



Supportive Environments for Healthy Communities

Issue 70 September 7, 2012 | Focus on WASH and Child Survival

This Weekly issue contains studies and reports published in 2012 that discuss WASH interventions and their impact on child survival. Included are a UNICEF review of prevention and treatment methods for pneumonia and diarrhea, a DFID report on factors that affect child development, research on how distance to water source affects child health and country reports from Bangladesh, Brazil, India, Nigeria and other countries.

Please let WASHplus know at any time if you have resources to share for future issues of WASHplus Weekly or if you have suggestions for future topics. An [archive](#) of past Weekly issues is available on the WASHplus website.

GLOBAL /REGIONAL REPORTS

- **Child Development and Economic Development: Lessons and Future Challenges**, 2012. J Boyden, DFID. ([Full text, pdf](#))

Developmental science has provided compelling evidence to show that diverse environmental factors strongly affect young people's survival, development, and well-being throughout infancy, childhood, and beyond. Many children in developing countries grow up in contexts of poverty and accumulated risk, a fact that poses a significant threat to the current generation of young people now as well as to their future as adults. So there is a strong case for focusing investments on children, not simply as a means of securing better conditions for them, but also as a pathway for reducing poverty and sustaining economic growth in the long term.

- **An Ecological Quantification of the Relationships between Water, Sanitation and Infant, Child, and Maternal Mortality**. *Environ Health*, Jan 2012. J Cheng. ([Full text, pdf](#))

Water and sanitation access are known to be related to newborn, child, and maternal health. This study attempts to quantify these relationships globally using country-level data. The study suggests that access to water and sanitation independently contribute to child and maternal mortality outcomes. If the world is to seriously address the Millennium Development Goals of reducing child and maternal mortality, then

improved water and sanitation accesses are key strategies.

- **Freshwater Availability and Water Fetching Distance Affect Child Health in Sub-Saharan Africa.** *Env Sci Technol*, Feb 2012. A Pickering, Stanford University. ([Abstract](#))

Currently, more than two-thirds of the population in Africa must leave their home to fetch water for drinking and domestic use. The time burden of water fetching has been suggested to influence the volume of water collected by households as well as time spent on income generating activities and child care. However, little is known about the potential health benefits of reducing water fetching distances. Time spent walking to a household's main water source was found to be a significant determinant of under-five child health.

- **Geographical Analysis of the Role of Water Supply and Sanitation in the Risk of Helminth Infections of Children in West Africa.** *Proc Natl Acad Sci U S A*, Dec 2011. M Soares, University of Queensland. ([Full text](#))

This study aimed to quantify the role of WASH in the risk of *Schistosoma hematobium*, *Schistosoma mansoni*, and hookworm infection in school-aged children; to estimate the population attributable fraction (PAF) of helminth infection due to WASH; and to spatially predict the risk of infection. It generated predictive maps of areas in West Africa without piped water, toilet facilities, and improved household floor types, using spatial risk models. There was a generally better geographical coverage for toilets and improved household floor types compared with water supply. These predictions, and their uncertainty, were then used as covariates in Bayesian geostatistical models for the three helminth species. Mapping the distribution of infection risk adjusted for WASH allowed the identification of communities in West Africa where preventive chemotherapy integrated with interventions to improve WASH will yield the greatest health benefits.

- **Neonatal Mortality: Incidence, Correlates and Improvement Strategies,** 2012. S Rahman, Weill Cornell Medical College, Doha. ([Full text, pdf](#))

This report provides a review of definitions, incidence, correlates and global magnitude of neonatal mortality. The chapter also presents evidence based strategies to improve neonatal survival, particularly in resource constrained developing countries.

- **Pneumonia and Diarrhoea: Tackling the Deadliest Diseases for the World's Poorest Children,** 2012. UNICEF. ([Full text](#))

Pneumonia and diarrhea are leading killers of the world's youngest children, accounting for 29% of deaths among children under age five worldwide – or more than 2 million lives lost each year. Nearly 90% of deaths due to diarrhea worldwide have been attributed to unsafe water, inadequate sanitation and poor hygiene. Hand washing with water and soap, in particular, is among the most cost-effective health interventions to reduce the incidence of both childhood pneumonia and diarrhea.

