Father's Migration and Health of Children Left-Behind in Rural Mozambique

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Introduction

Numerous studies have examined the relationship between migration and health inequalities among young children (e.g., Avogo & Agadjanian 2010, Frank & Hummer 2002; Kiros & White 2004), some of them focusing specifically on children in the migrant-sending communities (e.g. Kanaiaupuni & Donato 1999, Yabiku, Agadjanian, & Cau 2012, Hildebrandt et al. 2005). In many developing settings, migration is a common family strategy that has been fueled by better employment opportunities in host societies. In such settings, while improvements in health are likely to arise from the inflow of resources generated by migrant remittances, the social disruptions caused by parents' migration and the transformation in the family arrangements due to their prolonged absence can have a detrimental effect on children's health. These effects can vary across time: thus in earlier stages of migration, parental absence can have a negative impact on child's health, but in more advanced stages, remittances can improve health outcomes, compensating for the initial deleterious influences.

This paper examines the effect of fathers' migration on health outcomes of children left behind in rural southern Mozambique, a setting of a traditionally high male labor out-migration, primarily to South Africa (de Vletter 2007). Using data from a household survey conducted in 2011, we investigate the association between father's migration and two health indicators of children aged 6 to 59 months—low height-for-age (chronic malnutrition, or stunting) and age-

adequate immunization. We build on the previous literature that treats migration as a cumulative process and argues that the effects of migration vary depending on its stage and duration.

Multilevel logistic regression models do not detect any significant effects of migration on child's health when migration is defined as father's current status. However, when we use the proportion of child's lifetime that the father has spent in migration, results show that father's absence has significant effects on the two selected child health outcomes. Yet, these effects are in opposite directions. Specifically, the proportion of child's life spent away by the migrant father is associated with a significant decrease in the likelihood of a child being stunted (having low height for age), At the same time, the higher the share of a child's lifetime that the father is away, the lower the chances of the child having received adequate immunization. Moreover, when looking at these associations by child's gender, we find that both effects are statistically significant only for girls. We interpret these results in light of the social meaning of labor migration and of gender roles and ideology in this sub-Saharan setting.

Background

The literature on the effects of migration on those left behind has dealt with various economic and social outcomes, including health outcomes of children in sending communities (Creighton, Goldman, Teruel, & Rubalcava 2011, Kanaiaupuni & Donato 1999, McKenzie 2006, Mansuri 2006, Yabiku et al. 2012, Frank and Hummer 2002). It has been argued that migration can affect health of the children left behind through different pathways: by changing household welfare, altering family dynamics, and by making information on different life styles and health care practices available (Cortes 2007).

On the one hand, migration-generated remittances can change economic resources and investments patterns in the sending households and communities, improving children's diet and

their access to consumer goods and to health services. On the other hand, father's migration can disrupt household's previous arrangements and the division of domestic responsibilities (Pessar & Mahler 2003), creating a disproportionate burden of care on the mother (Yabiku, Agadjanian, & Sevoyan 2010). Given the decrease in time availability because of the father's absence, the child may be less likely to receive some forms of health inputs (McKenzie 2006). Second, the absence of an adult person can result in production loss in the household economy, which may not be compensated by remittances (de la Garza 2010). Finally, migration can affect family structure and family stability. The loss of intimacy and family life can lead to the breakdown of family ties (Gordon 1978, Gordon 1981), increasing women's and children's economic and emotional vulnerability.

Most research on the effects of migration on child's health in sending communities has examined the relationship of migration with child mortality. Studies have found a positive association between remittances and children's likelihood of survival (Lopez 2005, Duryea et al 2005, Frank & Hummer 2002). Similarly, Hildebrandt et al. (2005) found that children in migrant households in Mexico experience lower infant mortality and are less likely to have low birth weight. Yabiku et al. (2012) examine the effect of migration on child mortality in rural Mozambique and show that children whose fathers are economically successful migrants have lower mortality rates than their peers whose fathers are non-migrants, or unsuccessful migrants. Research focusing specifically on male labor migration and nutrition and vaccination of children left behind is scarcer and has produced mixed results. McKenzie (2006) analyzes the relationship between migration and child's health using a nationally representative sample of migrant households in Mexico. The author argues that children with a migrant father are less likely to receive adequate vaccination, and stresses the need to investigate the causes of reduced access to

