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Do Women's Land Rights Promote Empowerment and Child Health in Nepal?

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SUMMARY

Women's land rights are increasingly put forth as a means to promote development by empowering women, increasing productivity, and improving welfare. However, little empirical research has evaluated these claims. This paper uses the 2001 Nepal Demographic and Health Survey to explore whether women's land rights empower women and benefit young children's health in Nepal. The results provide support for both of these hypotheses. Women who own land are significantly more likely to have the final say in household decisions, a measure of empowerment. Similarly, children of mothers who own land are significantly less likely to be severely underweight.

Keywords

gender; land rights; empowerment; nutrition; Nepal; Asia

1. INTRODUCTION

Worldwide, women own only one to two percent of land (Crowley 1999; Seager 1997; Sachs 1996). Like men, many women are active farmers and depend on agriculture. Yet most women remain dependent upon the existence and goodwill of male relatives for access to land (e.g. Deere and Leon 2003; Rao 2005; Kevane and Gray 1999). In recent years, this gender gap in land rights has received attention from development practitioners and activists. In the international arena, the Food and Agriculture Organization of the United Nations, the Convention on the Elimination of Discrimination Against Women, and the UN Human Rights Commission have all called for equal treatment for women and men in access to land and agrarian reform (Crowley 1999; FAO 1995; UN Commission on Human Rights 2002). Multilateral and bilateral development agencies, including the World Bank (World Bank 2001), the Australian Agency for International Development (AusAID 2000), and Britain's Department for International Development (DFID 2002), have also noted the importance of women's land rights.

These institutions address women's land rights because they are seen as a tool to promote development. Like other women's issues, such as girls' education, women's land rights are put forth as a way to realize human rights, increase economic efficiency and productivity, empower women, and promote welfare and well-being (Agarwal 1994). Despite the

increasing prevalence of these claims, however, little research has empirically evaluated their validity. This paper attempts to address this gap in part by exploring the connections among women's land rights, women's empowerment, and child health in Nepal.

(a) Defining land rights

Land rights broadly defined can be understood as a variety of legitimate claims to land and the benefits and products produced on that land (e.g. Schlager and Ostrom 1992; Meinzen-Dick et al. 1997). When activists and development practitioners call for women's land rights, however, they are referring to effective land rights, which Agarwal defines as "claims that are legally and socially recognized and enforceable by an external legitimized authorized, be it a village-level institution or some higher-level judicial or executive body of the State" (Agarwal 1994:19). Ideally, an analysis of women's land rights should take different aspects of rights into account, including whether women own land and exercise control over land in practice. However, due to data limitations, in this paper women's land rights are defined simply as land ownership.

(b) The Nepali context

Land plays a crucial role in Nepal. Nepal is predominantly rural and over 80 percent of households directly depend on agriculture and land (Lumsalee 2002). Since land comprises the main source of economic livelihoods, it is also an important source of power and status in Nepal: "Land is more than a physical entity; it has been, and continues to be, the economic backbone of the agrarian system and the rural power structure" (Bhandari 2001: 168).

Women play an important role in farming this land. Some agricultural activities, such as plowing and irrigation, are largely or entirely done by men. However, many other activities, such as fertilizing and transplanting rice, are done by both men and women or women exclusively (Acharya and Bennett 1981; Pun 2000). Furthermore, Nepal is experiencing a feminization of agriculture. Men are increasingly moving into nonagricultural work or migrating to urban areas or outside of Nepal for employment, leaving women to take over agricultural activities (Cameron 1995; ADB 1999). As of 2001, over 90 percent of women workers were agricultural laborers or land managers compared to 64 percent of male workers (Nepal Ministry of Health et al. 2002).

Despite their active role in agriculture, however, women have limited land rights. In Nepal, the main means of gaining land is through inheritance, which is largely patrilineal. Thus, when discussing land rights and inheritance, women's rights are usually defined in terms of their relation to men. As reflected in the 11th amendment of the Civil Code, widows' have a right to a share in their husband's property. Daughters, on the other hand, only have a right to a share in their father's property if they are unmarried. Further, if daughters marry after inheriting parental property they are supposed to return their share to the other heirs. Widows have a relative advantage because they keep property within the same patrilineal line of descent. Daughters, on the other hand, marry into other families and transfer property out of one line of descent and into another.