COUNTRY STUDIES

- **BANGLADESH – Maternal, Neonatal and Child Health in Northern Districts of Rural Bangladesh: Profiling the Changes during 2008-2010**, 2012. M Al Mamun, BRAC. ([Full text, pdf](#))

More than 98% of the households were headed by men and the average household size was five in all study areas. Less than 1% respondent collected water from any source other than tubewell for both drinking and cooking purposes. The use of a sanitary toilet (water seal and septic tank) decreased in Nilphamari (27% to 16%). In Nilphamari and in control areas, the use of soap for hand washing after defecation had decreased (56% in 2008 to 46% in 2010 and 50% to 41% respectively); however it remained unchanged in Rangpur, Gaibandha and Mymensingh.

- **BRAZIL – Infant Mortality in Brazil, 1980-2000: A Spatial Panel Data Analysis**. *BMC Public Health*, 12:181, 2012. A Barufi. ([Full text, pdf](#))

The objective of this paper is to analyze the regional pattern of infant mortality in Brazil, evaluating the effect of infrastructure, socio-economic, and demographic variables to understand its distribution across the country. The analysis confirms that the provision of health care infrastructure and social policy measures (e.g. improving education attainment) are linked to reduced rates of infant mortality. An original finding concerns the role of spatial effects in the analysis of infant mortality rates. Spillover effects associated with health infrastructure and water and sanitation facilities imply that there are regional benefits beyond the unit of analysis.

- **INDIA – Child Mortality in India: A Complex Situation**. *World J Pediatr*, Feb 2012 . R Ghosh. ([Full text, pdf](#))

The review revealed economic disparity acts through various avenues of cultural belief and restrictions and is indirectly associated with care seeking behavior and utilization of health care, resulting in slow decline of the child mortality rate in India. Secondly, cultural norms, practices, and beliefs are strongly associated with high neonatal mortality, contributing to the sluggish decline of the overall child survival rate.

- **INDIA – Promoting Appropriate Management of Diarrhea: A Systematic Review of Literature for Advocacy and Action: UNICEF-PHFI Series on Newborn and Child Health, India**. *Indian Pediatrics*, Aug 2012. D Shah, University of Delhi. ([Full text, pdf](#))

Childhood diarrhea is a significant public health problem in India. Diarrhea accounts for 14% of the total deaths in under-five children in India. Infants aged 6-24 months are at the highest risk of diarrhea. There is a lack of robust nation-wide data on etiology; rotavirus and diarrheogenic *E.coli* are the most common organisms identified. The current national guidelines are sufficient for case-management of childhood diarrhea. Exclusive breastfeeding, hand washing and point-of-use water treatment are effective strategies for prevention of all-cause diarrhea; rotavirus vaccines are efficacious to prevent rotavirus specific diarrhea. Oral rehydration solution and zinc are the mainstay

of management during an episode of childhood diarrhea but have low coverage in India due to policy and programmatic barriers, and indiscriminate use of antibiotics and other drugs is common.

- **INDIA – Temporal Trends and Gender Differentials in Causes of Childhood Deaths at Ballabgarh, India: Need for Revisiting Child Survival Strategies.**

BMC Public Health, July 2012. A Krishnan. ([Full text, pdf](#))

This paper from Ballabgarh Health and Demographic Surveillance System (HDSS) site in north India looks at temporal trends and gender differentials in the causes of death among under-five children. The findings of the study point out to the need to move away from disease-specific to a comprehensive approach and to address gender inequity in child survival through socio-behavioral approaches.

