

(60.6 vs. 49.6%), multiples (6.1 vs. 2.1%), prematurely born (67.7 vs. 11.7%), weighed less than 2500 grams (71.2 vs. 12.0%), were born in a breech position (26.1 vs. 3.5%), and were delivered by caesarean section (26.5 vs. 18.7%). Their mothers were more often younger than 20 years and 35 years and older [OR=1.8], more often had a Maroon, Creole or Indigenous ethnicity [OR's respectively 1.3, 2.1, 2.5], and were less often Hindustani [OR=0.8] or Javanese [OR=0.3]. Low birth weight, premature birth and a breech position were independently associated with a 6.6, 4.9 and 3.8 times increased risk of neonatal death, respectively. In addition, most babies (74%) died in the early neonatal period and within 24 hours after birth (34%), due to respiratory insufficiency as a result of infant respiratory distress syndrome (IRDS), which accounted for 53% of deaths, followed by sepsis/infection (24%) and congenital malformations (19%).

**Interpretation:** Neonatal mortality in Suriname is high compared with more developed countries (5‰) but is comparable with other countries in the Caribbean region (19‰). Early neonatal death accounts for a large proportion of neonatal mortality in the multi-ethnic society of Suriname. Two-thirds of these infants are born prematurely and the timing of death is often in the first 24 hours after birth. More than half of the newborns died as a result of respiratory insufficiency. It is imperative that further measures are taken to reduce neonatal mortality. The initiation of a national neonatal intensive care unit would be a major step forward to achieve this goal.

**Funding:** Ministry of Health Suriname and TNO Netherlands Organization for Applied Scientific Research.

**Abstract #:** 01SEDH037

### Examining the link between prevalence of severe early childhood caries and self-reported oral health and quality of life outcomes

Y.A. Ellenikiotis<sup>1</sup>, B. Seymour<sup>1</sup>, K. Sokal-Gutierrez<sup>2</sup>, M. So<sup>3</sup>; <sup>1</sup>Harvard School of Dental Medicine, Boston, MA/US, <sup>2</sup>UC Berkeley School of Public Health, Berkeley, CA/US, <sup>3</sup>Harvard School of Public Health, Boston, MA/US

**Program/Project Purpose:** Children in developing nations are vastly affected by malnutrition and tooth decay with rates of tooth decay increasing over the last several years. Oral health diseases have affected approximately 2.1 billion individuals worldwide, yet little attention has been given to improving oral health. Oral diseases negatively impact child nutrition, child growth, and child well-being. Many children in Ecuador are severely affected by oral diseases, so we aimed to work with different communities within the country in attempts to evaluate the effectiveness of public health interventions developed by Dr. Sokal-Gutierrez.

**Structure/Method/Design:** The interventions focus on reducing child malnutrition and oral diseases by educating communities, distributing toothbrushes and toothpaste, and providing fluoride varnish. We additionally surveyed parents and screened for malnutrition and childhood caries. We referred those children that had severe tooth decay to dentists at the Ministry of Health to ensure appropriate treatment. Over the past four years, this project has worked with seventeen different indigenous Kichwa tribes in the amazon jungle and has seen hundreds of children aged 6 months to 6 years.

**Outcomes & Evaluation:** In 2011, 732 children participated and 80.7% had tooth decay with an average of 6.80 decayed teeth per child. Two years later 78% of 700 children still had some tooth decay, but the average number of decay per child decreased to 5.64. In 2011

and 2013, the percentage of children with severe mouth pain was 25.03% and 25.20%, respectively. Malnutrition rates were between 30-40% during these years as well. The percentage of children with tooth decay, malnourishment, and mouth pain are very high due to a collection of risk factors. These include a lack of knowledge, increased access to junk food, lack of necessary resources such as toothbrushes and toothpaste, and poor practices from both parents and children. We hope to minimize those risk factors and poor outcomes. Our primary analysis, however, will focus on examining the relationship between prevalence of early childhood caries and malnutrition on self-reported oral health outcomes and quality of life. We also partnered with the Ecuadorian USFQ dental and public health school and reached out to 200 more children aged 6 months to 15 years in mountainous communities with a similar interventional approach.

**Going Forward:** Even though we worked with specific populations, we believe malnutrition and tooth decay continue to be a problem for children all over developing nations and developed nations alike. As access to and consumption of unhealthy and sugary foods become increasingly common in developing nations, tooth decay and malnutrition rates will continue to rise and negatively impact child health rise unless successful interventions are developed to combat this.

**Funding:** We received funding from UC Berkeley, the Rotary Club, and Harvard Medical School.

**Abstract #:** 01SEDH038

### Livestock ownership and child stunting in Eastern Africa: an analysis of national survey data

E. Mosites<sup>1</sup>, T. Mwangi<sup>2</sup>, G. Bigogo<sup>3</sup>, E. Otiang<sup>3</sup>, P. Rabinowitz<sup>1</sup>, J. Walson<sup>1</sup>; <sup>1</sup>University of Washington, Seattle, WA/US, <sup>2</sup>Washington State University, Kisumu, KE, <sup>3</sup>KEMRI/CDC, Kisumu, KE

**Background:** Stunting in childhood (linear growth failure) has pervasive consequences that hinder not only individual development but impact population health and economic improvement. Rural areas shoulder an unequal burden of stunting, and One Health approaches may represent an innovative opportunity to addressing stunting in these areas. Livestock ownership may promote child growth by providing dietary diversity and wealth, or suppress it through zoonotic disease transmission, but the risk-benefit relationship is unclear. This study sought to evaluate whether national cross-sectional data show a relationship between livestock ownership and growth stunting.

