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Interpretation: Programs involving an integrated package of interventions addressing systems change, capacity building and leadership development have the promise to be highly cost effective in preventing maternal and neonatal mortality in low resource settings. Further research is needed to assess whether these results are unique to the particular circumstances of this implementation or whether they are applicable in other settings.

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Abstract #: *2.016_WOM*

Differences and Determinants of maternal mortality ratio in Sub-Saharan African countries.

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Background: Reducing maternal mortality ratio (MMR) was a primary target of the Millennium Development Goals (MDG5a). In Sub-Saharan Africa only three countries achieved the MDG5a and MMR is still high in the region. This study aims analyzing the data among Sub-Saharan countries that did not achieved the MDG5a and defining the determinants affecting MMR.

Methods: Data were obtained from WHO, UNICEF, World Bank, UNDP, and health departments. Forty five countries were divided into four groups according to WHO classification: making progress (MP) insufficient progress (IP), no progress (NP) and achieved the goal (A). Twenty indicators were divided into four areas: social, health, education, and economic. Descriptive statistics was applied to compare the groups and correlation analysis to examine the relationship between MMR and the indicators.

Findings: Correlation analysis showed a significant negative correlation between MMR and HDI (-0.768), literacy rate (-0.739), hospital beds (-0.639) skilled attendance at birth (-0.660), contraceptive prevalence (-0.590), improved sanitation facilities (-0.587), and the number of nurses and midwives (-0.508). Fertility rate (0.750) and adolescent birth rate (0.700) showed a strong positive correlation with MMR. Comparison analysis showed large gaps between the countries that achieved the goal and the other three groups.

Interpretation: To reduce the gaps of MDG5 and to accelerate achieving - SDG3.1 in Sub-Saharan Africa, it is important to improve determinants within the health system, but also social, education, and economic determinants are critical. Higher level of education, more health resources, and increasing expenditure on health appears to be a requisite.

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Abstract #: *2.017_WOM*

An Innovative, Mobile-health Enhanced, Peer-counseling Program to Improve Breastfeeding among Low-income, Minority Populations in Washington, DC

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Program/Project Purpose: Breastmilk is associated with reduced childhood obesity, asthma, infectious diseases, and sudden infant death syndrome, all of which disproportionately affect minority and low-income children in the US. Yet, breastfeeding rates are lower among low-income populations compared to the general population. Research has shown that peer-counselors, who come from the same culture and community and have experience breastfeeding, are effective in providing education and social support to improve breastfeeding behavioral outcomes. However, access to peer-counselors is limited; the use of e-technology can bridge this gap to reach low-income women with text messages. One-way texts provide consistent communication and high quality messages at low cost, and 2-way texts can respond to immediate needs with specific behaviors and support. BfedDC, a text-messaging program with 2-way texting capacity for peer-counselors was piloted in Washington DC clinics that are part of the US national assistance program for low-income families, ie WIC clinics, to address this need.

Structure/Method/Design: Two sets of text messages were designed, one for pregnant participants and another for mothers after delivery and into the first year of life; both available in Spanish and English. We examined process indicators (number participants enrolled, number dropped out, frequency of messaging, etc.) to understand the coverage and quality of the BfedDC program, and to link to breastfeeding behavioral outcomes.

Outcome & Evaluation: Coverage: 38.6% of those eligible enrolled in the program and within this total, about 40% of those had no prior experience breastfeeding. 5.6% of participants opted out of the program early. Quality: 1-way breastfeeding educational messages were delivered regularly, and 2 way texting conversations between mothers and peer counselors were observed in 13.5% of cases. Mothers most often texted questions about milk supply, latching, number of months to breastfeed, pumping and when support groups were occurring.

Going Forward: Significant work remains to address breastfeeding disparities particularly among low-income and minority populations. Our process data results informed the large scale implementation of BfedDC in Washington DC Process evaluation activities will continue as the program matures and will be linked to breastfeeding outcomes to determine the impact of the intervention on breastfeeding initiation and continued breastfeeding at 6 months.

Source of Funding: Redstone Center, GWU; Kappa Chapter, SigmaThetaTau.