preventative health care in migrant households. Hildebrandt et al. (2005) in their analysis of access to preventative health care in Mexico also find a negative effect of migration on the likelihood of having adequate immunization for age, among other outcomes. Mansuri (2007)'s study focuses on Pakistan rural households and provides evidence on the relationship between migration and child's nutrition. The author finds a positive impact of migration on two different measures of nutrition, low weight-for-age (acute malnutrition), and low height-for-age (chronic malnutrition). When examining gender differences in the effect of migration on child's growth, that study shows that although boys are taller than girls in non-migrant households, girls do better than boys when in migrant families (Mansuri 2007).

The relationship between migration and health is complex, manifesting itself differently depending on migration stage and duration (Kanaiaupuni & Donato 1999, Cortes 2007). For example, Kanaiaupuni and Donato (1999) argue that the impact of migration on health may not be seen in early stages of migration. According to the authors, households and communities slowly adapt to the transformations caused by the migration process, and health outcomes responses to migration vary with time (Kanaiaupuni & Donato 1999). They argue that in an early stage, child's health outcomes can suffer due to the disruption caused by parental migration in the household's division if labor and income. However, in a later stage, the disruptive effects on health decrease as the household adapts to the migrant's absence and the migrant's ability to remit increases (Kanaiaupuni & Donato 1999).

Hypothesis

To assess the relationship between male labor migration and the two child's health outcomes of interest, and to examine how this relationship might unfold over time, we test a set of hypotheses using two different measures of migration. First, we investigate the association

between current migration and chronic malnutrition, and current migration and age-adequate immunization. Second, considering that migration is a cumulative process and it can affect child's health differently depending on its timing and duration, we use a time-sensitive definition of migration. Specifically, we use the proportion of child's lifetime that her/his migrant father was away as an indicator of how much time the child has been exposed to the effects of parental migration. Both chronic malnutrition and adequate immunization are outcomes of cumulative nature, which makes the second approach even more appropriate. Chronic malnutrition is a measure of cumulative inadequacies in the nutritional and health status of a mother before and during pregnancy, and of a child in the early years of life (Unicef 2011), while an adequate immunization schedule is built since the child's first days of life.

Additionally, we test for differences in the association of migration and health by child's gender. Separate analysis for girls and boys are important because, as shown by previous literature on gender differences in health outcomes (Das Gupta 1990, Hill & Upchurch 1995), son preference and sex-biased attitudes regarding the use of health services and parental care are common in patrilineal, traditionally organized settings such as rural southern Mozambique.

We formulate our hypotheses as sets of alternatives reflecting different definitions of migration and different assumptions about the impact of migration on left-behind families and households.

H1a. Father's current migration status will be associated with lower chances of a child being chronically malnourished. This hypothesis is based on the assumption that migration increases economic and dietary resources in the household.

H1b. Father's current migration status will be associated with higher chances of a child being chronically malnourished. This hypothesis stems from the assumption that migration disrupts

household arrangements and family stability, and its disruptive effects may not be fully compensated by remittances.

H2a. Father's current migration status will be associated with higher chances of a child having age-adequate immunization (the same rationale as for H1a).

H2b. Father's current migration status will be associated with lower chances of a child having adequate immunization (the same rationale as for H1b).

H3a. The higher the proportion of a child's life that his/her father is away, the lower the chances of the child being chronically malnourished. This hypothesis is based on the assumption that the migrant's ability to remit may increase with time, as does the households ability to adapt to his absence. Children whose father has been migrating for a large proportion of their life may have been more exposed to the benefits of the flow of resources in the household provided by migration.

H3b. The higher the proportion of a child's life that his/her father is away, the higher the chances of the child being chronically malnourished. This hypothesis is based on the assumption that the migrant's longer absence may weaken the bond with the family, resulting in higher economic and emotional vulnerability.

H4a. The higher the proportion of a child's life that his/her father is away, the higher the chances of the child having age-adequate immunization (the same rationale as for H3a).

H4a. The higher the proportion of a child's life that his/her father is away, the lower the chances of the child having age-adequate immunization (the same rationale as for H3b).