While it is not the norm for Nepali women to own land, there are some women that do. In 2001, 11 percent of all households and 14 percent of land owning households in Nepal contained women landowners (author's calculations from Nepal Census 2001a & 2001b). Many of these women are widows who inherited land when their husbands died. However, different ethnic and local inheritance practices also play an important role. Some castes and ethnic groups, especially Tibeto-Burman groups, have more egalitarian inheritance practices and do pass on land to daughters (e.g. Watkins 1996; Holmberge 1989; Molnar 1980; Jones

and Jones 1976). Some parents also choose to give land to daughters because they have no sons, they have plenty of land to go around, or for other reasons. Additionally, some women who have high paying jobs in urban areas buy land with their own earnings (Shrestha 2006). It is also increasingly common for couples to register newly purchased property in both the husband and wife's names (Joshee 2006).

In the last few years, women activists have taken up the issue of women's equal inheritance rights (e.g. Adhikari 2001; Shrestha 1999). In 1994, a group of activists and lawyers challenged the inheritance law in the Nepali Supreme Court, starting a process that led to the introduction of a bill on inheritance of parental property to parliament (Malla 1997). In 1998, when parliament failed to discuss the new bill there were demonstrations by women all over the country (ADB 1999). In 2002, a version of the bill was finally passed as the 11th amendment to the Civil Code [1].

2. THE RATIONALE FOR WOMEN'S LAND RIGHTS

As noted above, the attention to women's land rights is certainly not unique to Nepal. The importance of women's land rights to development has been discussed in similar ways in reference to many countries. This section discusses the theoretical arguments why women's land rights may empower women and benefit family welfare. It also outlines the existing empirical literature that reflects on these arguments.

(a) Empowerment

The empowerment argument contends that women's land rights are important because they will empower women, a development goal in and of itself. Empowerment is a process that expands women's agency – or, more simply put, it is an increase in women's ability to make choices about their lives and environment (Malhotra and Schuler 2005). Kabeer (1999) further conceptualizes empowerment as three moments in time. The first moment comprises pre-conditions or resources, the second is the element of action or agency, and the third is the outcome. Following Kishor (2000), these pre-conditions can further be divided into sources and settings of empowerment. Settings of empowerment are characteristics of women's past and current environments that facilitate empowerment, such as the education of their parents. Sources of empowerment are objects and assets which women have that improve their security or influence and thus improve their household bargaining power and facilitate empowerment more broadly. Based on this understanding of empowerment, land ownership should act as a source of empowerment by increasing women's security and influence and increasing their control over household decisions (Haddad et al. 1997; Agarwal 1997).

To my knowledge, only one quantitative study directly reflects on the impact of women's land rights on empowerment. In a survey of five Asian countries, women who owned land in India and Thailand had greater domestic economic power (Mason 1998). More commonly, since such small proportions of women usually own land, land ownership is included in a larger indicator of assets or economic power. This clustering, while often necessary due to the data constraints, makes it impossible to distinguish the impact of land by itself. For example, in her study of how women's empowerment affects infant mortality and immunization in Egypt, Kishor (2000) uses an index of seven assets owned, including land,

[1]Before 2002, daughters could only inherit parental property if they were at least 35 and unmarried. If they later married they were to return the property. Under the new legislation discussed above there is no longer an age restriction for daughters, but daughters' inheritance rights are still contingent on their marital status. Married women still have no legal right to inherit parental property and unmarried women must still return it if they later marry. Under the previous law, widows also had to give up inheritances from their husbands if they remarried. However, under the new legislation, widows have a right to keep a share of their husband's property even if they remarry.

as one of 32 empowerment indicators. Similarly, in a study of women's autonomy in India, Jejeebhoy (2000) includes an index of control over economic resources which refers to whether the respondent owns and controls any family valuables (including land, jewelry, or vessels) and whether she expects to support herself in old age.

There is also some support for the effect of land rights on empowerment from ethnographic evidence. Women in Gujarat who participated in a loan program which insisted on joint legal titles for the husband and wife land said that they gained security from the joint title, in that the family would not expel them from the household, nor sell the land without their permission (Unni 1999). Similarly, in Rajasthan, Agarwal (1994) found that widows who owned land were given greater respect and consideration than widows who did not. And, as one of the women from the Bodhgaya land movement in India eloquently put it, "Earlier, we had tongues but could not speak. We had feet but could not walk. Now that we have the land we have the strength to speak and walk!" (Alaka and Chetna 1987).

