Prenatal Environmental Health Education in Canada

Findings of the PEHE Collaboration research on current gaps and opportunities

November 5, 2025

Webinar 1 in the PEHE-CCC ***Setting the Stage for Action*** webinar series

canadian partnership for children's health & environment
partenariat canadien pour la sante des enfants et l'environnement

PEHE COLLABORATION

Canadian Association of Nurses for the Environment
Association canadienne des infirmières et infirmiers pour l'environnement

Prenatal Environmental Health Education - Collaborating for Clinical and Community Action (PEHE-CCC)

*A joint initiative of the **Canadian Partnership for Children's Health and Environment (CPCHE)** and the **Prenatal Environmental Health Education (PEHE) Collaboration***

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Health Canada Santé Canada

The views expressed herein do not necessarily represent the views of Health Canada

Overview

- Why focus on prenatal environmental health?
- About the PEHE Collaboration research
- Key findings, Q&A
- Panel discussion

From research to action

Everyone. Everywhere. Everyday.

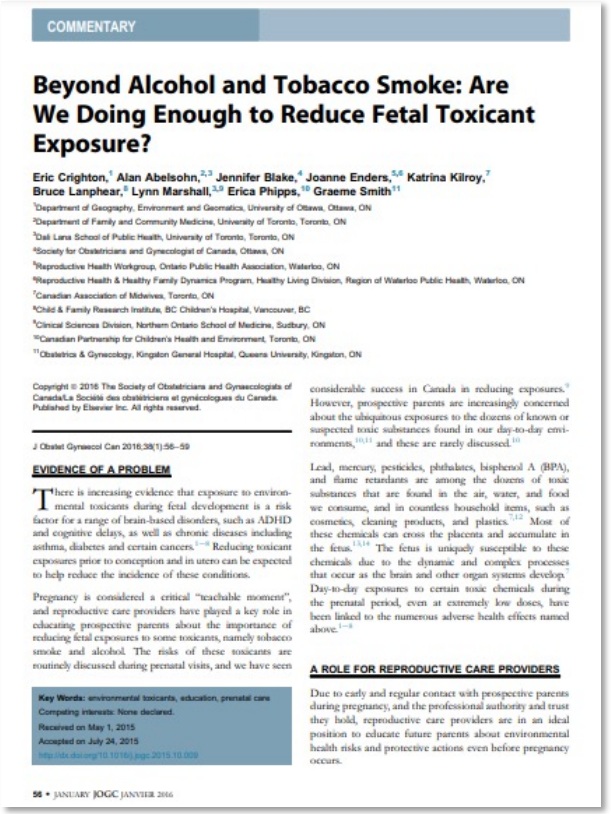
Reproductive health care leadership

International Federation of Gynecology & Obstetrics (FIGO) landmark statement (2015) on reproductive health impacts of toxic environmental chemicals https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6663094/

ACOG Committee Opinion No. 832 (2021) https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/07/reducing-prenatal-exposure-to-toxic-environmental-agents calls for clinician knowledge of environmental health, environmental health history-taking, EH policy advocacy

Royal College of Obstetricians and Gynecologists (UK) recommends that environmental health information "be conveyed routinely at infertility, antenatal and all women's clinics" to ensure that women can "make informed choices…"

SOGC co-authored commentary "Beyond alcohol and tobacco smoke: are we doing enough to reduce fetal toxicant exposures? (JOGC, 2015) https://www.jogc.com/article/S1701-2163(15)00010-9/fulltext recommends enhanced professional training; EH history-taking and patient education as routine part of reproductive care



COMMENTARY

Beyond Alcohol and Tobacco Smoke: Are We Doing Enough to Reduce Fetal Toxicant Exposure?

Eric Crighton,[1] Alan Abelsohn,[2,3] Jennifer Blake,[4] Joanne Enders,[5,6] Katrina Kilroy,[7] Bruce Lanphear,[8] Lynn Marshall,[3,9] Erica Phipps,[10] Graeme Smith[11]

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J Obstet Gynaecol Can 2016;38(1):56–59

EVIDENCE OF A PROBLEM

There is increasing evidence that exposure to environmental toxicants during fetal development is a risk factor for a range of brain-based disorders, such as ADHD and cognitive delays, as well as chronic diseases including asthma, diabetes and certain cancers.[1–8] Reducing toxicant exposures prior to conception and in utero can be expected to help reduce the incidence of these conditions.

