Dowry-Stature Link: Theory & Evidence

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Abstract

Using a nationally representative household survey from India, we examine the association between a proxy of dowry-cash gift given at the time of daughter's marriage-and an indicator of long-term malnutrition; namely, height-for-age (stunting). We find that dowry reduces stunting in both boys and girls. This result is important because dowry, until now, had been perceived as one of the potential sources of discrimination in terms of intra-household resource allocation.

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1 Introduction

Among the developing countries, India is one of the fastest growing countries in terms of gross domestic product (GDP). At the same time India is ranked second in the world in the number of children suffering from malnutrition (World Bank estimates), after Bangladesh. The number of children that are underweight is nearly double that of Sub-Saharan Africa. A recent study published in *The Lancet* points out that India is also home to 61 million stunted children - more than half the total number of kids under the age five and 34% of the world's young ones. There are several studies, in the developing countries context, that have shown that the incidence of malnutrition is relatively higher for a female child than for a male child (Pal, 1999; Mehrotra, 2006; Horton, 1988). Despite this, it remains inconclusive if there exists gender discrimination, especially if one relies on the cross-country evidence (Strauss, 90; Strauss & Lomperis, 1991).

In this paper, we examine if there exists an association between marriage transactions - which can also be interpreted as dowry or cash gift exchanged at the time of marriage - and the health outcomes of daughters who would eventually be married off. We consider height-for-age or stunting as an indicator of female child's health, since the ill effect of dowry, if there is one, on a girl's height, is likely to manifest over a long period of time.

The custom of dowry entails that parents must give gifts to the groom's family at the time of daughter's marriage. In the modern context, dowry, however, has become a real burden on the parents, as the magnitude of dowry has ballooned to several multiples of one's annual household income (See for example, Bloch & Rao, 2002). In the case of India, dowry has been identified as one of the potential sources of discrimination against the girl child with regards to intra-household resource allocation (Lahiri & Self, 2007; Rosenzweig & Schultz, 1982; Kingdon, 2002). Researchers have argued that it may result in discrimination against the girl child with respect to the allocation of household resources on the grounds that parents facing the budget constraint must decide at the outset whether to save money for dowry or invest in their girl's human capital (Anderson, 2004). Rosenzweig & Schultz (1982) in their theoretical model identify the impact of dowry on the survival rates of children in India. It is reasonable to argue that discrimination along the gender lines in resource allocation within the household has implications for daughters' nutritional status and health as it requires investments in them.

A priori we do not know the relationship between dowry and health since there is no established literature to guide us. We, therefore, construct two very simple models that yield opposite predictions on daughter's dowry-health association. The first prediction emanates from a very simple inter temporal household utility maximization model, where the household in the first period allocates resources on daughter's and son's health, and in the second period pays dowry for the daughter and receives dowry for the son. In this setting, daughter's dowry is negatively related to her health, whereas, the son's dowry is positively related to his health. This hypothesis obviously reflects the pervailing view that daughters are being discriminated within the household in terms of resource allocation. The second prediction comes from an assortative mating model, which has been relied upon in the past to generate predictions pertaining to the issues of dowry (see for example, Anderson, 2000; Sharma & Frijters, 2009). In this model, daughters from wealthy families are matched with high quality grooms, and from poor families with low quality grooms. In this marriage market, daughter's family offers a combination of dowry and health to the groom's family, which in turn can accept or reject the offer. In this setting, dowry and health are positively associated. We put these two competing theories to test against the data. The evidence that we find support the predictions of the assortative mating model.

This study makes two significant contributions. Firstly, to the best of our knowledge this is the first to estimate the association between dowry and health in India. A major hurdle in the past was the availability of a data set that had information on both malnutrition and dowry. The recent availability of data from the India Human Development Survey (IHDS), 2005, helps us clear this hurdle; in spite of the fact that we do not directly observe dowry but rather rely on an instrument of dowry. Secondly, it adds to the handful of studies that draws association between gender discrimination and health outcomes in developing countries context.

The remainder of this paper is organized as follows. Section 2 discusses the background literature. Section 3 presents two theoretical models. Section 4 describes the data. Section 5 discusses the empirical strategy. Section 6 presents the results on the association between dowry and health in India and also discusses the robustness of the estimates. Section 7 concludes the paper.

2 Background Literature

There are several papers that have looked into gender discrimination and health outcomes. For example, D'Souza and Chen (1980) and Rosenzweig and Schultz (1982) find that the infant and child mortality rates are lower among boys in India. Similarly papers by, Sen (1984), Sen and Sengupta (1983) and Behrman (1988) argue, on the basis of anthropometric indicators, that boys receive preferential treatments in India. There are several studies including Rosenzweig and Schultz (1982), Behrman and Deolalikar (1989) for India; Evenson et al. (1980), and Senauer et al. (1988) for the Philippines; Chen, Huq, and D'Souza (1981) for Bangladesh; Chernichovsky et al. (1983) for India that indicate that boys tend to be favored in the intra-household distribution of nutrients; although, at least part of these differences can be ascribed to different activity levels (Pitt, Rosenzweig, and Hassan 1990, using data from Bangladesh). A study by Alderman and Gertler (1989) reports that the income and price elasticities of the demand for health care are larger for girls than for boys in Pakistan. Behrman and Deolalikar (1990) also find similar results. Finally, Subramanian and Deaton (1990) argue that there is evidence in Indian NSS data that parents make more room for boys relative to the girls in their household expenditures.

Another set of studies investigates differences in infant and child mortality outcomes. Majority of these evidence is from Asian countries including India, but there is little evidence other than in Asia for gender differences in infant and child mortality outcomes. When it comes to the empirical evidence from countries other than Asia, researchers find small and non significant gender differences in the levels of anthropometric outcomes (see for example, Strauss (1990), and Svedberg (1990) on Africa, and Schoeld (1979) on Latin America). Several studies have looked into gender differences in schooling outcomes. For example in many countries, school enrollment ratios are higher for boys as compared to girls. Schultz (1987) argues that gender bias in schooling enrollments and attainments tends to decline with income. Other papers that look into gender differences in schooling outcomes (for example, Psacharopolous and Arriagada, 1989) present evidence for discrimination against boys in school attendance and performance in Brazil. Chernichovsky (1985) argues that there is discrimination against girls in school attendance in Botswana. In the equivalence scale literature, there is little evidence for gender bias in the allocation of expenditures in Cote d'Ivoire and Thailand (Deaton 1989), or in the United States (Gronau 1991). Behrman (1992) provides a detailed literature review.

Studies in the context of dowry, health, and discrimination in India has been relatively limited. There are few papers that establish dowry as one of the potential sources of discrimination against the girl child with regards to intra-household resource allocation, (for example Lahiri & Self, 2007; Rosenzweig & Schultz, 1982; and Kingdon, 2002). One of the arguments used by Anderson (2004) is that parents face a budget constraint and they must decide at the outset whether to save money for dowry or invest in their girl's human capital, which results in discrimination against the girl child. Rosenzweig & Schultz (1982), in their paper, test the hypothesis that differences in child survival are related to the relative returns to survival, with households selectively allocating resources to children in response to variation in sex differences in their expected earnings opportunities as adults. On the other hand, Sharma & Frijters (2009) find a positive association between dowry and female human capital acquisition questioning the claim that dowry is one of the potential sources of discrimination in intra-household resource allocation.

3 Theory

Our objective in this section is to hypothesize the relationship between a girl's health outcome and her dowry. As mentioned in the introduction, the existing literature is not very helpful in this regard. Therefore, we construct two very simple models to establish the link between dowry and health. The reason we are constructing two distinct models is to reflect the flavor of existing theoretical models on dowry. One type of dowry determining model views the parents as the utility maximizers subject to the budget constraints (see for example Sen, 1999), another considers intertemporal utility maximization (see for example Zhang & Chan, 1999), while the third type relies on assortative mating (see for example Anderson, 2000). We consider the later two frameworks. These two frameworks in our context yield contradictory predictions as shown below.

3.1 Intertemporal Household Utility Maximization Model

We consider a household that lives for two periods, consumes in both periods, and works only in the first period. To keep the analysis simple we assume that the household has only one son and one daughter.[1] The household maximizes the following inter temporal utility function:

$$U\left(c_1, c_2, l_b, l_g\right)$$

$$\text{s.t. } c_1 + \frac{c_2}{1+r} + \frac{\alpha g\left(l_g\right)}{1+r} = y_1 + \frac{y_2}{1+r} + \frac{\beta h\left(l_b\right)}{1+r} + w\left(\bar{l} - l_b - l_g\right)$$

where c_1 is the aggregate household consumption in the first period, c_2 is the aggregate household consumption in the second period, and l_b and l_g are the total amounts of household labor hours invested in producing son's and daughter's health respectively. The terms y_1 and y_2 are the exogenously given levels of income in the first and second period respectively. We

[1] This model follows in the spirit of Rose's (2000) model on gender bias and time allocation in the context of India.

assume that $y_1 > y_2$, so that the household has an incentive to transfer resources into the future. The term α is the exogenously given level of daughter's dowry. The daughter's dowry is treated as an outflow of resources from the household in the second period. The term β is the exogenously given level of son's dowry and is treated as an addition to the household income in the second period. The health functions $h\left(l_b\right)$ and $g\left(l_g\right)$ are increasing in their respective arguments and are assumed to be concave. The terms w and r are exogenously given wage rate and discount rate, respectively. The total household labor endowment is denoted by the term $\bar{l}$. To keep the model simple we assume that the household has access to an unconstrained credit market. The utility function is additively separable and increasing and concave in each argument $(u_i > 0\, for\, all\, i,\ u_{ii} < 0\, for\, all\, i)$. This setting yields the following proposition:

Proposition1: An increase in daughter's dowry decreases the investment in her health and therefore results in poor health, ceteris paribus.

Proof: Provided in the appendix.

Proposition2: An increase in son's dowry increases the investment in his health and therefore results in better health, ceteris paribus.

Proof: Provided in the appendix.

3.2 Assortative Mating Model

Here we need to model two different utility functions. First for the parents who decide the dowry amount and health outcome for the bride, and the second for the groom's parents who accept or reject the dowry and health offers of the bride. Since a typical marriage in India is arranged by the parents of the bride and groom, following Anderson (2000) we will assume that the utility of the parents and the bride are grouped together and the same is assumed for the groom side as well.[2] Also, for simplicity we assume that the bride is the only child of her parents and the same is true for the groom.

[2]Anderson's model is in the context of Pakistan.

