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Women's Inheritance Rights and Child Health Outcomes in India

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ABSTRACT Does a legal change in women's inheritance rights have long-term effects on child health outcomes? This paper examines the effect of an improvement in women's inheritance rights on child nutritional health outcomes in India using a difference-in-differences estimation approach. We use the staggered implementation of the Hindu Succession (Amendment) Act, 2005 to investigate the impact of the reform on anthropometric indicators of child health: being underweight, stunted, and wasted. The findings of this study reveal that an improvement in women's inheritance rights has a positive impact on children's health and reduces the probability of nutritional deficiency in the child. We identify mechanisms such as increased educational levels, better marital outcomes, and improved intrahousehold bargaining power of women as potential pathways through which inheritance rights affect child nutritional health outcomes. The results of the paper lend credence to growing evidence that legal recognition of women's inheritance rights can have sustained and second-generation effects, in spite of poor enforcement mechanisms and persistence of deep-rooted societal bias against women holding property.

KEYWORDS: Hindu Succession Amendment Act; inheritance rights; gender; India; nutrition; health; second generation effects

1. Introduction

Gender inequity is deeply engrained in the fabric of many regions of the developing world, including India. Some of the most notable manifestations of gender inequity are seen in the form of inequitable access to education for women, poor health, and nutritional outcomes as well as lack of labour market participation and financial exclusion (Kabeer, 2016). Roy (2015) and Esquivel (2016) reveal that women's empowerment is crucial for developing regions not only on the grounds of equity, but also have important efficiency implications as well. The Agenda 2030 set up by the United Nations also says, 'women and girls must enjoy equal access to quality education, economic resources and political participation as well as equal opportunities with men and boys for employment, leadership and decision-making at all levels' (UN Women, 2015).

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The economic role of women is assumed to be influenced by three major factors: social institutions, women's access to resources, and the level of overall development (Morrison & Jutting, 2005). Sustained gender inequity and women's economic disadvantage is partly attributable to the historical absence of legal inheritance rights for daughters. In developing countries, land markets are not well developed, and land is typically acquired through inheritance. Even among land-owning families in developing countries, women continue to be asset poor and economically reliant on men due to unequal inheritance rights (Kabeer, 2016).

Women's access to property through land rights is therefore a crucial determinant of more equitable gendered patterns of wealth distribution, household bargaining power, and marital decision-making (Deininger, Songqing, Nagaranjan, & Xia, 2019). In this context, the World Bank (2012) has advocated that legal reforms aimed at establishing equal inheritance rights over property are the most promising policy measures to increase women's voice in society. Assets acquired by way of inheritance affect women's social mobility (Agarwal, 2003; Anderson & Binder, 2015), agency in intrahousehold decision-making (Anderson & Eswaran, 2009), marriage market outcomes (Kudo, 2015), human capital investment in health and education (Harari, 2019) and fertility choices (Jayachandran, 2015). These inheritance laws can also have 'magnetic effects' on reforming the social customs of these regions and make them more equitable (Aldashev, Chaara, Platteau, & Wahhaj, 2012). In recent years, there have been reforms in inheritance laws across many developing countries to improve gender equity in inheritance distribution. According to UN Women (2015), p. 115 countries of the world have now recognised women's property rights on equal terms with men.

Changes in inheritance laws and their impacts on women's empowerment have been explored in different contexts. For instance, Harari (2019) found that amendments in inheritance laws in Kenya had important human capital effects in terms of reducing the incidence of gender mutation, getting medical assistance during childbirth, and delaying the age of marriage and childbearing. In another study, Menon, van der Meulen Roders, and Nguyen (2014) demonstrated that with the passing of Vietnam Land Law (1993), which tilted land rights more heavily in favour of women, there was increased allocation of household resources towards health, education, and nutrition, away from economic 'bads' like tobacco and alcohol.

Recognising the transformative role of women's inheritance rights, in 2005 India amended the Hindu Succession Act (HSA) of 1956, giving women a legal claim to inherit their parents' ancestral property. This constitutional amendment has been christened as the Hindu Succession (Amendment) Act, 2005 (HSAA, 2005). The law now requires parents to divide their ancestral property equally among all children. If daughters are denied an equal share of their parental property, they can approach the court of law. Existing studies have shown that while this law has increased women's likelihood of inheriting land, property rights for men and women are still not equalised in many parts of India (Goyal, Deininger, & Nagarajan, 2013). Instead, parents are compensating their daughters for disinheritance through higher investment in education and more dowry payments (Roy, 2015; Sapkal, 2020). However, empirical evidence on the intergenerational effects of this reform is rather limited and presents mixed outcomes.

Against this background, this paper examines the intergenerational effects of the HSAA on child health outcomes in India using a difference-in-differences estimation approach and repeated cross-sectional data from the Indian National Family Health Survey (NFHS). The objectives of this paper are twofold. First, to investigate the effects of the HSAA on child health outcomes in India. Second, to identify the causal mechanisms through which the HSAA affects child health outcomes in India.

This paper is closest to Deininger et al. (2019) which demonstrates that women who were beneficiaries of HSAA invested 2.2–2.6 times more in their daughters' education. In addition, Bose and Das (2021) find that reforms in property rights significantly empowered women through increased education but find no evidence of the intergenerational effects of the reform on children's education. Other studies such as Rosenblum (2015) and Bhalotra, Brule, and Roy (2017) conclude that in regions with high degree of son preference, HSAA has heightened the relative costs of raising a girl child and manifested in higher incidences of sex selective female abortions. Moreover, the

findings of this paper contribute to a growing number of studies which reveal that the reform has a positive impact on female autonomy in a number of areas such as greater participation in household decision-making (Heath & Tan, 2019), reduced incidents of domestic violence (Panda & Agarwal, 2005) and women's increased labour supply in high paying jobs (Heath & Tan, 2019).

