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Observing risk factors for diarrheal disease and malnutrition in rural Peru

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Background: In low and middle income countries, diarrheal disease and associated malnutrition remain leading causes of preventable morbidity and mortality among children under 5 years. In Peru, these conditions are more prevalent in children in rural areas, such as the Ancash region. For instance, while the number of years of life lost due to diarrheal diseases decreased significantly in Peru from 1990 to 2010, the prevalence of diarrhea in children under 5 years old in Ancash increased from 2009 (11%) to 2012 (14.2%). Additionally, 24.5% of children under 5 years of age in this region currently suffer from chronic malnutrition. We hypothesize that various observable elements related to food preparation and access, sanitation, and water in the home contribute to diarrheal episodes and associated malnutrition in children in the Ancash region.

Methods: To explore this further, we conducted an observational convenience survey of 28 households in three small towns in Ancash, Peru. Visits were made to kitchen areas, animal housing areas, and bathrooms; cooking practices were directly observed; and a questionnaire was administered by a native Spanish speaker. Qualitative and quantitative data were obtained; quantitative data were analyzed using SPSS software.

Findings: The results revealed a number of observable risk factors for fecal-oral contamination, including untreated water, periods of no access to water, animals near food preparation areas, and limited access to sewage collection and disposal systems.

Interpretation: The information gathered from this survey will inform future efforts for designing public health interventions to prevent diarrheal disease and malnutrition in this area.

Funding: None.

Abstract #: 1.003_MDG

Equity measurement in the post-2015: a systematic analysis of inequalities in vaccination coverage in GAVI-supported countries

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Background: The Sustainable Development Goals cite equity and the reduction of inequalities as a central principle. When assessing inequalities in the coverage of health interventions, extant practices have largely relied on country-specific wealth quintiles as the sole indicator and on simple comparisons between least and most wealthy, an approach with its limitations. The GAVI Alliance monitors equity in vaccination coverage in the countries supported. We conducted a systematic analysis of inequalities in vaccination coverage and compared various dimensions of inequality and statistical approaches in order to help inform the development of GAVI's new equity indicators for its post-2015 strategic period.

Methods: We used data from the most recent demographic and health surveys conducted in 45 of the 73 GAVI-supported countries. We measured inequalities in the receipt of diphtheria-tetanus-pertussis (DTP3) and measles containing vaccines (MCV) in all children aged 12 to 23 months according to various dimensions of inequality (including socioeconomic position (SEP) indicators, nutritional indicators and child gender). We used pairwise comparisons (risk difference; risk ratio) and the slope and relative index of inequality (SII; RII). We pooled the inequalities across countries by random-effects meta-analyses.

Findings: Our sample included 63,932 children in 45 countries. National DTP3 coverage ranged from 37.2% in Ethiopia to 97.1% in Rwanda. MCV ranged from 42.1% in Nigeria to 94.9% in Rwanda. Pooled RII were similar across the four SEP indicators and indicated that children at the top of the socioeconomic distribution were 1.4 times more likely to be vaccinated than children at the bottom (95% CI 1.29, 1.57). The absolute difference in DTP3 vaccination coverage between children of least and most educated mothers could be as high as 59, 65 and 85 percentage points in Pakistan, India and Nigeria, respectively. Compared to SII and RII, pairwise comparisons had many limitations for inequality measurement related to precision, feasibility and comparability across countries.

Interpretation: Global monitoring of equity in vaccination coverage should be conducted using summary measures of inequality such as the SII and RII and using indicators of SEP that are comparable across countries such as maternal education and the multidimensional poverty index.

Funding: None.

Abstract #: *1.004_MDG*

Impact of women's empowerment on use of modern contraceptives in Nigeria: a cross sectional study

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Background: In certain parts of the world, gender gaps in education, employment, and empowerment exist, with men reporting higher levels of empowerment measures than women. Studies have shown that empowering women allows them to take ownership of their welfare, including their reproductive health. However, there

is limited evidence regarding the impact of women's empowerment in Nigeria on use of modern contraception. The aim of this study was to assess the impact of women's empowerment on their use of modern contraception in Nigeria.