The bride side utility function, U_b, is given by:

$$U_b = u_1 (W - D - H) + q \qquad (1)$$

here W is initial household wealth, D is the dowry offered to the groom, H is the cost of health outcomes (presumed linear in the health outcomes, meaning that we can also use H as the level of bride's health) and q is the quality of the groom. We envisage u_1 to be the usual concave function and bridal households to be differentiated by their initial level of wealth, W. We denote the cumulative distribution of W as $F(W)$, which is bound from below by W_0. Note that the default level of utility if the household decides not to marry the daughter at all, would be $u_1(W)$.[3]

On the side of the grooms, their utility function, U_g, equals

$$U_g = u_2 (D) + u_3 (H) \qquad (2)$$

with $u_2()$ and $u_3()$being a convex function of their argument, denoting decreasing marginal utility of dowry and the level of bridal health. Grooms differ with respect to quality q. There is a c.d.f. of q denoted as $G(q)$ which is bound from below by $q_0 > 0$.

The market is characterized by perfect information and complete matching, with n households on both sides ordered in ascending wealth and quality. This means that no household in equilibrium should be able to gain by switching with another household.

The solution is found by backward induction: there is going to be complete assortative matching between the wealth of the bridal families and the quality of the grooms; i.e., the wealthier bridal families will match with the highest quality grooms. The least wealthy household is going to end up with groom q_0. The total wealth transferred $(D + H)$ solves the outside option of the least wealthy household; i.e., they have to be indifferent between marrying their daughter off or not:

[3] In the eventuality of daughter not getting married, we assume that the investment in her health out of the initial household wealth is not lost and remains within the family.

$$q_0 = u_1(W) - u_1(W - (D_0 + H_0)) \qquad (3)$$

which fixes $(D_0 + H_0)$, denoted as $\left(\widetilde{D_0 + H_0}\right)$. The allocation between D_0 and H_0 is then given by the maximization of the utility of the groom 0 subject to the budget constraint which means D_0 and H_0 solve in an interior solution:

$$u_2'(D_0) = u_3'(H_0) = u_3'\left(\left(\widetilde{D_0 + H_0}\right) - D_0\right) \qquad (4)$$

which fixes both D_0 and H_0.

We can now determine the level of $\left(\widetilde{D_1 + H_1}\right)$by solving the constraint that the bridal transfer has to be high enough to outbid the willingness to pay of the least wealthy household:

$$q_1 = u_1(W_0) - u_1\left(W_0 - \left(\widetilde{D_1 + H_1}\right)\right) \qquad (5)$$

iteratively, the transfer paid by the j^{th}bridal family is given by the equality for the $j - 1^{th}$household

$$u_1\left(W_{j-1} - \left(\widetilde{D_{j-1} + H_{j-1}}\right)\right) + q_{j-1} = q_j + u_1\left(W_{j-1} - \left(\widetilde{D_j + H_j}\right)\right) \qquad (6)$$

which solves to

$$q_j - q_{j-1} = u_1\left(W_{j-1} - \left(\widetilde{D_{j-1} + H_{j-1}}\right)\right) - u_1\left(W_{j-1} - \left(\widetilde{D_j + H_j}\right)\right) \qquad (7)$$

which iteratively uniquely ties down $\left(\widetilde{D_j + H_j}\right)$. Since we have ordered the households by wealth, it is immediate that $\left(\widetilde{D_j + H_j}\right)$ is increasing in wealth W and thus with j. Given the assumption on the form of u_1 it is also immediate that no household can improve after this allocation by switching partners: the less wealthy families at the margin don't sufficiently value groom quality to outbid the wealthier families.

Now, the division between D_j and H_j is again given by the maximization of the groom's utility. This is because otherwise a groom would switch to a family that offers less total transfer $\left(\widetilde{D_j + H_j}\right)$ but gives an improved mix. This means they solve

$$u_2'(D_j) = u_3'\left(\left(\widetilde{D_j + H_j}\right) - D_j\right) \qquad (8)$$

since $\left(\widetilde{D_j + H_j}\right)$ is increasing in j, we can also say that both D_j and H_j must be increasing in j (a deviation can't solve this equation because both u_2 and u_3 are convex). Hence we get the following predictions:

Proposition3: All else equal, an increase in dowry is positively associated with bridal health.

Proposition4: All else equal, dowry and bridal health increase in wealth.

4 Data

We use data from the 2005 India Human Development Survey, a nationally representative household level data set collected by the National Council of Applied Economic Research in New Delhi and the University of Maryland (Desai, Reeve and NCAER 2009). IHDS covers 41,554 households located throughout India. [4] This data set became available for public use only recently, and has not yet been exploited by economists. The survey contained many questions that are not asked in the larger and more commonly used Indian household survey, the National Sample Survey. Most relevant for us is the information on marriage practices for each household member. We are not aware of any other large-scale household-level data set in India that contains a measure of cash amount for daughter's marriage at the time of wedding. Specially the question asked is: "Generally in your community for a family like yours, what are the kind of things that are given as gifts at the time of daughter's marriage?" One such variable of interest is "Cash Amount".

[4] The survey covered all the states and union territories of India except Andaman and Nicobar and Lakshadweep, two union territories which together account for less than .05% of India's population.

Even though our primary objective is to examine the association between dowry and a measure of malnutrition among female children in India, we do discuss the results from male children's sample as well for comparative purposes. We are interested in using height-for-age that reveals information on stunting as a long-term measure of malnutrition. The standard practice is that if the height of a child is below 3 standard deviations of the median height in the reference group then the child is considered stunted for his/her age. In the nutrition literature it is considered a long-run measure of nutritional status (Waterlow et al., 1977). This measure also reflects the accumulation of nutrition over the child's lifetime. Evidence suggests that stunting is related to mental development, mortality and labor market outcomes. In fact, both nutritionists and economists suggest that height-for-age is also a useful indicator of child health and welfare. The reference group statistics are obtained from the World Health Organization Child Growth Standards. In our sample that comprises of 68,462 children in the age group 1-14 years, approximately 13% are stunted. The number of female children in this sample is 32,743 of which approximately 13.4% are stunted, whereas, approximately 12.7% of male children are stunted out of a total of 35,719 . Our main independent variable of interest is a proxy of dowry. The mean of this variable is approximately Rs. 23,000 with the maximum being Rs. 2,000000 and minimum being zero. Table 1 presents the descriptive statistics for the variables used in this paper.

5 Empirical Strategy

The most important implication of the theoretical models is that a girl's dowry and her health outcomes are associated with each other, negatively in the case of first model and positively in the case of second model. The first model provides us with a more specific cause-effect relationship, whereas, the second model does not establish this casue-effect relationship. Implementing this cause-effect relationship empirically is straight forward since we are allowing for the possibility of dowry to be an endogenous variable in the health equation which is discussed below.

To estimate the effect of dowry on nutritional status of female children, as measured by height-for-age, we presume that this relationship is approximated by:

$$y_{ihj} = \alpha + \beta Dowry_{ihj} + \varphi X_{ihj} + \epsilon_i \qquad (10)$$

where y_{ihj} is a measure of malnutrition, stunting of the i^{th} child in the h^{th} household of the j^{th} community. $Dowry_{ihj}$ is an instrument for individual child's dowry, and X_{ihj} is a standard set of control variables (age, number of older and younger brothers and sisters, mother's age, mother's height, mother's weight, mother's education, father's age, father's education, a measure of income or consumption, measures of sanitation such as household excrement, stagnant water, clean water, availability of traditional latrines). The coefficient of primary interest is β, which gives the effect of dowry on child's health outcomes.

The motivation for including the number of older and younger brothers and sisters comes from the following discussion. It is often argued that the oldest child is the least malnourished and the subsequent children are increasingly poorly provided for. Parents may have less time per child once the family size becomes large. Additional children may stretch the family budget too far. Mothers become older and may become more tired as they have more children and thus cannot so easily find the energy to devote as much attention to late arriving children. To the extent that there is a quantity- quality tradeoff between having a few children and lavishing attention on them and having a lot of children but letting them fend more for themselves, we would expect to observe that early children are better nourished. Also it is important to control for mother's education. A great deal of attention has been paid on the positive effect of mother's education on child nutrition. Additionally, in our Equation 10, we use a proxy for household income; viz, a measure of household consumption. In the case of India and other developing countries consumption measure has been found to be a better control for well being than the income measure. It is important to control for the household income because of its association with the nutritional status of child.

5.1 Dowry Instrument

Since we do not have any direct evidence of dowry in our sample, we, instead, instrument dowry with the cash gift at the time of daughter's marriage (now onwards dowry), which for all practical purposes is akin to dowry because cash gift is one of the most significant components of dowry that includes other types of tangible gifts as well.[5] This cash gift is a household's perception of how much on average is transacted in a family like theirs in their community. Clearly the amount that they expect to pay for daughters or receive for sons is likely to be correlated with this perceived cash gift. The following expression captures the essence of our argument:

$$D_{ihj} = f\left(\overline{D}_{hj}, \gamma_{ih}, \delta_h, \mu\right) \qquad (9)$$

where D_{ihj} is the dowry for the i^{th} child in the h^{th} household of the j^{th} community. The term $\overline{D}_{hj}$ is the average dowry in the community for the similar households as perceived by the h^{th} household. The variable γ_{ih} refers to the i^{th} child specific characteristics relevant for dowry determination in the h^{th} household, and δ_h is the h^{th} household specific characteristics. The term μ captures the other determinants. The average perceived dowry $\overline{D}_{hj}$ varies from household to household because each household has different mechanisms to acquire this information from the community network. Given the fact that dowry is illegal many households may not like to reveal this information to everybody in their community. The information about dowry spreads through the word of mouth and therefore is subject to distortions. We also believe that the average perceived dowry $\overline{D}_{hj}$ is exogenous component of individual dowry. It should be noted that in our estimation framework, discussed in the following section, we are not concerned about modeling dowry heterogeneity among children, as we do not observe those in our data.

[5] Even though, the survey provides information on these other tangible gifts, we chose to not include them in our measure of dowry because it is difficult to aggregate and quantify the values of them for a household.

5.2 Endogeneity of Dowry

Estimating the effect of dowry on measures of nutrition is not straight forward since dowry is plausibly endogenous in equation 10 as suggested by the assortative mating model proposition 3. The primary source of endogeneity is due to the presence of omitted variables in our estimating equation. One omitted variable that is likely to be correlated with dowry instrument is wealth. The wealthy households are not only more likely to offer higher dowries for their daughters, but are also more likely to invest in their health outcomes, as suggested by our model on assortative mating (proposition 4). In order to address this source of endogeneity, we include a measure of household assets and an indicator of below poverty line, as proxies of wealth, in our estimation.

Caste and religion (social group) of the household to which a child belongs to, and are considered plausible determinants of child's health outcomes, are also likely to be correlated with dowry instrument. The magnitude and level of dowry vary across caste and religious affiliations because of differing social norms and cultures. The exclusion of these variables from the estimation is likely to bias the coefficient of dowry. Even though, we cannot predict the direction of the bias in our estimation, we do try to address this issue by controlling for caste and religion dummies.

