

Prenatal Environmental Health Education in Canada: Research Brief

Findings from the Prenatal Environmental Health Education (PEHE) Collaboration's national surveys of women of reproductive age and prenatal care providers

Highlights:

- **Current and prospective parents are concerned about environmental risks to reproductive/prenatal/child health and would benefit from additional knowledge to take protective actions:** Survey results suggest that most women of reproductive age in Canada see everyday exposures, like toxic chemicals and air pollution, as risks to child health and want practical guidance. Prenatal care is identified as their preferred setting to receive this information.
- **Prenatal care providers recognize but under-address environmental health risks:** Health professionals agree that exposures matter, yet few routinely ask about them, provide resources, or feel equipped to advise patients.
- **A knowledge-action gap persists:** Women want to act but face barriers such as cost, lack of information on safer options, and time. Health professionals want to help but lack the requisite knowledge, training and informational resources.
- **Education is an actionable solution:** Both surveys highlight education and knowledge mobilization as opportunities to better integrate environmental health protection as a routine part of prenatal care in Canada.
- **Health professionals want their professional associations to be more active on environmental health issues:** Respondents see a role for professional associations in providing training, practical guidelines, evidence summaries and engaging in policy advocacy.

What is the PEHE Collaboration?

The [Prenatal Environmental Health Education \(PEHE\) Collaboration](#) is a multi-disciplinary research initiative that brings together diverse expertise and experience to co-create the knowledge base on which to advance prenatal environmental health education in Canada. PEHE Collaboration [research team](#), partners and collaborators have come together to create a baseline understanding of environmental health-related interests, concerns, practices and preferences among prospective parents and prenatal care providers in Canada to inform intersectoral strategy development and targeted efforts to fill existing gaps.

Based at the University of Ottawa and supported by a grant from the Canadian Institutes of Health Research (CIHR), the PEHE Collaboration brings together people working in clinical and public health professional associations, research institutions, non-profit organizations, frontline health and social services, and community leadership and advocacy to work together towards these shared aims. The overall goal of the PEHE Collaboration is to improve prenatal environmental health education and advocacy in Canada.

Why does prenatal environmental health matter?

The PEHE Collaboration is motivated by the knowledge that exposure to toxic chemicals, pollution, climate-related risks, and other environmental hazards during the highly susceptible stages of prenatal development can have long-lasting impacts on child health and development and later-life risk for multiple chronic diseases. Families are routinely exposed to contaminants in food, water, air, and common household products. Everyday risks include phthalates in plastics and fragranced products, lead in old paint, radon and mould in homes, pesticides in food, and mercury in fish. National biomonitoring data show that substances such as plastic additives (e.g., Bisphenol-A (BPA), phthalates), pesticides, heavy metals and flame retardants are routinely found in human bodies, including among women of reproductive age. These exposures do not affect all families and communities equally. Indigenous, racialized, newcomer, and low-income communities often face higher exposures, greater barriers to mitigation, and limited inclusion in decision-making. Prenatal environmental health matters not only for individual well-being, but is an actionable means to improve population health, chronic disease prevention, health equity and intergenerational justice in Canada.

As noted in a [joint commentary](#) published at the outset of the research, PEHE Collaboration partners recognize that environmental health education is not yet – but should be – a routine part of prenatal care in Canada.

Health Sector Leadership on Environmental Health Risks to Reproductive and Prenatal/Child Health

Around the world and in Canada, leading medical organizations have called for stronger health sector leadership on environmental health:

- [FIGO \(International Federation of Gynecology & Obstetrics\), 2015](#): Urges providers to advocate for policies that prevent toxic exposures, promote healthy food systems, take environmental histories, educate patients, and champion environmental justice.
- [ACOG \(American College of Obstetricians and Gynecologists\) 2021](#): Cites growing evidence of links between exposures and adverse outcomes, and calls for training of obstetric care clinicians, history-taking, patient counselling, and policy advocacy.
- [RCOG \(Royal College of Obstetricians and Gynecologists, UK\) 2013](#): Calls for environmental health information to be conveyed routinely at antenatal and women's health clinics and via the media, so mothers can make informed choices to minimize exposures.
- SOGC (Society of Obstetricians and Gynecologists of Canada) and [PEHE Collaboration partners co-authored commentary, 2015](#): Recommends integration of environmental health into medical, nursing, and midwifery training; inclusion of standardized questions on exposures in antenatal intake forms; development of patient resources; and stronger policy advocacy.