(b) Welfare

The welfare argument contends that securing women's land rights will promote the welfare and well-being of women and their families, as well as the broader community. This welfare rationale rests on the notion that resources put in the hands of women, rather than men, are more likely to be used to the benefit of children and others. This point is supported by studies on the effects of women's and men's income on household well-being measures. Compared to equal amounts of men's income, women's income is consistently associated with greater positive effects, as measured by child survival, household calorie level, food expenditures, and children's nutritional status (e.g. Quisumbing et al. 1995; Thomas 1990). Women themselves often note that land rights would provide security in the face of their husband dying or abandoning them and in cases of domestic violence (Agarwal 1994). As a Nepali woman stated,

> "The wife should get her property when her husband is still alive, so that she can make her own living even if her husband leaves her or treats her badly, and she doesn't have to depend on anybody" (Panos Institute 2003).

A few studies have examined whether women's land rights promote welfare. In Kerala, Kumar (1978 as cited in Agarwal 2002) found that women's home gardens were associated with better child nutrition. Quisumbing and de la Briere (2000) found that women's assets at marriage were positively related to expenditure on children's clothing and education in Bangladesh, but only a few women in the survey brought land to their marriage so their result is most likely due to other assets besides land. In terms of women's own well-being, Panda and Agarwal (2005) found that women who owned land or houses were significantly less likely to experience marital violence in Kerala.

Securing and recognizing women's land rights may improve welfare by not only putting resources in the hands of women, but by increasing agricultural productivity and thereby increasing the total amount of resources available. This rationale is often termed the efficiency argument (Agarwal 1994), but increasing agricultural efficiency can improve welfare as well. This argument comes in two main variants. The first variant of this argument notes that a considerable number of farmers are women whose productivity is hindered by gender norms.

Ethnographic studies demonstrate how women's lack of rights hinders productivity in Nepal and the rest of South Asia. In Nepal, irrigation is a men's activity and women are often barred from water committees and forced to pay high irrigation fees while men can donate labor for canal maintenance in lieu of fees (e.g. Pun 2000; van der Schaaf 2000; van Koppen et al. 2001). This barrier limits productivity when women household heads take sons out of

school to irrigate or male family members are unable to undertake wage work because they have to stay and irrigate (Pun 2000). In India, productive assets such as ploughs, bullocks, and wells are often held collectively by male relatives and women can have trouble accessing them (e.g. Sharma 1980; Chen 2000). Additionally, extension services often assume that women are not farmers, and thus, do not provide information and technology directly to women (e.g. Arun 1999).

Most studies that have tried to directly measure the impact of gender inequalities on agricultural efficiency come from Sub-Saharan Africa. These studies find that total efficiency would be improved if resources were allocated more equitably across men and women's plots (e.g. Udry 1996; Saito 1994). Further, women's plots have smaller yields than men's plots, but if differences in agricultural inputs are controlled for the differences disappear. For example, Udry (1996) finds that the average household output of crops would increase by 6 percent in Burkina Faso if fertilizer and other inputs were distributed more evenly across individual household members' plots.

A second form of this argument suggests that women's desire to invest in their children make them more productive and sustainable farmers than men when given the same opportunities (Kodoth 2001). There is only very limited anecdotal evidence from South Asia to support this notion. In Andhra Pradesh, groups of women collectively leased land that the owners were not farming because the owners either had too much land for themselves to cultivate or the land was marginal (Rajan 1990). The women were able to farm the land and produce productive harvests, as well as employ several other village women while doing so. Further, after the Bodhgaya land movement in India, small agricultural loans were made available to those who had received land. Women used the loans to buy bullocks, while many men wanted to spend it on alcohol (Alaka and Chetna 1987).

Finally, the empowerment rationale discussed above may also play a key role in the relation between women's land rights and welfare. As discussed above, women's land rights may *directly* improve welfare, and child's health specifically, through greater food security or income. However, land rights may *indirectly* improve welfare and child health *via* women's empowerment. Better child health may come from women, rather than men alone, making key household decisions, such as when, where, and which children should receive food and health care. Many studies have found that women's empowerment is associated with a variety of good child health outcomes, including greater use of health care, better immunization and nutritional status, and reduced child mortality (e.g. Bloom et al. 2001; Kishor 2000).