The Third omitted variable in Equation 10 is the domicile. We rely on two measures to capture domicile: the state of residence and a dummy for rural residence. Both of these measures are considered plausibly associated with a child's health outcome as has been shown in many previous studies (see for example, Thomas & Strauss, 1992, and Haughton & Haughton, 1997). It is also well documented that dowry is more prevalent in Bihar, Uttar Pradesh, Punjab, Delhi, Andhra Pradesh and Tamil Nadu and not so much in North-Eastern states. Moreover, the incidence of dowry is high in the rural areas than in the urban areas. In order to address the domicile effect we control for the state of residence and rural dummy in our estimation.

The fourth omitted variable that contributes to the endogeneity bias in equation 10 is the sibling dowries. Sibling dowries are likely to cause permanent income shocks to the family budget. Brothers' dowries are an addition to the family income and is likely to augment a girl's dowry offering, whereas, sisters' dowries are an outflow of resources from the family and is likely to have an adverse effect on a girl's dowry offering. Sibling dowries can plausibly also affect the child's health outcomes through its effect on the family budget. In order to address this source of endogeneity we control for the older brothers' dowries, older sisters' dowries, younger brothers' dowries and younger sisters' dowries in our estimations.

Given the forgoing discussion on likely sources of endogeneity bias, we amend Equation (10) as follows:

$$y_{ihj} = \alpha + \beta Dowry_{ihj} + \delta wealth + \theta caste + \psi domicile + \phi sibling\, dowries + \varphi X_{ihj} + \epsilon_i \tag{11}$$

We believe that Equation (11) addresses the main sources of endogeneity bias.

5.3 Selection Bias

The second problem that arises in estimating equation (10) is that of selection bias. Our sample consists of all surviving children from 1-14 years in age. This sample obviously does not account for the fact that some parents might have resorted to selective abortion or female infanticide primarily to avoid paying dowry. It is also likely that once the girl child was born, she was discriminated heavily against in terms of resource allocation including nutrients provision and lack of medical attention, when needed, which might have resulted in her death. Clearly, this implies that the ability of a family to pay dowry in some part will play a role in the choice of having a girl child in the first place. This will obviously bias our estimate of dowry in equation (10). In order to correct this selection bias, we rely on Heckman's (1979) two-step estimator, where in the first step we run a probit to generate Inverse Mills Ratio (IMR) from the estimates. The dependent variable is a dummy that equals one if a girl did not experience the death of any of her sisters and zero otherwise (approximately 19% of the girls experienced the death of one or more sisters). We use all the regressors from equation (11) in the first step probit regression. Additionally, we include another variable that has information on each girl's parents currently using some methods to delay or prevent pregnancy. We denote this variable by contraceptives use.

In the second step, we include the estimated IMR as an additional regressor in our main specification given by equation (11). The IMR is identified by the variable 'contraceptives use' in the second step. We believe that the use of contraceptives by parents will positively affect a girl's survival and makes them less likely to engage in extreme behaviors such as female infanticide. We also believe that the 'contraceptives use' variable is less likely ro be correlated with the error term in the second step. Thus, we estimate the following modified equation:

$$y_{ihj} = \alpha + \beta Dowry_{ihj} + \delta wealth + \theta caste + \psi domicile + \phi sibling\, dowries + imr + \varphi X_{ihj} + \epsilon_i \quad (12)$$

6 Is there an association between dowry and stature?

6.1 Standardized Height Regression - Female Sample

The baseline model presented in table 2 suggests that dowry and girl's standardized height are positively associated with each other. More specifically, a Rs. 100,000 increase in dowry increases a girl's standardized height by 0.26 standard deviations. This increase remains unchanged when we control for wealth measures, caste & religion measures, and domicile measures. These coefficients of dowry in different specifications are all statistically significant at the 1% level. However, when we control for sibling dowries, the coefficient of dowry increases to 0.29, but is not statistically significant at the conventional levels (significant at 12%). Since we do not observe dowry information separately for each sibling, but assign the same average dowry to each child in the household, we need to run a separate specification that controls for the household specific fixed effects. The one drawback of running a household specific fixed effects model is that we lose significant amount of information. To avoid this problem, we run a random effects model that eliminates the dependency of dowry on the fixed household characteristics. We also obtain the standard errors by clustering at the household level. The last column of table 2 presents the estimates of the household specific random effects model. As one can see, now the coefficient of dowry decreases to 0.21 from 0.29, and is statistically significant at the 10% level. This specification also indicates that an increase in the age of a girl and having an additional older brother or sister is negatively associated with her standardized height. The negative effect of an older brother or sister on a girl's height is according to the expectations. Several studies in the past that controlled for the birth order of a child in their health equations have found this negative association (see for example, Horton, 1988; Senauer & Garcia, 1991). Whereas, having an additional younger brother is positively associated with a girl's height. We did not come across any study that controls for this variable in their health equations. Mother's height, schooling and age are all positively associated with a girl's height. These findings are in accordance with previous studies (see for example, Senauer & Garcia, 1991, in the context of Philippines; Haughton & Haughton, 1997, in the context of Vietnam; Chen & Li, 2009, in the context of China; Thomas et.al., 1991, in the context of Brazil). The logarithm of consumption, which is a proxy for income, is positively associated with a girl's height. This is also in accordance with the results from previous studies (see for example, Chen & Li, 2009, in the context of China; Pal, 1991, in the context of India).

6.2 Robustness Analysis

6.2.1 Probit Regression

Table 3 presents the estimates from the probit model where the dependent variable is stunting. The baseline model indicates that an increase in dowry reduces a girl's stunting. A Rs. 100,000 increase in a girl's dowry decreases her likelihood of being stunted by approximately 0.131. This more or less remains unchanged when we control for wealth and caste & religion measures. All these coefficients of dowry are statistically significant at the 1% level. When we control for the domicile measures, the coefficient drops from -0.13 to -0.09 and is statistically significant at the 5% level. However, controlling for sibling dowries, raises the coefficient to -0.146 and it remains statistically significant at the 5% level.

6.2.2 Quartile Regression on Standardized Height

We construct quartiles based on two measures: income and consumption. Table 4 presents the estimates from quartile regression. As the estimates suggest, that even though dowry is positively associated with the standardized height for both the upper and lower quartiles under both income and consumption classifications, it is not statistically significant at the conventional levels. But the results from the middle quartiles (table 5) suggests that dowry is significant for the third quartile under both income and consumption classifications. This allows us to conclude that the association between dowry and height is primarily a middle class phenomenon.

6.2.3 Is there a Selection Bias?

Table 6 presents the estimates from the regression on standardized height and probit on stunting which include the inverse mills ratio (IMR) to correct for selection bias. Table 6 column 2 presents the estimates from the first step probit regression to generate IMR. The identifying variable 'contraceptives use' by parents is positively associated with a girl's survival and is statistically significant at the 1% level. Table 6 column 3 shows the estimates from the second step regression on girl's standardized height. In this specification the coefficient of dowry is still positive and statistically significant at the 10% level. It now increases to 0.31 from 0.29, which was the estimate for fully specified model in table 2. The coefficient of IMR is negative and statistically significant at the 5% level, implying that the probability of a girl surviving is negatively associated with her height. In this specification, it is fair to conclude that selection was biasing our estimtes. Table 6 column 4 displays the estimates from the second step probit regression on girl's stunting. The coefficient of IMR is positive implying that the probability of a girl surviving is positively associated with her being stunted. However, it is not statistically significant at the conventional levels. Here in this specification the coefficient of dowry is negative (-0.14) and statistically significant at the 10% level, implying that a girl's dowry has a negative impact on stunting.

6.3 Results from Male Sample

6.3.1 Standardized Height Regression

The baseline model presented in table 7 suggests that dowry and boy's standardized height are positively associated with each other. More specifically, a Rs. 100,000 increase in dowry increases a boy's standardized height by 0.15 standard deviations. This increase does not change much when we control for wealth measures, caste & religion measures, and domicile measures. These coefficients of dowry in different specifications are all statistically significant at the 10% level. However, when we control for sibling dowries, the coefficient of dowry increases to 0.16, but is not statistically significant at the conventional levels. The last column of table 7 presents the estimates of the household specific random effects model. Under this specification, the coefficient of dowry increases to 0.26 from 0.16, and is statistically significant at the 5% level. This specification also indicates that the boy's age is negatively associated with his standardized height. Whereas, mother's height, weight, schooling and age, logarithm of consumption, hailing from an OBC, dalit, adivasi, or muslim family are all positively associated with a boy's standardized height.

6.3.2 Probit Regression on Stunting

Table 8 presents the estimates from the probit model where the dependent variable is stunting. The baseline model indicates that an increase in dowry reduces a boy's stunting. A Rs. 100,000 increase in dowry decreases stunting by approximately 0.09. This does not change by much when we control for wealth, caste & religion, and domicile measures. All these coefficients of dowry are statistically significant. However, controlling for sibling dowries, decreases the dowry coefficient to -0.056 and it is not statistically significant.

6.3.3 Quartile Regression on Standardized Height

Table 9 & 10 present the estimates from quartile regression. As the estimates suggest, using the income based quartiles the coefficient of dowry is positive but significant only in the case of third quartile. Whereas, according to the consumption based quartiles it is positive for the second, third, and fourth quartiles respectively and remains significant in all these cases. These results from the male sample also allow us to claim, akin to the female case, that the association between dowry and height is primarily a middle class phenomenon.

6.4 Pooled Sample

It would be interesting to estimate the effect of female dowry on her height when we pool the two samples, i.e. male & female. Pooling the sample allows us to equalize the variance of the two sub samples. We present the result of pooled sample in table 11 for both standardized height and stunting specifications. Column 2 of table 11 presents the estimates from the standardized height regression. Here we have included dowry's interaction with female to estimate the effect of female dowry on her height. The variables dowry, female dummy, and female & dowry interaction term are jointly significant at the 10% level ($F_{1,13407} = 3.49$). The resulting coefficient is positive, implying that an increase in female dowry positively affects her height. Column 3 of table 11 presents the estimates from the probit regression on stunting. Here the variables dowry, female dummy, and female & dowry interaction term are not jointly significant at the conventional levels ($chi^2(1) = 1.72$). However the effect of female dowry on her stunting is negative.

7 Conclusion

Using a large scale nationally representative household level data from India, we find that dowry decreases stunting among girls. We also have evidenc to suggest that the same is true for the boys as well, which is not entirely unexpected. This is one of the first nationally representative data set from the post liberalized India with several questions on marriage practices and norms. The effect of dowry on stunting outcome is quite relevant and important in the Indian context, because, up to now, it was suspected that dowry is one of the factors that is playing a role in the discrimination against girl child in terms of intra-household resource allocation. One possible explanation for this result can be found in the assortative mating hypothesis (Becker, 1991), whereby, a highly desirable groom will match with a highly desirable bride. So parents know that the girl's human capital including her health outcomes must be improved before marriage, otherwise she will likely end up with a less desirable match, dowry notwithstanding.