H5a. Father's migration will be associated with lower chances of being chronically malnourished for girls. This hypothesis is based on the assumption that girls may profit more from the improved maternal autonomy gained with the father's absence. Moreover, they may be more likely to benefit from additional income provided by migration if their male siblings are considered as "priorities" in the allocation of household resources.

H5b. Father's migration will be associated with higher chances of being chronically malnourished for girls. This hypothesis is based on the assumption that the disruptive effect of father's migration may not be compensated by remittances, increasing the economic vulnerability of the family, and leaving females with less access to resources in a setting where sons are prioritize.

H6a. Father's migration will be associated with lower chances of being chronically malnourished for boys. This hypothesis is based on the assumption that they may profit from the flow of resources in the household provided by remitances.

H6b. Father's migration will be associated with higher chances of being chronically malnourished for boys. This hypothesis is based on the assumption that the disruptive effect of migration on family life may not be fully compensated by remittances.

H7a. Father's migration will be associated with higher chances of having age-adequate immunization for girls (the same rationale as for H5a).

H7b. Father's migration will be associated with lower chances of having age-adequate immunization for girls (the same rationale as for H5b).

H8a. Father's migration will be associated with higher chances of having age-adequate immunization for boys (the same rationale as for H6a).

H8b. Father's migration will be associated with lower chances of having age-adequate immunization for boys (the same rationale as for H6b).

Data and methods

The data for the present study come from a representative survey of women of reproductive age conducted in 2011 in rural areas of four contiguous districts (total area 5900 square miles, population 625,000) of Gaza province in southern Mozambique. The sample includes women from 56 villages in 14 districts, who were first interviewed in 2006. The 2011 survey collected detailed demographic and socioeconomic information, including household material status, household composition, pregnancy histories, reproductive intentions, husband's migration history, and women's perceived HIV status. The survey also collected detailed information on vaccination history and anthropometrics for children below age 5, and schooling for all members in the household between 5 and 18 years old. In parallel with the individual women's survey, a community survey was carried out in each of the villages in the sample.

The analytical sample of this study consists of 1305 children aged 6 to 59 months who were identified in the household roster as being the respondent's children. The average number of children per household in the analytical sample is 1.9. Because we cannot identify the main caregiver for the non-biological children in the extended family context, and respondent's characteristics may not be directly associated to their non-biological children, we restrict our sample to biological children only. In 2011, 72.6% of children between 6 and 59 months old living in the households included in the total sample were respondent's biological children.

Information on the relationship to the respondent and children's sex and age is drawn from the household roster, while our two outcomes of interest – adequate immunization and nutrition - are drawn from the vaccination and anthropometrics modules.

Dependent variables

The dependent variables of interest are chronic malnutrition and adequate immunization for children between 6 and 59 months in 2011. Information collected on immunization was recorded based on the child's vaccination card. When the card was not available, the vaccination schedule was recorded based on mother's recall. In Mozambique, the Expanded Program on Immunization (EPI) targets seven major diseases, namely measles, diphtheria, tetanus, tuberculosis, poliomyelitis, pertussis, and hepatitis B (Jani et al. 2008). The basic vaccination schedule includes BCG (at birth), DTP (at 6, 10 and 1 weeks), measles (at 9 months), OPV (at birth, 6, 10 and 14 weeks) (Unicef 2011). For the analysis of immunization status we constructed a variable indicating if the child has "adequate immunization" for age. The dichotomic variable was calculated comparing the child's age in months and the compliance to the basic vaccination schedule appropriate up to that age. If the child missed one or more doses, the variable is coded 0, and if all doses recommended up to that age were taken, the variable is coded 1.

Information on children's nutritional status comes from anthropometric measures recorded in 2011. The measures available include child's age, weight in kilograms, and height in centimeters. Based on these measures we calculate the height-for-age z-scores in accordance to the WHO (1983) distribution. Children whose z-score were less than -2SD were considered stunted (chronic malnutrition).

