POLICY BRIEFING

Exploring inequities in sanitation-related disease burden and estimating the potential impacts of pro-poor targeting

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Inequity is commonplace in Dhaka, the capital of Bangladesh, where slums exist (left) in the shadows of new high-rise buildings. Credit: Rick Rheingans

Background

There is growing attention to disparities in global and national progress in improving access to sanitation. Recent work by UNICEF and the WHO/UNICEF Joint Monitoring Programme (JMP) has shown significant variation in progress in improving access to sanitation across quintiles in many low-income settings (UNICEF, 2010; JMP, 2011). UNICEF has argued that this is not only 'unfair' but also potentially acts as a 'brake' to progress across all the MDGs (UNICEF, 2010).

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Others have considered the role of international aid flows (OECD, 2008; WHO, 2010) and national policy and planning (World Bank, 2011; WHO, 2010) in securing progress on poor people's access to sanitation services. Work in this area has suggested that certain groups are being marginalized by the targeting of current strategies and investments.

Less work though has been carried out to understand how the health burden and potential benefits associated with sanitation vary across sub-populations in low-income settings. Research based on other interventions has shown significant variance in disease burden and impacts across socio-economic groupings. A stronger understanding of how sanitation-related risks are distributed across sub-populations offers the potential to improve both the effectiveness and efficiency of investments through better targeting.

Objectives and strategy

The objectives for this study were to estimate for 10 low income countries[1] in sub-Saharan Africa and South Asia:

- The distribution of sanitation-related health burden by wealth quintile
- The likely distribution of health benefits for targeting sanitation improvements at different wealth quintile groups
- The spatial distribution of sanitation–related health burden and benefits

This work used existing household survey data from the Demographic and Health Surveys (DHS) for the 10 countries to estimate disparities in sanitation related services, exposures, susceptibility, burden and impact of infrastructure improvements.

The key components of this analysis were the:

- Construction of an asset index that did not include either water or sanitation as assets to assess economic status of households
- Assessment of 'access to sanitation' based on both household access to a private or shared facility and also the density of people without sanitation in the immediate vicinity
- Use of nutritional vulnerability (measured by weight for age Z-scores) as a measure of susceptibility for diarrhoeal mortality
- Use of children under 5 years of age, rather than the household, as the unit of analysis
- Comparison of sanitation-related health burden and benefits among wealth quintiles within both urban and rural areas
- Estimation of sanitation-related burden of disease based on national under-5 diarrhoea mortality estimates, pooled estimates of sanitation effectiveness, and the estimated distribution of 'sanitation risk'
- Estimation of the impact of access to improved sanitation (to a private facility) for each wealth quintile in urban and rural areas
- Development of interpolation maps in ArcGIS to explore the spatial patterns of disparities for two of the countries (Malawi and Kenya)

[1] Four of the ten countries (Zambia, Ghana, Nigeria and India) are categorized as 'lower middle income countries' and the remaining six (Kenya, Malawi, Ethiopia, Zimbabwe, Bangladesh and Tanzania) as 'low income countries' by the World Bank. For the purposes of this paper all ten are described as 'low income'. http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Low_income. Accessed: October, 2011

Key results

Although available data and knowledge prevent definitive answers to the questions outlined in the objectives for this study, the results of this analysis suggest the following:

- The health burden of poor sanitation falls disproportionately on children living in the poorest households
- This increased health burden is the result of both greater exposure to infection and increased susceptibility among children in these households
- The increased exposure among these children is a function of their increased likelihood of having no access to a private facility, having to use shared facilities and being more likely to live in an area with a high density of people without sanitation
- Children in poor households are more likely to be susceptible (resulting from lower nutritional status) to diarrhoeal diseases and suffer higher mortality
- Improvements in sanitation for households in the poorest quintile may bring significantly greater health benefits than improvements in the richest quintiles
- The sanitation-related burden differs between rural and urban settings but children in poor households in both settings consistently suffer disproportionately
- While rural populations generally have lower levels of access, the sanitation-associated risk may be greater for the urban poor due to the increased likelihood of these households being in areas with a high density of people without sanitation

Conclusions

There are important limitations of this study that must be highlighted: (1) the relative importance of the three exposure variables is not known and are treated here as being equal; (2) the susceptibility index contains only one variable (nutritional vulnerability); (3) only diarrhoeal child mortality is considered in estimating the distribution of health impacts, and the total burden and its distribution would change if other sanitation-related health impacts were included. However, even taking account of these limitations, the results of this analysis suggest that:

- Strategies to reach children in the poorest households are required to both protect those children and households most at risk, and to maximize the impact of sanitation investments more broadly
- Although the study did not directly consider the relative costs of targeting the poorest households, reaching these households may yield substantially higher health benefits and greater economic returns
- Better use of available information on the distribution of sanitation-related health burden and potential benefits could lead to more effective planning and more efficient use of resources at the national level
- Current monitoring indicators at the national and global levels fail to incentivise the targeting of the areas of greatest need and potential greatest impact
- Existing limitations in monitoring efforts include a focus on household coverage rather than child coverage; the use of only household access, not community level exposure measures; no direct targets for focusing improved access on the poorest; and, in some settings, the under counting of the most vulnerable urban populations

Research for sanitation and hygiene solutions

The world is seriously off-track in meeting the Millennium Development Goal on sanitation and 2.6 billion people are still without a safe toilet.

SHARE aims to address these challenges by accelerating progress on sanitation and hygiene in developing countries by generating rigorous and relevant research, and ensuring new and existing solutions are adopted at scale.

The consortium conducts research across four pillars:

- Health
- Equity
- Urban
- Markets

SHARE's activities primarily take place in its focus countries:

- Bangladesh
- India
- Malawi
- Tanzania

The DFID-funded SHARE consortium is led by the London School of Hygiene and Tropical Medicine. Its other partners are the International Centre for Diarrhoeal Disease Research, Bangladesh, International Institute for Environment and Development, Shack/Slum Dwellers International and WaterAid.

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