

Comparing mental and neuropsychological health outcomes between two pesticide exposure groups in rural Bangladesh

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Background: Agricultural workers are at risk of pesticide exposures in agriculture-dependent South Asian countries due to lack of monitoring and education on proper use of personal protective equipment (PPE). Limited information is available in the literature if pesticide exposure is associated with mental and neuropsychological health outcomes in this region. The major goal of the present study was to examine the associations of pesticide exposure with several mental and neuropsychological health outcomes.

Methods: A pilot study was conducted in a rural community in Matlab, Bangladesh on 57 healthy adults who were 30–55 years old and were also free from any chronic illness. Among the subjects, 38 were occupationally exposed (regularly using pesticides in the field) and 19 were environmentally exposed (living in the agricultural community but were not using pesticides). Participants responded to a number of demographic, pesticide exposure, 16 depression and 20 stress questions through a face-to-face interview conducted by a research team that included a physician. At the same time, the team completed two parts of Trail Making Test (TMT), a neuropsychological pencil-paper test. To compare two exposure groups for the demographic characteristics and outcomes we used independent sample t-test and chi-square test for continuous and categorical variables respectively.

Findings: After the preliminary analysis, it was observed that occupationally exposed group had non-significantly higher depression score on the Center for Epidemiologic Study Depression (CESD) scale as compared to environmentally exposed group. Furthermore, occupationally exposed group had significantly higher depression score on the CESD interpersonal subscale ($p < 0.05$). Occupationally exposed group took longer time (Mean times in sec \pm sd were 73.1 ± 40.3 vs 123.8 ± 48.7 for part A; 56.8 ± 25.1 vs 112.0 ± 28.7 for part B) to complete both parts of the TMT even though the differences were not statistically significant perhaps due to the small sample size.

Interpretation: The findings of this study are preliminary, and larger studies need to be conducted in this population to obtain further evidence on the mental and neuropsychological health outcomes of pesticides.

Funding: The study was jointly funded by the Andrew W. Mellon Foundation and Indiana University (Grant Number: 00115453).

Abstract #: 1.003_PLA

Beyond operationalizing: The need for evaluation in One Health

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Background: Motivating and sustaining the operationalization of One Health depends on measured outcomes to secure future investment. We conducted a systematic review of One Health literature to analyze how interventions were evaluated and the nature of the outcomes reported.

Methods: We searched Scopus, PubMed and Web of Science using the term ('One Health'), restricting publication date from year 2003 (based on the formal introduction of the term) until May 26, 2015, when the literature review was first initiated. Articles were categorized based on title, as 'Topical'—whether One Health was referred to as a concept: the interdisciplinary integration of animal health, human health and ecosystem well-being, 'Non-Topical', or in a language other than English. We reviewed abstracts of 'Topical' references; those that cited a One Health approach were included in the full-text review upon which articles were screened for topic, and if any, metrics reported. Articles were excluded if they did not specifically provide a case study of an approach or if the full-text could not be located.

Findings: A total of 3858 articles were found resulting in 1839 unique papers; of these we categorized 808 as 'Topical'. Out of the 103 articles included for full-text review, 47 articles referenced specific a One Health intervention. 21 of these articles evaluated the approach, of which 8 used quantitative metrics (such as DALYs, cost savings, livestock productivity) to report outcomes. The majority of articles referenced the effectiveness of One Health approaches without citing measured outcomes.

Interpretation: Our search terms may have limited the inclusion of interventions termed as 'Ecohealth' or programs that fit the One Health concept, but our findings suggest evaluation of One Health programs is not yet widely employed. Building on attention from stakeholders across the One Health interface, evaluation can shift the paradigm beyond ad hoc operationalization to more a sustained and systematic execution of One Health. Demonstrating outcomes and allowing for comparison across interventions can inform stakeholder investment, shape how priorities are set, and resources allocated.

Funding: USAID Emerging Pandemic Threats PREDICT-2 Project and the Shirley Estabrook Wood Fund and Tow Foundation Public Service Program of Barnard College.

Abstract #: 1.004_PLA

Implementing climate change and health into pre-service nursing education

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Program Purpose: In April 2015, 30 leaders of U.S. medical, nursing and public health schools met at the White House and pledged to train the next generation of healthcare professionals to address the health effects of climate change. The University of Michigan School of Nursing was one of the signers this pledge. Our aim is to insert innovative and impactful education about climate change and health into the existing nursing curriculum.

Structure: The desired outcome is that all nursing students at the University of Michigan will receive education about the health effects of climate change in each year of their education.