The key findings of this paper reveal that an improvement in women's inheritance rights has a positive impact on children's health and reduces the probability of nutritional deficiency in the child. We identify mechanisms such as increased educational levels, better marital outcomes, and improved intrahousehold bargaining power of women as potential pathways through which inheritance rights affect child nutritional health outcomes. The relevance of this study stems from providing policy-informed discussions on the second-generation effects of the HSAA based on the following points. Firstly, it is crucial to analyse the second-generation impact of these reforms as empirical evidence reveals that the positive impacts of women's inheritance laws may not be sustainable over time (Mookerjee, 2019). Secondly, existing literature reveals that with increased financial empowerment and asset endowments women tend to invest more in their children, leading to enhanced health and educational outcomes in the subsequent generations (Baranov, Bhalotra, Biroli, & Maselko, 2017; Duflo, 2003). Thirdly, this study provides an exemplar to evaluate the implications of inheritance rights in the context of other developing regions which are currently implementing reforms in the area of women's inheritance rights.

The remainder of the paper is structured as follows. Section 2 analyses how women's inheritance rights are conceptualised in literature, as well as the institutional setting of India's inheritance laws. Section 3 presents the data sources and identification strategy. Section 4 lays down the empirical model adopted in this study. Section 5 presents the main findings and discusses them in the context of larger literature on the subject. Section 6 concludes.

2. Conceptualising women's inheritance rights

Parental bequests of wealth are considered the primary mechanism to transfer assets across generations. These affect the patterns of capital accumulation, as well as associated economic gains (Stiglitz & Weiss, 1981). While analysing the nature of intergenerational bequests, traditional models of wealth transfer (Becker, 1974; Becker & Tomes, 1979) treat households as a single unit, in which all resources are pooled. It is assumed that the household head is an altruistic planner, who will make economic decisions that maximise both their present consumption, as well as their children's future income.

However, these unitary, gender-neutral models of economic wealth have been criticised by a number of studies, as these are not representative of the heterogeneity in preferences and female bargaining power within the household (Agarwal, 1995; Anderson & Eswaran, 2009). In developing countries' context, it has been demonstrated that mother's control over family's resources has resulted in better household food security, increase in survival rates for girl child and higher investment in schooling (Duflo, 2003; Duflo & Udry, 2004; Luke & Munshi, 2011; Qian, 2008).

Harari (2019) argues that when inheritance laws are made more gender equitable, there are two possible consequences. A woman's access to ownership in ancestral property is likely to increase their intra-household bargaining power. This in turn affects the household's choices in terms of investment in human capital for women. Whether an individual household invests more or less in women's human capital, following these changes in inheritance laws remains ambiguous. It largely depends on whether human capital (health, education, and nutrition) and physical capital (ancestral property) are counted as substitutes or complements. In cases where human capital and physical capital are considered as complements, more equitable inheritance laws will also translate into better socio-health outcomes for women. This has been demonstrated empirically by some studies such as Goyal et al. (2013) and Roy (2015). However, other studies have revealed that with the passing of inheritance laws women's human capital formation, in terms of their health, education, and labour market participation has suffered (Ambrus, Field, & Torero, 2010; Rosenblum, 2015). There thus, remains considerable ambiguity on the possible outcomes of these gender-equitable inheritance laws.

2.1. Women's inheritance rights in India

In India, inheritance laws vary with the geographical region as well as the religious affiliations of different groups in society. In post-independence India, the Hindu Succession Act (1956) was formulated which provided the basis to regulate and codify laws governing interstate succession.¹ This law combined western jurisprudence with the Hindu School of Law. Hindu law is governed by two main schools of thought – *Mitakshara* and *Dayabhaga* (Agarwal, 1994b). The most important distinction between these two schools is in terms of their classification of property. While the *Mitakshara* system makes a distinction between 'joint family property' and 'separate property',² the *Dayabhaga* system treats all property as separate property and does not recognise a coparcenary right to property (Bates, 2004).

According to the provisions of the HSA, the separate property of a Hindu dying interstate (without a will),³ and his 'notional' share of family joint property, allowed for equal shares to his immediate heirs, that is, to surviving children (both sons and daughters) and spouse. However, daughters of a Hindu dying interstate had no direct inheritance rights to joint family property. On the other hand, sons of a Hindu dying interstate not only enjoyed the right of inheritance over 'notional' share of joint family property, and his father's own separate property, but also had a direct right by birth to an independent share of the joint family property. In other words, all persons who acquired interest in the joint family property by birth were said to belong to the 'Hindu Coparcenary' (Agarwal, 1994a). This has been compared to an exclusive male membership club to which women had no access.

Thus, sons of Hindu dying interstate received two portions of share in the common property of the family, whereas, daughters were entitled to receive only one share. For instance, if m represents the number of male coparceners and f is the number of additional females, interstate succession of a Hindu head of household would have each of the former receive a share of $[(1/(m + 1)) + (1/(m + 1))/(m + f)]$ whereas each of the latter would receive only $(1/(m + 1))/(m + f)$ with the difference being the coparcener share (Deininger et al., 2019). This institutional configuration was both gender biased and inefficient in terms of allocating entitlements to the most valued individuals.