Given this scenario, it is not surprising to find the positive relationship between dowry and female long-run health outcome as measured by height-for-age.

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Appendix

Proof of Proposition1:

Form the Lagrangian

$$L = U\left(c_1, c_2, l_b, l_g\right) + \lambda\left(y_1 + \frac{y_2}{1+r}\right) + w\left(\bar{l} - l_b - l_g\right) + \frac{\beta h\left(l_b\right)}{1+r} - c_1 - \frac{c_2}{1+r} - \frac{\alpha g\left(l_g\right)}{1+r}$$

The first order conditions are as follows:

$$U_1 - \lambda = 0$$

$$U_2 - \frac{\lambda}{1+r} = 0$$

$$U_3 - w\lambda + \frac{\lambda\beta h'(l_b)}{1+r} = 0$$

$$U_4 - w\lambda - \frac{\lambda\alpha g h(l_g)}{1+r} = 0$$

$$y_1 + \frac{y_2}{1+r} + w\left(\bar{l} - l_b - l_g\right) + \frac{\beta h(l_b)}{1+r} - c_1 - \frac{c_2}{1+r} - \frac{\alpha g(l_g)}{1+r} = 0$$

Next, totally differentiate equations (3-7) with respect to α

$$U_{11}\frac{\partial c_1^*}{\partial \alpha} - \frac{\partial \lambda^*}{\partial \alpha} = 0$$

$$U_{22}\frac{\partial c_2^*}{\partial \alpha} - \frac{1}{(1+r)}\frac{\partial \lambda^*}{\partial \alpha} = 0$$

$$U_{33}\frac{\partial l_b^*}{\partial \alpha} - w\frac{\partial \lambda^*}{\partial \alpha} + \frac{\lambda\beta h^{"}}{(1+r)}\frac{\partial l_b^*}{\partial \alpha} + \frac{\beta h'}{(1+r)}\frac{\partial \lambda^*}{\partial \alpha} = 0$$

$$U_{44}\frac{\partial l_g^*}{\partial \alpha} - w\frac{\partial \lambda^*}{\partial \alpha} - \frac{\lambda g'}{1+r} - \frac{\lambda\alpha g'}{(1+r)}\frac{\partial l_g^*}{\partial \alpha} - \frac{\alpha g'}{(1+r)}\frac{\partial \lambda^*}{\partial \alpha} = 0$$

$$-\frac{\partial c_1^*}{\partial \alpha} - \frac{1}{(1+r)}\frac{\partial c_2^*}{\partial \alpha} - w\frac{\partial l_b^*}{\partial \alpha} - w\frac{\partial l_g^*}{\partial \alpha} + \frac{\beta h'}{(1+r)}\frac{\partial l_b^*}{\partial \alpha} - \frac{g}{1+r} - \frac{\alpha g'}{(1+r)}\frac{\partial l_g^*}{\partial \alpha} = 0$$

Next, solve for $\frac{\partial l_g^*}{\partial \alpha}$ by using Cramer's rule:

$$\frac{\partial l_g^*}{\partial \alpha} = \frac{U_{11}U_{22}\left(U_{33+}\frac{\lambda^*\beta h'}{1+r}\right)\left[-\left\{\left(-w - \frac{\alpha g'}{1+r}\right)\frac{g}{1+r}\right\}\right]}{U_{11}U_{22}\left(U_{33+}\frac{\lambda^*\beta h'}{1+r}\right)\left[-\left\{\left(-w - \frac{\alpha g'}{1+r}\right)\left(-w - \frac{\alpha g'}{1+r}\right)\right\}\right]} < 0$$

The proof is immediate if we recognize that the health function $g(l_g)$ is increasing in l_g and is concave.

Q.E.D.

Proof of Proposition 2:

Totally differentiate equations (3-7) with respect to β

$$U_{11}\frac{\partial c_1^*}{\partial \beta}-\frac{\partial \lambda^*}{\partial \beta}=0$$

$$U_{22}\frac{\partial c_2^*}{\partial \beta}-\frac{1}{(1+r)}\frac{\partial \lambda^*}{\partial \beta}=0$$

$$U_{33}\frac{\partial l_b^*}{\partial \beta}-w\frac{\partial \lambda^*}{\partial \beta}+\frac{\lambda^* h}{1+r}+\frac{\lambda\beta h^{"}}{(1+r)}\frac{\partial l_b^*}{\partial \beta}+\frac{\beta h^{'}}{(1+r)}\frac{\partial \lambda^*}{\partial \beta}=0$$

$$U_{44}\frac{\partial l_g^*}{\partial \beta}-w\frac{\partial \lambda^*}{\partial \beta}-\frac{\lambda\alpha g^{'}}{(1+r)}\frac{\partial l_g^*}{\partial \beta}-\frac{\alpha g^{'}}{(1+r)}\frac{\partial \lambda^*}{\partial \beta}=0$$

$$-\frac{\partial c_1^*}{\partial \beta}-\frac{1}{(1+r)}\frac{\partial c_2^*}{\partial \beta}-w\frac{\partial l_b^*}{\partial \beta}-w\frac{\partial l_g^*}{\partial \beta}+\frac{\beta h^{'}}{(1+r)}\frac{\partial l_b^*}{\partial \beta}+\frac{h}{1+r}-\frac{\alpha g^{'}}{(1+r)}\frac{\partial l_g^*}{\partial \beta}=0$$

Next, solve for $\frac{\partial l_b^*}{\partial \beta}$ by using Cramer's rule:

$$\frac{\partial l_b^*}{\partial \beta}=\frac{U_{11}U_{22}\left(-\frac{\lambda^* h^{'}}{1+r}\right)\left[-\left\{\left(-w-\frac{\alpha g^{'}}{1+r}\right)\left(-w-\frac{\alpha g^{'}}{1+r}\right)\right\}\right]}{U_{11}U_{22}\left(U_{33+}\frac{\lambda^*\beta h^{"}}{1+r}\right)\left[-\left\{\left(-w-\frac{\alpha g^{'}}{1+r}\right)\left(-w-\frac{\alpha g^{'}}{1+r}\right)\right\}\right]}>0$$

The proof is immediate if we recognize that the health function $h(l_b)$ is increasing in l_b and is concave.

Q.E.D.

Table 1: **Summary Statistics (1-14 years)**

	Pooled	Sample	Female	Sample	Male	Sample
Variables	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Standardized Height	-1.871436	3.378388	-1.873584	3.306274	-1.869455	3.443638
Stunting	.1304081	.3367543	.1339218	.3405734	.1271872	.3331872
Dowry	.2283979	.5289733	.2283529	.5253489	.2284392	.5322916
Age	7.438126	4.21222	7.443057	4.222066	7.433607	4.203228
Older Brothers	.6627472	.9047651	.6685398	.9041415	.6574372	.9053165
Younger Brother	.4477082	.6856893	.5111322	.7111702	.3895686	.6561155
Older Sister	.6923257	.9438537	.6721131	.9335605	.7108542	.952828
Younger Sister	.4006164	.7001607	.4418044	.7434863	.3628601	.6556847
Mother's Weight	48.52324	16.04448	48.53574	16.97736	48.51185	15.14465
Mother's Height	119.3616	61.90656	118.9687	62.10696	119.7218	61.72095
Father's Age	37.01075	8.008114	36.99809	8.013516	37.02233	8.003274
Mother's Age	32.12072	7.203544	32.07551	7.197443	32.16204	7.208972
Father's Schooling	6.097242	4.846223	6.081988	4.822102	6.111186	4.8682
Mother's Schooling	3.783393	4.553923	3.76088	4.536017	3.803969	4.570197
Log Consumption	6.339266	.6501622	6.319294	.6452203	6.357578	.6541342
House Excrement	.2616342	.4395277	.2612467	.4393208	.2619894	.4397231
Stagnant Water	.1962695	.3971776	.1934765	.3950292	.1988298	.3991252
Clean Water	.8589144	.3481123	.8580765	.348977	.8596825	.347321
Traditional Latrine	.3954456	.4889498	.3925114	.488317	.3981354	.4895205
Below Poverty Line	.2984283	.4575718	.3101121	.4625463	.287718	.4527053
Household Assets	11.40065	6.005312	11.29695	5.953651	11.4957	6.050803
OBC Dummy	.3332798	.471389	.3310631	.4706029	.3353117	.4721059
Adivasi Dummy	.0861354	.2805659	.0892099	.2850508	.083317	.2763646
Dalit Dummy	.2153603	.4110751	.2186727	.4133523	.212324	.4089587
Muslim Dummy	.1493091	.3563955	.1507192	.3577805	.1480165	.3551213
Rural Residence	.6961526	.4599209	.6968512	.459626	.6955122	.4601966
Older Brothers' Dowry	.1263666	.5107875	.1284282	.549025	.1244717	.4729256
Older Sisters' Dowry	.138219	.5097996	.1307292	.4732438	.145103	.5411419
Younger Brothers' Dowry	.0853294	.3739624	.0980823	.3869522	.0736081	.3612216
Younger Sisters' Dowry	.0726563	.3172828	.0778625	.3149015	.0678712	.3193862
Contraceptives Use	.5584333	.4965781	.5386489	.498513	.5765435	.4941145

