

Using Community Health (CHWs) to increase access to maternal health services—preliminary findings from Neno, Malawi

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Program/Project Purpose: Access to maternal health services during pregnancy is very low in many low and middle income countries including Malawi, and Community Health Workers (CHWs) are increasingly used to enhance utilization of antenatal care (ANC), delivery, and postnatal care services. In March 2015, Partners In Health in collaboration with the Ministry of Health started the Healthy Mothers, Healthy Communities project which uses CHWs to identify and accompany pregnant women throughout the cascade of perinatal services. We report preliminary findings on the impact of CHWs on utilization of maternal health services in Chifunga Health Center in Neno, Malawi from March to September 2015.

Structure/Method/Design: We identified, trained, and supervised 109 CHWs in Chifunga, a rural primary health facility with a catchment area of 10,685 people. CHWs were chosen through a process involving community leaders and members and underwent a 5 day training focusing on maternal health and their role as the link between the community and health system. CHWs were then deployed to households to identify pregnant women, accompany them to health facilities during all antenatal care, labor and delivery, and postnatal care visits. We analyzed the data from the CHW reporting tools and facility registers from March to September 2015.

Outcome & Evaluation: In the first 6 months of the project, 1,600 women of childbearing age were screened for pregnancy each month. In total, 201 new pregnancies were identified, of whom 84% were accompanied to their first ANC visit by a CHW. One-hundred sixty pregnant women, both previously and newly pregnant, received at least one home visit per month.

At the health facility, 94 women attended ANC each month after the intervention, representing a 53% increase compared to the 3 months preceding the CHW program. The proportion of women starting ANC in their first trimester increased from a baseline of 23% in 2014–2015 to 38% for the first cohort of women that were accompanied to care in March 2015.

Going Forward: CHWs in Neno has Played a key role in linking women to perinatal health services. As the program continues we will explore the effect of CHWs on attending a complete package of care for pregnant mothers including all ANC visits, delivery, and postnatal care.

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Abstract #: 1.039_MDG

A community-based intervention to reduce tooth decay and malnutrition in Mumbai, India

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Background: India Smiles is a community-based preventative intervention to evaluate the contribution of poor oral health to child malnutrition, and prevent tooth decay and malnutrition in young children. Early childhood caries (ECC), the decay of primary teeth in children under age 6, is increasing in prevalence and affects 60–90% of children worldwide. It is exacerbated by consumption of junk foods and limited access to dental care. The consequences of ECC include mouth pain, problems eating, sleeping, and concentrating in school.

Methods: The study reports data from baseline to 1-year follow-up on the oral health and nutrition of 455 children from 6 months to 6 years of age in Mumbai, India. Baseline and follow-up data was collected by interviewing mothers about oral health and nutrition knowledge and practices and their child's complaints of mouth pain; examining for decayed, missing and filled teeth, and measuring height and weight for nutritional status. The intervention included community health worker education for mothers and children on oral health and nutrition, toothbrushes and fluoride toothpaste distribution, and biannual applications of fluoride varnish to children's teeth. Univariate and bivariate statistical analyses were completed with SPSS, version 22.

Findings: From baseline to 1-year follow-up, some risk factors (increased consumption of milk, decreased consumption of soda, increased tooth brushing) reduced, while others (consumption of junk food and sweets) increased. Prevalence of tooth decay decreased from 64% in year 1 to 52% in year 2, and the average number of decayed teeth decreased from 6.1 to 4.6. Additionally, the percentage of children reporting of mouth pain decreased from 77% to 50% for children age 6. Regarding nutritional status, there was a 5.9% decrease in number of severely underweight children, and 6.3% decrease of extreme stunting primarily due to reduction in prevalence of severe malnutrition ($Z < -3$).

Interpretation: India Smiles intervention was associated with a decrease in the prevalence and severity of tooth decay, mouth pain, and malnutrition after 1 year. The program is completing the 4th year follow-up data collection in collaboration with our Indian partner organizations and developing strategies to ensure sustainability.

Funding: Big Ideas at Berkeley.

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Quality of local healthcare facilities and deciding on in-facility delivery: identifying contributors to healthcare-seeking behavior among pregnant Malawian women

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Background: Millennium Development Goal (MDG) 5 seeks to reduce maternal mortality in Malawi from 620 /100,000 live-births in 1990 to 155 by 2015. 2013 maternal mortality remained high at 510, indicating this goal will likely not be met.

Thadeus and Maine (1994) propose maternal healthcare is hindered by three delays: in 1) decision to seek care, 2) reaching health facility; and 3) receiving adequate care once at facility. Our research explores the first, asking: what factors contribute to Malawian women deciding to not seek in-facility deliveries? Known

factors include income and distance to facility; we further consider how quality of local healthcare facilities correlates with women's decisions to have in-facility births.