In the Indian subcontinent, both the centre and state governments enjoy joint jurisdiction over the subject of property and inheritance laws. In 1976, the state of Kerala amended the HSA, followed by the states of Andhra Pradesh (1976), Maharashtra (1994), and Karnataka (1994). These amendments granted equal inheritance rights to women to ancestral property, provided they were unmarried at the time of the reform. The federal government of India passed a sweeping constitutional amendment in 2005 in all the remaining states of India. This brought about many changes to the act, the most important of which granted that daughters would acquire coparcenary rights to ancestral property. This legislative provision, The Hindu Succession (Amendment) Act 2005 (HSAA) is hereafter referred to as the Amendment.

The Amendment constitutes an interesting natural experiment that allows us to explore whether changes in inheritance legislation can improve women's access to physical and human capital. This has acquired substantial research interest in recent years. However, as shown in the previous sections, the reform has been linked to only limited gains for women in terms of their overall empowerment – decision-making within the household, labour market outcomes, and welfare indicators. This has been mainly attributed to two main factors – the weak compliance of the said legislation and societal bias against women holding property. So far, very few women have been beneficiaries of this legislation, and received a share in ancestral property (Roy, 2015). This has been seen in case of other gender-positive legislations in India as well, such as Dowry Prohibition Act (1961), which failed to protect the intended beneficiaries from the 'dowry trap' (Srinivasan, 2005). Secondly, the socio-cultural milieu of India continues to discriminate against women holding property. It has led to countervailing effects in areas of high son preferences through higher female child mortality and increase in perceived costs of raising a girl child (refer to Bhalotra et al., 2017). Therefore, it is crucial to explore whether this reform would have any positive effects for women over a long-term time horizon.

The existing empirical evidence on the pattern of women's property ownership following HSAA (2005) is mixed. Deininger, Goyal, and Nagarajan (2013) showed that women exposed to the reform are 15 percentage point more likely to inherit land, as compared to the control group. However, Brule, concluded on the basis of a mixed methods study that the reform had only a 'small but significant impact' on women's property ownership. In another study, Rao (2007) employed case study research to demonstrate how the reform influenced women's 'backstage influence' and enabled them to use extended social networks within the household and the community for their legal inheritance rights to be actualised in practice.

3. Data source and summary statistics

This study employs pooled cross-sectional data from the India National Family Health Surveys (NFHS) for the years 2005–06 and 2015–16. The NFHS is a nationally representative survey conducted by the Ministry of Health and Family Welfare, Government of India. The NFHS fieldwork collects data from women aged 15–49 years and men aged 15–54 years through detailed questionnaires. Four types of questionnaires are administered in this survey – household, men, women, and biomarker.

The household questionnaire collects information on the total number of members of the households, socio-economic characteristics of the households, water, sanitation, health insurance, and number of deaths in the family in the preceding three years. The women's questionnaire gathers data on marriage, fertility, contraception choices, reproductive health, children's immunisation, and treatment of childhood illnesses. The men's questionnaire covers questions related to marriage, number of children, contraception, fertility preferences, nutrition, sexual behaviour, attitudes towards gender roles, HIV/AIDS, and lifestyle.

The biomarker questionnaire contains information related to measurements of height, weight, and haemoglobin levels for children; blood pressure, and random blood glucose for women aged 15–49 years. The questionnaires are administered with the informed consent of the participants. The surveys have a relatively large sample size. In total, 124,385 women were interviewed in 2005–06, and 699,686 women were interviewed in 2015–16. Our main variables of interest are anthropometric indicators of child health outcomes, which include being underweight, stunted, and wasted.

We construct indicator variables for the following outcomes, employing the definitions of being underweight, stunting, and wasting, specified by the WHO (2003): (i) underweight equal to 1 if the mean standard deviation weight-for-age of children aged 0–59 months, born to a woman in the household is ≤ -2 and 0 if otherwise. (ii) Stunted equal to 1 if the mean standard deviation height-for-age of children aged 0–59 months, born to a woman in the household is ≤ -2 and 0 if otherwise. (iii) Wasted equal to 1 if the mean standard deviation weight-for-height of children aged 0–59 months, born to a woman in the household is ≤ -2 and 0 if otherwise. We also construct a composite index of nutritional deprivation of children and assign it a value equal to 1 if children in the household, aged 0–59 months have any of the above nutritional deficiencies (stunting, wasting, and underweight) and 0 if otherwise.

Table 1 presents summary statistics for women, in the sample used in our estimation as well as disaggregated across women in treated religious group⁴ and non-treated religious group. Among women in the treated religious group, 95.3 per cent are Hindu, 2.8 per cent are Sikh, 1.5 per cent are Buddhist, and 0.2 per cent are Jain. The average age of the women in the treated groups is 29.8 years. We have used a series of dummy variables for educational attainment, marital status, place of residence, caste, availability of clean water, toilet and electricity within the household.