Pregnancy is considered a critical "teachable moment", and reproductive care providers have played a key role in educating prospective parents about the importance of reducing fetal exposures to some toxicants, namely tobacco smoke and alcohol. The risks of these toxicants are routinely discussed during prenatal visits, and we have seen considerable success in Canada in reducing exposures.[9] However, prospective parents are increasingly concerned about the ubiquitous exposures to the dozens of known or suspected toxic substances found in our day-to-day environments,[10,11] and these are rarely discussed.[11]

Lead, mercury, pesticides, phthalates, bisphenol A (BPA), and flame retardants are among the dozens of toxic substances that are found in the air, water, and food we consume, and in countless household items, such as cosmetics, cleaning products, and plastics.[7,12] Most of these chemicals can cross the placenta and accumulate in the fetus.[13,14] The fetus is uniquely susceptible to these chemicals due to the dynamic and complex processes that occur as the brain and other organ systems develop.[7] Day-to-day exposures to certain toxic chemicals during the prenatal period, even at extremely low doses, have been linked to the numerous adverse health effects named above.[1–8]

A ROLE FOR REPRODUCTIVE CARE PROVIDERS

Due to early and regular contact with prospective parents during pregnancy, and the professional authority and trust they hold, reproductive care providers are in an ideal position to educate future parents about environmental health risks and protective actions even before pregnancy occurs.

Key Words: environmental toxicants, education, prenatal care
Competing interests: None declared.
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http://dx.doi.org/10.1016/j.jogc.2015.10.009

The Prenatal Environmental Health Education (PEHE) Collaboration

- Aims to improve prenatal environmental health education in Canada
- Funded by the Canadian Institutes of Health Research (CIHR)

CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

- Strong engagement of professional associations, research, public health and non-profit organizations

PEHE COLLABORATION ESEP

https://www.pehe-esep.ca/

PEHE research objectives

1. Investigate reproductive-aged women's prenatal environmental health knowledge, attitudes, protective practices and educational preferences

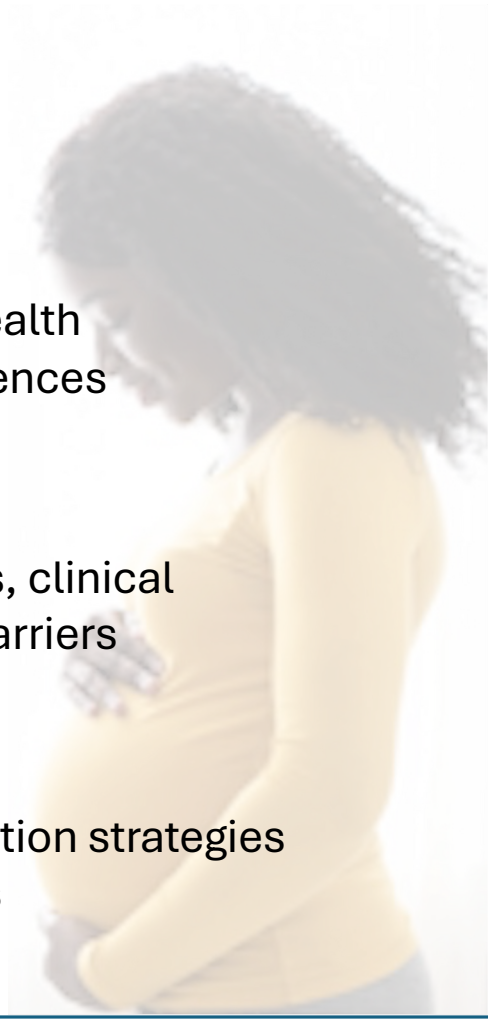
   Phase 1 – National survey of reproductive-aged women

2. Examine PHP's environmental health-related knowledge, attitudes, clinical practices, experiences and patient education opportunities and barriers

   Phase 2 – National survey of prenatal healthcare providers (PHPs)

3. Identify and examine the suitability of environmental health education strategies for diverse clinical, community and environmental health contexts

