

DOHaD Canada

Issue 3, Dec 2021

Editor's Note

The end of the year is a time for reflection and contemplation. As we count down the final days of 2021, the second year of the COVID-19 pandemic, we thought it worthwhile to reflect on some notable events that affected the DOHaD Canada community.

By all measures, 2021 was a challenging year. Many lost loved ones and their livelihoods to the pandemic. The upheaval in day-to-day life caused by the incessant need to juggle the demands of remote working and home-schooling, coupled with prolonged periods of social isolation has pushed many of us to our limits (and beyond). This is to say nothing of the enormous toll placed on health care workers who toil on the front lines to provide care for those in need. Not surprisingly, the pandemic has also had a disruptive influence on the scientific enterprise; laboratory closures and funding interruptions have directly affected research outputs worldwide. Furthermore, limitations on travel, social isolation, and uncertainty about the future has also hobbled the creative process, which may have long-term implications. Indeed, [A recent study](#) published in Nature Communications suggests that the pandemic had a marked effect on research outputs in 2019-2020, but productivity is now gradually returning to pre-pandemic levels. That's the good. The not-so-good is that the article also reports that in the post-pandemic landscape, "scientists have been substantially less likely to pursue new research projects", suggesting the impacts of the pandemic on science may persist longer than initially thought.

But there is also cause for optimism. Rapid development and mobilization to mass vaccinate the population was a major achievement, made possible by the concerted efforts of countless scientists, health practitioners and policy makers to respond to the global health crisis wrought by the spread of COVID-19. There were also some unexpected benefits of social distancing. Although there are no substitutes for in-person meetings, with the expansion of communication technologies, virtual meetings have reduced onerous travel and bridged geographical gaps, enabling easier access to group meetings. Because of this, we saw greater diversity of conference presenters and attendants across research disciplines and lived experience. DOHaD Canada held its first virtual conference in June; the meeting, organized by Sophie Petropoulos, Marcel van de Wouw, Anita Kozyrskyj, Meghan Azad and Gerry Giesbrecht, took place over 3 days and attracted a record number of attendees. Similarly, the 2021 Canadian Academy of Health Sciences (CAHS) Forum, entitled "Healthy Start, Life-Long Impact: Eradicating Non-Communicable Disease", co-chaired by Sandra Davidge and John Challis was held virtually, enabling CAHS non-members and trainees to attend for the first time. The forum was an immense success in seamlessly combining the breadth of topics that the DOHaD field encompasses, ranging from animal behavior and epigenetics, to social factors and populations at risk, to interventions and policy change. We applaud the DOHaD community and organizers for bringing various pillars of research together and focusing on policy change to help the vulnerable during our pandemic year. If you didn't get a chance to attend the CAHS Forum, not to worry, that was only a preview of the thought-provoking discussions that will take place at the 2022 DOHaD World Congress in Vancouver — that's one you don't want to miss!

In the meantime, enjoy a safe and happy holiday season, and all the best for 2022!!

The ECO Committee

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Research Highlights: Dr. Shela Hirani

Breastfeeding Advocacy Research: Program, Practices and Policies (BARPPP)”

Dr Shela Hirani is an Associate Professor at the University of Regina, Faculty of Nursing, Canada. She is a neonatal and child health nursing professional, academician, researcher, and an International Board-Certified Lactation Consultant. She is actively involved in work surrounding the improvement of health equity, health systems, programs and policies that often negatively affects the health and well-being of marginalized and vulnerable groups of women and young children. Dr Hirani’s research focus is in alignment with the Sustainable Development Goals, 2015-2030, with a special focus on goal 3 that aims at reducing preventable deaths in newborns and children under 5 years of age. This also aligns with the Partnership for Maternal, Child, & Adolescent Health and the World Health Organization (WHO) that promote breastfeeding for the first 12 months of life.

As suboptimal breastfeeding practice is the leading cause of malnutrition-related mortalities and morbidities among infants, Dr Hirani is actively involved in the promotion, protection, and support of breastfeeding in diverse settings, including disaster relief camps, post-disaster settings, community-based healthcare settings, workplace settings, child daycare centres, and post-secondary institutions. Her program of research entitled “*Breastfeeding Advocacy Research: Program, Practices and Policies*” (BARPPP) aims to improve the health of the marginalized and vulnerable population of mothers and young children. The *key goal* of BARPPP is to improve breastfeeding rates through breastfeeding advocacy-related research work with the vulnerable group of mothers with young children who are refugees, immigrants, homeless, internally displaced after natural disasters, and/or negatively affected by the COVID-19 pandemic. Another goal of BARPPP is to facilitate the implementation of baby-friendly initiatives (BFI) in hospitals and community-based healthcare settings in collaboration with the key stakeholders and knowledge users.