Table 1. Summary statistics

| | All samples | Non-treated religions | Treated religions |
|---|-------------------|-----------------------|-------------------|
| <i>Religion</i> | | | |
| Hindu | 0.756 (0.429) | 0.000 (0.000) | 0.953 (0.209) |
| Muslim | 0.116 (0.319) | 0.558 (0.496) | 0.000 (0.000) |
| Christian | 0.079 (0.269) | 0.381 (0.486) | 0.000 (0.000) |
| Sikh | 0.022 (0.147) | 0.000 (0.000) | 0.028 (0.165) |
| Buddhist | 0.012 (0.111) | 0.000 (0.000) | 0.015 (0.124) |
| Jain | 0.002 (0.044) | 0.000 (0.000) | 0.002 (0.049) |
| Other religion | 0.012 (0.111) | 0.059 (0.236) | 0.000 (0.000) |
| <i>Other characteristics</i> | | | |
| Current age of woman | 29.739 (9.733) | 29.192 (9.663) | 29.882 (9.747) |
| Number of breastfeed (day and night) | 0.288 (2.606) | 0.355 (2.858) | 0.269 (2.536) |
| No education dummy | 0.285 (0.451) | 0.272 (0.445) | 0.289 (0.453) |
| Primary education dummy | 0.131 (0.337) | 0.148 (0.355) | 0.127 (0.332) |
| Total children ever born | 1.914 (1.856) | 2.047 (2.154) | 1.879 (1.768) |
| Births in last five years | 0.378 (0.681) | 0.441 (0.733) | 0.362 (.666) |
| Married dummy | 0.747 (0.435) | 0.699 (0.458) | 0.759 (0.427) |
| Husband lives in home dummy | 0.920 (0.271) | 0.915 (0.279) | 0.921 (0.269) |
| Height (in cm) | 1.519 (0.061) | 1.518 (0.059) | 1.520 (0.061) |
| Rural dummy | 0.678 (0.467) | 0.593 (0.491) | 0.701 (0.457) |
| Caste dummy | 0.824 (0.380) | 0.564 (0.495) | 0.892 (0.310) |
| Dummy if source of water is within premises | 0.655 (0.475) | 0.712 (0.453) | 0.640 (0.479) |
| Dummy if household has flush toilet system | 0.502 (0.499) | 0.609 (0.488) | 0.473 (0.499) |
| Dummy if household has electricity | 0.876 (0.328) | 0.882 (0.322) | 0.875 (0.330) |
| | 198,620 | 46,106 | 152,514 |

Notes: The values presented in the table are the mean statistics. Standard deviations are in parenthesis. Sample includes women in either the treated groups or the control group.

4. Empirical strategy

We use the staggered implementation of the HSAA (2005) to investigate the effects of women's inheritance rights on child health outcomes, using a difference-in-differences estimation approach. The identification strategy in this paper relies on exposure to the Hindu Succession (Amendment) Act, 2005 through a woman belonging to the treated religious group, residing in a reformed state and unmarried as of the year of reform implementation. The identification strategy adopted in this paper

is similar to those in previous studies such as Heath and Tan (2019), Roy (2015), and Deininger et al. (2019). We construct a binary variable for the treated religion (that is, Hindu) equal to ‘1’ if a woman belongs to any of the following religion: Hindu, Buddhist, Sikh, or Jain. Women that belong to other religions are those in the control group and are classified as ‘0’. The second variation consists of women residing in Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra, Karnataka, and other states (except Jammu and Kashmir), but were unmarried as at the time of the reform implementation in each state. For example, those residing in Kerala, whose year of marriage entry coincides with 1977 and above are the treated cohort. Likewise, the treated cohort residing in Andhra Pradesh, Tamil Nadu, Maharashtra, and other states are respectively those whose year of marriage entry are 1987 and above, 1990 and above, 1995 and above, 1995 and above, and 2006 and above. Women in the control group are those residing in these states whose marriage year coincides with periods before the reform was implemented in the states (see Table A1).

The identification strategy is based on the assumption that in the absence of the Hindu Succession (Amendment) Act, 2005, which affected women’s inheritance rights, there would be no significant difference between child health outcomes for women exposed to the reform and those who are not exposed to the reform. We estimate the following equation for the relationship between women’s inheritance rights and child health outcomes:

$$Y_{ijrt} = \alpha_0 + \beta_1 TreatedCohort_{ijrt} + \beta_2 TreatedCohort_{ijrt} \times Hindu_{ijrt} + Hindu_{ijrt} \times \theta_j + Hindu_{ijrt} \times \delta_t + X_{ijrt} + \varepsilon_{ijrt} \quad (1)$$

The dependent variable Y_{ijrt} denotes child health outcomes (being underweight, stunted, and wasted) for woman i , in state j , and belong to religion r . β_2 captures the impact of women’s inheritance rights on child health outcomes, X_{ijrt} denotes a vector of woman’s/mother’s and household control variables, including current age of the woman, number of days she breastfed her child (day and night), total number of children ever born to the woman, number of births in the last five years, educational level, marital status, whether cohabits with the husband, caste, place of residence, presence of drinking water within the household, presence of flush toilet system within the household and presence of electricity within the household. ε_{ijrt} is the error term. The estimation of equation (1) includes the interaction of state of residence and ‘Hindu’⁵ fixed effect, and the interaction of ‘Hindu’ and year of birth fixed effect. To take into account concerns about serial correlation and heteroscedasticity, the standard errors are clustered at the state level.

It is important to note that property transfers through dowry practices can affect child well-being and it is a common practice in India. However, we are unable to control for this variable in our model because the Indian National Family Health Survey (NFHS) used in our analysis does not contain information on dowry practices or related activities in India.

5. Results and discussion

5.1. Effect of reform on child outcomes

The effect of the Amendment on child health outcomes is shown in Table 2. We use the following dependent variables: being underweight, stunted, wasted, and a composite indicator for child’s nutritional health outcomes. From column 2, we find that a woman’s exposure to the Hindu Succession Act leads to a reduction in the likelihood of a child being underweight. However, the result is not statistically significant. Column 4 shows that exposure to the Amendment leads to 1.7 percentage point decline in the likelihood of a child being stunted. Column 6 reveals that exposure to the Amendment Act leads to 2 percentage point decline in the

likelihood of a child being wasted. Regression estimates in columns 4 and 6 are statistically significant.

