

0.91) were included. 82% applied International Classification of Headache Disorders (ICHD) diagnostic criteria. Median responder rate was 83.4%. Median age of migraineurs was 32 years (IQR 24.6–38.7). Prevalence period ranged from lifetime in 73 (28.5%), one-year in 149 (58.2%), two-years in 4 (1.6%), 6-months in 18 (%), and 3-months in 12 (7%) studies. Pooled crude migraine prevalence was 11.6% (95% CI 10.7–12.6%; random effects); 10.4% in Africa, 10.1% in Asia, 11.4% in Europe, 9.7% in North America, 16.4% in Central and South America. Weighted migraine prevalence stratified among females, males, rural, urban, and school/college was 13.8%, 6.9%, 11.2%, 8.4%, and 12.4% respectively. Sensitivity analysis revealed similar random-effects weighted prevalence between ICHD-using studies versus all studies (11.6%), likewise between one-year versus all studies (11.6%).

Interpretation: Migraine affects one in ten people worldwide; it is twice common in females. Higher prevalence was found among school/college students and urban residents. Geographical variations were observed with Central and South American region featuring higher prevalence compared to other regions.

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Abstract #: 2.093_NEP

"Its spirit is strong": Shawi spirits, healers and diarrhea in the Amazon

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Background: Indigenous communities' perceptions of illness may not always reflect known biomedical causes of disease. These perceptions make some health interventions ineffective, reinforcing a higher burden of illness in Indigenous communities. In particular, waterborne illness remains a public health issue. The goal of this research was to explore how Shawi perceptions of the causes of diarrhea, as a symptom of waterborne illness, relate to Shawi beliefs and cosmology about water. Further, the research explored implications for the effectiveness of biomedical healthcare interventions in the Peruvian Amazon.

Methods: This study used participatory qualitative methods. 22 semi-structured interviews were conducted from August 21 to September, 2014, in two Shawi communities. Study communities were located on the shore of the Armanayacu River, in the Balsapuerto district of the Alto-Amazonas province, in the Loreto department of Peru. Interviews were conducted with: parents of children younger than ten, persons associated with traditional medicinal practices, individuals with expertise in Shawi spiritual beliefs, and health technicians at the government medical clinic used by each community. Interview results were analyzed using a thematic phenomenological approach combined with ATLAS.ti qualitative analysis software.

Findings: Qualitative analysis found that the two Shawi communities did not perceive drinking untreated water as able to cause diarrhea. Shawi perceptions about diarrhea correlated strongly with Shawi cosmology, spiritual beliefs, and the Shawi traditional health system. Community

members perceived diarrhea to arise from three different pathways: diarrhea caused by water spirits, diarrhea caused by a traditional healer, or diarrhea caused from feelings of hunger due to food insecurity.

Interpretation: The number of participants was limited by time constraints, and analysis was made difficult by multiple language translations. However, the study clearly found that many Shawi perceptions of illness do not reflect biomedical causes of diarrhea (hygiene, sanitation, parasites). Current interventions for diarrhea disease in the Amazon do not recognize community perceptions of the causes, which may render these interventions ineffective. Therefore, understanding and appreciating Indigenous health perceptions is key to improving the design of waterborne illness health interventions.

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Influence of the 2014 West African Ebola epidemic on essential health service utilization in a Liberian district

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Background: The recent 2014 West African Ebola virus disease (EVD) epidemic has so far affected 10,672 Liberians, resulting in 4,808 deaths. This study aimed to delineate changes in essential health service utilization at the level of a Liberian district with comparisons to the previous year.

Methods: Data was collated from monthly Health Management Information System (HMIS) forms sent by the 11 health facilities in Zorzor district (population 40,704) to the Liberian Ministry of Health & Social Welfare over 2013–2014 and analyzed for trends. IRB approval was obtained for secondary data analysis as no individually identifiable health information was used.

Findings: There was a global decline in many key indicators, especially in the field of maternal and child health. Amongst the significant findings was a decrease in the number of four or more antenatal care visits (-66 women, $p < 0.001$), maternal tetanus immunization (-32 women, $p = 0.02$), male condom distribution (-681 units, $p = 0.005$), Pentavalent vaccination for children under age 1 (-22 infants, $p = 0.02$), vitamin A supplementation for children aged 12–59 months (-31 children, $p = 0.01$), and for children under age 5, insecticidal net distribution (-24 units, $p < 0.001$) as well as the number of children with diarrhea and pneumonia who were appropriately treated (-54 and -68 respectively, $p < 0.001$).