Overview of the PEHE Collaboration research

The goal of the PEHE Collaboration is to build a shared understanding of current practices, barriers and opportunities as the foundation for developing a collective strategy and related capacity and tools for prenatal environmental health education across diverse prenatal care and community contexts in Canada.

The objectives of the CIHR-funded PEHE Collaboration research (2018-2025) were to gain an understanding of the current Canadian landscape regarding:

1. reproductive aged women's views, experiences and preferences related to environmental health education
2. prenatal health care providers' current practices, training and preferences related to environmental health education
3. community-level contextual factors, issues of concern and related capacities

PHASE 1: National survey of women of reproductive age

Through a national online bilingual survey of ~2000 reproductive-aged women, we sought insights on questions such as:

- Are women of reproductive age concerned about prenatal environmental exposures to toxic chemicals and other hazards during pregnancy? If so, what are their concerns?
- Do women engage with their prenatal care providers on environmental health issues and, if so, who initiates the conversation?
- What barriers do women experience in seeking knowledge or guidance on environmental health concerns?
- Do women feel that environmental health education should be part of prenatal care?

At-a-glance: Phase 1 national survey of reproductive-aged women (2021)

National online bilingual survey of women aged 18-45 years

Total participants: 1914

Respondents recruited through national online panel with quotas by region and age group and to ensure representation of visible minorities and Indigenous respondents

Approved by the University of Ottawa Research Ethics Board

PHASE 2: National survey of prenatal health care providers

Through a national survey of doctors, nurses, midwives, public health professionals and others who provide prenatal care, we sought to better understand providers' views, practices and preferences, such as

- What factors motivate or inhibit health professionals' engagement with patients on environmental health issues?
- Are health professionals taking environmental histories as part of prenatal care? If so, what tools or protocols do they use? If not, what are the barriers?
- What environmental health topics do providers feel should be routinely discussed as part of preconception/prenatal care? What topics are most frequently raised by patients?
- How and to what extent do health professionals receive relevant training to support their role in prenatal environmental health? What other supports, such as informational materials and practice points, would they find helpful?

PHASE 3: Mixed methods exploration of environmental health interests, concerns and capacities in diverse clinical and community contexts

Through a suite of engaged research initiatives, including community-based participatory research, surveys and mixed methods research, our research team sought a deeper understanding of the local contexts, drivers, barriers and enablers as key inputs to inform strategy development and advocacy to reduce environmental health inequities and advance environmental and social justice. Student-led research included a survey of child care professionals (a sector largely comprised of women of reproductive age), mixed methods research with recently graduated medical students, and analysis of the Phase 1 survey data via an equity lens focusing on the survey responses from Indigenous and racialized participants. PEHE Collaboration partners conducted a scoping review of environmental health educational materials to assess their accessibility, relevance, and potential for integration into prenatal care. The PEHE Collaboration also engaged in the [Reimagining Research](#) feasibility study, funded and co-led by Health Canada and co-designed with community-based partner organizations, that sought community members' grounded expertise on ways to redesign environmental health research to be more inclusive, relevant and without harm for equity-denied communities.

At-a-glance: Phase 2 national survey of prenatal healthcare providers (2022)

National online bilingual survey of prenatal care providers

Respondents recruited through partner organizations, including:

- Society of Obstetricians and Gynecologists of Canada (SOGC)
- College of Family Physicians of Canada (CFPC)
- Canadian Association of Physicians for the Environment (CAPE)
- Canadian Association of Midwives (CAM)
- National Council of Indigenous Midwives (NCIM)
- Canadian Association of Perinatal and Women's Health Nurses (CAPWHN)
- Canadian Association of Nurses for the Environment (CANE)
- Canadian Public Health Association (CPHA)

Total participants: 474

- Obstetricians-gynecologists (19%)
- Midwives (26%)
- Nurses (19%)
- Family physicians (15%)
- Public health (11%)
- Maternal support professionals (9%)

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What we learned

The findings from the Phase 1 and 2 surveys of women and prenatal care providers reveal significant gaps in current capacity and practice, yet high levels of interest and opportunity to better integrate environmental health as a routine part of prenatal care in Canada.