Using a composite indicator for child health outcomes, in column 8 of [Table 2](#), we find that exposure to the women's inheritance law leads to 1.7 reduction in any of the indicators of nutritional deficiency. The regressions in [Table 2](#) control for household's characteristics, in addition to using the interaction of state of residence and treated religion (Hindu) fixed effect, as well as the interaction of year of birth and Hindu fixed effect.

[Table 3](#) presents the results of the heterogeneous effects of the Hindu Succession (Amendment) Act, 2005 on child health outcomes. Following Heath and Tan (2019), and Roy (2015), we disaggregate the results by location of residence and household wealth status. We find that the effects of the Amendment on child nutritional health outcomes are greater for urban households as compared to rural households. We also find that the impact of the Amendment on child nutritional health outcomes is more pronounced in the case of rich households relative to poorer households. Our findings confirm the theoretical treatise put forth by Agarwal (1994a) who said that despite gender progressive legislations, women have been prevented from inheriting land in rural areas due to societal bias against women holding agricultural land, as well as a number of administrative failures. This has been confirmed by some field-based studies in recent years as well (Brown, Ananthpur, & Giovarelli, 2002; Bates, 2004; Roy, 2011).

In [Table 4](#), we identify potential mechanisms through which an improvement in women's inheritance rights via the Amendment affects child health outcomes. We find that women's exposure to the Amendment increases the likelihood of completing secondary education, completing university education, and ability to read a whole sentence. A number of studies reveal that there exists a positive connection between maternal education and child health outcomes (Grepin & Bhardwaj, 2015; Güneş, 2015; Lindeboom, Nozal, & van der Klaauw, 2009). With higher levels of education, women experience greater household bargaining power and more say in decision-making about child health outcomes and overall household spending. These are subsequently associated with better nutritional and health outcomes of children.

In [Table 5](#), we analyse the effects of the Amendment in terms of marriage market outcomes. Women's exposure to the reform increases the likelihood of having spouses with higher years of schooling or who have completed university education and are working as professionals. This may be ascribed to the fact that with the passing of the HSAA (2005), parents tend to spend more on their daughters' education. As a result, women who are potential beneficiaries of HSAA (2005) tend to be better educated as compared to others in the treatment group ([Table 4](#)). Since these women have higher educational qualifications, they are able to find better qualified spouses. Also, with passing of HSAA, parents have started increasing dowry bequests to their daughters (Roy, 2015). In the Indian context, these dowry bequests could potentially help women to find spouses who are professionals/highly educated and have a high-income earning potential.

[Table 6](#) examines whether the implementation of the Amendment has an effect on women's intrahousehold bargaining power and their say in household decision-making within their marital household. We find weak evidence of the relationship between Hindu Succession (Amendment) Act, 2005 and women's decision-making power. Our studies contradict Roy (2011) who demonstrated that granting inheritance rights to women increased their autonomy within the marital household. However, other scholars propound that in male dominated societies like India, gender equitable inheritance laws may lead to constrained marriage and gender norms for women if not accompanied by actual property ownership. In these societies, women are merely carriers of property from the father to the husband, rather than actual managers of property (Agarwal, 1994b).

Table 2. Effect of the reform on child health outcomes

| | Underweight | | Stunted | | Wasted | | Composite outcome | |
|------------------------|---------------------|-------------------|----------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Treated cohort × Hindu | -0.009 (0.008) | -0.009 (0.008) | -0.019*** (0.006) | -0.017*** (0.006) | -0.021** (0.008) | -0.020*** (0.007) | -0.017** (0.007) | -0.017*** (0.006) |
| Treated cohort | -0.018** (0.007) | 0.006 (0.007) | -0.025*** (0.006) | 0.011* (0.006) | -0.004 (0.008) | 0.013 (0.008) | -0.005 (0.007) | 0.012* (0.006) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 189,035 | 173,843 | 189,035 | 173,843 | 189,343 | 174,124 | 138,766 | 127,991 |
| R-squared | 0.017 | 0.033 | 0.013 | 0.033 | 0.023 | 0.030 | 0.013 | 0.043 |

Notes: Estimates of the direct effect of Hindu was dropped because of collinearity problems. Regression estimates in columns 2, 4, 6, and 8 include controls for woman's/mother's characteristics, including current age of women, number of breastfeed (day and night), no education dummy, primary education dummy, total children ever born, births in last five years, married dummy, husband lives in home dummy, height (in cm), rural dummy, caste dummy, dummy if source of water is within premises, dummy if household has flush toilet system, and dummy if household has electricity. All columns include *state of residence* × *Hindu* fixed effect, and *Hindu* × *year of birth* fixed effect. Hindu is 1 if the woman's religion is Hindu, Buddhist, Sikh, or Jain. Treated cohort is 1 for a woman residing in *Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra, Karnataka*, and other states (except *Jammu and Kashmir*) and single as at the year of reform implementation. Standard errors are clustered at the state level. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Table 3. Heterogeneous effects of women's inheritance rights on child health outcomes

