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**Program/Project Purpose:** About half of the populations without access to improved drinking water are in Sub-Saharan Africa (319 million).[1] Mozambique, as part of this statistic, is also ranked as one of the most poverty-stricken countries in the world (180 out of 188 in the UN Human Development Index).[2] In an effort to provide every person with the human right to water and sanitation, World Vision Mozambique has implemented the WASH (Water Sanitation and Hygiene) Project. However, has this project been successful and ultimately benefited the country? In an effort to understand the impact that introducing a reliable source of water has in a Mozambican community, we conducted a field study to assess the aftermath of WASH.

**Structure/Method/Design:** Two local districts, Chibuto and Guija, were selected; from each, a community with an old water borehole and a new borehole was identified. In a span of six weeks, participants were chosen and surveyed based on their role in the community: adult community member, secondary student, and health care provider or professor.

**Outcome & Evaluation:** Results show that communities are utilizing the water bore holes to maximize their everyday chores; however, they are not correlating the serious health implications that are related to lack of potable water or poor sanitation methods. Based on the results of the study, we recommend that World Vision initiate a continuous follow up after water borehole implementation in a community. An evaluation of this action could help increase health sustainability and an understanding of the importance of water in Mozambican communities.

**Going Forward:** Further evaluation methods within communities would assess sustainability measures in water, hygiene and sanitation. A better understanding of the importance of water among community members would improve the overall health and infrastructure in Mozambican.

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### Seasonal Variations in Fetal Growth Patterns in Ulaanbaatar City, Mongolia

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**Background:** Ulaanbaatar, the capital city of Mongolia sees some of the world's most extreme seasonal variability in climate and air pollution levels. In the winter months, temperatures can drop to  $-40^{\circ}\text{C}$  and particulate matter and gaseous pollutant concentrations at this time can exceed over 20 times WHO standards. In the summer months, air pollution levels are low and temperature

extremes can reach up to  $+33^{\circ}\text{C}$ . This cross-sectional study examines whether there are seasonal variations in fetal growth patterns on prenatal ultrasound evaluations given these extreme environmental fluctuations.

**Methods:** We collected measurements from 4373 fetal ultrasounds from three antenatal care clinics in Ulaanbaatar, Mongolia from March to July 2016. Biparietal diameter (BPD), abdominal circumference (AC), and femur length (FL) growth parameters were estimated from each sonographic evaluation. Z-scores were calculated for each measurement using published norms by weeks gestation. Season of conception was grouped in tertiles: Winter (November to February), Spring (March to June), Summer (July to October). The impact of season of conception on second and third trimester ultrasound Z-score measurements was assessed with two-way ANOVA with interaction at a 0.05 significance level.

**Findings:** There were significant differences in FL, BPD and AC by season of conception. FL Z-score ( $p=0.033$ , Winter > Spring), BPD Z-score ( $p=0.011$ , Winter < Summer), and AC Z-score ( $p=0.014$ , Winter < Summer). BPD Z-score also differed by trimester of pregnancy ( $p=0.0002$ , Tr2 > Tr3). AC Z-score did not differ by season of conception, but did differ by trimester ( $p=0.0003$  Tr2 > Tr3).

**Interpretation:** Our preliminary findings suggest that there are seasonal patterns in fetal growth in Ulaanbaatar, Mongolia. To our knowledge, this is the first study on seasonal variations in fetal growth patterns in Mongolia. These findings will help to better understand environmental changes on fetal growth, and to develop interventions to reduce adverse fetal and birth outcomes.

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### The Effects of Early Childhood Development Centers on Child Development and Nutritional Outcomes in Estancia, El Salvador

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**Background:** In El Salvador, it is estimated that 35% of households live in multidimensional poverty with limited access to education, adequate nutrition, and economic opportunities. Poverty is known to affect child development and educational outcomes. An estimated 25% of three and four-year children in El Salvador have a low Early Childhood Development Index (ECDI) score. Doctors for Global Health partnered with a local non-governmental organization, *La Asociación de Campesinos para el Desarrollo Humano* (Peasant Association for Human Development, CDH), and facilitated the creation of Centers for Integrated Child Development (CICD) for children two – six years of age; children receive a curriculum that includes motor, language, and socio-emotional activities