Dr Hirani’s research work has impacted the delivery of care to the vulnerable group of mothers affected by disaster, displacement and migration. Her work has been conducted in Canada and Pakistan with the latter being in disaster relief camps of the northern region in Pakistan where thousands of families were living in the temporary housing (huts, shelters and tents) due to recurrent natural disasters and political instability. Putting herself at risk to collect data from

recurrent natural disasters and political instability. Putting herself at risk to collect data from displaced women living in disaster relief camps of northern Pakistan, Dr Hirani garnered incredible stories of the difficulties encountered when trying to breastfeed their children in disaster relief

camps that lack privacy and basic facilities. Dr Hirani's current research projects with the refugee and immigrant mothers in Saskatchewan, Canada identified that these mothers find it challenging to sustain their breastfeeding practices due to lack of access to breastfeeding counselling facilities, donation of formula milk, lack of breastfeeding support, racism in healthcare settings, inadequate social support, absence of baby-friendly initiatives in healthcare settings, financial constraints during the pandemic, lack of culturally appropriate care, and absence of interpretation services in healthcare settings.

Dr Hirani has contributed to knowledge development surrounding "breastfeeding during COVID-19", "care of marginalized women in post-disaster settings", "breastfeeding during humanitarian emergencies", and "mother and baby-friendly initiatives at workplace settings". Dr Hirani secured competitive research funding from the "Saskatchewan Health Research Foundation (SHRF)", "Jim Pattison Children's Hospital Foundations", "International Development Research Centre (IDRC)", "University of Regina, Canada", "University of Alberta", and "Sigma Theta Tau International (STTI)". Dr Hirani is hopeful that her research work will further develop knowledge related to migration and disaster management, facilitate mobilization of knowledge, and guide future research with the vulnerable group of mothers and young children affected by disaster, displacement and migration.

Website:

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https://www.researchgate.net/profile/Shela_Hirani

Twitter:

<https://twitter.com/home>

Additional Resources:

Breastfeeding in post-disaster settings

- **Hirani, S. A.** (2021). A policy brief on promotion, protection and support breastfeeding practices during disaster and displacement. *Clinical Lactation*, 12 (1), 30-38. [Link to article.](#)
- **Hirani, S. A.**, Richter, S., Salami, B. (2020). Humanitarian aid and breastfeeding practices of displaced mothers: A qualitative study in disaster relief camps. *Eastern Mediterranean Health Journal*, 26. [Link to article.](#)
- **Hirani, S. A.**, & Richter, S. (2019). Maternal and child health during forced displacement. *Journal of Nursing Scholarship*, 51(3), 252-261. [Link to article.](#)
- **Hirani, S. A.**, Richter, S., Salami, B., & Vallianatos, H. (2019). Breastfeeding in disaster relief camps: An integrative review of literature. *Advances in Nursing Science*, 42(2), E1-E12. [Link to article.](#)

Breastfeeding during COVID-19: An Information Guide:

- **Hirani, S. A.**, Pearce, M., & Lanoway, A. (2021). Knowledge mobilization tool to promote, protect and support breastfeeding during COVID-19. *Canadian Journal of Public Health*, 112,599–619. [Link to article.](#)
- **E-Resource link:** https://youtu.be/rbsK_ypeOO4

Health and Well-being of Refugee Mothers during COVID-19

- **E-Resource Link:** English version: <https://youtu.be/jwElsIz6mQ4>
Arabic version: <https://youtu.be/V4agaUGVO6g>

Research Highlights: Dr. Vladislav Drobinin

Severe mental illness (SMI) refers to functionally disruptive mental disorders that are responsible for a large proportion of disability in the population. SMI includes schizophrenia, bipolar disorder, and recurrent depression. SMI typically begins in adolescence or early adulthood and often follows a life course. Thus, there is a great push to identify biological markers of SMI that may be present before the onset of illness. My research uses magnetic resonance imaging (MRI) in order to non-invasively investigate the development of psychiatric disorders.

I am a postdoctoral researcher at the Families Overcoming Risks and Building Opportunities for Well-being study ([FORBOW](#)). My research examines genetic and clinical risk for mental illness at the level of the brain. For example, I found that structural alterations in the inferior frontal gyrus were present in individuals in the early stages of bipolar disorder but also in their unaffected relatives ([Drobinin et al., 2019](#)). On the clinical side, I demonstrated that attenuated psychotic symptoms during adolescence are associated with reduced cortical folding before the onset of psychotic illness ([Drobinin et al., 2020](#)).