Independent variables

The primary independent variable is male labor migration status. First, we use a simple migrant/not-migrant dichotomy as the migration indicator. Men were coded not-migrants if women reported that their partner spent all nights outside her community in the past 30 days. All other men were coded as migrants. Second, we use a cumulative measure of migration to capture the effect of duration of father's migration over child's health outcomes. The variable is constructed as the proportion of child's lifetime spent away by the father, and is calculated as a ratio between the time spent migrating by the father since the child was born (in years), and child's age (in years). It varies between 0 and 1.

Controls

In addition to these main independent variables of interest, a set of control variables related to children's health outcomes and migration status is included in the multivariate analysis. Models control for: child's age, child's sex, number of children aged 5 or less, mothers' age, mother's educational level, mother's work outside the house, and mother's perceived HIV status in 2011.

To account for differences in household socioeconomic status, we create an index of household's standard of living indicating ownership of selected consumer goods (radio, bicycle, car or motorcycle), and control for size of agricultural land. Multivariate models also control for distance to the nearest clinic to account for possible differences in access to health services and urbanization level.

Methods

The analysis uses multilevel logistic regressions to estimate the probability of being stunted or having adequate immunization in 2011. Because of the design of the survey sample, in which the primary unit of analysis was the woman, observations are not independent when we change the focus to children. Children are clustered within respondents' household, and therefore women's characteristics are repeated for children living in the same household. To account for this non-independence of observations we fitted a two-level model with random intercept and slopes at the first level (child), and random intercept only at the second level (woman).

Preliminary results

As can be seen in the descriptive statistics displayed in table 1, the overall prevalence of chronic malnutrition in children aged 6 to 59 months is around 28%, which is considered "very high" by the WHO. The prevalence of stunting is higher for boys than girls, and seems to be related with a lower measure of socioeconomic status and smaller agricultural land. 52% of the children in the sample have adequate immunization for age, but the difference by child's gender is in the opposite direction. In this case, boys are more likely than girls to have been fully immunized.

Father's migration status is related with a lower prevalence of chronic malnutrition. Similarly, a higher proportion of child's life spent away by the father is positively related with a lower prevalence of stunting. Father's whose children suffer with chronic malnutrition spent on average 66% of the child's lifetime away, while among children with desirable height-for –age, the proportion time the father was absent is of 71%. However, the proportion of child's life spent away by the father is lower among children with adequate immunization in comparison with their peers who have not received complete vaccination.

The mean share of child's life spent away by the father in the total sample is 67%, a high proportion if we consider that only 34% of the children have fathers who were currently absent at the time of the survey. For instance, the mean time spent away by fathers who were currently not migrating is around 50% of the child's life. This indicates how current migration status may not accurately capture the effect of male migration on child's health outcomes. If we do not consider differences in the cumulative migration experience of the father, children who have been affected by parental migration in the past for a significant share of her/his lifetime would be treated as a child from a non-migrant household. At the same time, a child whose father is absent but have spent most of the child's life in the community would be placed in the same group as those whose father have been away since the child's birth. The children in this spectrum are likely to have been differently affected by remittances and the family transformations caused by migration.

The positive association between migration and chronic malnutrition can also be seen in the multivariate analysis in table 2. In model 1, father's current migration status is not significant for child's likelihood of being stunted. However, when we consider the proportion of the child's lifetime spent away by the father instead of current migration status in model 2, the association is negative and significant. Therefore, the higher the share of a child's lifetime spent away by the father, the lower the chances of the child having chronic malnutrition. The separate models by gender show that the effect of proportion of child's lifetime that the father spent away significantly affects the chances of being stunted for daughters, but it is not statistically significant for sons.

Table 3 presents the multivariate analysis for adequate immunization. Similarly to chronic malnutrition, current migration status is not significant to child's immunization, as

shown by model 1. In model 2, the proportion of child's lifetime spent away by the father is significant and has a negative relationship with adequate vaccination for children between 6 and 59 months. Children whose father has spent a lower portion of their child's lives migrating are more likely to have a received all vaccines appropriate for their age. Thus, children whose father has been absent for a longer time are less likely to have access to preventive health care. Moreover, if we split the sample by gender of the child, the significant effect of migration in model 2 holds only for girls.