Methods: This study used the Nigerian Demographic Health Surveys from 2003, 2008, and 2013. The final analytic sample was restricted to women: who expressed no desire to have children within the two years of the survey, and who reported no desire in having more children. Women's empowerment was measured as their ability to partake in healthcare decisions, large household purchases, and visiting relatives. Chi-square tests and logistic regression models were used to assess the relationship between women's empowerment and contraception use. Multiple regression models adjusted for respondent's age, religion, education, wealth status, and area of residence. Analyses were conducted using SAS 9.4, and statistical significance was set at $p<0.05$.

Findings: The final sample consisted of 29,630 respondents. Modern contraceptive use in Nigeria increased from 2003 (8.7%) to 2013 (51.0%). In 2008, respondents who reported involvement in decision-making around large household purchases (aOR=1.27; 95% C.I=1.11-1.46), healthcare (aOR=1.41; 95%C.I-1.21-1.64), and visiting relatives (aOR=1.40; 95% C.I=1.17-1.66) had higher odds of using modern contraception than respondents who were uninvolved. Similar observations were observed in 2013 where women's involvement in large household purchases (aOR=1.68; 95% C.I=1.43-1.97), healthcare (aOR=1.48; 95%C.I-1.28-1.71), and decision to visit relatives (aOR=1.74; 95% C.I=1.50-2.02) were positively associated with use of modern contraception. Pooled data from 2003-2013 revealed a positive association between the three measures of women's empowerment and use of modern contraception.

Interpretation: It is important to consider women's empowerment when designing interventions to address gaps in health and in particular, reproductive health. By empowering women and improving their chances of using modern contraceptives, they are more likely to space births and reduce unplanned pregnancy, sexually transmitted infections, and infant and maternal mortalities.

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Abstract #: *1.005_MDG*

Can community health workers improve male involvement in maternal health: evidence from rural Tanzania

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Background: Male involvement in maternal health is recommended as one of the interventions to improve maternal and newborn health. There have been challenges in realising this action, partly due to the position of men in society and partly due to health system challenges in accommodating men. The aim of this study was therefore to evaluate the effect of Home-Based Lifesaving Skills training by community health workers on improving male involvement in maternal health in terms of knowledge of danger signs, birth preparedness and escorting wives to antenatal and delivery care, and joint decision-making in a rural community in Tanzania.

Methods: A community-based intervention consisting of the training of the community in Home-Based Lifesaving Skills by community health workers was implemented using one district as the intervention district and another as comparison district. A pre/post intervention using quasi-experimental design was used to evaluate the effect of Home-Based Lifesaving Skills training on male involvement and place of delivery for their partners. The effect of the intervention was determined using difference of difference analysis between the intervention and comparison data at baseline and endline.

Findings: The results show there was improvement in male involvement (39.2 % vs. 80.9%) with a net intervention effect of 41.1% (CI: 28.5 − 53.8; $p < .0001$). There was improvement in the knowledge of danger signs during pregnancy, childbirth and postpartum periods. The proportion of men accompanying their wives to antenatal and delivery also improved. Shared decision-making for place of delivery improved markedly (46.8% vs. 86.7%), showing a net effect of 38.5% (CI: 28.0 − 49.1; $p <.0001$). Whilst facility delivery for spouses of the participants improved in the intervention district, this did not show statistical significance when compared to the comparison district with a net intervention effect of 12.2% (95% CI: -2.8 − 27.1: $p = 0.103$).

Interpretation: This community-based intervention employing community health workers to train the community in Home-Based Lifesaving Skills program is both feasible and effective in improving male involvement in maternal health care.

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Abstract #: *1.006_MDG*

Reducing loss to follow-up of HIV exposed infants in Central Mozambique

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Background: Preventing mother-to-child transmission (PMTCT) remains a challenge in central Mozambique, where HIV prevalence is over 15% and where over 50% of exposed infants are lost to follow up (LTFU) before receiving appropriate diagnostic testing or treatment. In collaboration with UW and HAI, CIOB undertook a study to identify weaknesses within the cascade of care and designed a targeted intervention to reduce LTFU of exposed-infants.

Methods: Formative research was undertaken in six health centers in Manica and Sofala provinces between September and November 2014. Weaknesses in the cascade of care were identified using health