3. DATA AND METHODS

Data for this analysis come from the 2001 Nepal Demographic and Health Survey (NDHS), a nationally representative, cross sectional, household survey (Nepal Ministry of Health et al. 2002). 8,633 households were surveyed and within those households 8,726 ever married women aged 15–49 were interviewed. The overall response rate was 97.8 percent. The sample of women used in this study is limited to 4,884 women respondents based on occupation and household structure. First, the sample is limited to agricultural workers because, as will be discussed below, an important question was asked only of agricultural workers. Second, the sample is limited to regular members of the household who are currently married and residing with their husbands. Limiting the sample in this way eliminates female headed households in which women would be primary decision makers simply by default.

It should be noted that the cross sectional design of the survey poses challenges for this analysis. Empowerment is conceptualized as a process of change. However, the data come from one point in time and do not address whether change has occurred. Further, assuming change did occur, the cross sectional design poses a reverse causation problem. The theorized order of cause and effect is that first a woman gains land rights and then these land rights facilitate an increase in agency. However, with a cross sectional survey that does not include retrospective questions this time ordering is lost. The theorized causal order may occur in the opposite direction or in both directions. Women who are already empowered may use their greater agency to secure land rights. Although, these women may be empowered still further after they have gained land rights.

(a) Land rights measure

As noted above, land rights are measured with an indicator of land ownership. In the NDHS women were asked, "Do you own any land, either by yourself or jointly with someone else?" Women who owned land either by themselves or jointly are classified as land owners. However, results using this question alone may be misleading because it compares women who own land to all other women. Women with land rights are a subset of landed households. The reference group, women who do not own land, includes both landless households where no one owns land and landed households where men (and possibly other women) in the family own land. Households with land tend to be wealthier, and wealthier households perform better on many health outcomes, including the health outcome used here (Gwatkin 2000; Wagstaff and Watanabe 2000). Therefore, if women's land rights are used alone, the resulting effect may be positively biased by the comparison of women with land rights to women from male-headed landless households. Thus, it is important to control for other household members' land ownership to make sure that it is not this wealth relationship that is responsible for the effects of *women's* land rights [2].

Ideally, one would create a measure of land rights that takes into account whether or not men in the women's household own land or, even better, the amount of land that each member owns. Unfortunately, the NDHS did not ask whether other household members, or if the household in general, owned land. However, women who worked in agriculture were asked if they mainly worked on their own or family land, rented land, or land owned by someone else. This question is used as a proxy for other household members' land ownership. It is assumed that other household members own land if the respondent said she worked on family land and did not own land herself.

Thus, the measure of land ownership used here has three categories. The first category, referred to as "lives in landed household," comprises women who do not own land themselves and work on land owned by their family. The second category, "owns land herself," contains respondents who own land themselves. Finally, the third category, "lives in landless household," includes women who neither own land nor work on family land.

The NDHS also asked women whether they owned livestock. Livestock play an important role in farming, so livestock rights are also included in the analysis. However, it should be noted that no information is available about other household members' livestock ownership. Thus, this variable compares women who own livestock to both women who live in households where other members own livestock and in households without any livestock at all.

[2]As shown later, a control for household wealth is included in the analysis. However, the measure does not take land ownership into account. Thus, the potential wealth effects of land ownership may not be sufficiently controlled for by using the wealth measure alone.

(b) Empowerment measures

The empowerment measures are drawn from four questions on household decision making. Respondents were asked who in their household usually has the final say on: 1) their own health care; 2) making large household purchases; 3) making household purchases for daily needs; and 4) visits to family, friends, and relatives. Women could respond that they, their husband, or someone else had the final say alone or jointly [3]. The vast majority of decisions that women made jointly were with husbands, but a few were with someone else.

Two measures of empowerment were created using these questions. The first measure is an empowerment scale which is simply the total number of decisions that a woman usually has the final say on alone or jointly, ranging from zero to four. The internal reliability of this empowerment scale is high; it has a Cronbach's alpha of 0.81. This high alpha supports the assumption that the questions on the four different decisions and thus the empowerment scale are measuring a single underlying concept.

A second empowerment variable was created to compare women having the final say alone on decisions versus doing so jointly. It is possible that there is a qualitative difference between women who have the final say on a decision alone versus those who make only joint decisions. The second measure is a dummy variable denoting whether the respondent usually has the final say alone on at least one of the four decisions. A dummy was used because very few women made more than one decision alone.

