

PLANETARY HEALTH/GLOBAL ENVIRONMENTAL HEALTH/ONE HEALTH

Health disparities and pesticide contamination of produce in Suriname

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Background: Suriname, an UMIC in the Caribbean region has significant ethnic heterogeneity: Hindustani (27.4%), Maroons (21.7%), Creoles (15.7%), Javanese (13.7%), and Mixed (13.4%), with the remainder representing Amerindians, Chinese, and Caucasians. Pesticides are used extensively in Suriname's agriculture. National pesticide residue monitoring is absent, but data from the Netherlands (2011–2013) show pesticide residues on imported produce from Suriname exceed European Union Maximum Residue Limits (EU MRLs). Pesticide exposure has been associated with neurological and neurobehavioral disorders. No environmental policies exist to protect those most vulnerable: pregnant women and children, especially the Indigenous. Despite the population's heterogeneity, no study has attempted to quantify the role of culture examining how cultural networks inform health decision-making. This study will examine how demographic and cultural factors relate to dietary pesticide exposure in pregnant women living in urban and rural regions of Suriname.

Methods: The study is being conducted in three phases. Phases 1 and 2 entail the environmental characterization and pesticide residue analysis. Phase 3 focuses on exposure assessment including a comprehensive dietary assessment and biomarker testing. The dietary assessment ascertains intake rates of vegetables as well as key demographic factors (age, ethnicity, gender, residency, education, income). Cultural factors will be assessed in Phase 3 through an ethnographic study approach to measure the beliefs and behaviors of participants, and analyze their cultural agreement employing Cultural Consensus Analysis.

Findings: 32 insecticides (e.g. lambda-cyhalothrin) and 12 fungicides (e.g. carbendazim) were tested on 9 produce-items (tannia, cabbage, chinese cabbage, yard-long beans, peppers, tomatoes, rice, sweet potatoes, banana). Organochlorines (endosulfan, lindane) and pyrethroids (lambda-cyhalothrin, cypermethrin) were detected. The popularly consumed vegetable Tannia, had levels of Endosulfan and Lindane exceeding the EU MRL. Data collection and analysis of demographic and cultural factors related to dietary pesticide exposure will be available at the upcoming conference.

Interpretation: Selected produce are contaminated with pesticides including Endosulfan and Lindane prohibited in Suriname and phased out under the Stockholm Convention. Culturally-tailored dietary interventions can be designed to protect pregnant women and their offspring in a sustainable fashion.

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Hygiene, sanitation, and behaviors that produce positive deviant outcomes in childhood growth in rural eastern Kenya: A qualitative positive deviant investigation

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Background: The Katangi region of Eastern Province of Kenya features alarming amounts of children suffering from malnutrition (27%) and growth stunting (37%), despite a home-based community health worker (CHW) program in the area. Our project aims to identify positive deviant sanitation, hygiene, and other behaviors in the region that can be the source of future interventions to eradicate childhood malnutrition; that is behaviors practiced in the home that promote the development of better-nourished children independent of factors such as wealth.

Methods: A nutritional assessment of local children using anthropometric measurements to classify the children into well-nourished and malnourished groups was conducted. Also, a Wealth Ranking Survey was administered to classify our study population into five classifications of wealth. A matrix of nutritional status and household wealth was then used to stratify the children into positive deviant and non-positive deviant groups based on these two parameters; positive deviants (PD) being those children with normal childhood growth despite living in 2 most poor quartiles, and non-positive deviants (non-PD) being malnourished children in those same wealth groups. We conducted home-based caregiver interviews with nine families representing a mix of PD and non-PD children to explore caregiver practices of feeding, sanitation and hygiene. Food preparation and caregiver practice observations were also recorded.

Findings: Our data identified several caregiver behaviors that could be PD inducing behaviors. We found that all mothers of PD children utilize their CHW first when the child is sick; non-PD mothers were more likely (75%) to wait until the child needed the aid of a physician, which is often located days away. Similarly, all PD mothers endorsed using soap during food prep, with only 25% of non-PD mothers doing the same. Finally the availability of an adult auxiliary caregiver, commitment to breastfeeding, and increasing food amount during diarrhea were all more common in the PD group than the non-PD group.

Interpretation: Several behaviors have been identified which could be PD behaviors. These are a potential source of intervention via education and the expansion of the CHW program. More study subjects are currently being recruited.

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