Methods: We rely on publicly available facility and individual-level data from Demographic and Health Surveys (DHS). Facility data is from the 2013–2014 Service Provision Assessment (SPA) survey, which characterizes Malawi's health service facilities. We use SPA data to construct a metric for facility quality, aggregating availability of various resources relevant to pregnancy outcomes.

The 2010 Standard DHS survey asks women to identify who assisted with delivery: health personnel, another person–friend/relative or traditional birth attendant, other, or no one. Because both datasets are GPS-linked, we can directly measure how quality of nearby healthcare facilities correlates with a mother's decision to have an in-facility birth. Spatial analysis will be conducted using ArcGIS, and our regression will control for other effects.

Findings: Analysis is in progress. However, heterogeneity in facility quality is evident: for example, among 528 facilities offering delivery services, only 13% provide Caesarean delivery; 6% use the dangerous practice of giving newborns full baths. There is also variation in the decision to have an in-facility birth: the 2010 DHS report shows only three-quarters of births (73%) took place in a health facility.

Interpretation: Understanding drivers behind women's decisions to have in-facility births is crucial for improving pregnancy outcomes. Furthermore, this study's spatial analysis allows us to identify hotspots of need: where women are most likely to not seek skilled healthcare personnel during childbirth, and where lesser quality healthcare is prevalent. This will be instrumental for planning policy.

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The addition of whey permeate to ready-to use supplementary food improves recovery from moderate acute malnutrition

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Background: Moderate acute malnutrition (MAM) is highly prevalent worldwide and affected children may suffer from lasting consequences including growth stunting and cognitive impairment. Ready-to-use supplementary food products have been developed to treat MAM in children, however the optimal nutrient composition is still debated. Prior studies suggest that dairy protein, in comparison to plant-based protein, increases lean body mass, accelerates linear growth, and improves recovery from malnutrition. We hypothesize that the use of whey protein in supplementary food for malnourished children will be beneficial and lead to improved outcomes.

Methods: We conducted a prospective, double-blinded randomized controlled clinical trial to compare a whey-based versus soy-based ready-to-use supplemental food (RUSF) product. Children aged

6–59 months with MAM, defined by mid-upper-arm circumference (MUAC) of 11.5–12.4 cm were enrolled at a total of 18 sites in southern Malawi from February 2013 to November 2014. Once enrolled, children were randomized to receive soy RUSF versus whey RUSF. Caregivers were given supplies of RUSF to feed to their children at a dose of 75 kcal/kg/day. Children returned for follow up visits every two weeks and were monitored for clinical improvement by MUAC, height, and weight. Primary outcome was recovery from MAM by reaching a MUAC of 12.5 cm within 12 weeks of initiating therapy. Secondary outcomes included change in MUAC, weight, and length as well as time to recovery and adverse events.

Findings: A total of 2259 children were enrolled in the study. Baseline characteristics were similar between the two groups. The percentage of children who successfully recovered from MAM was higher in the whey RUSF group at 83.9% vs. 80.5% ($p < 0.04$; RR=1.043, 95% CI: 1.003, 1.084). The average MUAC at time of recovery was also greater in the whey RUSF group as compared to the soy RUSF group ($p < 0.009$). Children randomized to the whey RUSF group had higher average daily MUAC gain ($p < 0.003$). No significant adverse events were identified.

Interpretation: In this randomized, prospective, clinical trial, we demonstrate that RUSF formulated from whey permeate improves nutritional recovery and anthropometry in the treatment of MAM in children in sub-Saharan Africa.

Funding: Scandinavian Dairy Association.

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Implementing targeted interdisciplinary solutions to health barriers through experiential learning projects: the Northwestern access to health project in Mali

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Program/Project Purpose: The Northwestern Access to Health Project (ATH) is an interdisciplinary global community health project that brings together law, public health, and business faculty and graduate students with communities, local health advocates, and human rights organizations. ATH aims to balance cross-disciplinary academic learning environments with realistic, sustainable interventions, utilizing diverse perspectives to reduce challenges associated with mono-dimensional, non-consultative interventions. Multidimensional approaches generate targeted and adaptable projects as solutions to health barriers.

In 2013, ATH began working with communities and advocates in the Mopti region of Mali to create innovative, low-resource interventions to reduce female genital cutting (FGC). With an 89% prevalence rate, FGC—"partial or total removal of the external female genitalia"—contributes to high maternal mortality, infection, girl child death, and disability. ATH develops creative, multi-sectoral interventions to address the complex interaction between the tradition of FGC and the realization of SDG 3—Good Health.