Table 2: **Effect of Dowry on Standardized Height-Female Sample**

Variables	**Baseline**	**Wealth**	**Caste**	**Domicile**	**Sibling dowries**	**Random Effects**
Dowry	0.263***	0.261***	0.266***	0.266***	0.293	0.215*
	(0.0939)	(0.0947)	(0.0943)	(0.102)	(0.187)	(0.113)
Age	-0.249***	-0.250***	-0.251***	-0.264***	-0.263***	-0.247***
	(0.0198)	(0.0196)	(0.0195)	(0.0192)	(0.0191)	(0.0142)
Older Brother	-0.0468	-0.0480	-0.0382	0.00198	-0.0162	-0.0857*
	(0.0547)	(0.0547)	(0.0567)	(0.0574)	(0.0611)	(0.0483)
Younger Brother	0.0540	0.0561	0.0630	0.114**	0.158**	0.111*
	(0.0523)	(0.0523)	(0.0532)	(0.0567)	(0.0622)	(0.0620)
Older Sister	-0.0590	-0.0599	-0.0555	-0.0501	-0.0781	-0.0899**
	(0.0497)	(0.0503)	(0.0503)	(0.0513)	(0.0552)	(0.0440)
Younger Sister	0.0584	0.0609	0.0662	0.0952*	0.149**	0.0690
	(0.0518)	(0.0516)	(0.0514)	(0.0513)	(0.0596)	(0.0557)
Mother's Weight	-0.00480**	-0.00486**	-0.00472**	-0.00472*	-0.00474*	-0.000390
	(0.00233)	(0.00229)	(0.00231)	(0.00253)	(0.00254)	(0.00192)
Mother's Height	0.0303***	0.0301***	0.0301***	0.0314***	0.0314***	0.0292***
	(0.00838)	(0.00843)	(0.00845)	(0.00846)	(0.00843)	(-0.00435)
Father's Age	0.00242	0.00286	0.00348	-0.00247	-0.00236	0.00130
	(0.0139)	(0.0137)	(0.0137)	(0.0127)	(0.0127)	(0.0105)
Mother's Age	0.0169	0.0169	0.0164	0.0282*	0.0271*	0.0324**
	(0.0152)	(0.0151)	(0.0152)	(0.0149)	(0.0149)	(0.0131)
Father's Schooling	0.00798	0.00627	0.00523	0.00645	0.00705	-0.00455
	(0.0121)	(0.0117)	(0.0121)	(0.0119)	(0.0119)	(0.00967)
Mother's Schooling	0.0333**	0.0314**	0.0311**	0.0234	0.0233	0.0209*
	(0.0144)	(0.0152)	(0.0150)	(0.0157)	(0.0157)	(0.0112)
Log Consumption	0.274***	0.222**	0.238**	0.307***	0.308***	0.292***
	(0.0863)	(0.111)	(0.112)	(0.118)	(0.118)	(0.0969)
Household Excrement	-0.00139	0.00547	-0.00230	0.0182	0.0137	-0.0163
	(0.112)	(0.117)	(0.118)	(0.119)	(0.119)	(0.0891)
Stagnant Water	-0.0376	-0.0362	-0.0299	-0.0208	-0.0179	-0.0472
	(0.119)	(0.119)	(0.119)	(0.124)	(0.124)	(0.0977)
Clean Water	0.130	0.126	0.136	0.137	0.141	0.0629
	(0.159)	(0.159)	(0.163)	(0.145)	(0.145)	(0.103)
Latrine	-0.146	-0.172*	-0.143	0.0223	0.0324	0.0188
	(0.0956)	(0.0990)	(0.107)	(0.119)	(0.118)	(0.0979)
Below Poverty Line		-0.0481	-0.0339	-0.129	-0.127	-0.0984
		(0.126)	(0.125)	(0.132)	(0.132)	(0.106)
Household Assets		0.00821	0.00948	-0.00299	-0.00411	0.0138
		(0.0129)	(0.0133)	(0.0151)	(0.0151)	(0.0110)
OBC Dummy			0.185	0.192	0.183	0.0589
			(0.122)	(0.121)	(0.119)	(0.100)
Dalit Dummy			0.0829	0.0629	0.0543	0.0699
			(0.132)	(0.136)	(0.135)	(0.111)
Adivasi Dummy			0.133	0.240	0.230	0.191
			(0.186)	(0.186)	(0.186)	(0.163)
Muslim Dummy			-0.0365	-0.0978	-0.105	0.0220
			(0.182)	(0.184)	(0.182)	(0.130)
Rural Residence				-0.111	-0.107	-0.115
				(0.115)	(0.114)	(0.0939)
Older Brother's Dowry					0.137	0.0632
					(0.128)	(0.101)

Table 2: **Effect of Dowry on Standardized Height-Female Sample**

Variables	Baseline	Wealth	Caste	Domicile	Sibling dowries	Random Effects
Older Sister's Dowry					0.178	0.0751
					(0.132)	(0.0952)
Younger Brother's Dowry					-0.245*	-0.174
					(0.137)	(0.128)
Younger Sister's Dowry					-0.338	-0.102
					(0.245)	(0.139)
Intercept	-7.232***	-6.922***	-7.166***	-7.597***	-7.590***	-7.681***
	(1.330)	(1.413)	(1.448)	(1.528)	(1.522)	(0.992)
State Fixed Effects	No	No	No	Yes	Yes	Yes
R-Squared	0.073	0.073	0.074	0.102	0.103	
Number of Observations	10,346	10,346	10,346	10,346	10,346	10,346

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 3: **Effect of Dowry on Stunting-Female Sample**

Variables	**Baseline**	**Wealth**	**Caste**	**Domicile**	**Sibling dowries**
Dowry	-0.131***	-0.129***	-0.130***	-0.0989**	-0.146**
	(-0.0496)	(-0.0496)	(-0.0495)	(-0.0472)	(-0.0721)
Age	-0.0373***	-0.0362***	-0.0362***	-0.0297***	-0.0299***
	(-0.00543)	(-0.00544)	(-0.00543)	(-0.00547)	(-0.00546)
Older Brother	0.0054	0.00721	0.00699	-0.00865	0.0107
	(-0.0188)	(-0.0188)	(-0.0192)	(-0.0197)	(-0.0216)
Younger Brother	0.0207	0.0203	0.0202	-0.00613	-0.0162
	(-0.0225)	(-0.0224)	(-0.0225)	(-0.0233)	(-0.0251)
Older Sister	0.0263	0.0282	0.028	0.0238	0.0162
	(-0.0177)	(-0.0177)	(-0.0178)	(-0.0179)	(-0.0194)
Younger Sister	0.00806	0.00611	0.00587	-0.0163	-0.0345
	(-0.0204)	(-0.0203)	(-0.0204)	(-0.0205)	(-0.0231)
Mother's Weight	0.00105	0.00109	0.00106	0.000998	0.000991
	(-0.000929)	(-0.000902)	(-0.000901)	(-0.00093)	(-0.000931)
Mother's Height	-0.00420***	-0.00416***	-0.00415***	-0.00408***	-0.00414***
	(-0.00118)	(-0.00117)	(-0.00117)	(-0.00116)	(-0.00116)
Father's Age	-0.00484	-0.00553	-0.00559	-0.00162	-0.0015
	(-0.00431)	(-0.00433)	(-0.00434)	(-0.00439)	(-0.00438)
Mother's Age	0.00169	0.00203	0.00204	-0.00477	-0.00472
	(-0.00547)	(-0.00547)	(-0.0055)	(-0.00557)	(-0.0056)
Father's Schooling	-0.00504	-0.00306	-0.00314	-0.00415	-0.00434
	(-0.00403)	(-0.00421)	(-0.00425)	(-0.00429)	(-0.00429)
Mother's Schooling	-0.0113**	-0.00875*	-0.00894*	-0.00674	-0.00671
	(-0.00447)	(-0.00458)	(-0.00457)	(-0.00475)	(-0.00475)
Log Consumption	-0.0868***	-0.046	-0.0491	-0.0929**	-0.0956**
	(-0.0291)	(-0.0398)	(-0.0398)	(-0.0424)	(-0.0423)
Household Excrement	-0.0102	-0.0205	-0.0195	-0.016	-0.0129
	(-0.0388)	(-0.0386)	(-0.0385)	(-0.041)	(-0.0408)
Stagnant Water	0.0447	0.0439	0.0424	0.0278	0.0269
	(-0.0418)	(-0.0419)	(-0.042)	(-0.0439)	(-0.0439)
Clean Water	0.0155	0.0204	0.018	0.017	0.0157
	-0.0438	-0.0439	-0.0443	-0.0452	-0.0452
Latrine	-0.0187	0.0135	0.0119	-0.0301	-0.0351
	(-0.033)	(-0.0365)	(-0.0374)	(-0.0425)	(-0.042)
Below Poverty Line		0.0198	0.0181	0.0216	0.0204
		(-0.0425)	(-0.0424)	(-0.0458)	(-0.0457)
Household Assets		-0.00958**	-0.00999**	-0.00915*	-0.00845*
		(-0.00428)	(-0.00434)	(-0.00483)	(-0.00481)
OBC Dummy			-0.0492	-0.0592	-0.0552
			(-0.042)	(-0.0434)	(-0.0428)
Dalit Dummy			-0.0219	-0.0117	-0.0104
			(-0.0461)	(-0.0468)	(-0.0465)
Adivasi Dummy			-0.0508	-0.088	-0.0893
			(-0.0632)	(-0.0654)	(-0.0655)
Muslim Dummy			-0.026	4.09E-05	0.00286
			(-0.0514)	(-0.0532)	(-0.0531)
Rural Residence				-0.0504	-0.0516
				(-0.0402)	(-0.0398)
Older Brother's Dowry					-0.135**
					(-0.0644)

Variables	Baseline	Wealth	Caste	Domicile	Sibling dowries
Older Sister's Dowry					0.0444
					(-0.0506)
Younger Brother's Dowry					0.0579
					(-0.0566)
Younger Sister's Dowry					0.115
					(-0.0941)
Intercept	0.497**	0.297	0.357	0.627*	0.659*
	(-0.241)	(-0.287)	(-0.292)	(-0.353)	(-0.352)
State Fixed Effects	No	No	No	Yes	Yes
Number of Observations	20,143	20,143	20,143	20,125	20,125

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 4: **Quartile Regression - Female Sample**