   Phase 3 – Community-based and provider-engaged research activities



Phase 1 survey of women of reproductive age

National online bilingual survey, 2021

- Total participants: 1,914
- Statistically representative at national level

International Journal of *Environmental Research and Public Health*

MDPI

Article

Environmental Health Attitudes, Practices, and Educational Preferences: A National Survey of Reproductive-Aged Women in Canada

Eric J. Crighton [1], Erica Phipps [1,2,*], Graeme N. Smith [3], Rukhsana Ahmed [4], Jocelynn L. Cook [5], Jeffrey R. Masuda [6], Alvaro R. Osornio-Vargas [7], Margaret Sanborn [8], Lesley J. Brennan [7,9], Karen P. Phillips [10,*] and on behalf of the PEHE Collaboration [†]

Int. J. Environ. Res. Public Health **2024**, *21*, 1397. https://doi.org/10.3390/ijerph21111397

Characteristics	% (n)
Age, years	
18-29	41.1 (614)
30-39	37.1 (923)
40-45	21.8 (377)
Pregnancy history	
Never pregnant	54.1 (967)
Currently pregnant	4.4 (88)
Previously pregnant	41.5 (859)
Indigenous	5.2 (86)
Visible minority	28.6 (413)
Recent immigrant (<10 years)	9.6 (190)
Education	
High school or less	13.3 (247)
College or university	73.8 (1429)
Graduate studies	12.9 (236)
Income ($ 000)	
<40	21.1 (392)
40 to <60	16.1 (304)
60 to <100	31.8 (618)
≥100	30.9 (589)

[1.] % derived from weighted data, n from unweighted data

canadian partnership for children's health & environment

PEHE COLLABORATION

CANE ACIIE Canadian Association of Nurses for the Environment / Association canadienne des infirmières et infirmiers pour l'environnement

Phase 2 survey of prenatal care providers

National online bilingual survey, 2022

- Total participants: 474
- Respondents recruited through partner organizations: SOGC, CFPC, CAPE, CAM, NICM, CAPWHN, CANE, CPHA

Characteristics	% (n) [1]
Gender (% female)	89.7 (425)
Practitioner type	
Midwife	25.9 (123)
Obstetrician-gynaecologist	19.2 (91)
Family physician	15.4 (73)
Nurse	19.4 (92)
Public health/maternal support	20.0 (95)
Professional association affiliations	
SOGC	40.9 (194)
CAM	25.3 (120)
CMA	24.7 (117)
CFPC	14.3 (68)
CNA	14.3 (68)
NACM	4.6 (22)
CAPWHN	3.8 (18)
CHNC	2.5 (12)
Year of graduation	
<2005	31.4 (136)
2005-2015	39.7 (172)
>2015	28.9 (125)
Time spent providing prenatal care/services	
20% or less	33.1 (157)
21-50%	26.4 (125)
51-80%	21.1 (100)
>80%	19.4 (92)

[1] variables may not sum to sample size due to missing data

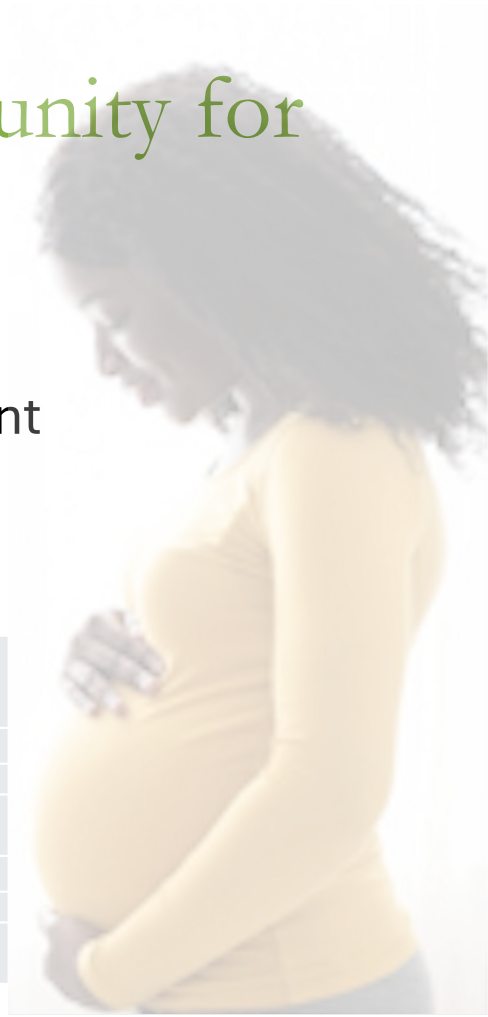
What we learned

Prenatal period is viewed as an opportunity for prevention

Strong agreement across the two surveys that:

- Day-to-day exposures can interfere with child development
- Pregnant persons can reduce risk by reducing exposures

	Women % (#)	Prenatal care providers % (#)
Day-to-day exposures can interfere with child development		
Agree to strongly agree	**91.9** (1704)	**95.4** (438)
Strongly disagree to neutral	8.1 (151)	4.6 (21)
Pregnant persons can reduce risk by reducing exposures		
Agree to strongly agree	**90.6** (1661)	**93.9** (429)
Strongly disagree to neutral	9.4 (178)	6.1 (28)

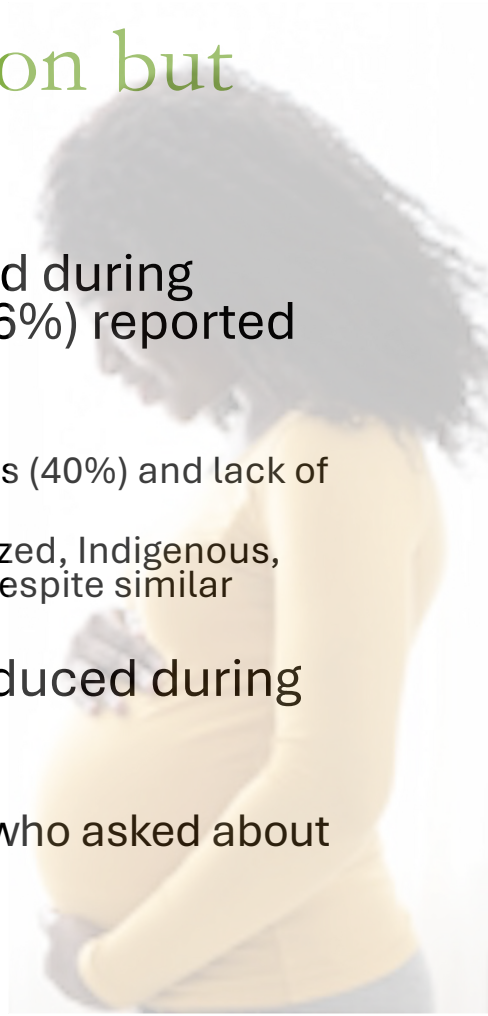


Environmental health concerns include toxic chemicals/metals, air pollution

- Environmental hazards of concern reported by women respondents included toxic chemicals (24%), air pollution (14%), pollution in general (8%), climate change/natural disasters/wildfire smoke (7%), among others
- Hazards that providers felt should be routinely addressed with prenatal patients included workplace exposures (91%), sources of exposure in the home (79%), contaminants in food (78%), water quality (73%), outdoor air quality (55%) and climate change (54%)

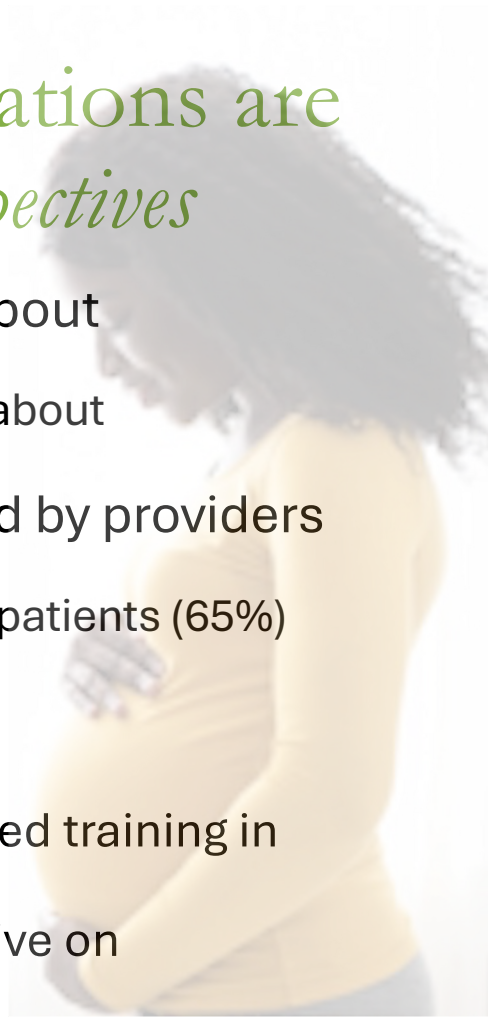
Women and providers see value in action but face barriers

