

Increased Duration of Paid Maternity Leave Lowers Infant Mortality in Low- and Middle-Income Countries: A Quasi-Experimental Study



Background

In recent years, studies in high-income countries have consistently found that paid leave for mothers of infants is associated with improvements in child health:

- For example, a study using a sample of 18 OECD countries found that increases in paid parental leave were associated with decreases in perinatal, neonatal, and post-neonatal infant mortality, as well as child mortality.

These benefits may be explained by a range of factors:

- Paid leave may enable mothers to access better pre- and post-natal care, particularly since some countries provide leave beginning before birth;
- Paid leave supports families financially and may reduce mothers' stress by guaranteeing job security; and;
- Paid leave facilitates the initiation and continuation of breastfeeding, which has known benefits for infant health. Evidence suggests paid leave also enables parents to ensure children receive vaccinations on time.

However, less is known about whether paid parental leave affects child health in low- and middle-income countries (LMICs). This study represents the first effort to examine whether paid leave policies affect infant, neonatal, and post-neonatal mortality in LMICs. Because leave for mothers is currently far more widely available than leave for fathers, this study examines the impact of paid maternity leave.

Methods

This study used birth history data collected via the Demographic and Health Surveys (DHS) to assemble a panel of approximately 300,000 live births in 20 countries from 2000 to 2008; these 20 countries were selected because they administered at least two DHS surveys between 2001 and 2011, which permitted analyses of policy changes occurring within countries over time.

DHS data contain information on:

- Infant and neonatal mortality, including the age of death of any children who have died, based on the birth histories collected for each woman; and
- Factors that might impact infant and neonatal mortality, including gender of the infant, maternal age, maternal education, interval of time between births, urban/ rural residence, household socio-economic status (SES), and presence of a skilled birth attendant.

DHS data were merged with longitudinal data collected by WORLD and MACHEquity on the duration of paid maternity leave provided by each country, as well as the wage replacement rate provided during the leave.

This data was also merged with time-varying country-level data, including GDP per capita, female labor force participation, per capita total health expenditure, and per capita government health expenditure, from the World Bank's World Development Indicators and Global Development Finance databases.

This study estimated the effect of an increase in maternity leave in the prior year on the probability of infant (below one year of age), neonatal (below 28 days of age) and post-neonatal (between 28 days and one year) mortality. Fixed effects for country and year were included to control for unobserved time-invariant confounders that varied across countries and temporal trends in mortality that were shared across countries.

Findings

Each additional month of paid maternity was associated with 7.9 fewer infant deaths per 1,000 live births (95% CI 3.7, 12.0), reflecting a 13% relative reduction. Reductions in infant mortality associated with increases in the duration of paid maternity leave were concentrated in the post-neonatal period.

Estimates were robust to adjustment for individual, household, and country-level confounders, although there may be residual confounding by unmeasured time-varying confounders, such as coincident policy changes.

Effects of a 1-mo increase in paid maternity leave on the number of infant deaths per 1,000 live births, Demographic and Health Surveys, 2000–2007.

Exposure	Model (n = 274,716)		
	Estimate	LCL ^a	UCL
Additional month of paid leave	-7.9	-12.0	-3.7
Individual and household-level covariates^b			
Male gender	9.8	7.3	12.3
Mother's education (years)	-1.5	-3.0	-0.1
Household SES 2nd quintile	-4.4	-11.3	2.4
Household SES 3rd wealth quintile	-2.2	-9.6	5.2
Household SES 4th wealth quintile	-9.4	-13.0	-5.8
Household SES 5th quintile (highest)	-13.6	-20.0	-7.1
Urban residence	0.3	-5.3	6.0
Short birth interval (<24 mo)	32.9	22.7	43.1
Maternal age 20–39 y	-24.0	-31.0	-16.9
Maternal age ≥40 y	-6.5	-17.2	4.2
Skilled attendant at delivery	-1.1	-9.3	-7.1
Country-level covariates			
Wage replacement rate	0.1	-0.1	0.3
ln GDP per capita	-10.2	-93.7	73.3
Female labor force participation	0.6	-0.4	1.6
ln government health expenditure	-7.7	-17.0	1.6
ln total health expenditure	-13.9	-35.5	7.6

^a LCL, lower confidence limit of 95% CI; ln, natural log; UCL, upper confidence limit of 95% CI

^b Reference categories for categorical variables are female (versus male) gender, lowest wealth household SES quintile, rural (versus urban) residence, longer (versus <24 month) birth interval ≥ 24 mo, lower (<20 y) maternal age < 20 y, and absence (versus presence) of a skilled attendant at delivery

This research brief presents key findings from the following article: Nandi A, Hajizadeh M, Harper S, Koski A, Strumpf EC, and Heymann SJ. Increased Duration of Paid Maternity Leave Lowers Infant Mortality in Low- and Middle-income Countries: A Quasi-experimental Study. *PLoS Medicine*. Published online before print March 2016. To access additional WORLD publications, please visit <http://worldpolicycenter.org/publications>.



Discussion

Since 1990, the global mortality rate for children under 5 has fallen by half. However, millions of infants and children still die each year from preventable causes, and the vast majority of these deaths take place in LMICs.

This study suggests that more generous paid maternity leave policies may help further reduce infant mortality in LMICs. The particularly strong associations with the post-neonatal period suggest that paid leave for mothers in LMICs may indeed influence breastfeeding, immunizations, and other post-natal factors that support infant health.

However, further work is needed to determine precisely how paid maternity leave may help reduce infant mortality. In addition, further research is needed to understand the optimal balance of paid leave before and after delivery.