| | Underweight | | Stunted | | Wasted | | Composite outcome | |
|--|-------------------|-------------------|-------------------|----------------------|--------------------|---------------------|--------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Panel A: by location of residence | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| Treated cohort × Hindu | -0.006 (0.007) | -0.018 (0.012) | -0.003 (0.008) | -0.045*** (0.011) | -0.017* (0.008) | -0.026 (0.015) | -0.012* (0.006) | -0.034*** (0.012) |
| Treated cohort | -0.002 (0.007) | 0.020* (0.011) | -0.004 (0.006) | 0.047*** (0.009) | 0.010 (0.008) | 0.022 (0.017) | 0.006 (0.006) | 0.034*** (0.011) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 125,970 | 47,867 | 125,970 | 47,867 | 126,191 | 47,927 | 94,432 | 33,552 |
| R-squared | 0.030 | 0.040 | 0.028 | 0.045 | 0.031 | 0.031 | 0.040 | 0.055 |
| Panel B: by wealth of household | Poor | Rich | Poor | Rich | Poor | Rich | Poor | Rich |
| Treated cohort × Hindu | 0.014 (0.009) | -0.021 (0.013) | 0.002 (0.007) | -0.026** (0.013) | 0.005 (0.010) | -0.031** (0.012) | 0.003 (0.007) | -0.031** (0.013) |
| Treated cohort | -0.011 (0.008) | 0.022* (0.012) | -0.001 (0.006) | 0.029** (0.011) | -0.008 (0.006) | 0.029* (0.015) | -0.002 (0.005) | 0.032** (0.012) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 78,170 | 61,025 | 78,170 | 61,025 | 78,359 | 61,067 | 61,310 | 41,329 |
| R-squared | 0.028 | 0.036 | 0.020 | 0.040 | 0.029 | 0.029 | 0.046 | 0.049 |

Notes: Estimates of the direct effect of Hindu were dropped because of collinearity problems. The wealth of household is classified poor/poorest and rich/richest following the National Family Health Surveys of the two rounds of data used in our analysis. See [Table 2](#) for detail of control variables.

5.2. Mechanism

5.2.1. Premarital investment – education and health channel.

Table 4. Effect of the reform on education

| | Completed at least secondary education | | Completed at least university education | | Able to read a whole sentence | |
|------------------------|--|---------------------|---|---------------------|-------------------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treated cohort × Hindu | 0.047*** (0.015) | 0.044*** (.012) | 0.058*** (0.019) | 0.059*** (0.018) | 0.049*** (0.016) | 0.046*** (0.014) |
| Treated cohort | 0.187*** (0.009) | 0.089*** (0.010) | 0.096*** (0.015) | 0.043*** (0.016) | 0.168*** (0.013) | 0.075*** (0.013) |
| Control variables | No | Yes | No | Yes | No | Yes |
| Observations | 571,112 | 504,977 | 571,112 | 504,977 | 566,695 | 501,058 |
| R-squared | 0.155 | 0.304 | 0.054 | 0.137 | 0.149 | 0.296 |

Notes: Estimates of the direct effect of Hindu were dropped because of collinearity problems. The wealth of household is classified poor/poorest and rich/richest following the National Family Health Survey classification. See Table 2 for detail of control variable.

5.2.2. Marital market outcomes.

Table 5. Effect of the reform on marital market outcomes

| | 1 if husband/spouse completed University education | | Total number of years of husband/spouse schooling | | Husband/spouse's completed schooling is higher than woman's | | Husband/spouse works as a professional | | Husband/spouse works as a skilled or unskilled manual worker | |
|------------------------|--|---------------------|---|--------------------|---|--------------------|--|--------------------|--|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Treated cohort × Hindu | 0.069*** (0.014) | 0.050*** (0.013) | .778*** (0.162) | 0.403** (0.154) | 0.011 (0.012) | 0.017 (0.012) | 0.059** (0.023) | 0.046** (0.019) | -0.005 (.016) | -0.021 (0.014) |
| Treated cohort | 0.074*** (0.014) | 0.006 (0.015) | 1.382*** (0.197) | 0.037 (0.189) | -0.039*** (0.011) | -.024** (0.010) | .065*** (0.022) | -0.028 (0.019) | -0.046*** (0.016) | 0.017 (0.012) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 152,681 | 132,155 | 152,681 | 132,155 | 153,518 | 132,684 | 101,133 | 86,863 | 140,221 | 121,584 |
| R-squared | 0.032 | 0.181 | 0.077 | 0.426 | 0.023 | 0.078 | 0.037 | 0.135 | 0.039 | 0.082 |

Notes: columns (1) and (2) if the husband/spouse of the woman has completed university education, and 0 if has no education, completed primary or secondary education. Total number of years of husband/spouse education is in total number of years of schooling. Husband/Spouse's completed schooling is higher than women's is 1, and 0 if the same as woman's completed schooling or less educated than woman. Dummy if husband/spouse is currently working as a professional, sales personal, or in the service sector and 0 if working in other sector; dummy if husband works as skilled or unskilled manual labourer, and 0 if working in other sectors. Standard errors are clustered at the state level. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

5.2.3. *Women's intrahousehold bargaining power.***Table 6.** Effect of the reform on bargaining power of women

| | Woman decides how to spend her earnings | | Woman has final say at least one of the four | | Woman earns more or the same as spouse | | Number of control issues by spouse | |
|------------------------|---|-------------------|--|-------------------|--|-------------------|------------------------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Treated cohort × Hindu | 0.020 (0.036) | 0.002 (0.042) | -0.010 (.015) | 0.006 (0.013) | 0.009 (0.028) | 0.038 (0.030) | -0.057 (0.040) | -0.042 (0.039) |
| Treated cohort | 0.000 (0.034) | -0.027 (0.038) | 0.070*** (0.020) | -0.004 (0.014) | 0.048* (0.025) | -0.016 (0.028) | -0.055 (0.043) | -0.007 (0.044) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 13,255 | 12,339 | 143,609 | 132,044 | 34,786 | 32,701 | 111,547 | 99,182 |
| R-squared | 0.115 | 0.182 | 0.038 | 0.076 | 0.020 | 0.057 | 0.071 | 0.093 |