- While most women (91%) agreed that risks can be reduced during pregnancy by taking protective actions, only about half (56%) reported doing so
  - 40% indicated that they wanted to take action but were unable
    - Cited barriers included costs (52%), limited awareness of safer options (40%) and lack of time (23%)
    - Secondary analysis of data from respondents who identified as racialized, Indigenous, low-income suggest inequities in ability to take protective measures despite similar levels of concern (Medeiros et al.)
- Most providers (94%) similarly agreed that risks can be reduced during pregnancy, yet
  - 50% reported never taking an environmental history
  - 38% reported not providing informational resources to patients who asked about environmental health issues
  - 40% reported never taking action to address patients' concerns



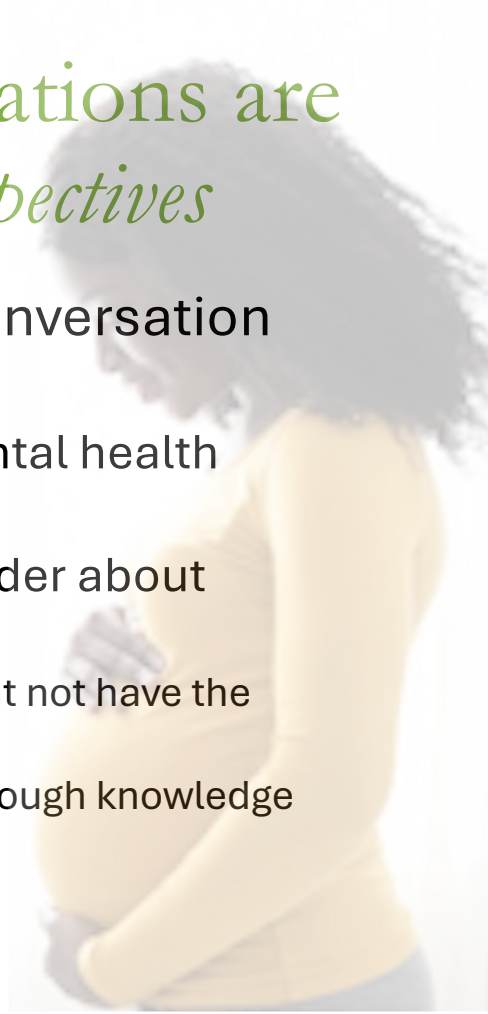
Prenatal environmental health conversations are not routinely happening – *Provider perspectives*

- Providers report that few of their patients ask questions about environmental health concerns
  - Nearly two-thirds (59%) reported that < 5% of their patients ask about environmental health concerns
- Barriers to talking about environmental health issues cited by providers included:
  - Concern that available protective measures are out of reach for patients (65%)
  - Lack of knowledge/training/guidelines (59%)
  - Lack of appropriate informational resources for patients (58%)
- Fewer than one-third of providers (31%) reported having received training in environmental exposures and health outcomes
- Most (83%) want their professional association to be more active on environmental health issues



Prenatal environmental health conversations are not routinely happening – *Women's perspectives*