Discussion and next steps

Our preliminary results show the importance of considering a cumulative measure of father's migration to analyze the effect of his migration on child's health outcomes. While the dichotomy migrant/not-migrant based on current migration status does not capture differences in the chances of having chronic malnutrition and adequate immunization for age, the proportion of child's lifetime spent away by the father is a significant predictor of both outcomes. In support of our Hypothesis H3, we find that a child whose father has been in migration for a higher portion of her/his lifetime is less likely to be chronically malnourished. Our results also show that the smaller the proportion of child's lifetime the father have been absent, the greater the chances of her/him having adequate immunization, which supports our Hypothesis H4b.

When we split our sample by gender of the child, the association between the proportion of child's lifetime spent away by the father and child's nutrition and vaccination outcomes is only significant for girls. The result for chronic malnutrition supports our Hypothesis H5a. Girls may benefit more from father's longer migration since their birth. We speculate that the longer portion of girls' lifetime spent away by the father may give the mother greater autonomy, as shown by Yabiku, Agadjanian, and Sevoyan (2010), which could create a more favorable

environment for girls in the household. Moreover, if sons are prioritized in the household allocation of resources, the increment in wealth provided by the father's longer migration can help targeting girls' needs, which might not happen otherwise. Yet, a higher portion of girl's lifetime spent migrating by the father is also associated with lower chances of receiving preventative health care. This result supports our Hypothesis H7b. Previous research have documented the detrimental effect of migration on immunization (Hildebrandt et al. 2005, McKenzie 2006), but have not investigated gender differences on the association between father's migration and child's access to adequate vaccination.

The full paper will test possible pathways to the relationship between father's migration and child's chronic malnutrition and adequate vaccination. We speculate that the economic improvement promoted by father's migration may be an important mechanism through which father's prolonged absence is associated with lower chances of chronic malnutrition for children. Although the effect of remittances cannot be directly tested, it is possible to look at changes in the household wealth overtime by taking advantage of the longitudinal design of the survey. Moreover, characteristics related to family arrangements and family structure will be used to investigate mechanisms related to the disruptive effect of migration in the family life, which can be related to the detrimental effect of parental migration on child's chances of accessing preventative health care.

References

Cortés, R. 2007. Remittances and children's Rights: an overview of Academic and policy Literature. UNICEF Division of Policy and Planning Working Papers.

Creighton, M. J., Goldman, N., Teruel, G., & Rubalcava, L. 2011. Migrant networks and pathways to child obesity in Mexico. *Social Science & Medicine*, 72, 685-693.

Das Gupta, M. 1990. Death clustering, mother's education and the determinants of child mortality in rural Punjab, India. *Population Studies*, 44, 489–505.

de la Garza, R. 2010. Migration, development and children left behind: A multidimensional perspective. Social and Economic Policy working paper. New York: UNICEF.

Duryea, S., López Córdova, E., & Olmedo, A. 2005. Migrant remittances and infant mortality: Evidence from Mexico. Mimeo, Inter-American Development Bank.

Frank, R., & Hummer, R. A. 2002. The other side of the paradox: the risk of low birth weight among infants of migrant and nonmigrant households within Mexico. *International Migration Review*, 36(3), 746-765.

Gordon, E. 1978. The women left behind: A study of the wives of the migrant workers of Lesotho. Geneva: International Labour Office.

—. 1981. An analysis of the impact of labour migration on the lives of women in Lesotho. *Journal of Development Studies,* 17(3):59-76.

Hildebrandt, N., McKenzie, D. J., Esquivel, G., & Schargrodsky, E. 2005. The effects of migration on child health in Mexico. *Economia*, 6(1), 257-289.

Hill, K., & Upchurch, D. M. 1995. Gender differences in child health: Evidence from the demographic and health surveys. *Population and Development Review*, 21, 127–151.

Jani, J. V., De Schacht, C., Jani, I. V., and Bjune, G. 2008. Risk factors for incomplete vaccination and missed opportunity for immunization in rural Mozambique. *BMC Public Health*, 8(1): 161.

Kanaiaupuni, S. M., & Donato, K. M. 1999. Migradollars and mortality: the effect of migration on infant survival in Mexico. *Demography*, 36(3), 339-353.

Kiros, G. E., & White, M. J. 2004. Migration, community context, and child immunization in Ethiopia. *Social Science & Medicine*, 59, 2603-2616.

