

decade, primarily among rice farming communities. The national healthcare system is struggling to address the medical needs of the growing number of affected individuals who need to be treated with dialysis and renal transplants.

**Hypothesis:** Occupational pesticide use and alcohol consumption are risk factors associated with CKDu in farming communities in Sri Lanka.

**Aims:** 1) To conduct a case control study investigating risk factors for CKDu using a One Health community survey approach in affected rice farming communities of Sri Lanka; 2) To use results generated from this study to assist CKDu researchers in exploration of multidisciplinary intervention strategies and in generating data-driven policy changes to reduce CKDu incidence.

**Methods:** The case-control study focused on human populations living in the CKDu prevalent North Central region (NCR) of Sri Lanka. A sample population of 110 individuals (55 cases and 55 controls) was selected based on CKDu health screening records from affected communities. Cases were individuals who tested positive for albuminuria and had renal changes consistent with CKD without the presence of diabetes or hypertension. Controls were patients with similar exposures, but negative for albuminuria and CKD. The oral survey tool was translated from English to Sinhalese and administered by Sri Lankan research staff. Multivariable logistic regression was performed to model risk factors associated with CKDu diagnosis.

**Findings:** Community surveys from the 55 CKDu cases and 55 control individuals were analyzed based on exposure factors related to human, animal, and environmental components: 1) cultural practices, 2) family history, 3) animal health, 4) occupational pesticide use, and 5) utilized water sources. Preliminary analysis shows that the CKDu epidemic is most likely multifactorial and involves both cultural and occupational exposures more common in cases than controls.

**Interpretation:** Occupational and cultural risk factors are both important considerations that could be targeted in community interventions to reduce CKDu incidence in Sri Lanka and other affected agricultural communities.

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### Impact of an improved biomass stove on birth outcomes in rural Nepal: A cluster-randomized, step-wedge trial

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**Background:** Low birthweight (LBW), preterm birth, and small-for-gestational-age (SGA) are strongly associated with morbidity and mortality in low-resource settings. Data on the impact of

reducing particulate indoor air pollution from biomass stoves on adverse birth outcomes is lacking.

**Methods:** A cluster-randomized, step-wedge, community-based cookstove replacement trial was conducted in rural southern Nepal to estimate the impact on birth outcomes. Eligible households had at least one child < 36 months of age or a married woman 15–30 years of age. Prevalent pregnancies were enrolled at baseline and incident pregnancies were identified by visiting households every five weeks. Gestational age was based on date of last menstrual period ascertained during these visits. Households were surveilled for six months prior to a 12-month stepped-wedge introduction of an improved biomass stove with chimney (Envirofit Corp.), followed by an additional six months of surveillance. 2553 pregnancies were enrolled within 3376 households. As soon after delivery as possible, study workers visited the household to interview the woman and take infant anthropometric measurements. Outcomes were compared across different amounts of time a pregnant woman lived in a household with an improved cookstove. Household PM<sub>2.5</sub> was collected before and after stove installation.

**Findings:** Mean 20-hour PM<sub>2.5</sub> level was reduced from 1386 µg/m<sup>3</sup> to 930 µg/m<sup>3</sup>. Mean birth weight and gestational age was 2627g (SD = 443) and 38.8 weeks (SD = 3.1), respectively, among those delivering prior to improved stove installation. 39% were LBW, 22% preterm, and 55% SGA among pregnancies with no exposure to improved stoves. There was no statistically significant difference or trends in adverse birth outcomes by increasing exposure to improved stoves during pregnancy.

**Interpretation:** PM<sub>2.5</sub> concentrations following installation of the improved stoves were still well above the WHO indoor air standard of 25 µg/m<sup>3</sup>. There was no evidence that installation of improved biomass stoves reduced adverse birth outcomes. This could be due to an inadequate improved stove design, stove stacking, or other sources of indoor air pollution. Trials to examine birth outcomes with better biomass stove designs or clean fuel are needed to establish whether further lowering of indoor air pollution improves birth outcomes.

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### Zoonotic enteric pathogens in Kisumu Kenya, a comparison of farmed and Lake Victoria Tilapia: A collaborative interprofessional One Health project

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**Background:** Tilapia are among the main protein source around Lake Victoria, including Kisumu Kenya. Environmental pollutants of Lake Victoria include municipal untreated sewage, runoff, storm-water, and animal waste. We hypothesized that tilapia were contaminated with enteric zoonotic pathogens and we compared lake fish to locally farmed fish. We further wanted to see if certain parts of the fish were more likely to be contaminated.