Variables	**Top 25% income**	**Top 25% consumption**	**Bottom 25% income**	**Bottom 25% consumption**
Dowry	0.0244	0.0164	0.282	0.209
	(0.157)	(0.0768)	(0.186)	(0.350)
Age	-0.278***	-0.252***	-0.179***	-0.195***
	(0.0303)	(0.0166)	(0.0199)	(0.0211)
Older Brother	-0.0624	-0.0315	-0.0543	-0.0256
	(0.116)	(0.0740)	(0.0655)	(0.0602)
Younger Brother	0.130	0.00992	-0.100	0.0256
	(0.150)	(0.0882)	(0.0851)	(0.0803)
Older Sister	-0.0217	0.0894	-0.0901	0.0174
	(0.104)	(0.0662)	(0.0584)	(0.0571)
Younger Sister	0.111	-0.0570	-0.0460	0.0256
	(0.134)	(0.0883)	(0.0791)	(0.0733)
Mother's Weight	0.0134*	0.00297	0.000205	0.00398
	(0.00771)	(0.00296)	(0.00214)	(0.00270)
Mother's Height	0.0483***	0.0493***	0.0354***	0.0532***
	(0.00945)	(0.00591)	(0.00495)	(0.00634)
Father's Age	0.0349	-0.00561	0.00134	0.0104
	(0.0233)	(0.0136)	(0.0125)	(0.0150)
Mother's Age	-0.00389	0.0236	0.0247	-0.00416
	(0.0280)	(0.0161)	(0.0164)	(0.0182)
Father's Schooling	0.00142	-0.0183	0.00181	0.00290
	(0.0213)	(0.0125)	(0.0128)	(0.0131)
Mother's Schooling	0.0272	0.0462***	0.000116	0.00268
	(0.0213)	(0.0122)	(0.0172)	(0.0185)
Log Consumption	0.197	0.0550	0.398***	0.509***
	(0.169)	(0.121)	(0.137)	(0.195)
Household Excrement	-0.0656	-0.347***	-0.177	-0.0646
	(0.210)	(0.120)	(0.111)	(0.119)
Stagnant Water	-0.0873	0.264**	-0.0660	-0.208
	(0.223)	(0.132)	(0.125)	(0.130)
Clean Water	0.275	0.260	0.0136	-0.101
	(0.251)	(0.166)	(0.124)	(0.122)
Latrine	0.0828	0.0335	0.445***	0.436***
	(0.197)	(0.117)	(0.152)	(0.156)
Below Poverty Line	0.138		0.0831	0.159
	(0.291)		(0.139)	(0.140)
Household Assets	0.00832	-0.0103	0.00307	-0.00748
	(0.0221)	(0.0117)	(0.0171)	(0.0175)
OBC Dummy	-0.0904	-0.208**	0.376**	0.0229
	(0.173)	(0.101)	(0.164)	(0.174)
Dalit Dummy	-0.0284	-0.541***	0.354**	0.253
	(0.225)	(0.125)	(0.171)	(0.181)
Adivasi Dummy	-0.224	-0.291	0.301	0.108
	(0.447)	(0.268)	(0.210)	(0.210)
Muslim Dummy	-0.241	-0.249*	0.0646	-0.280
	(0.256)	(0.146)	(0.197)	(0.207)
Rural Residence	-0.0603	0.00869	-0.0343	-0.0575
	(0.182)	(0.0994)	(0.158)	(0.151)
Older Brother's Dowry	0.165	0.107	-0.136	0.231
	(0.171)	(0.0785)	(0.183)	(0.275)

Variables	**Top 25% income**	**Top 25% consumption**	**Bottom 25% income**	**Bottom 25% consumption**
Older Sister's Dowry	0.0216	-0.0920	-0.200	-0.278
	(0.133)	(0.0671)	(0.158)	(0.253)
Younger Brother's Dowry	-0.142	0.0316	0.235	0.156
	(0.158)	(0.0970)	(0.278)	(0.283)
Younger Sister's Dowry	-0.101	-0.0471	-0.0149	0.0609
	(0.241)	(0.0870)	(0.300)	(0.310)
Intercept	-10.33***	-8.467***	-9.479***	-13.84***
	(1.893)	(1.292)	(1.460)	(1.887)
State Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	1,818	1,625	3,214	3,521

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 5: **Quartile Regression on Standardized Height -Female Sample (Middle Quartiles)**

Variables	**2nd Quartile - Income**	**3rd Quartile - Income**	**2nd Quartile - Consumption**	**3rd Quartile - Consumption**
Dowry	0.146	0.433**	0.296	0.356**
	(0.243)	(0.184)	(0.201)	(0.147)
Age	-0.224***	-0.190***	-0.231***	-0.203***
	(0.0193)	(0.0207)	(0.0182)	(0.0168)
Older Brother	-0.113*	0.00375	-0.127**	-0.185***
	(0.0621)	(0.0678)	(0.0606)	(0.0643)
Younger Brother	0.0460	0.0478	-0.0491	0.00880
	(0.0803)	(0.0914)	(0.0788)	(0.0826)
Older Sister	-0.0885	-0.0342	-0.232***	-0.112*
	(0.0570)	(0.0620)	(0.0570)	(0.0588)
Younger Sister	0.0835	-0.0929	0.00563	-0.00977
	(0.0730)	(0.0818)	(0.0734)	(0.0813)
Mother's Weight	0.000217	-0.000362	-0.000874	-0.00128
	(0.00231)	(0.00202)	(0.00185)	(0.00167)
Mother's Height	0.0394***	0.0197***	0.0236***	0.0419***
	(0.00645)	(0.00724)	(0.00443)	(0.00600)
Father's Age	0.0228	-0.00575	-0.000393	0.0162
	(0.0149)	(0.0149)	(0.0132)	(0.0105)
Mother's Age	0.0144	0.00289	0.0443***	0.0311**
	(0.0181)	(0.0188)	(0.0171)	(0.0139)
Father's Schooling	-0.0158	-0.00362	-0.0100	-0.00690
	(0.0122)	(0.0134)	(0.0114)	(0.0109)
Mother's Schooling	0.00964	0.0162	0.0329**	0.00711
	(0.0153)	(0.0143)	(0.0138)	(0.0117)
Log Consumption	0.0177	0.114	0.353	0.202
	(0.145)	(0.141)	(0.368)	(0.305)
Household Excrement	0.212*	-0.0160	-0.0981	0.0838
	(0.113)	(0.127)	(0.103)	(0.104)
Stagnant Water	-0.329***	-0.00744	-0.175	-0.0508
	(0.126)	(0.134)	(0.113)	(0.114)
Clean Water	-0.0512	0.0489	0.110	0.0660
	(0.129)	(0.154)	(0.123)	(0.130)
Latrine	-0.191	0.0953	-0.318***	0.0856
	(0.126)	(0.122)	(0.114)	(0.101)
Below Poverty Line	-0.149	-0.284*	-0.505***	-0.639*
	(0.136)	(0.153)	(0.172)	(0.385)
Household Assets	0.0378**	0.0318**	0.0457***	0.0339***
	(0.0158)	(0.0152)	(0.0131)	(0.0117)
OBC Dummy	-0.128	-0.0181	0.128	0.109
	(0.144)	(0.129)	(0.125)	(0.104)
Dalit Dummy	0.0855	0.131	0.187	0.205*
	(0.151)	(0.148)	(0.135)	(0.119)
Adivasi Dummy	0.0736	-0.358	0.0791	0.280
	(0.207)	(0.288)	(0.226)	(0.229)
Muslim Dummy	-0.0444	0.0340	0.252	0.403***
	(0.172)	(0.169)	(0.153)	(0.141)
Rural Residence	-0.213*	-0.0168	-0.243*	-0.0160
	(0.122)	(0.120)	(0.145)	(0.0968)

Variables	**2nd Quartile - Income**	**3rd Quartile - Income**	**2nd Quartile - Consumption**	**3rd Quartile - Consumption**
Older Brother's Dowry	0.237	-0.0852	-0.0331	-0.0813
	(0.199)	(0.124)	(0.0994)	(0.135)
Older Sister's Dowry	0.0484	0.0642	0.108	0.108
	(0.160)	(0.132)	(0.180)	(0.112)
Younger Brother's Dowry	0.370	-0.418**	-0.199	-0.214
	(0.299)	(0.173)	(0.206)	(0.171)
Younger Sister's Dowry	-0.0396	-0.249	0.0276	-0.168
	(0.160)	(0.192)	(0.258)	(0.176)
Intercept	-7.443***	-4.221***	-7.076***	-9.620***
	(1.477)	(1.533)	(2.523)	(2.256)
State Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	2,964	2,350	2,915	2,285

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 6: **Sample Selection - OLS and Probit**

Variables	Selection Equation	Standardized Height	Stunting (Probit)
Dowry	-0.139**	0.315*	-0.139*
	(0.0602)	(0.188)	(0.0718)
Age	0.00388	-0.280***	-0.0264***
	(0.00670)	(0.0202)	(0.00599)
Older Brother	0.0104	-0.0689	0.0137
	(0.0220)	(0.0591)	(0.0226)
Younger Brother	-0.0611**	0.192***	-0.0218
	(0.0270)	(0.0647)	(0.0271)
Older Sister	-0.0153	-0.119**	0.0278
	(0.0197)	(0.0552)	(0.0202)
Younger Sister	-0.0145	0.158**	-0.0295
	(0.0235)	(0.0641)	(0.0248)
Mother's Weight	0.00132	-0.00512*	0.000800
	(0.000936)	(0.00310)	(0.00107)
Mother's Height	0.00312**	0.0246***	-0.00348***
	(0.00137)	(0.00816)	(0.00125)
Father's Age	-0.0104**	0.0103	-0.00298
	(0.00517)	(0.0132)	(0.00465)
Mother's Age	-0.0315***	0.0528***	-0.0114*
	(0.00618)	(0.0188)	(0.00693)
Father's Schooling	0.00731	0.000589	-0.000769
	(0.00483)	(0.0115)	(0.00447)
Mother's Schooling	0.0140**	0.0208	-0.00612
	(0.00601)	(0.0145)	(0.00499)
Log Consumption	-0.0600	0.296***	-0.0813*
	(0.0491)	(0.112)	(0.0445)
Household Excrement	-0.00956	0.0349	-0.0149
	(0.0441)	(0.108)	(0.0424)
Stagnant Water	-0.0870*	0.0696	0.00591
	(0.0480)	(0.125)	(0.0466)
Clean Water	-0.00659	0.166	0.0160
	(0.0514)	(0.125)	(0.0471)
Latrine	0.138***	-0.0511	-0.0319
	(0.0492)	(0.118)	(0.0451)
Below Poverty Line	-0.0241	-0.0815	0.0284
	(0.0511)	(0.127)	(0.0472)
Household Assets	0.0242***	-0.0170	-0.00665
	(0.00550)	(0.0167)	(0.00575)
OBC Dummy	0.195***	0.0615	-0.0308
	(0.0519)	(0.121)	(0.0446)
Dalit Dummy	-0.0150	0.0448	-0.00365
	(0.0563)	(0.134)	(0.0473)
Adivasi Dummy	0.0656	0.214	-0.106
	(0.0747)	(0.182)	(0.0681)
Muslim Dummy	-0.0276	-0.0989	0.00269
	(0.0618)	(0.164)	(0.0555)
Rural Residence	0.000234	-0.129	-0.0506
	(0.0445)	(0.111)	(0.0415)
Older Brother's Dowry	0.0753*	0.136	-0.131*
	(0.0403)	(0.127)	(0.0673)

Variables	Selection Equation	Standardized Height	Stunting (Probit)
Older Sister's Dowry	-0.0140	0.245*	0.0259
	(0.0414)	(0.134)	(0.0526)
Younger Brother's Dowry	0.0542	-0.260*	0.0471
	(0.0568)	(0.138)	(0.0575)
Younger Sister's Dowry	-0.0217	-0.332	0.0994
	(0.0563)	(0.293)	(0.103)
Contraceptives use	0.117***		
	(0.0378)		
Inverse Mills Ratio (IMR)		-2.130**	0.457
		(0.968)	(0.347)
Intercept	1.851***	-6.689***	0.521
	(0.415)	(1.465)	(0.364)
State Fixed Effects	Yes	Yes	Yes
Number of Observations	18,631	9,538	18,631