More recently, I have been using machine learning techniques to make individual level predictions. This requires a high degree of confidence in the underlying data quality. To this end I have detailed the scan-rescan reliability of 9 commonly used structural MRI measures in a sample of adolescents including those with anxiety and attention-deficit/hyperactivity disorder ([Drobinin et al., 2020](#)). Satisfied with the reliability of developmental data, I have recently developed a model that is able to accurately predict the chronological age of a person based on their MRI scan (Figure 1). When the model was applied to an at-risk sample of youth, we found that experience of adversities, diagnosis of depression, and functional impairment were all associated with an older appearing brain ([Drobinin et al., 2021](#)). My goal is to build on this type of work, improve individual level prediction, and begin translating neuroimaging findings into clinical utility.

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DOHaD Canada Trainee Committee Highlights

Hello everyone!

We'd like to thank all the trainees who participated in our COVID-19 survey. We are currently reviewing responses collected, and we look forward to implementing your feedback soon! Many members indicated an interest in taking on a role with the DOHaD Canada Trainee and Development Committee (TDC); below are positions coming available in the new year:

- **Co-Chair** (also serves as trainee representative on DOHaD Canada Council; 1 position)
- **Vice President - Communications** (liaises with ECO Committee; 1 position)
- **Vice President - Events** (1 position)
- **Member at large** (multiple positions)

Please note - the Trainee Representative position is filled by elections through DOHaD Canada membership. All other positions are available through a member's expression of interest, followed by selection by the TDC and approval by the Council Executive. If you have any questions about these roles and what they require (i.e., responsibilities, time commitment, etc.), please don't hesitate to reach out to our co-chair Christian Bellissimo (bellisc@mcmaster.ca).

Get involved with DOHaD 2022 World Congress!

As many of you are aware, the 2022 International DOHaD Congress will be held in Vancouver on August 27–31, 2022. To help trainees who are not familiar with Vancouver navigate their stay, the Subcommittee for Engaging Trainees from Low-to-Middle Income Countries and Indigenous Communities (A part of the Congress' larger Trainee and Networking Committee) is currently recruiting Community Ambassadors, where trainees in, or familiar with, Vancouver can serve as a guide for other trainees traveling internationally to attend congress. To make this program a success, they would like to start recruiting trainees now who may be interested in acting as Ambassadors for the duration of the meeting. For more information, please contact the subcommittee co-chair Christian Bellissimo (bellisc@mcmaster.ca)

Past Events: DADE 2021

The Domestic Animal DOHAD and Epigenetics Satellite Symposium was held in Quebec City, Canada from October 12 - 13, 2021. The symposium brought together 84 participants from 10 countries. World experts in domestic animal epigenetics participated in more than two dozen podium and poster presentations. We hope the success of the first International DADE symposium forecasts a great turnout for the upcoming DOHAD World Congress. We look forward to seeing everyone in Vancouver in 2022!!

Marc André Sirard (Marc-Andre.Sirard@fsaa.ulaval.ca)

Prospectus: DOHaD 2022

The DOHaD 2022 Program and Executive Committee are delighted to share updated details about the DOHaD World Congress, to be held in Vancouver August 22-31, 2022 in conjunction with the 12th annual meeting of the Kids Brain Health Network.

In addition to confirmed preconference satellites and workshops on *Domestic Animal DOHaD and Epigenetics (DADE 2021)*, *DOHaD Through an Indigenous Lens*, and *Intervention Cohorts*, we are excited to announce the following **congress symposia**:

- Social determinants of DOHaD: health inequities, immigration, racism and sexism
- Early brain development and the origins of infant mental health
- DOHaD in humans: don't forget genetics!
- Gut-brain axis
- Placental development and lifelong consequences
- Human milk and DOHaD: fundamental dynamics to applied interventions
- Environmental crises and development
- Early life exposure to greenspace
- Preconception and periconception exposures: stress, alcohol and vitamins
- Developmental programming of health and diseases and preterm birth

Keep visiting <https://www.dohad2022.com/program> as we **reveal more details** about additional symposia, congress speakers, and update the exciting programme we have planned!

Some **programme highlights** include:

- 2 satellite meetings: Animal DOHaD and Indigenous health
- 2 days of workshops: Trainees; Healthy Life Trajectories Initiatives
- 12 Keynote presentations, including Barker and Hales Award lectures
- 12 Trainee Plenary Award lectures
- 18 symposia, panels
- 72 oral presentations
- Poster presentations
- Public forum
- Job fair
- Networking and connection receptions
- Opening reception, banquet, closing ceremonies and more!

We are also delighted to support the DOHaD trainee subcommittee in their efforts to establish a **“buddy system” between Canadian trainees and International trainees** for the international congress. Learn more about this in this newsletter's Trainee Section, and if you are a trainee, sign up!

Contact Janice Bailey or John Challis at Janice.Bailey@frq.gouv.qc.ca or j.challis@utoronto.ca with your ideas and thoughts on any aspect of the workshops and main programme and/or to volunteer as reviewers, judges and session chairs.

