PAA Extended Abstract

A cross-country analysis of urban-rural differences in child health outcomes: The impact of ideal family size and parity

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Reducing the under-5 mortality rate represents United Nation's Millennium Development Goal (MDG) 4 (Kinney et al. 2010). Rural-urban differences in child mortality have been well-documented (Bocquier et al. 2011, Van de Poel et al. 2009). Parity has been documented as a key predictor of child health (Cunningham et al. 2010, Muula et al. 2011). However, prior literature on urban-rural health differences by parity is scarce, as well as on how urban-rural health gaps differ between countries. Because of the difference in ideal number of children between rural and urban families (Van de Poel 2009), I expect parity to function differently by remoteness with ideal number of children to moderate the effect of parity on child health outcomes in sub-Saharan Africa.

The analysis will contain five health outcome dependent variables. Two are prenatal care measures: number of prenatal health facility visits and timing of the first prenatal health facility visit, categorized into four and three categories respectively. The other three are postnatal measures of health: low birth weight (LBW) defined as being <2,500 grams (Kinney et al. 2010, Muula et al. 2011), stunting, and whether the child is alive. The first two will be dichotomized, the latter is inherently binary. The strength of my health outcome indicators is that they tap into the quality of the child's health as opposed to an absolute measure such as mortality, which does not indicate the health status of those still alive.

Parity, ideal number of children, and spacing will be my focal explanatory variables. I have not examined my independent variables yet, but it has been well-documented that they are important predictors of health outcomes (Bocquier et al. 2011, Johnson-Hanks 2007). Comparing urban-rural infant mortality in sub-Saharan Africa has been thoroughly researched, but not particularly by other measures of child health. Some evidence exists that higher parity mothers have experiences to draw from and low parity mothers have greater risk of LBW (Muula AS et al. 2011). However, more research needs to verify this finding (Kravdal 2011).

Spacing is meaningfully different in sub-Saharan Africa then elsewhere. African women's birth intervals differ less by parity than do the intervals of women from more developed parts of the world. Also the inter-birth spaces are much greater in SSA (Johnson-Hanks 2007). The length of inter-birth intervals is a significant predictor of infant and child mortality and thus will be included in the study (Hale et al 2009).

The controls will include SES measured by the household wealth index, access to health facility, mother and partner's education, age of mother at birth, marital status and others. Traditions, social norms, and attitudes also need to be accounted for (Van de Poel 2009). It has been documented that the rural-urban gaps in child malnutrition disappear when SES is controlled (Fotso 2007).

I chose to study Niger, Ethiopia, and Namibia for this analysis. These three were chosen to represent different stages of the fertility transition in the study. Niger is a nation experiencing little or no decline with a TFR of 7.0 (NIS 2006). Ethiopia is further along the transition in a stage of moderate decline with a TFR of 5.4 (CSA 2006). Namibia has experienced substantial decline with a TFR of 3.6 (MoHSS 2008).

The data used for this study are from the Demographic and Health Surveys (DHS) Phase V Individual Recode File for Niger (2006), Ethiopia (2005), and Namibia (2006-07). These individual recode files contain information on the mother and child. The analytical population for each country is women with at least one birth in the last five years. Those who were missing for any of the three health outcome measures were dropped from the sample. The Niger sample had 5,884 women with a child in the last five years. This decreased to 5,856 after the missing observations were dropped. Ethiopia dropped from 6,589 to 6,525[1] and Namibia dropped from 4,029 to 3,618. Reducing infant and child mortality are contributors to sustained fertility decline (Shapiro and Gebreselassie 2008).

I find support in my preliminary findings for the urban-rural divide in child health outcomes. For all three health indicators, a higher proportion of the rural population is worse off for each country compared to the urban population. A notable discovery is that the urban-rural divide generally shrinks as TFR decreases. I plan to add three more countries to the analysis, again, each at one of the three major stages of the fertility transition to enhance the comparative power of the study. I expect to continue to see lower TFR countries to have a narrower urban-rural gap.

Since my health measures are either binary or ordered categorical with more than two categories, I will explore multivariate regression analysis by using logistic regression. In separate models I will regress the child health indicators on my five explanatory variables. I will expect an interaction effect between parity and ideal family size. The reason for not looking into maternal health, despite it being MDG 5 is because a key focus of the study is on how ideal family size interacts with parity on child health outcomes and so the theoretical grounding is on how the desirability of a birth effects the health outcome of that child, not the health outcome of the mother. Although some child health indicators such as prenatal visits are also indicators of maternal health, they will not be used for that purpose in this study.

Understanding which populations are at greatest risk of poor child health outcomes will allow donor funds to be used more efficiently to meet these goals. If parity is associated with rural-urban health differences, family planning and health programs would make more efficient use of funds by diverting a greater proportion to higher parity mothers. To achieve the MDGs, cost effective results can be achieved by targeting populations in most need. These are often remote populations, and as my preliminary results provide evidence for, the most vulnerable may indeed be high fertility remote populations.

Note:
1. One rural observation indicated 11 for month into pregnancy at time of first prenatal visit. This observation was dropped due to inconceivability.