- **KENYA – Child Survival, Poverty and Inequality in Kenya: Does Physical Environment Matter?**

African Journal of Social Sciences, Number 1, 2012. J Kabubo-Mariara, University of Nairobi. ([Full text, pdf](#))

This paper analyses child poverty in Kenya using two measures of child well-being: survival and asset index. The paper further analyzes the determinants of child survival. The key findings are that: physical environment including assets and location are important factors for child survival; rural children are more likely to be poor and to die than urban children; and that provincial differentials and inequalities among poor children are quite pronounced.

- **KENYA – What Has Driven the Decline of Infant Mortality in Kenya?** 2012. G Demombynes, World Bank. ([Full text](#))

Kenya's infant mortality rate has fallen by 7.6% per year, the fastest rate of decline among the 20 countries in the region for which recent Demographic and Health Survey data is available. Kenya's rate of postneonatal deaths per 1,000 live births fell by more than half over a five-year period, dropping from 47 to 22, as measured using data from the 2003 and 2008-09 Demographic and Health Surveys. Among the possible causes of the decline are various targeted new public health initiatives and improved access to water and sanitation.

- **MOZAMBIQUE – Geographic Differentials in Mortality of Children in Mozambique: Their Implications for Achievement of Millennium Development Goal 4.**

Jnl Health Pop Nutrition, Sept 2012. G Macassa, University of Gävle, Sweden. ([Full text, pdf](#))

Results of univariate and multivariate analyses showed a significant association between under-five mortality and province (region) of mother's residence. Children of mothers living in the North provinces (Niassa, Cabo Delgado, and Nampula) and the Central provinces (Zambezia, Sofala, Manica, and Tete) had higher risks of mortality than children whose mothers lived in the South provinces, especially Maputo province and Maputo city. This study supports the thought that interventions aimed at reducing

under-five mortality should be tailored to take into account the subnational/regional variation in economic development.

- **NIGERIA – Risk Factors and a Predictive Model for Under-five Mortality in Nigeria: Evidence from Nigeria Demographic and Health Survey.** *BMC Pregnancy Childbirth*. Feb 2012. G Kayode, Department of Public Health & Biostatistics, University of Birmingham. ([Full text](#))

It is essential to identify determinants of under-five mortality (U5M) childhood mortality because these will assist in formulating appropriate health programs and policies in order to meet the United Nations MDG goal. The objective of this study was to develop a predictive model and identify maternal, child, family and other risk factors associated U5M in Nigeria. This study yielded an excellent predictive model which revealed that the likelihood of U5M among the children of mothers that had their first marriage at age 20-24 years and ≥ 25 years declined by 20% and 30% respectively compared to children of those that married before the age of 15 years. Also, the following factors reduced odds of U5M: health seeking behaviour, breastfeeding children for >18 months, use of contraception, small family size, having one wife, low birth order, normal birth weight, child spacing, living in urban areas, and good sanitation.

- **PHILIPPINES – Do Piped Water and Flush Toilets Prevent Child Diarrhea in Rural Philippines?** *Asia Pac J Public Health*, Dec 2011. J Capuno, University of the Philippines. ([Abstract](#))

The incidence of diarrhea among under-five children was found to be lower by as much as 4.5% in households with access to piped water and 10% in those with their own flush toilets, relative to comparable households. These findings underscore the need to ensure the quality of drinking water from the pipe or from other improved sources at the point of use, and the provision of improved and own sanitation facilities.

Each WASHplus Weekly highlights topics such as Urban WASH, Indoor Air Pollution, Innovation, Household Water Treatment and Storage, Hand Washing, Integration, and more. If you would like to feature your organization's materials in upcoming issues, please send them to Dan Campbell, WASHplus knowledge resources specialist, at dacampbell@fhi360.org.



About WASHplus - WASHplus, a five-year project funded through USAID's Bureau for Global Health, creates supportive environments for healthy households and communities by delivering high-impact interventions in water, sanitation, hygiene (WASH) and indoor air pollution (IAP). WASHplus uses proven,

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at-scale interventions to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under five years of age globally. For information, visit www.washplus.org or email: contact@washplus.org.

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