(c) Child health measure

Child health is measured by nutritional status, specifically whether the child is severely underweight. Severely underweight children are those whose weight is more than three standard deviations below the international reference median for their age. This measure indicates that a child is suffering from chronic and acute malnutrition and disease [4]. This measure is used because it is a good general measure of child health (de Onis et al. 1993) that is logically related to women's land rights as discussed above. It also pertains to the time of survey and thus is contemporaneous with the land rights measure. Other potential health measures, including prenatal and delivery care and immunization status could have occurred as long as five years ago when the mother's land rights status may have been different. Further, anthropometric status is available for all children born in the last five years and still alive at the time of survey. Other measures available in the NDHS, such as treatment of an illness experienced in the last two weeks, apply only to a subset of children.

4. RESULTS AND DISCUSSION

(a) Empowerment

The association between women's land rights and empowerment is first explored using simple crosstabulations. As hypothesized, women who own land are more likely to have the final say on household decisions, indicating that they are more empowered (table 1). 70 percent of women who own land have the final say on at least one decision alone or jointly compared to 48 percent of women in landed households and 60 percent of women in

[3]Women could also respond that the decision was not applicable. These "not applicable" responses were coded as not having the final say. This categorization could present a bias if poor women are more likely to reply that a decision is not applicable because they are not able to use health care as much or make large purchases. However, the largest proportion of women who responded not applicable to a decision is less than one percent of the sample. Thus, categorizing "not applicable" answers as not having the final say does not create any bias in this case.

[4]Before puberty, children from all populations for which data exist have similar growth patterns, demonstrating similar height and weight distributions by age (Martorell and Habicht 1986). Therefore, comparison to an international reference population is used to indicate malnutrition among young children in Nepal (Nepal Ministry of Health et al. 2002).

landless households. Similarly, 37 percent of women who own land have the final say alone on a decision compared to 20 percent of women living in landed households and 30 percent of women in landless households. All of these differences are significant according to χ-squared tests with p-values less than 0.01.

Next, a multivariate analysis is presented to explore whether the positive association between empowerment and land rights remains when controlling for other factors. A logistic regression model is used for the final say alone dummy and an ordered logit model is used for the empowerment scale. An ordered logit model was chosen because it appropriately treats the empowerment scale as an ordinal indicator of an underlying continuous variable. It assumes that the more decisions a woman has the final say on, the greater her empowerment, but the distances between each additional decision are not necessarily equal. For example, the difference in terms of a woman's empowerment level between making one rather than no decisions versus four rather than three decisions are not presumed to be the same.

The odds ratios for both models are presented in table 3. Similar to the odds ratios from a logit model, the odds ratios from the ordered logit model can be interpreted as the factor by which a unit increase in an independent variable will increase the odds of being in a higher empowerment category, or simply more empowered. Basic controls for urban residence, religion, caste/ethnicity, household wealth, and household structure are included in the models. There are also controls for other sources and settings of empowerment, including age, education, and employment remuneration. The p-values for the odds ratios are based on robust standard errors that accommodate the potential effects of correlation among respondents in the same primary sampling units.

The positive association between women's land rights and empowerment does remain after controlling for socio-economic characteristics, household structure, and other sources and settings of empowerment. Using the empowerment scale, the odds that a woman is more empowered are 50 percent larger if she owns land (model 1, table 3). Further, the model predicts that a woman who owns land and is average on all other characteristics in the model has a 60 percent probability of having the final say on at least one decision alone or jointly. By comparison, an average woman who does not own land has a 54 percent predicted probability of having the final say alone or jointly on at least one decision. The results are very similar for the final say alone model. The odds are 48 percent greater that a woman has the final say alone on a decision if she owns land (model 2, table 3). An average woman has a 26 percent predicted probability of having the final say alone if she owns land versus a 23 percent probability if she does not own land.

As expected, other sources and settings of empowerment are also associated with greater empowerment. Receiving payment in kind increases the odds that a woman has the final say alone by 42 percent and being paid cash more than doubles the odds. Similarly, a primary education increases the odds of a woman has the final say alone by 41 percent and a secondary education by 82 percent. Women's place in the family hierarchy has a very strong association with empowerment. Women who own livestock also have greater odds of being more empowered.

Caste and ethnicity are included as a basic contextual control, but caste also plays a role as a setting of empowerment. Tibeto-Burman women are significantly more likely to be more empowered. This result is consistent with the role of caste as a setting of empowerment. High castes have more restrictive gender norms (Bennett 1983; Acharya and Bennett 1981 and 1983). For example, high caste women generally have less choice over marriage partners, marry at younger ages, and have stricter customs regarding ritual purity and sexuality. By contrast, the Tibeto-Burman ethnic groups are known for more egalitarian

gender norms where love marriages and greater freedom of movement are more common. Morgan and Niraula (1996) found similar results in their comparison of Terai and hill villages in Nepal. Multiple marriages, distance between natal and marital families, and other characteristics associated with Tibeto-Burman ethnic groups were associated with greater freedom of movement and decision-making.