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 7: **Effect of Dowry on Standardized Height - Male Sample**

Variables	**Baseline**	**Wealth**	**Caste**	**Domicile**	**Sibling dowries**	**Random Effects**
Dowry	0.151*	0.147*	0.158**	0.139*	0.160	0.260**
	(0.0785)	(0.0789)	(0.0787)	(0.0833)	(0.128)	(0.118)
Age	-0.201***	-0.203***	-0.202***	-0.212***	-0.212***	-0.201***
	(0.0166)	(0.0165)	(0.0163)	(0.0161)	(0.0161)	(0.0138)
Older Brother	-0.0273	-0.0311	-0.0151	0.00887	0.00891	-0.0767
	(0.0511)	(0.0509)	(0.0516)	(0.0500)	(0.0540)	(0.0491)
Younger Brother	0.0184	0.0184	0.0262	0.0619	0.0525	0.0733
	(0.0552)	(0.0548)	(0.0555)	(0.0573)	(0.0604)	(0.0634)
Older Sister	-0.0195	-0.0255	-0.0176	-0.00978	-0.0122	-0.0608
	(0.0482)	(0.0485)	(0.0479)	(0.0466)	(0.0517)	(0.0441)
Younger Sister	0.0729	0.0752	0.0864	0.126**	0.149**	0.0998
	(0.0636)	(0.0635)	(0.0636)	(0.0640)	(0.0682)	(0.0648)
Mother's Weight	0.00578	0.00431	0.00501	0.00799	0.00791	0.00746*
	(0.00534)	(0.00542)	(0.00534)	(0.00529)	(0.00529)	(0.00406)
Mother's Height	0.0239***	0.0239***	0.0233***	0.0232***	0.0232***	0.0259***
	(0.00802)	(0.00801)	(0.00791)	(0.00783)	(0.00784)	(0.00470)
Father's Age	0.0125	0.0138	0.0156	0.00468	0.00471	0.000695
	(0.0125)	(0.0126)	(0.0125)	(0.0132)	(0.0132)	(0.0107)
Mother's Age	0.00570	0.00525	0.00312	0.0168	0.0166	0.0326**
	(0.0149)	(0.0149)	(0.0148)	(0.0156)	(0.0156)	(0.0131)
Father's Schooling	0.00781	0.00364	0.00370	0.00897	0.00890	0.00541
	(0.0112)	(0.0117)	(0.0120)	(0.0121)	(0.0122)	(0.00981)
Mother's Schooling	0.0585***	0.0534***	0.0542***	0.0366***	0.0365***	0.0391***
	(0.0132)	(0.0129)	(0.0129)	(0.0132)	(0.0132)	(0.0111)
Log Consumption	0.112	0.105	0.127	0.192	0.191	0.292***
	(0.0934)	(0.127)	(0.127)	(0.133)	(0.133)	(0.0933)
Household Excrement	0.251**	0.274**	0.266**	0.255**	0.255**	0.0834
	(0.115)	(0.114)	(0.112)	(0.112)	(0.112)	(0.0900)
Stagnant Water	-0.288**	-0.288**	-0.267**	-0.265**	-0.265**	-0.0889
	(0.117)	(0.117)	(0.114)	(0.118)	(0.118)	(0.0981)
Clean Water	0.167	0.151	0.188	0.153	0.151	0.0924
	(0.133)	(0.133)	(0.134)	(0.131)	(0.131)	(0.104)
Latrine	-0.239**	-0.309***	-0.254**	-0.133	-0.135	-0.103
	(0.109)	(0.118)	(0.121)	(0.125)	(0.125)	(0.0982)
Below Poverty Line		0.0909	0.0959	0.0343	0.0333	0.0589
		(0.126)	(0.126)	(0.130)	(0.130)	(0.107)
Household Assets		0.0191	0.0226*	0.0208	0.0209	0.00193
		(0.0124)	(0.0123)	(0.0132)	(0.0132)	(0.0110)
OBC Dummy			0.410***	0.422***	0.424***	0.276***
			(0.113)	(0.114)	(0.114)	(0.100)
Dalit Dummy			0.204	0.202	0.204	0.208*
			(0.126)	(0.125)	(0.125)	(0.111)
Adivasi Dummy			0.554***	0.675***	0.676***	0.455***
			(0.180)	(0.181)	(0.181)	(0.166)
Muslim Dummy			0.0113	-0.00654	-0.00469	0.244*
			(0.167)	(0.169)	(0.169)	(0.131)
Rural Residence				-0.0720	-0.0731	-0.0918
				(0.116)	(0.116)	(0.0947)
Older Brother's Dowry					0.00208	-0.0961
					(0.112)	(0.109)

Variables	Baseline	Wealth	Caste	Domicile	Sibling dowries	Random Effects
Older Sister's Dowry					0.0140	0.0409
					(0.104)	(0.0876)
Younger Brother's Dowry					0.0515	-0.107
					(0.0980)	(0.123)
Younger Sister's Dowry					-0.129	-0.193
					(0.135)	(0.142)
Intercept	-6.184***	-6.235***	-6.661***	-7.379***	-7.365***	-9.006***
	(1.241)	(1.371)	(1.364)	(1.491)	(1.492)	(1.017)
State Fixed Effects	No	No	No	Yes	Yes	Yes
R-Squared	0.052	0.052	0.055	0.080	0.080	
Number of Observations	11,198	11,198	11,198	11,198	11,198	11,198

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 8: **Effect of Dowry on Stunting -Male Sample**

Variables	Baseline	Wealth	Caste	Domicile	Sibling dowries
Dowry	-0.0903**	-0.0885**	-0.0967***	-0.0831**	-0.0559
	(0.0362)	(0.0363)	(0.0371)	(0.0367)	(0.0506)
Age	-0.0461***	-0.0452***	-0.0451***	-0.0429***	-0.0428***
	(0.00541)	(0.00540)	(0.00534)	(0.00545)	(0.00548)
Older Brother	0.0299	0.0315	0.0262	0.0201	0.0335
	(0.0202)	(0.0203)	(0.0212)	(0.0203)	(0.0218)
Younger Brother	0.0187	0.0177	0.0131	0.00478	0.0191
	(0.0262)	(0.0262)	(0.0269)	(0.0263)	(0.0284)
Older Sister	0.00337	0.00580	0.00276	0.00264	-0.00168
	(0.0198)	(0.0199)	(0.0200)	(0.0189)	(0.0205)
Younger Sister	0.00492	0.00368	-0.00173	-0.0140	-0.0223
	(0.0244)	(0.0246)	(0.0254)	(0.0250)	(0.0258)
Mother's Weight	-0.00652***	-0.00580***	-0.00613***	-0.00711***	-0.00705***
	(0.00172)	(0.00169)	(0.00168)	(0.00174)	(0.00174)
Mother's Height	-0.00237**	-0.00244**	-0.00239**	-0.00221*	-0.00219*
	(0.00114)	(0.00115)	(0.00114)	(0.00115)	(0.00116)
Father's Age	-0.00401	-0.00461	-0.00526	-0.00501	-0.00505
	(0.00443)	(0.00446)	(0.00442)	(0.00469)	(0.00470)
Mother's Age	-0.00148	-0.00129	-0.000653	-0.00252	-0.00265
	(0.00574)	(0.00574)	(0.00579)	(0.00623)	(0.00624)
Father's Schooling	-0.00433	-0.00231	-0.00222	-0.00340	-0.00327
	(0.00400)	(0.00411)	(0.00420)	(0.00433)	(0.00433)
Mother's Schooling	-0.0100**	-0.00774*	-0.00830*	-0.00581	-0.00590
	(0.00456)	(0.00464)	(0.00467)	(0.00492)	(0.00492)
Log Consumption	-0.0651**	-0.0447	-0.0556	-0.0774*	-0.0780*
	(0.0309)	(0.0394)	(0.0400)	(0.0432)	(0.0431)
Household Excrement	-0.0555	-0.0644*	-0.0675*	-0.0638	-0.0625
	(0.0381)	(0.0384)	(0.0381)	(0.0395)	(0.0396)
Stagnant Water	0.105**	0.104**	0.0988**	0.0802*	0.0814**
	(0.0429)	(0.0428)	(0.0418)	(0.0413)	(0.0413)
Clean Water	0.00207	0.00766	-0.00191	0.00791	0.00728
	(0.0451)	(0.0449)	(0.0446)	(0.0458)	(0.0458)
Latrine	0.0528	0.0838**	0.0643	0.0150	0.0156
	(0.0349)	(0.0381)	(0.0403)	(0.0459)	(0.0457)
Below Poverty Line		-0.0119	-0.0123	0.00940	0.00800
		(0.0463)	(0.0458)	(0.0480)	(0.0480)
Household Assets		-0.00908**	-0.0102**	-0.00800	-0.00806*
		(0.00414)	(0.00418)	(0.00489)	(0.00488)
OBC Dummy			-0.0963**	-0.115***	-0.117***
			(0.0414)	(0.0421)	(0.0419)
Dalit Dummy			-0.104**	-0.110**	-0.113**
			(0.0447)	(0.0457)	(0.0457)
Adivasi Dummy			-0.186***	-0.248***	-0.252***
			(0.0642)	(0.0685)	(0.0684)
Muslim Dummy			0.0143	0.0170	0.0146
			(0.0633)	(0.0586)	(0.0585)
Rural Residence				-0.0145	-0.0150
				(0.0419)	(0.0419)
Older Brother's Dowry					-0.0899*
					(0.0517)

Variables	**Baseline**	**Wealth**	**Caste**	**Domicile**	**Sibling dowries**
Older Sister's Dowry					0.0268
					(0.0428)
Younger Brother's Dowry					-0.0916
					(0.0631)
Younger Sister's Dowry					0.0489
					(0.0652)
Intercept	0.504**	0.425	0.613*	0.742*	0.737*
	(0.250)	(0.315)	(0.322)	(0.383)	(0.384)
State Fixed Effects	No	No	No	Yes	Yes
Number of Observations	22,046	22,046	22,046	21,981	21,981

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 9: **Quartile Regression - Male Sample**

