

### Can traditional birth attendants be integrated successfully into national health programs to improve maternal health amongst indigenous populations? A case study of Mam and K'iche' indigenous peoples in Quetzaltenango & Totonicapán, Guatemala

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**Background:** Guatemalan maternal health shows extreme ethnic inequality and indigenous women suffer disproportionate mortality and morbidity. In line with international policy, this study aimed to evaluate the success of the integration of traditional birth attendants (TBAs) into the public health systems of the predominantly indigenous regions of Quetzaltenango and Totonicapán, and its potential to improve indigenous maternal health.

**Methods:** In total, 55 participants took part in one of 19 semi-structured interviews or 4 focus group discussions in May and June 2015. Stratified purposeful sampling ensured representation of all main stakeholders in indigenous maternal healthcare: NGO Officers, Ministry of Health personnel, TBAs, Municipal Councilors and women and men of reproductive age. The Framework Approach was used to analyse interview data. The Liverpool School of Tropical Medicine granted ethical approval in April 2015 and written informed consent was gained from all study participants.

**Findings:** Currently, TBAs are not fully integrated into health systems despite increased collaboration with health professionals. Political dysfunction and inter-stakeholder competition challenge effective integration on multiple levels. Whilst national political policies promote indigenous and western maternal healthcare practices, at a regional level, western medicine is the hegemonic discourse, and within communities, Mayan culture wins out. Relationships between TBAs and health professionals are often tense and competitive, with biomedical providers concerned about increasing westernisation of TBA practices. Communities perceive institutional births poorly due to cultural inappropriateness of health facilities and distrust of state actors, but also want access to biomedical knowledge. All stakeholders consider integration necessary to improve indigenous maternal health. In municipalities where stakeholders unite, successful integration is possible and increases health service accessibility to indigenous communities.

**Interpretation:** The current non-integration of TBAs into health systems limited triangulation of the stated attitudes of participants towards integration with their observed behaviour. TBA integration in Guatemala is complex and culturally sensitive, but necessary. Successful integration requires: 1) negotiations between TBAs and SBAs to define their respective roles, 2) increased community participation in healthcare, 3) community education to increase awareness of obstetric emergencies and trust in health institutions. In the long term, state funding for integrated TBAs is necessary.

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### Breastfeeding increases the risk of childhood anemia in a rural community in south-eastern Nigeria – Emphasis on maternal nutritional status may be the key to reducing child mortality from anemia

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**Background:** Child mortality rate in sub-Saharan Africa is 29 times higher than in industrialized countries. Anemia is one of the preventable causes of child mortality. Volunteer medical staff from University of Wisconsin (UW), Madison used a free humanitarian medical mission conducted by Mezu International Foundation (MIF) in rural South-Eastern Nigeria to determine the prevalence and risk factors of anemia in that region, in order to identify strategies for reduction.

**Methods:** We conducted a cross-sectional study on 96 children aged 1-7 years from 50 randomly selected families seeking care at the august 2015 MIF medical mission. The number of children surveyed was determined from attendance at prior medical missions. Institutional Review Board (IRB) was obtained from a collaborating local institution, Federal University of Technology, Owerri. Verbal informed consent was obtained from parents or caregivers prior to study participation. A study questionnaire was used to collect information regarding socio-economic status, family health practices and nutrition. Other clinical diagnoses were obtained from medical records at the mission. Anemia was diagnosed clinically or by point of care testing of hemoglobin (Hgb) levels.

**Findings:** Out of 96 children that were selected for the study, 90 completed surveys were analyzed (49% male and 51% females). Anemia was the most prevalent clinical morbidity (69%), followed by intestinal worm infection (53%), and malnutrition (29%). All children were breastfed beyond five months of age. Mean age (months) that breastfeeding was stopped was 11.8 ( $\pm 2.2$ ) in children with Hgb <11mg/dl (severe anemia), 10.5  $\pm$  2.8 in children with Hgb = 11-11.9mg/dl (mild-moderate anemia), and 9.4  $\pm$  3.9 in those with Hgb >12mg/dl (no anemia) ( $p = 0.0445$ ).

**Interpretation:** The longer the infant was breastfed, the worse the severity of childhood anemia. Childhood anemia was likely influenced by the low iron content of breastmilk, an indication of maternal anemia and poor nutrition. Although continuous breastfeeding is a known strategy to reduce child mortality, a family-centered preventive intervention to diagnose and treat maternal anemia may be more effective in reducing childhood anemia in the community, which could lead to reduced mortality from anemia.

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### Dengue and Chikungunya virus in the Dominican Republic: Knowledge, awareness and preventative practices

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**Background:** Although Dengue has had a longstanding presence in the Dominican Republic, Chikungunya was introduced into the region in December of 2013. Since then, the Dominican Republic