As discussed above, land ownership does have a positive association with women's participation in household decision making. This result is consistent with the hypothesis that women's land rights are a source of empowerment. However, it is important to go further and also consider how land rights compare to these other sources of empowerment. Do land rights confer more or less household decision making power than other sources? In particular, how do land rights compare to education and employment, two commonly discussed sources of empowerment? The point estimates for the odds ratios for land ownership are larger than those for primary education and being paid in kind, suggesting that land ownership may be a more powerful source of empowerment than small amounts of education and working without cash payment (table 3). On the other hand, the odds ratios for land ownership are smaller than those for secondary education, suggesting that land ownership is not as effective a source of empowerment as large amounts of education. However, none of these differences are statistically significant according to Wald tests.

Interestingly, the comparison between land ownership and cash employment differs strikingly between the two measures of empowerment (table 3). Using the empowerment scale, the odds ratio for land ownership is 1.50 and the odds ratio for cash employment is 1.44. While the point estimate of the odds ratio for land ownership is slightly larger, the two are roughly the same and, not surprisingly, the difference is not statistically significant. By contrast, when using the final say alone as the dependent variable, cash employment appears to be a much better source of empowerment. The odds of a woman having the final alone on one of the four decisions are more than twice as large if she works for cash versus 48% larger if she owns land. The Wald test used to examine whether these two odds ratios differ significantly has a p-value of 0.06. While this p-value is slightly larger than the commonly used cutoff of 0.05 for statistical significance, it does provide good evidence that cash employment has a stronger association with women having the final say alone on a decision than land ownership. Thus, it appears that compared to owning land, working for cash has a stronger association with having the final say *alone* on a decision, but not for having the final say *jointly*.

When comparing the different sources of empowerment, however, the most striking result is for women's place in the family structure. These results strongly support women's place in the family structure as the most influential source of empowerment. According to both measures of empowerment, the odds of a woman being more empowered are more than four times larger if she is the wife of the household head, rather than a daughter-in-law or sister-in-law (table 3). This odds ratio for being the wife of the household head is not only significantly larger than all the others, but many times the size of the others. For example, in the empowerment scale model, the odds ratio for being the wife of the household head is two and a half times the size of the secondary education odds ratio, three times the size of land ownership and cash employment, and nearly four times the size of primary education.

(b) Child health

As with empowerment, the hypothesis on child health is first explored using simple crosstabulations. Children whose mothers own land are less likely to be severely underweight (table 1). Eight percent of children whose mothers own land are severely underweight compared to 14 percent of both children who live in landless households and

landed households. The χ-squared test used to examine whether these differences are significant has a p-value of 0.06, providing fairly good evidence that the differences are real.

The hypothesis on child health is next tested using multivariate logistic regression to see whether the association remains after controlling for other factors (table 4). These models all include controls for urban residence, religion, caste, household wealth, education, and mother's age. Models 2 and 3 further add mother's empowerment as measured by the empowerment scale and the final say alone dummy respectively. These empowerment measures are used to explore whether the main pathway between mother's land rights and child health is through empowerment as discussed above. Both measures of empowerment are used to examine if mothers having the final say alone has a different impact from mothers having the final alone or jointly. Again, the p-values for the odds ratios are based on robust standard errors that accommodate the potential effects of correlation among respondents in the same primary sampling units.

The results are consistent with the hypothesis that mothers' land rights benefit children's health. The odds ratio for other's land ownership of 0.53 is significant at the 0.05 level. Therefore, the odds that a child is severely underweight is reduced by half if their mother owns land (model 1, table 4). The size of this association is comparable in size to those for household wealth and parents' education. For example, the odds that a child is severely underweight are slightly more than half as larger if the father completed secondary education. However, the predicted probability of a child being severely underweight does not differ substantially by mother's land ownership. The model predicts that a child whose mother owns land and is average on all other characteristics in the model has a seven percent probability of being severely underweight. By comparison, the predicted probability of an average child being severely underweight increases to ten percent if the mother does not own land.