Mansuri, G. 2007. Does Work Migration Spur Investment in Origin Communities? Entrepreneurship, Schooling, and Child Health in Rural Pakistan. In: Ozden, C. & M. Schiff (eds), International Migration, Economic Development and Policy. Macmillan-World Bank: Washington DC.

Massey, D. S., Goldring, L., & Durand, J. 1994. Continuities in transnational migration: An analysis of nineteen Mexican communities. *American Journal of Sociology*, 1492-1533.

McKenzie, D. 2006. Beyond Remittances: The Effects of Migration on Mexican Households, in http://web.worldbank.org/

World Health Organization. 1983. Measuring change in nutritional status. Guidelines for assessing the nutritional impact of supplementary feeding programmes for vulnerable groups. Geneva: WHO.

Unicef. 2011. Child Poverty and Disparities in Mozambique 2010.

Vletter, F. 2007. Migration and development in Mozambique: Poverty, inequality and survival. Development Southern Africa 24(1): 137-153.

Yabiku, S. T., Agadjanian, V., and Sevoyan, A. 2010. Husbands labor migration and wives autonomy, Mozambique 200-2006. *Population Studies* 64(3): 293-306.

Yabiku, Scott T., and V. Agadjanian, and Boaventura Cau. 2012. Labor migration and child mortality in Mozambique, *Social Science & Medicine* 75(12): 2530-2539.

Table 1 Descriptive statistics: child malnutrition and age-adequate immunization by child's sex, Mozambique, 2011 (percent or mean)

	Chronic malnutrition						Adequate immunization					
	Total		Females		Males		Total		Females		Males	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total sample	27.9	72.1	25.7	74.2	32.5	67.4	52.4	47.6	51.9	48.0	52.4	47.5
Child's age (in months)	31.6	32.1	31.5	32.3	31.7	31.8	33.2	30.1	33.4	30.0	33.0	29.8
Household characteristics												
Size of agricultural land (in hec)	1.7	1.9	1.7	1.9	1.7	1.9	1.9	1.8	1.9	1.8	1.8	1.8
Household economic status index	2.1	2.2	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1
Distance to nearest clinic (in km)	5.4	5.8	5.0	5.8	5.7	5.9	5.8	5.6	5.8	5.4	5.8	5.8
Number of siblings aged less than 5 years	2.9	2.9	3.0	2.9	2.8	2.9	2.8	3.1	2.8	3.1	2.7	3.0
Mother's characteristics												
Age												
Less than 25	13.9	14.7	13.0	14.6	14.5	14.3	14.2	14.7	14.3	14.0	14.1	14.9
25 to 29	25.2	23.9	24.6	25.3	25.8	23.0	24.7	23.8	23.6	27.1	26.2	20.9
30 to 34	27.2	25.9	26.7	25.1	27.6	26.2	27.2	25.0	27.0	23.6	27.0	26.2
35 or more	28.1	30.7	29.1	30.5	27.3	31.7	29.1	31.1	30.3	29.9	27.7	33.7
Education												
No education	25.5	24.9	26.7	24.1	24.6	26.5	24.3	26.2	23.3	26.7	25.5	26.2
1 to 4 years	44.0	45.3	43.6	45.1	44.4	45.3	44.3	45.8	44.2	45.4	44.2	46.1
5 years or more	30.5	29.8	29.7	30.8	31.1	28.3	31.5	28.0	32.4	27.9	30.4	27.7

Table 1 Descriptive statistics: child malnutrition and age-adequate immunization by child's sex, Mozambique, 2011 (percent or mean) (Continue)

	Chronic malnutrition						Adequate immunization					
	Total		Females		Males		Total		Females		Males	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Work outside the household	33.8	30.5	34.8	31.5	33.0	29.5	31.7	31.4	34.4	29.5	28.9	33.3
Does not work outside the household	66.2	69.5	65.2	68.6	67.0	70.5	68.3	68.6	65.6	70.5	71.1	66.7
Possible HIV positive	39.5	42.8	40.6	40.9	38.6	43.4	42.6	40.6	43.1	37.7	41.0	42.8
Not possible HIV positive	60.5	57.2	59.4	59.1	61.4	56.6	57.4	59.4	56.9	62.3	59.0	57.2
Migration status												
Migrant husband	34.2	35.6	35.2	33.2	33.3	38.0	35.4	34.9	33.9	33.6	36.6	36.2
Not a migrant husband	65.8	64.4	64.9	66.8	66.7	62.0	64.6	65.1	66.1	66.4	63.4	63.8
Proportion of child's life spent away	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.7	0.7

Source: Childbearing Dynamics in a Setting of High HIV Prevalence and Massive ART Rollout Survey, 2011.