**Methods:** This study was a regional analysis of the most recent Demographic and Health Survey cross-sectional datasets from three East African countries, including Kenya (2008-2009), Ethiopia (2011), and Uganda (2010), restricted to children under 5 years living in rural areas. We calculated a Tropical Livestock Unit (TLU) score, which combines multiple species of livestock into a single weighted measure to represent the amount of livestock owned. The association between family livestock ownership and stunting was assessed using a log-binomial model adjusted for wealth and region, and was stratified by diarrheal illness, animal-sourced foods, region within country, and wealth index to identify high risk subgroups.

**Findings:** This analysis included the households of 8720 children from Ethiopia, 2214 children from Uganda, and 4203 children from Kenya. Stunting was highly prevalent in each country, ranging from 23.4% in Kenya to 38.7% in Ethiopia. A TLU unit increase in livestock ownership was not significantly associated with stunting prevalence in Kenya or Uganda, but was associated with a 2% decrease in stunting prevalence in Ethiopia (Ethiopia- PR 0.98,

$p=0.003$ , Kenya- PR 0.99,  $p=0.43$ , Uganda- PR 0.95,  $p=0.11$ ). In all three countries, families which owned few small animals, such as small numbers of chickens or goats, did not have a significant benefit for stunting compared to those families owning no animals. However, ownership of larger numbers of small animals or cattle was associated with benefit in all countries. The relationship between livestock and stunting varied by region, but not by other stratifying variables.

**Interpretation:** This analysis provides a unique approach to considering the ultimate causes of malnutrition. In this study, owning few small animals did not provide a benefit for stunting prevalence suggesting that the advantage of owning livestock may only be realized for families with larger herd and flock sizes. The association of livestock and stunting varied across region, representing differing patterns of human-animal ownership patterns and interactions. National survey data is limited in that it is cross-sectional, but can offer meaningful information in certain circumstances. Planned future prospective cohort studies will provide further insight into the influence of livestock on child nutrition.

**Funding:** None.

**Abstract #:** 01SEDH039

### Know your diabetes! assessing knowledge of type II diabetes complications and prevention in Armenia

H.Z. Wright<sup>1</sup>, S. Woods<sup>2</sup>, W. Irvine<sup>2</sup>, M. Hovhannisyanyan<sup>3</sup>, T. Jiao<sup>4</sup>;  
<sup>1</sup>Division of Public Health, University of Utah, Salt Lake City, UT/US,  
<sup>2</sup>University of Utah, Salt Lake City, UT/US, <sup>3</sup>Yerevan State Medical University, Yerevan, Armenia, <sup>4</sup>Department of Pharmacotherapy L.S. Skaggs Pharmacy Institute, Salt Lake City, UT/US

**Background:** With 54,950 cases reported in 2013, and an estimated 19,000 undiagnosed cases, Armenia has the highest prevalence of diabetes in the Caucasus region (International Diabetes Federation, 2013). Diabetes prevalence is projected to increase to approximately 1 in 10 Armenians by 2030, making diabetes awareness and prevention imperative for controlling current and future cases. Our objective was to assess the adult Armenian population's understanding of type II diabetes complications and prevention to determine the need for future educational programs and training.

**Methods:** A cross-sectional survey was carried out using a self-administered questionnaire between June 24th and July 4th, 2013, in four different urban and rural regions of Armenia: Yerevan, Hrazdan, Gyumri, and Armavir. 454 Armenian men and women ages 18 and older attending local health clinics participated in the study. Participants were recruited using convenience sampling method and were provided a verbal consent. before administering the survey. The study was approved by University of Utah Internal Review Board (IRB\_00064888) and Yerevan State Medical University Ethics Committee (N10). Standard descriptive statistics and regression-based approaches were utilized to analyze the data.

**Findings:** Of the 454 adults surveyed 34% were male and 66% female. The distribution of participant ages was 30% between 18-29 years, 32% between 30-49 years, and 33% over 50 years. Most participants surveyed resided in urban rather than rural areas (65% vs 35%, respectively). Our data indicates that 48% of respondents were aware of type II diabetes as a preventable disease, however, only 2% (SD =1.77) were knowledgeable of all preventive practices. Of the study participants, 56% were unaware weight reduction can help control and prevent type II diabetes. Participants with secondary or higher education were more aware ( $p = 0.012$ ) of the preventability of type II diabetes. Over 77% of the study population acknowledged uncontrolled type II diabetes can cause complications, however, only 33% (SD = 0.95) could identify 1-3 complications, with less than 2% identifying four or more complications. Over 22% of respondents were unaware type II diabetes can lead to severe health complications.

**Interpretation:** Our results indicate that nearly half the study population were unaware type II diabetes is a preventable disease, and very few were knowledgeable about all preventative practices. Although acknowledgment of diabetes complications was high, few participants could identify specific complications. Our data indicate participants having secondary education or higher were more aware of type II diabetes' preventative nature. Thus, it is important that current and future Armenian educational programs address the diabetes knowledge disparity through targeted intervention. The limitation of the study was the relatively small sample size. A larger, more representative sample should be analyzed in the future to assess knowledge throughout Armenia.

**Funding:** None.

**Abstract #:** 01SEDH040