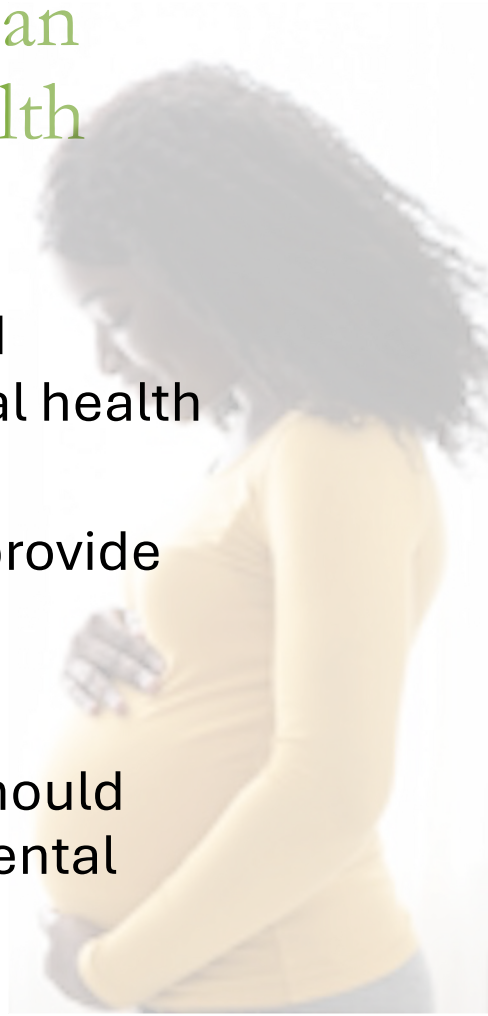
- Women reported reluctance, barriers to initiating a conversation about environmental health issues with their provider
  - Fewer than a quarter (23%) had ever discussed environmental health issues with a healthcare professional
  - One in five (20%) felt reluctant to ask their healthcare provider about environmental health hazards. Cited reasons included:
    - Concern that the provider might dismiss their concern (66%), might not have the information (43%), might not have time (40%)
    - Feeling unsure that their question was valid (35%) or not having enough knowledge to know what to ask (35%)



Women and providers see prenatal care as an appropriate context for environmental health education

- Women respondents: 77% felt that pregnancy-related healthcare is an appropriate context for environmental health education
- Providers: 52% felt that healthcare providers should provide information on environmental health risks to patients

- 79% of providers felt that health care professionals should advocate for policies/regulations to reduce environmental health hazards



Environmental Health in Canadian Perinatal Care: Healthcare Provider Knowledge and Training Gaps

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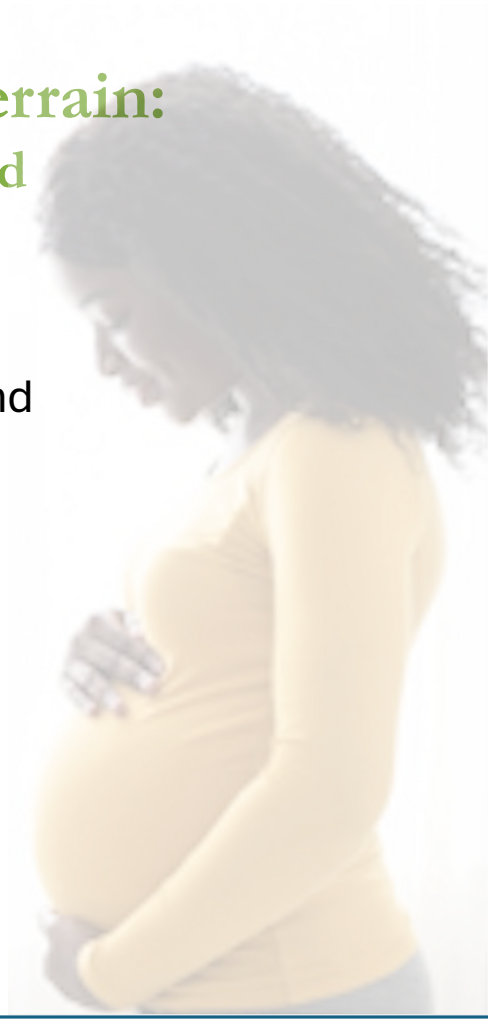
Environmental Health Advocacy in Uncertain Terrain:
Perspectives of Canadian Perinatal Healthcare Trainees and Practitioners, *B. Sanko et al.*



