Developmental toxicant exposure in pregnant and reproductive-age women new to BC

Toxicants such as lead and mercury pass from mother to fetus, potentially leading to slowed growth and neurodevelopment in the child. Two in five Greater Vancouver residents are immigrants, and nearly one-third arrived within the last decade.[1] Adult women born outside Canada tend to have higher body burdens of reproductive and developmental toxicants than women born in Canada.[2,3] Heavy metals (lead, mercury, and cadmium), PCBs, and organochlorine pesticides such as DDT are the primary toxicants of concern. Studies have shown that Asian women and children may be at higher risk for exposure to mercury,[4,5] and given that 70% of recent immigrants to Vancouver have origins in Asia,[1] dietitians are concerned. Heavy metals are found at low levels in a variety of cultural and noncultural household products and foods, including:

- Cinnabar (used in vermilion paint by Indo-Canadian women to indicate their married status) and many freshwater and large predatory ocean fish may contain mercury.
- Imported ayurvedic treatments, traditional Chinese medicines, candies, and personal care items may contain lead.
- Organ meats and oysters may contain cadmium.

The Study of Newcomer Women and Developmental Toxicants (SEED) is enrolling participants to explore whether, how, and how much reproductive-age women new to BC from South and East Asia are exposed to and incorporate developmental toxicants through food, everyday household products, work, cultural practices, and hobbies. If tissue levels are found to be of concern, the study will also aim to find the best ways to lower them. Mitigating toxicant levels in pregnant and looking-to-become-pregnant newcomer women will help prevent future health risks passed to offspring during pregnancy and lactation.

Enrolling 300 participants from March 2015 to January 2016, SEED will assess newcomer women's blood and urine levels of heavy metals (lead, mercury, and cadmium) and other developmental toxicants. Health care providers who serve women originally from India, China, Hong Kong, and Taiwan living in the Greater Vancouver area and Abbotsford may be interested in learning about SEED and how their patients can participate. Women are eligible to participate if:

- They are 19 to 45 years old.
- They arrived in Canada 1 to 5 years ago directly from India, China, Taiwan, or Hong Kong.
- They are either less than 16 weeks pregnant or have not been pregnant for at least the past 8 months and not breastfeeding.
- They speak English, Punjabi, Hindi, Mandarin, or Cantonese.
- They live in the Greater Vancouver area, including Abbotsford.

Participation in the study involves completing a 1.5 hour in-person survey about one's health, diet, everyday product use, and exposures. In addition to the survey, a urine and blood sample will be collected. Participants will receive $50 and will be sent their personal blood toxicant results. If a woman's toxicant levels are found to be of concern, a study physician will offer guidance to her and her health care provider on how to interpret and lower toxicant exposures and tissue levels.

Among other cultural and noncultural products, SEED queries exposure to red vermilion powder (left) and ayurvedic teas (right) as potential sources of heavy metals.

This study will inform appropriate testing for heavy metals in pregnant women, as well as clinical and policy guidelines for the management of lead, mercury, and cadmium exposures among new-to-Canada women of reproductive age.

Led by environmental health researchers at the BCCDC, the project is a collaboration with Fraser Health and Vancouver Coastal Health Authorities, Health Canada, the University of Toronto, and Toronto Public Health, with funding provided by Health Canada, BCCDC, and the BC Ministry of Health.

Newcomer women, health care providers, and community organizations who serve newcomer women are invited to contact us by phone at 604 707-2529 (in English, Mandarin, Cantonese, Punjabi, and Hindi) or e-mail us at seed@bccdc.ca, or visit our website (www.bccdc.ca/SeedStudy) to learn more.

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This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ *Editorial Board.*

References

Available at bcmj.org.