Upcoming Events

DOHaD Worldwide Webinar Series (January 2022). Please join the 2022 DOHaD World Congress Organizing Committee for a special webinar related to the upcoming congress: *Social and Environmental Disruptions in DOHaD: Successful Interventions for a Healthy Future*. More details to follow including a registration link through Eventbrite which can be accessed via the DOHaD International Society [Website](#).

Society for Reproductive Investigation (SRI) Annual Meeting (March 15–19, 2022; Denver, Colorado). Click [here](#) for details.

Canadian National Perinatal Research Meeting (CNPRM) (May 30–June 3, 2022; virtual format). Click [here](#) for details.

American Society of Animal Science (ASAS) Perinatal Biology Symposium (August 28–31, 2022; Aspen, Colorado). Click [here](#) for details.

Announcements

Publications

Shrankhala Tewari, Pablo Toledo Margalef, Ayesha Kareem, Ayah Abdul-Hussein, Marina White, Ashley Wazana, Sandra T. Davidge, Claudio Delrieux, Kristin L. Connor. Mining Early Life Risk and Resiliency Factors and Their Influences in Human Populations from PubMed: A Machine Learning Approach to Discover DOHaD Evidence. *Journal of Personalized Medicine* 2021, 11: 1064. [Link to article.](#)

Marie-Eve Brien, Dorothée Bouron-Dal Soglio, Solenn Dal Soglio, Camille Couture, Isabelle Boucoiran, Youssef Nasr, Kate Widdows, Megan C Sharps, Dina El Demellawy, Alexander Ep Heazell, Didier Menzies, Sylvie Girard. Pandemic stress and SARS-CoV-2 infection are associated with pathological changes at the maternal-fetal interface. *Placenta* 2021 Nov;115:37-44. [Link to article.](#)

Marina White, David Grynspan, Tim Van Mieghem, Kristin L Connor. Isolated fetal neural tube defects associate with increased risk of placental pathology: Evidence from the Collaborative Perinatal Project. *Placenta* 2021 Oct;114:56-67. [Link to article.](#)

Dawod, Bassel; Marshall, Jean; Azad, Meghan. Breastfeeding and the developmental origins of mucosal immunity: how human milk shapes the innate and adaptive mucosal immune systems. *Current Opinion in Gastroenterology*: November 2021 37 (6):547-556. [Link to article.](#)

Kendrick Lee, Daniel B. Hardy. Metabolic Consequences of Gestational Cannabinoid Exposure. *International Journal of Molecular Sciences* 2021, 22(17), 9528. [Link to article.](#)

Hauna Sheyholislami, Kristin L. Connor. Are Probiotics and Prebiotics Safe for Use during Pregnancy and Lactation? A Systematic Review and Meta-Analysis. *Nutrients* 2021, 13(7), 2382. [Link to article.](#)

Awards/Honours

Dr. Kristin Connor has been elected to the Canadian Institutes of Health Research Institute of Human Development Child and Youth Health (IHDCYH) Advisory Board.

Andrew Woodman (graduate student - Bourque Lab) was awarded the Governor General's Gold Medal at the University of Alberta 2021 Fall Convocation.

Peter Johnson (DOHaD Canada trainee) was recognized as a Top 40 Under 40 by Edify Magazine. Click [here](#) for details.

Opportunities

Multiple Graduate and Postdoctoral Positions in Novel Interventions to Optimise Development and Pregnancy Health. CIHR- and NSERC-funded PhD (ideally, MSc considered) and PDF positions available in the lab of Dr. Kristin Connor (<http://connorlab.ca>) at Carleton University, Ottawa. Candidates will investigate gut (microbes)-placental mechanisms regulating fetoplacental development and pregnancy health, and how novel interventions may prevent or correct adverse pregnancy and developmental outcomes. Applicants should have mouse model experience (reproductive sciences and transgenic model experience is ideal), strong molecular biology, microbiology and/or immunology skills, excellent analytical and communications skills, and commitment to developing as an independent scientist. Start date is flexible, but some positions are ideally filled asap. Contact Dr. Connor (kristin.connor@carleton.ca) for more information and to express your interest.

Research Associate: Multi-Omics & Microbiome Science

The Azad Lab situated at the University of Manitoba and Children's Hospital Research Institute of Manitoba (CHRIM) in Winnipeg, Canada, is seeking a Research Associate in Multi-Omics and

Manitoba (CHRCM) in Winnipeg, Canada, is seeking a Research Associate in Multi-Omics and Microbiome Science to join our team. In this role, you will develop and manage projects, collaborate with internal and external partners, analyze and interpret data, disseminate scientific findings to stakeholders and collaborators, and help mentor junior lab members. This full-time position is expected to commence on December 6th or as soon as possible thereafter. Salary is commensurate with qualifications and experience. For more details and to express interest, click [here](#).

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