Phase 1 survey of women of reproductive age in Canada¹:

- Over half of respondents (55%) reported being moderately to very concerned about environmental hazards, with toxic chemicals, air pollution, and climate-related risks among the most frequently cited concerns. Almost all participants (92%) agreed that everyday exposures can be harmful to child health.
- Most respondents (91%) agreed that risks can be reduced during pregnancy, yet only about half (56%) reported taking protective actions.
- 40% indicated that they want to take action but are unable. Of these respondents, many pointed to barriers such as costs (52%), limited awareness of safer options (40%), and lack of time (23%).
- Fewer than one in four women (23%) had ever discussed environmental health hazards with a health care provider. Many cited concerns that providers might dismiss their questions (66%), lack information (43%), or not have time (40%).
- Nearly nine in ten women (89%) said information about environmental hazards would influence their actions during pregnancy. Three out of four (77%) respondents felt that environmental health hazards should be discussed during pregnancy-related health care.

Phase 2 survey of prenatal care providers in Canada^{2,3}:

- Most providers agreed that day-to-day environmental exposures can interfere with child development (95%) and that risks can be reduced by taking protective measures (94%).
- Half (50%) reported never taking an environmental history, and only one in five (22%) do so with 80% or more of their patients.
- More than half (59%) of respondents indicated they would use an environmental health assessment form if available from a trusted source.
- More than half (59%) of providers reported that fewer than 5% of their patients ask about environmental concerns.
- 38% reported not providing informational resources to patients who ask about environmental health issues.

¹ Crighton, E. & Phipps, E. *Environmental Health Perceptions, Practices and Educational Preferences among Reproductive-aged Women in Canada: PEHE Project*. International Medical Geography Symposium, Edinburgh, Scotland, June 21, 2022.

² Crighton, E. J., Phipps, E., Smith, G. N., Ahmed, R., Cook, J. L., Masuda, J. R., Osornio-Vargas, A. R., Sanborn, M., Brennan, L. J., & Phillips, K. P. (2024). Environmental Health Attitudes, Practices, and Educational Preferences: A National Survey of Reproductive-Aged Women in Canada. *International Journal of Environmental Research and Public Health*, 21(11), 1397. <https://doi.org/10.3390/ijerph21111397>.

³ Phipps, E., Crighton, E. & Smith, G. *Current practices addressing toxic chemical exposure and other environmental health risks during prenatal care: Results and implications of a Canada-wide survey of prenatal care providers*. Society of Obstetricians and Gynecologists of Canada (SOGC) Annual Scientific Conference, Ottawa, Canada, June 8, 2023.

- Significant barriers to discussing environmental health issues with patients included limited patient access to protective measures (65%), lack of training or guidelines (59%), and a shortage of appropriate resources to share with patients (58%).
- Only about one-third (31%) of providers reported receiving training on environmental exposures, and most of that was 10 hours or less.
- Over 80% expressed strong support for professional associations to play a more active role on environmental health.

From research to action

Taken together, the PEHE Collaboration research findings point to education and knowledge mobilization as an actionable gap. Women want information and prefer to receive it during prenatal care, and providers see the importance of prenatal environmental health education but lack the training, tools, and resources to deliver it. These findings provide a strong evidence base on which to build the knowledge, capacity, and professional leadership needed to make environmental health education a routine part of prenatal care in Canada.

Prenatal environmental health education and related advocacy represent a proactive means of improving reproductive and child health outcomes, reducing the burden of chronic disease, and mitigating the disproportionate exposures and health risks borne by equity-denied communities. Advancement of prenatal environmental health aligns with recent policy measures, including revisions to the Canadian Environmental Protection Act (CEPA) that affirm the right to a healthy environment, and the passage of Bill C-226, Canada's National Strategy on Environmental Racism and Environmental Justice.

The PEHE Collaboration and the Canadian Partnership for Children's Health and Environment (CPCHE, a founding partner in the PEHE Collaboration) are co-leading a joint initiative, [Prenatal Environmental Health Education in Canada: Collaborating for Clinical and Community Action](#) (PEHE-CCC or "PEHE Triple-C"). The initiative, which is funded through the federal Chemicals Management Plan and for which the Canadian Association of Nurses for the Environment (CANE) is serving as lead partner, is bringing together partners from clinical care, public health, environmental health, community organizations to mobilize strategic and collaborative actions to fill identified gaps and advance prenatal environmental health in Canada.

To learn more or to get involved, please contact:

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The Prenatal Environmental Health Education (PEHE) Collaboration research was supported by
the Canadian Institutes of Health Research (CIHR).



Preparation of this research brief was made possible through funding from Health Canada.

Financial contribution:
Contribution financière :



The views expressed herein do not necessarily reflect those of CIHR or Health Canada.