Interpretation: The drop in infant immunizations, Integrated Management of Childhood Illness (IMCI) services for children under age 5, as well as antenatal care and family planning is concerning. Since Zorzor district only had 15 confirmed EVD cases, with just one affecting a healthcare worker, it is possible that this decrease in health service utilization is associated with fear and stigma rather than direct fallout. Further analysis was difficult as credible sources to derive denominators for the calculation of proportions and ratios were lacking, in addition to the nature of

the HMIS forms representing passive surveillance with the potential for underreporting. Extrapolation to assess impact, such as a rise in vaccine-preventable diseases or maternal and under-five mortality, remains to be confirmed in future studies. For now, scheduling catch-up vaccinations, reinstating routine antenatal care and family planning services, as well as recommitting resources to the IMCI strategy should be made a priority.

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Malnutrition in Lao PDR: Does maternal health knowledge buffer the negative effects of environmental risk factors on child stunting?

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Background: Lao PDR is one of the least developed countries in the world and one of the most challenging places for children to develop. Forty-six percent of the population in Laos lives below the national poverty line (World Bank, 1999) and the prevalence rate of stunting (chronic malnutrition) is close to 50% (Save the Children, 2014). Although many of the determinants of stunting are well understood, the rates of stunting in Laos remain alarmingly high. Maternal health knowledge, even within illiterate, non-educated populations, has been shown to predict short-term nutritional improvements in children in Indonesia (Webb & Block, 2003). However, health knowledge among Lao mothers remains understudied, especially as it relates to important child health outcomes. The goal of the present study is to understand the prevalence and determinants of childhood stunting in Lao PDR, specifically investigating parental knowledge about nutrition and healthcare practices. The moderating effects of parental knowledge on the association between children's environmental risk and objective measures of malnutrition will be also be examined.

Methods: Data were obtained from 800 families with children under age 5 in three districts and 90 villages in the northern province of Luang Prabang, Lao PDR using a two-stage cluster sample method based on the 30-cluster random sample technique standardized by the WHO. This technique meets the standards of reliability and provides results with a level of confidence of 95%. Families were interviewed using a structured survey questionnaire and extensive anthropometric data was collected.

Findings/Interpretation: Preliminary results (Figure 1) show that malnourished children remain a major population in Lao PDR, with stunting rates approaching 50% in the present sample. In addition, results point to the protective effects of maternal education and village location (rural vs. urban). Maternal health knowledge (i.e., of symptoms, danger signs, and approaches to treatment), household risk (i.e., potable water, healthy sanitation, mosquito nets, etc.), and nutritional practices are currently being analyzed. Our preliminary data also show that children of mothers with greater health knowledge evidence lower rates of

stunting. Further interpretations pending analyses will be discussed.

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Barriers to surgery in low- and middle-income countries: Patient perceptions in Vietnam

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Background: The Emergency and Essential Surgical Care program (WHO, 2005) and Lancet *Global Surgery 2030 Commission* have brought to light the growing need for surgical care in low- and middle-income countries (LMICs), along with challenges of adequately providing surgical services. We conducted a large-scale, cross-sectional study of barriers to cleft surgery to develop an updated, evidence-based model for barriers to surgical care in LMICs.

Methods: We administered a validated 78-question survey examining access/barriers to comprehensive surgical care to a random selection of households that attended Operation Smile's 25th Anniversary missions in Vietnam (November 2014, in the cities of Hanoi, Nghe An, Hue, Ho Chi Minh, An Giang and Bac Lieu). Operation Smile provides gratis comprehensive and surgical cleft care for underserved children in LMICs. 884 households presented to the missions and 453 (51%) were surveyed. Patients/guardians provided written consent. This study was IRB approved by the University of Southern California.

Findings: In this population, the average age of cleft lip and cleft palate surgery was 37 and 46 months, respectively, which is well outside the optimal window (18 months). Fifty-four percent of respondents stated cost was the most significant barrier to obtaining cleft surgery. Barriers to surgical care were considerable for families with insurance, as 52% of households who had insurance were unable to access cleft surgery prior to the mission, compared to 25% without coverage ($p < 0.001$). Of households that accessed surgery in the past, 83% had their surgery done by a charity, despite 63% having insurance coverage. This may suggest limitations to existing insurance structures in Vietnam, as patients continue to rely heavily on external institutions and out-of-pocket systems. Households in our study attributed this discrepancy to lack of supplies and trained professionals, mistrust of medical providers, and lack of long-term and comprehensive care (59%, 34% and 32% of respondents, respectively).

Interpretation: Despite high rates of insurance coverage, families had considerable difficulty accessing surgical care. We show that patient perceptions of financial/structural/cultural barriers play a large