As discussed above, a major pathway for the impact of women's land rights on child nutrition may be through empowerment. In the previous section it was shown that women's land ownership does have a positive association with women's participation in household decision making. It is possible that the positive association between mother's land ownership and child nutrition may come through the greater empowerment that mothers who own land have. If empowerment is a major pathway, the inclusion of empowerment in the health model should substantially diminish the effect of land ownership, making the odds ratio for land ownership closer to one [5]. When the empowerment measures are added to the health model, the odds ratios for land ownership remain almost the same (models 2 and 3, table 4). The land ownership odds ratio decreases only very slightly from 0.53 to 0.51 when the mother's empowerment scale is added and increases very slightly from 0.53 to 0.54 when mother's final say alone is added. Thus, these results do not support empowerment as a major pathway from women's land rights to better child nutrition. Instead, the main pathway may be a more direct route through the larger income and resources that women's land rights provide.

[5]Adding empowerment measures to the health model to see whether the odds ratio for women's land rights changes is not an ideal test of whether empowerment is the main pathway from women's land rights to better child health. In this case, empowerment is an endogenous variable since, as shown in table 3, it is affected by women's land rights. To appropriately control for this endogeneity, models of child health that include both land rights and empowerment (models 2 and 3, table 4) should use an instrumental variable for empowerment. However, there are no instrumental variables available for empowerment. So this more limited approach is used. In these circumstances, it should be stressed that due to this endogeneity the magnitude of the relative effects of land rights and empowerment on children's health are not measured accurately in these models with both land rights and empowerment (models 2 and 3, table 4).

5. CONCLUSION

While it is increasingly recognized as important, the issue of women's land rights remains a difficult one. The argument is often made that empowering women, educating girls, and otherwise working to improve women's situation will ultimately benefit everyone. However, this argument is more difficult in the context of land, a finite resource. In Nepal, as in other countries, there is a clear resistance to women's equal inheritance rights, a primary means by which they would gain land. The land issue can appear as an intractable case of zero sum game; if women gain independent land rights, men will have to lose land. Thus, the structural quality of land, which places it at the heart of established power relations and makes it such a fundamental source of inequality, is simultaneously the barrier that stands in the way of it being addressed in a meaningful way. Further, the increasing pressure of growing populations on land, resulting land fragmentation, and resistance to women's inheritance create ambivalence among those who might be even the most avid supporters of women's land rights. As early as 1981, Acharya and Bennett (1981; 1983) recommended promoting women's property rights as a key element in promoting the status of women in Nepal. However, citing land fragmentation and the difficulty of the inheritance issue, they stressed that it should be a long term goal and, instead, emphasized moving women outside the subsistence economy.

In the face of such a sensitive and fundamental issue, it is critical to better understand the current and potential impacts of women's land rights. This analysis provides a rare empirical reflection on the claims that women's land rights empower women and benefit family welfare. These results show significant associations between women's land rights, empowerment, and child health. Nepali women who own land are more likely to have the final say in household decisions and their young children are less likely to be severely underweight. These results suggest that, yes, women's land rights do promote empowerment and child health in Nepal. Further, when comparing different sources of empowerment, land ownership is comparable to education and employment, both of which have received much more attention than land rights. Thus, while land ownership does not appear to be superior to education and employment, it may be just as effective as them. It should further be noted, however, that all of these sources of empowerment are not as influential as women's place in the family structure in determining women's decision making power in Nepal.

While these findings provide an initial step towards greater understanding with available data, it is clear that much further research is needed to confirm and extend the findings presented here. First, longitudinal studies, or at least retrospective questions, are needed to better capture how women acquire land and how it is connected to the process of empowerment. Are empowered women gaining land or are women landowners becoming empowered or both? Second, it is critical to explore how these relationships may vary across contexts. Apart from different cultural contexts, differences in local inheritance patterns may be crucial. For example, the effects of women's land rights may differ depending on how the women gained the land and whether women usually have inheritance rights.

Finally, it should be reiterated that the current effects of women's land rights may be quite different from their potential impact. In Nepal, as elsewhere, women landowners are rare and women with effective land rights are even rarer. It is likely that if Nepali women gain land rights in substantial numbers the cumulative and broader effects of these rights on a collective level will palpably differ from the household level effects of the rare individual woman who owns land.

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Table 1

Percentage of women having the final say on household decisions and percentage of children who are severely underweight by women's land ownership.