OBJECTIVE: Assess Canadian perinatal healthcare providers (PHP) and trainees' educational and clinical preparedness for addressing environmental hazards in pregnancy and engaging in environmental health advocacy

MIXED METHODS

- English/French surveys June 20, 2023-February 13, 2024
  - trainees (180)-midwives (68), nurse (RN-54), nurse (RPN-28), MD (30)
  - PHP (26)-midwives (21), nurse (RN-2), MD (3)
- Interviews: 7 (4 nursing, 3 midwifery) trainees/recent graduates

Perspectives of Canadian Perinatal Healthcare Trainees and Practitioners, *B. Sanko et al., continued*

Major Findings

- **Theme: Acknowledgement of the Range and Complexity of Environmental Hazards**
- **Theme: Gaps in Theoretical Instruction and Practical Training on Environmental Health Risks**
  - Perinatal environmental health gaps in current program: **66% trainees strongly agree/agree**
  - Trained to take environmental history? **Trainees 47%** **PHP 28.6%**
  - Trained to take environmental history in the context of pregnancy **Trainees 45.5%** **PHP 28.6%**
- **Subtheme: Training Fails to Connect Environmental Health Theory with Clinical Practice**

  "We've talked about environmental justice, but not what specific exposures do or how to handle them clinically. I care, but I don't feel equipped." **- MW02 [midwife trainee]**
- **Theme: Multilevel Barriers Influence Patient Environmental Risk Counseling and Health Promotion in Perinatal Care**
  - 42.3% PCP regularly take environmental history with pregnant patients
  - Gaps- outdoor air pollution (wildfires), exposures in the home, water quality
  - Barriers- knowledge gaps, lack of institutional support, patient's structural limitations

Breathing for Two: Canadian Healthcare Providers on Wildfire Smoke and Pregnancy. *D Paquette Rochette, KP Phillips*

- **OBJECTIVE:** Assess experiences, training and recommendations of Canadian perinatal healthcare providers (PHP) in the context of wildfire exposure and pregnancy
  - English/French surveys April 1, 2025- September 8, 2025
    - PHP (174)-OB/GYN(20), family physicians (20), midwives (20), nurses (95), complementary providers (19)
      - practice regions geographically concentrated in western Canada (68.96%)
      - 70.69% annual/frequent wildfire

Breathing for Two: Canadian Healthcare Providers on Wildfire Smoke and Pregnancy. *D Paquette Rochette, KP Phillips*

Major Findings

- Sufficient **knowledge** (17.34% strongly agreed/agreed) to educate patients about wildfire-related pregnancy risks
- Sufficient **confidence** (21.39% strongly agreed/agreed) to provide guidance and resources to pregnant patients
- No wildfire-specific perinatal training (64%)
- Wildfire-specific perinatal training is not accessible in my professional sector (54.6%)
- Gaps relating to wildfires and perinatal health were identified
  - lack of awareness/training (42.42%)
  - lack of clinical guidelines (34.85%)
  - limited access to resources or tools (15.91%)

Panel discussion

- **Graeme Smith**, MD, PhD, FRCSC, FCAHS

  Queens University; Kingston Health Sciences Centre
- **Jeff Masuda**, PhD

  University of Victoria; Centre for Environmental Health Equity
- **Marg Sanborn**, MD, CCFP, FCFP

  Rural family physician
- **Jacqueline ("Jack") Avanthay-Strus**, I.A., M. Sc. Inf., PhD (c)

  Canadian Association of Nurses for the Environment; Université de Saint-Boniface

Looking ahead

Upcoming events:

- Webinar 2 (Jan 2026) – Building community capacity and advocacy on environmental chemicals and environmental justice
- Webinar 3 (Feb. 2026) – Filling the gaps: Environmental health knowledge mobilization resources and strategies for preconception/prenatal care

Stay connected, get involved:

- Visit the PEHE-CCC project page and sign up for project news: https://healthyenvironmentforkids.ca/prenatal-environmental-health/
- Get in touch with questions, ideas, interest to collaborate:
  - Erica Phipps, erica@healthyenvironmentforkids.ca
  - Tim Ellis, tim@healthyenvironmentforkids.ca

Thank you | Merci | Miigwetch

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