Table 1: Urban-rural differences in child health outcomes

Variable		Niger					Ethiopia				
		Urban		Rural		Total	Urban		Rural		Total
		Frequency	Percent	Frequency	Percent		Frequency	Percent	Frequency	Percent	
Number of Prenatal Visits	No Visits	177	11.20	2,361	60.65		255	30.35	4,187	75.99	
	1-2	355	21.89	720	14.83		41	4.54	480	9.64	
	3-4	909	53.10	926	20.50		199	21.82	548	10.06	
	5+	239	13.81	169	4.02		542	43.28	2732	4.31	
	Total	1,680	100	4176	100	5,856	1,037	100	5,488	100	6,525
Timing of First Prenatal Visit	No Visit	177	11.20	2,361	60.65		255	30.35	4,187	75.99	
	No Visit in First 3 Months	1,456	86.17	1,773	38.28		654	60.64	1,246	23.19	
	Visit in First 3 Months	47	2.64	42	1.07		128	9.01	55	0.83	
	Total	1,680	100	4,176	100	5,856	1,037	100	5,488	100	6,525
Child is Alive	No	74	4.50	281	7.40		44	5.64	343	6.45	
	Yes	1,606	95.50	3,895	92.60		993	94.36	5,145	93.55	
	Total	1,680	100	4,176	100	5,856	1,037	100	5,488	100	6,525

		Namibia				
		Urban		Rural		Total
		Frequency	Percent	Frequency	Percent	
Number of Prenatal Visits	No Visits	39	3.24	115	5.06	
	1-2	85	5.08	168	7.08	
	3-4	370	22.43	619	29.32	
	5+	968	69.25	1,254	58.54	
	Total	1,462	100	2,156	100	3,618
Timing of First Prenatal Visit	No Visit	39	3.24	115	5.06	
	No Visit in First 3 Months	1,217	79.74	1,837	86.03	
	Visit in First 3 Months	206	17.02	204	8.91	
	Total	1,462	100	2,156	100	3,618
Child is Alive	No	74	4.22	105	4.86	
	Yes	1,388	95.78	2,051	95.14	
	Total	1,462	100	2,156	100	3,618

Notes:
Percents are weighted

References

Bongaarts, J. (2008). Fertility transitions in developing countries: Progress or stagnation? *Studies in Family Planning, 39*(2), 105-110.

Central Statistical Agency [Ethiopia] and ORC Macro. 2006. *Ethiopia Demographic and Health Survey 2005: Key Findings*. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ORC Macro.

Cunningham, S., Elo, I., Herbst, K., & Hosegood, V. (2010). Prenatal development in rural south africa: Relationship between birth weight and access to fathers and grandparents. *Population Studies - A Journal of Demography, 64*(3), 229-246.

Fotso, J., Ezeh, A., Madise, N., Ziraba, A., & Ogollah, R. (2009). What does access to maternal care mean among the urban poor? factors associated with use of appropriate maternal health services in the slum settlements of nairobi, kenya. *Maternal and Child Health Journal, 13*(1), 130-137.

Giroux, S. C., Eloundou-Enyegue, P. M., & Lichter, D. T. (2008). Reproductive inequality in sub-saharan africa: Differentials versus concentration. *Studies in Family Planning, 39*(3), 187-198.

Gyimah, S. O. (2009). Polygynous marital structure and child survivorship in sub-saharan africa: Some empirical evidence from ghana. *Social Science & Medicine (1982), 68*(2), 334-342.

Hale, L., DaVanzo, J., Razzaque, A., & Rahman, M. (2009). Which factors explain the decline in infant and child mortality in matlab, bangladesh? *Journal of Population Research*, *26*(1), 3-20.

Hindin, Michelle J., & Adesegun O Fatusi. (2009). Adolescent sexual and reproductive health in developing countries: An overview of trends and interventions. *International Perspectives on Sexual and Reproductive Health, 35*(2), 58.

Johnson-Hanks, J. (2007). Natural intentions: Fertility decline in the african demographic and health surveys. *American Journal of Sociology, 112*(4), 1008-1043.

Kinney, M. V., Bergh, A., Chopra, M., Diab, R., Friberg, I., Odubanjo, O., Science in Action: Saving the Lives of Africa's Mothers. (2010). Sub-saharan africa's mothers, newborns, and children: Where and why do they die? *PLoS Medicine, 7*(6), e1000294.

Kravdal, O., & Kodzi, I. (2011). Children's stunting in sub-saharan africa: Is there an externality effect of high fertility? *Demographic Research, 25,* 565-594.

Magadi, M. A. (2011). Cross-national analysis of the risk factors of child malnutrition among children made vulnerable by HIV/AIDS in sub-Saharan africa: Evidence from the DHS. *Tropical Medicine & International Health, 16*(5), 570-578.

Ministry of Health and Social Services (MoHSS) [Namibia] and Macro International, Inc. 2008. Namibia Demographic and Health Survey 2006-07: Key Findings. Calverton, Maryland, USA: MoHSS and Macro.

Muula, A. S., Siziya, S., & Rudatsikira, E. (2011). Parity and maternal education are associated with low birth weight in malawi. *African Health Sciences*, *11*(1), 65-71.

National Institute of Statistics [Niger] and ORC Macro. 2006. Niger Demographic and Health Survey 2006: Key Findings. Niamey, Niger and Calverton, Maryland, USA: National Institute of Statistics and ORC Macro.

Shapiro, David., & Gebreselassie, T. (2008). Fertility Transition in Sub-Saharan Africa: Falling and Stalling. *African Population Studies*, *23*(1), 3-23.

Van de Poel, E., O'Donnell, O., & Van Doorslaer, E. (2009). What explains the rural-urban gap in infant mortality: Household or community characteristics? *Demography*, *46*(4), 827-850.