	Has final say on at least one decision alone or jointly %	Has final say on all four decisions alone or jointly %	Has final say alone %	Child is severely underweight %
Lives in landed household	47.9	12.1	20.2	13.7
Owns land herself	69.5	23.1	36.6	8.1
Lives in landless household	59.7	15.4	29.9	14.2
Total	52.3	13.8	23.7	13.5

Table 2

Descriptive statistics for variables used in models predicting women's empowerment and children's health.*

Variable	4,884 Women Empowerment Sample %	3,770 Women with Children Health Sample %
Empowerment scale	mn: 1.18 sd: 1.44	mn: 1.01 sd: 1.41
Final say alone	24	20
Child severely underweight	n/a	14
Urban residence	4	2
Hindu	86	83
Caste/ethnicity		
High caste	32	30
Tibeto-Burman	24	25
Other	44	46
Household wealth		
Highest	11	7
Intermediate high	20	18
Middle	20	19
Intermediate low	23	26
Lowest	26	30
Wife of household head	77	75
Age	mn: 32.2 sd: 9.0	mn: 28.7 sd: 6.5
Employment remuneration		
Unpaid	77	78
Paid in kind only	16	15
Paid in cash	8	7
Education		
None	80	81
Primary	13	13
Some secondary or more	7	6
Husband's education		
None or unknown	43	43
Primary	27	28
Some secondary	21	21
Completed secondary	9	9
Land rights		
Lives in landed household	71	74
Owns land herself	9	6
Lives in landless household	20	20
Owns livestock	29	27

*Percents are rounded to the nearest whole number and, thus, do not necessarily add to 100.

Source: Nepal Demographic and Health Survey, 2001

Table 3

Odds ratios from the ordered logit model of the empowerment scale and the logit model of the final say alone dummy, N = 4,884.

	Empowerment Scale OR	Final Say Alone OR
Urban residence	0.98	1.32
Hindu	1.33**	1.29*
Caste/ethnicity		
High caste	0.91	1.31*
Tibeto-Burman	1.31**	1.91***
Other (ref)	1.00	1.00
Household wealth		
Highest	1.52***	1.49**
Intermediate high	1.32**	1.31*
Middle	1.31**	1.34**
Intermediate low	1.19*	1.29**
Lowest (ref)	1.00	1.00
Wife of household head	4.60***	4.27***
Age	1.03***	1.02***
Education		
None (ref)	1.00	1.00
Primary	1.17*	1.41**
Some secondary or more	1.74***	1.82**
Employment remuneration		
Unpaid (ref)	1.00	1.00
Paid in kind only	1.25**	1.42**
Paid in cash	1.44**	2.25***
Owns livestock	1.32***	1.45***
Land ownership		
Lives in landed household (ref)	1.00	1.00
Owns land herself	1.50***	1.48***
Lives in landless household	1.18	1.26
−2 Log Likelihood	12,923	4,873
Model Chi-Square	566.6***	362.4***

* p<0.10

** p<0.05

*** p<0.01

Source: Nepal Demographic and Health Survey, 2001

Table 4

Odds ratios for logistic regression models of severely underweight children, N = 3,770.

	Model 1 OR	Model 2 OR	Model 3 OR
Urban residence	1.12	1.12	1.13
Hindu	1.19	1.19	1.20
Caste/ethnicity			
High caste	0.62**	0.62**	0.62**
Tibeto-Burman	0.39***	0.38***	0.39***
Other (ref)	1.00	1.00	1.00
Household wealth			
Highest	0.42***	0.43***	0.42***
Intermediate high	0.61**	0.61**	0.62**
Middle	0.47***	0.47***	0.47***
Intermediate low	0.75**	0.75**	0.75**
Lowest (ref)	1.00	1.00	1.00
Mother's age	1.02**	1.02**	1.02**
Mother's education			
None (ref)	1.00	1.00	1.00
Primary	0.85	0.84	0.85
Some secondary or more	0.61	0.60	0.61
Father's education			
None or unknown (ref)	1.00	1.00	1.00
Primary	0.93	0.93	0.93
Some secondary	0.61***	0.61***	0.61***
Completed secondary	0.46***	0.46**	0.46**
Mother owns livestock	1.03	1.03	1.04
Land ownership			
Lives in landed household (ref)	1.00	1.00	1.00
Mother owns land	0.53**	0.51**	0.54**
Lives in landless household	0.78	0.78	0.79
Mother's empowerment scale		1.05	
Mother has final say alone			0.85
−2 Log Likelihood	2,812.8	2,811.0	2,811.3
Model Chi-Square	78.7***	90.3***	79.1***

* p<0.10

** p<0.05

*** p<0.01

Source: Nepal Demographic and Health Survey, 2001