Table 2 Effect of male labor migration on child's likelihood of being chronically malnourished, Mozambique 2011

	Model 1			Model 2		
	Total	Females	Males	Total	Females	Males
	B	B	B	B	B	B
Age	0.00	0.00	0.00	0.00	0.00	0.00
Female	-0.44***	-	-	-0.43***	-	-
Household characteristics						
Size of agricultural land	-0.01	0.04	-0.04	-0.01	0.04	-0.04
Household economic status index	-0.12*	-0.18*	-0.07	-0.11	-0.15	-0.07
Distance to nearest clinic	-0.02	-0.04*	0.00	-0.02*	-0.05**	0.00
Number of siblings aged less than 5 years	0.00	0.02	-0.02	0.00	0.02	-0.01
Mother's characteristics						
Age (omitted= 35 or more)						
Less than 25	0.21	0.11	0.28	0.26	0.21	0.29
25 to 29	0.14	0.08	0.20	0.19	0.19	0.20
30 to 34	0.15	0.05	0.24	0.18	0.11	0.25
Education (omitted= no education)						
1 to 4 years	0.07	0.25	-0.08	0.02	0.12	-0.08
5 years or more	-0.03	0.02	-0.07	-0.07	-0.03	-0.1
Work outside the household	0.12	0.20	0.01	0.11	0.19	0.00
Possible HIV positive	-0.04	-0.04	-0.09	-0.02	-0.01	-0.06
Migration status						
Migrant husband	-0.10	0.13	-0.33	-	-	-
Proportion of child's life spent away	-	-	-	-0.18*	-0.25*	-0.12
Intercept	-0.21	-0.60	-0.27	-0.03	-0.21	-0.28
N	1303	677	626	1303	677	626

Source: As for table 1. * p<.05; ** p<.01; *** p<.001.

Table 3 Effect of male labor migration on child's likelihood of having adequate immunization for age, Mozambique 2011

	Model 1			Model 2		
	Total	Females	Males	Total	Females	Males
	B	B	B	B	B	B
Age	0.01***	0.01**	0.01**	0.01***	0.01	0.01**
Female	-0.09	-	-	-0.09	-	-
Household characteristics						
Size of agricultural land	0.02	0.06	-0.02	0.02	0.06	-0.01
Household economic status index	0.05	-0.06	0.17*	0.06	-0.03	0.17
Distance to nearest clinic	0.01	0.02	0.00	0.00	0.01	0.00
Number of siblings aged less than 5 years	-0.15**	-0.16**	-0.16*	-0.15**	-0.15*	-0.16
Mother's characteristics						
Age (omitted= 35 or more)						
Less than 25	0.00	0.03	-0.03	0.05	0.10	0.00
25 to 29	0.04	-0.36	0.53*	0.12	-0.28	0.61*
30 to 34	0.27	0.13	0.42	0.32*	0.15	0.5*
Education (omitted= no education)						
1 to 4 years	-0.15	-0.15	-0.23	-0.23	-0.24	-0.32
5 years or more	-0.27	-0.22	-0.43	-0.33*	-0.26	-0.5*
Work outside the household	-0.17	-0.04	-0.29	-0.19	-0.06	-0.34
Possible HIV positive	-0.08	0.00	-0.19	-0.06	0.02	-0.17
Migration status						
Migrant husband	-0.01	-0.16	0.15	-	-	-
Proportion of child's life spent away	-	-	-	-0.21*	-0.28*	-0.14
Intercept	0.46	0.57	0.32	0.72*	0.91*	0.53
N	1303	677	626	1303	677	626

Source: As for table 1. * p<.05; ** p<.01; *** p<.001.