Notes: columns (1) and (2) if only the woman decides about how to spend her earnings. Columns (3) and (4) is a dummy if the woman alone decides at least one of the following – final say on own health, final say on making large household purchases, final say on visits to family or relatives, and final say on deciding what to do with husband's earnings. Columns (5) and (6) is a dummy if the woman earns more or the same as her husband/spouse. Column (7) and (8) is the number of control issues by spouse. Standard errors are clustered at the state level. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

5.3. *Robustness check*

5.3.1. *Address selective migration.* One factor that might confound the results of this study is reform-induced migration. The possibility exists that individuals or households might react to state reforms by migrating to other states with favourable inheritance laws. However, we are unable to investigate the possibility of selective migration having an effect on our results because the NFHS data does not contain information on women's state of birth or migration history.

However, it is important to note that existing studies in India show that although many women migrate at the time of marriage, this migration rarely occurs between states (Heath & Tan, 2019). Census data collected in the periods after the reform highlight that interstate migration has remained low. Census of India (2011) reveals that only 0.9 per cent of women were interstate migrants. Moreover, Roy (2015) finds that migration across states in India due to marriage is rare, and it is estimated to be less than 3 per cent. Therefore, it appears that the preponderance of migration, to the extent it exists at all, occurs largely within the state and may not be of substantial concern for this study, although we cannot entirely rule out some degree of selective migration contributing to our results. Based on this evidence, selective migration is unlikely to significantly affect our results.

5.3.2. *Exclude sample from Kerala.* Kerala has traditionally been a matrilineal society, where land is inherited through the female line (Kerr, 2019). We therefore estimate equation (1) by excluding the sample from this location, and the results of this robustness check are presented in Panel A of Table A2 in the appendix. Our results suggest that these child health outcomes are not driven primarily by the inclusion of sample from Kerala.

5.3.3. *Include sample with living child.* We next include only women with living children in the sample to estimate equation (1). The results in Panel B of Table A2 are similar to the earlier estimates that the legal amendments lead to a significant decline in child health outcomes.

5.3.4. *Falsification test.* The falsification test arbitrarily selects false reform states by assigning each state in the sample a random number and then assigns the first five states the treatment year of the

true reform states. Random state 1 experiences a false reform year since 1977, random state 2 experiences a false reform year since 1987, while random states 3, 4, and 5 have a false reform year since 1990, 1995, and 1995, respectively. We then estimate equation (1) by interacting the pseudo reform states and the true affected religion. The results in Panel C show a significant difference from the earlier estimates in Table 2.

We also arbitrarily select false affected religions by assigning each religion in the sample a random number and then selecting the first four religions as the affected religion, while the treatment year of the true reform states remains unchanged. We then estimate equation (1) as the interaction between the pseudo affected religion and the true reform states and reform year. The results in Panel D show a different outlook than that from the estimates in Table 2.

These falsification tests are suggestive of the earlier estimated effect that the legal amendments lead to a significant decline in child health outcomes are traceable to the sampled women being single at the time of the reform, residing in states that have implemented the reform and belonging to the treated religion.

5.3.5. Potential effect of other policies that are state and location specific. This last robustness check examines the consistency of our main result when we address the potential influence of other large-scale public health programme that could influence our outcome variables. Particularly, we focus on the 2005 National Rural Health Mission (now called the National Health Mission), which is a large-scale public health programme that was intended to contribute to the reduction in the inter-religion inequalities in child health. Therefore, in this additional robustness check we control for this large-scale public health programme interventions by interacting an indicator for the state of residence and rural dummy. The results from Panel E of Table A2 further shows that the results are consistent even when we control for the potential effect of state-level programme that is specific to rural locations.

6. Conclusion

This paper demonstrated that an improvement in women's inheritance rights has sustained long-term impacts and positive implications in terms of child nutritional health outcomes. Specifically, we find that a legal change in women's inheritance rights reduces the likelihood of a child being underweight, stunted, or wasted. Our results reveal that children whose mothers were exposed to the Amendment were 1.7 and 2 percentage points less likely to be stunted and wasted. The results of this contribute to the existing literature on the socio-economic repercussion of women's inheritance laws by providing empirical evidence on how equitable inheritance laws have sustained second-generation effects in terms of improvement in child nutritional health outcomes.

We also explored the potential pathways through which women's inheritance rights brought about intergenerational positive effects on child nutritional health outcomes. Our research unearthed that with more equitable inheritance laws, there tends to be complementary investment in women's education which translates into better marriage market outcomes and improved intrahousehold bargaining power. This in turn translates into better nutritional health outcomes for children.

In addition, we estimated heterogeneous effects of the implementation of the Amendment by location of residence and wealth status of the households and found that these effects were stronger for higher income households in urban areas, as compared to poorer households in rural areas. In this respect, our results mirror the findings of other studies, which demonstrate that the effect of this amendment has been limited so far. This is an area which requires further investigation on how women belonging to rural areas and poorer socio-economic backgrounds can become potential beneficiaries of this Amendment. This question is especially pertinent for an agrarian-oriented economy like India.