Variables	**Top 25% Income**	**Top 25% Consumption**	**Bottom 25% Income**	**Bottom 25% Consumption**
Dowry	0.0676	-0.136	0.248	0.335*
	(0.177)	(0.105)	(0.167)	(0.194)
Age	-0.172***	-0.235***	-0.145***	-0.167***
	(0.0291)	(0.0187)	(0.0155)	(0.0172)
Older Brother	0.0254	-0.289***	-0.111**	-0.118**
	(0.114)	(0.0882)	(0.0542)	(0.0506)
Younger Brother	-0.0255	-0.00448	0.0944	0.122*
	(0.161)	(0.116)	(0.0681)	(0.0696)
Older Sister	-0.0253	-0.114	0.0210	0.0330
	(0.103)	(0.0748)	(0.0475)	(0.0468)
Younger Sister	0.0143	0.184	0.129**	0.140**
	(0.167)	(0.114)	(0.0657)	(0.0684)
Mother's Weight	0.0117	0.0193***	0.00867***	0.00389
	(0.00776)	(0.00505)	(0.00317)	(0.00606)
Mother's Height	0.0463***	0.0488***	0.0291***	0.0292***
	(0.0103)	(0.00666)	(0.00435)	(0.00545)
Father's Age	0.0184	0.0119	0.0208*	0.0299**
	(0.0220)	(0.0144)	(0.0107)	(0.0134)
Mother's Age	-0.00262	0.0457**	0.00671	0.00220
	(0.0272)	(0.0178)	(0.0136)	(0.0157)
Father's Schooling	0.0324	0.00352	0.0132	0.0123
	(0.0218)	(0.0142)	(0.0102)	(0.0112)
Mother's Schooling	0.00341	0.00307	-0.00394	0.0202
	(0.0196)	(0.0141)	(0.0136)	(0.0153)
Log Consumption	0.418***	0.162	0.317***	0.512***
	(0.154)	(0.130)	(0.109)	(0.168)
Household Excrement	0.0931	0.171	-0.0299	0.0588
	(0.208)	(0.141)	(0.0875)	(0.101)
Stagnant Water	-0.0543	-0.188	0.00417	-0.127
	(0.215)	(0.149)	(0.0999)	(0.111)
Clean Water	0.350	0.278	-0.0396	0.0696
	(0.266)	(0.191)	(0.0990)	(0.103)
Latrine	-0.125	-0.124	-0.0710	-0.190
	(0.190)	(0.130)	(0.120)	(0.134)
Below Poverty Line	0.406		0.229**	0.0393
	(0.281)		(0.109)	(0.118)
Household Assets	0.0342	0.00292	0.0177	0.0142
	(0.0224)	(0.0138)	(0.0135)	(0.0145)
OBC Dummy	0.154	0.000325	0.235*	0.125
	(0.174)	(0.117)	(0.126)	(0.147)
Dalit Dummy	0.00477	-0.0728	0.153	0.0174
	(0.219)	(0.150)	(0.133)	(0.151)
Adivasi Dummy	0.633	0.479	0.150	0.0757
	(0.442)	(0.301)	(0.163)	(0.178)
Muslim Dummy	-0.142	0.0838	0.221	-0.0863
	(0.244)	(0.179)	(0.158)	(0.177)
Rural Residence	0.0954	0.0440	0.0818	-0.217
	(0.177)	(0.117)	(0.126)	(0.132)
Older Brother's Dowry	-0.160	0.194*	-0.0811	-0.221
	(0.158)	(0.103)	(0.164)	(0.198)

Variables	**Top 25% Income**	**Top 25% Consumption**	**Bottom 25% Income**	**Bottom 25% Consumption**
Older Sister's Dowry	0.0402	0.00618	0.0478	-0.161
	(0.120)	(0.0697)	(0.151)	(0.147)
Younger Brother's Dowry	-0.143	0.125	-0.249	-0.470**
	(0.203)	(0.100)	(0.181)	(0.221)
Younger Sister's Dowry	-0.515*	0.137	-0.242	-0.140
	(0.274)	(0.110)	(0.167)	(0.260)
Intercept	-13.02***	-11.25***	-9.950***	-9.960***
	(1.938)	(1.424)	(1.201)	(1.371)
State Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	2,058	1,967	3,251	3,567

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 10: **Quartile Regression on Standardized Height -Male Sample (Middle Quartiles)**

Variables	**2nd Quartile - Income**	**3rd Quartile - Income**	**2nd Quartile - Consumption**	**3rd Quartile - Consumption**
Dowry	0.0803	0.475***	0.308**	0.408**
	(0.220)	(0.158)	(0.135)	(0.197)
Age	-0.159***	-0.161***	-0.146***	-0.142***
	(0.0176)	(0.0213)	(0.0160)	(0.0214)
Older Brother	-0.142**	-0.0216	-0.0416	-0.121
	(0.0595)	(0.0761)	(0.0554)	(0.0863)
Younger Brother	-0.0886	0.0463	0.0717	-0.0174
	(0.0807)	(0.105)	(0.0759)	(0.116)
Older Sister	-0.110*	0.00741	-0.0975**	-0.0691
	(0.0563)	(0.0672)	(0.0488)	(0.0741)
Younger Sister	0.0309	0.0291	0.0489	-0.195
	(0.0790)	(0.110)	(0.0753)	(0.121)
Mother's Weight	0.000474	0.0136**	0.0138***	0.00434
	(0.00586)	(0.00666)	(0.00526)	(0.00643)
Mother's Height	0.0513***	0.0250***	0.0332***	0.0373***
	(0.00588)	(0.00840)	(0.00483)	(0.00829)
Father's Age	0.00607	0.00734	0.000257	0.0212
	(0.0137)	(0.0157)	(0.0108)	(0.0160)
Mother's Age	0.0220	0.0128	0.0257*	-0.0147
	(0.0167)	(0.0193)	(0.0141)	(0.0199)
Father's Schooling	0.0226*	0.00818	0.0198*	0.0203
	(0.0118)	(0.0148)	(0.0104)	(0.0148)
Mother's Schooling	0.0127	0.0337**	0.0244**	0.0121
	(0.0146)	(0.0160)	(0.0124)	(0.0153)
Log Consumption	0.147	0.395***	-0.188	0.529
	(0.129)	(0.148)	(0.333)	(0.398)
Household Excrement	0.333***	0.0593	0.165*	-0.133
	(0.107)	(0.142)	(0.0918)	(0.140)
Stagnant Water	-0.366***	-0.0681	-0.298***	0.0734
	(0.116)	(0.147)	(0.0991)	(0.150)
Clean Water	-0.0133	-0.157	-0.114	-0.104
	(0.119)	(0.171)	(0.112)	(0.173)
Latrine	-0.0587	-0.0586	-0.0984	0.0523
	(0.117)	(0.138)	(0.102)	(0.136)
Below Poverty Line	-0.0212	0.111	0.0931	0.764
	(0.127)	(0.171)	(0.153)	(0.607)
Household Assets	0.00872	-0.00734	0.00682	0.0234
	(0.0144)	(0.0167)	(0.0119)	(0.0153)
OBC Dummy	0.243*	-0.172	0.285**	0.117
	(0.133)	(0.144)	(0.114)	(0.140)
Dalit Dummy	0.225	-0.177	0.153	-0.0812
	(0.140)	(0.163)	(0.122)	(0.159)
Adivasi Dummy	0.226	-0.133	0.510**	0.0738
	(0.203)	(0.315)	(0.208)	(0.325)
Muslim Dummy	0.137	0.107	0.0373	0.422**
	(0.164)	(0.187)	(0.139)	(0.190)
Rural Residence	-0.187	-0.0465	-0.0629	0.141
	(0.115)	(0.132)	(0.128)	(0.129)

Variables	**2nd Quartile - Income**	**3rd Quartile - Income**	**2nd Quartile - Consumption**	**3rd Quartile - Consumption**
Older Brother's Dowry	-0.0241	-0.0353	-0.124	0.115
	(0.199)	(0.164)	(0.140)	(0.153)
Older Sister's Dowry	0.104	-0.202*	0.249***	-0.188
	(0.184)	(0.121)	(0.0947)	(0.138)
Younger Brother's Dowry	0.0169	-0.101	-0.380*	-0.225
	(0.225)	(0.164)	(0.221)	(0.191)
Younger Sister's Dowry	0.141	0.00396	-0.196	0.0415
	(0.239)	(0.244)	(0.209)	(0.201)
Intercept	-11.50***	-7.474***	-6.965***	-11.91***
	(1.352)	(1.633)	(2.306)	(3.003)
State Fixed Effects				
Number of Observations	3,296	2,593	3,084	2,580

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

Table 11: **Pooled Sample**

Variables	**Standardized Height**	**Stunting**
Dowry	0.204	-0.0767
	(0.128)	(0.0485)
Age	-0.236***	-0.0373***
	(0.0133)	(0.00411)
Female	-0.0176	0.0559**
	(0.0651)	(0.0234)
Female Dowry interaction	0.0645	-0.0476
	(0.121)	(0.0526)
Older Brother	-0.00193	0.0216
	(0.0430)	(0.0168)
Younger Brother	0.0969**	0.00464
	(0.0448)	(0.0205)
Older Sister	-0.0373	0.00538
	(0.0391)	(0.0151)
Younger Sister	0.138***	-0.0260
	(0.0480)	(0.0182)
Mother's Weight	-0.00315	-0.000304
	(0.00256)	(0.00116)
Mother's Height	0.0287***	-0.00354***
	(0.00668)	(0.00101)
Father's Age	0.00112	-0.00344
	(0.00945)	(0.00343)
Mother's Age	0.0223**	-0.00351
	(0.0112)	(0.00456)
Father's Schooling	0.00768	-0.00387
	(0.00890)	(0.00330)
Mother's Schooling	0.0310***	-0.00662*
	(0.0105)	(0.00369)
Log Consumption	0.242***	-0.0847***
	(0.0937)	(0.0316)
Household Excrement	0.141	-0.0381
	(0.0873)	(0.0314)
Stagnant Water	-0.152*	0.0548*
	(0.0890)	(0.0328)
Clean Water	0.141	0.0140
	(0.102)	(0.0342)
Latrine	-0.0593	-0.00871
	(0.0896)	(0.0347)
Below Poverty Line	-0.0493	0.0174
	(0.0995)	(0.0371)
Household Assets	0.0109	-0.00922**
	(0.0104)	(0.00392)
OBC Dummy	0.313***	-0.0865***
	(0.0868)	(0.0323)
Dalit Dummy	0.136	-0.0587*
	(0.0968)	(0.0357)
Adivasi Dummy	0.455***	-0.166***
	(0.134)	(0.0517)
Muslim Dummy	-0.0420	0.00374
	(0.133)	(0.0433)

Variables	**Standardized Height**	**Stunting**
Rural Residence	-0.0968	-0.0294
	(0.0864)	(0.0315)
Older Brother's Dowry	0.0643	-0.111**
	(0.0886)	(0.0454)
Older Sister's Dowry	0.0575	0.0373
	(0.0805)	(0.0363)
Younger Brother's Dowry	-0.0797	-0.0111
	(0.0874)	(0.0421)
Younger Sister's Dowry	-0.212	0.0896
	(0.160)	(0.0556)
Intercept	-7.435***	0.589**
	(1.203)	(0.289)
State Fixed Effects	Yes	Yes
Number of Observations	21,544	42,147

Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).