Abstract #: *2.018_WOM*

Trends in Breastfeeding and Cesarian sections over a 20 year period in 40 low and middle income countries

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Background: WHO recommends that mothers initiate breastfeeding within the first hour after childbirth, **exclusively** breastfeed

their child for six consecutive months, and then continue to breastfeed and supplement for up to two years; to optimize growth and development. While it has long been recognized that breastfeeding improves child survival by decreasing diarrheal disease and acute respiratory infections, recently it has also been linked to a decreased risk of childhood obesity and diabetes. Moreover benefits to the mother have been underestimated; breastfeeding is associated with a lower risk of cancer and metabolic disorders. Yet the number of women in low-middle income countries (LMIC) who follow the WHO guidelines is low. Optimal practices around birth and socio-demographic factors influence breastfeeding behaviors. We sought to describe the trends in breastfeeding and birthing practices over time in LMICs, and their association with individual and country level economic status.

Methods: Data from the **Demographic Health Surveys** (DHS) from three time periods within a 20-year timeframe in each of 41 countries were used. The DHS is a nationally representative household survey that provides data in the areas of population, health & nutrition. Sample sizes for surveys ranged from 1169 to 7530 infant/mother pairs. Descriptive analysis was conducted to examine trends in breastfeeding and birthing practices (type of delivery and location). Unadjusted and adjusted logistic regression models were conducted for each survey to estimate the relationship between breastfeeding and birthing practices. Results for each country were combined for a meta-analysis.

Findings: Preliminary findings. Country-level and individual-level wealth were associated with breastfeeding practices. In general as a country's wealth increased breastfeeding behaviors declined. Within countries wealthier individuals had poorer breastfeeding behaviors. Wealthier individuals had higher rates of c-sections. After controlling for socio-demographic variables individuals who had a vaginal delivery had significantly greater odds of breastfeeding.

Interpretation: There is a need for optimal practices around birth to support immediate breastfeeding.

We recommend training hospital staff and other health care workers on practices that protect, promote and support breastfeeding, like those outlined in WHO/UNICEF's Baby-Friendly Hospital Initiatives.

Other health system strengthening interventions should be explored.

Source of Funding: None.

Abstract #: *2.019_WOM*

Disparity in Delivery: Why Is What Is Good for the Goose, Not Good for the Gander? Cervical Cancer Screening Program Strategies in LMICs Are Inferior

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Background: The incidence of cervical cancer is significantly higher in Low and Middle Income Countries (LMICs) than in High Income Countries. There are three methods to screen for cervical cancer: Visual Inspection with Acetic Acid (VIA), HPV testing, and cytology. Cytology based screening resulted in drastic reduction in cervical cancer in High Income Countries, but has not been implemented in many LMICs because it is thought to be expensive and for fear of "loss to follow-up." In this study, we surveyed countries in various income groups and correlated income with the published screening strategy in each country. Through our pilot program, we also show that cytology can be implemented successfully with minimal resources in LMICs.

Methods: Published resources from IARC and WHO were surveyed for available cervical cancer screening strategies. We categorized the countries according to income levels. VIA, Pap smear, and HPV testing availability was collected.

A low-cost cytology laboratory in Tamil Nadu, India was established, and we trained 6 cyto-screeners for staining and reading cytology slides in 2 years.

Findings: Our study shows that while 90.9% of High Income Countries and 70.9% of Upper Middle Income Countries have cytology programs, only 45.0% of Lower Middle Income Countries and 18.2% of Low Income Countries have cytology based cervical cancer screening.

In our pilot program, we were able to implement a laboratory for cervical cytology with minimal cost and resources (<3000USD/year/laboratory). It takes 6 months to 1 year to fully train (95% concordance) a cytoscreener in these locations with sparse resources.

Interpretation: Cytology based programs are available in High Income Countries and Upper Middle Income Countries, but less frequently in Lower Middle Income Countries or Low Income Countries. We hypothesize that non-availability of cytology based programs may be associated with persistent higher incidences of cervical cancer in these countries. Much rigorous analysis is required to link this association. Through our pilot programs, we show that it is possible to create low cost cytology based screening programs in LMICs.

Thus, if cytology based programs can effectively decrease cervical cancer, then this should be available globally, rather than less effective methods.

Source of Funding: GlobalREACH, UMHS; American Society of Cytopathology.

Abstract #: *2.020_WOM*

Coordination and Partnership for Improved Maternal-Child Health in Rural Chiapas, Mexico

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Program/Project Purpose: Improving maternal-child health remains a major goal worldwide for the most marginalized and vulnerable populations. New methods that implement what is known to work medically, but that also comprehensively address the myriad factors contributing to poor outcomes, are needed. Chiapas has one of the highest rates of maternal mortality in Mexico at