Our study suffers from two main limitations. First, due to lack of available data on dowry practices, we could not account for the interlinkages between dowry practices and outcomes of child well-being. It would be instructive to have a follow-up study which accounts for these interlinkages. Second, we recognise that quantitative studies can only provide a small window to understand complex social realities. In patriarchal societies like India, legal changes on their own cannot bring about qualitative

improvements in women's socio-economic outcomes. Therefore, there is need for further qualitative studies to deepen existing understanding of the societal factors which influences women's property inheritance, so that these may be reformed through robust policy imperatives.

Notes

1. This law is applicable to Hindus, Jains, Buddhists, and Sikhs. It does not apply to Muslims, Christians, Jews, and Parsis.
2. The Joint family property comprises of ancestral property, plus any property that was jointly/separately acquired but merged into the joint property. Separate property includes that which is self-acquired and/or any property inherited from persons other than his father, paternal grandfather, or paternal great-grandfather (Agarwal, 1994a).
3. Empirical estimates reveal that 80 per cent individuals die without writing a will in India (Sapkal, 2020).
4. Treated religious group comprise of women belonging to Hindu, Sikh, Jain, and Buddhist religion. Women belonging to these religious groups are perceived beneficiaries of HSAA (2005). Non-treated religious group comprise of women belonging to Muslim, Christian, and other religions. Women belonging to these religious groups fall outside the ambit of HSAA (2005).
5. We categorise women belonging to the treated religious group as 'Hindu' in our model.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

Table A1. Data design

| | Treatment | Control |
|------------------------------------|--|--|
| Religion | Hindu, Buddhist, Sikh, or Jain | Other religion |
| State of residence [marriage year] | Kerala [1977 and above] Andhra Pradesh [1987 and above] Tamil Nadu [1990 and above] Maharashtra [1995 and above] Karnataka [1995 and above] Other states [2006 and above] | Kerala [1976 and below] Andhra Pradesh [1986 and below] Tamil Nadu [1989 and below] Maharashtra [1994 and below] Karnataka [1994 and below] Other states [2005 and below] |

Table A2. Robustness checks

| | Underweight (std. dev. of weight-for-age is <=-2) | Stunted (std. dev. of height- for-age is <= -2) | Wasted (std. dev. of weight- for-height is <= -2) | Composite outcome (child is at least one of underweight, stunted or wasted) |
|--|--|--|--|--|
| | (1) | (2) | (3) | (4) |
| Treated cohort × Hindu | -0.008 (0.008) | -0.017*** (0.006) | -0.018** (.007) | -0.017*** (0.006) |
| Treated cohort | .005 (0.007) | 0.010* (0.006) | 0.010 (0.007) | 0.012* (0.006) |
| Control variables | Yes | Yes | Yes | Yes |
| Observations | 171,605 | 171,605 | 171,890 | 126,623 |
| R-squared | 0.032 | 0.033 | 0.030 | 0.043 |
| Treated cohort × Hindu | -0.009 (0.008) | -0.018*** (0.006) | -0.020*** (0.007) | -0.018*** (0.006) |
| Treated cohort | 0.007 (0.007) | 0.012** (0.006) | 0.014 (0.008) | 0.014** (0.007) |
| Control variables | Yes | Yes | Yes | Yes |
| Observations | 171,952 | 171,952 | 172,229 | 126,440 |
| R-squared | 0.033 | 0.033 | 0.030 | 0.043 |
| Panel C: falsification test – arbitrarily assigning reform states | | | | |
| Treated cohort × Hindu | 0.046 (0.036) | -0.043 (0.034) | 0.110*** (0.030) | -0.057* (0.032) |
| Treated cohort | -0.025 (0.038) | 0.038 (0.034) | 0.014 (0.020) | 0.054*** (0.010) |
| Control variables | Yes | Yes | Yes | Yes |
| Observations | 20,675 | 20,675 | 20,676 | 15,399 |
| R-squared | 0.055 | 0.049 | 0.053 | 0.091 |

(continued)

Table A2. (Continued)

| | Underweight (std. dev. of weight-for-age is <=-2) | Stunted (std. dev. of height- for-age is <= -2) | Wasted (std. dev. of weight- for-height is <= -2) | Composite outcome (child is at least one of underweight, stunted or wasted) |
|---|--|--|--|--|
| Panel D: falsification test – arbitrarily assigning affected religion | | | | |
| Treated cohort × Hindu | 0.010 (0.008) | 0.016** (0.007) | 0.017** (0.008) | 0.016*** (0.006) |
| Treated cohort | -0.003 (0.003) | -0.006 (0.004) | -0.006 (0.006) | -0.004 (0.003) |
| Control variables | Yes | Yes | Yes | Yes |
| Observations | 174,073 | 174,073 | 174,358 | 128,153 |
| R-squared | 0.033 | 0.033 | 0.030 | 0.043 |
| Panel E: potential effect of other policies that are state and location specific | | | | |
| Treated cohort × Hindu | -0.009 (0.008) | -0.017*** (0.006) | -0.020*** (0.007) | -0.018*** (0.006) |
| Treated cohort | 0.006 (0.007) | 0.011* (0.006) | 0.014 (0.008) | 0.013** (0.006) |
| Control variables | Yes | Yes | Yes | Yes |
| Observations | 174,073 | 174,073 | 174,358 | 128,153 |
| R-squared | 0.033 | 0.033 | 0.030 | 0.043 |

Standard errors are clustered at the state level. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$. See Table 2 for detail of control variables.