

THE RESEARCH DIVIDE

Women are more likely to die prematurely from preventable illnesses.²

Women experience 50-75% of adverse drug reactions, yet many medications prescribed to women have often been tested only on men.¹

Depression occurs twice as often in women as men, yet most mental health research is based on men.^{3,4}

70% of patients with “medically unexplained symptoms” are women and these symptoms are frequently and incorrectly linked to a psychological origin.⁵

THE RESEARCH GENDER GAP

Women's health is unique. There are significant differences in how women and men experience health conditions. For example, women have unique reproductive biology and uniquely experience cervical, ovarian, and uterine cancers. Women's unique biology also increases susceptibility and influences treatment efficacy for a variety of diseases including heart disease, dementia, and mental health.

Yet the scientific research that informs medicine; prevention, diagnosis, and treatment; routinely fails to consider and investigate the crucial impacts of sex and gender. Research has also shown that these glaring disparities in the diagnosis and treatment of women have existed for generations.^{1,5,6}

The majority of our knowledge of health and disease is based on decades of male human and animal research; historically, women were largely excluded from medical trials. Failure to consider sex and gender in health research, by relying on men's health as a proxy, effectively leaves women's health to chance. Without a focus on women's health issues, we will not understand how their physiology (including menstrual cycles, pregnancy and menopause) impacts disease susceptibility and treatment.

Sadly, even with this gap in knowledge, women's health research remains greatly underfunded and under-researched.

WHAT'S HAPPENING IN BC?

To uncover the true realities of this research bias in BC and the impact it is having on women, we worked with UBC professor Dr. Liisa Galea to investigate disparities across academia using the following datasets:

- The public database of successful federal grant applications and awards in years 2008-2018 for the tri-councils: the Canadian Institutes for Health Research (CIHR), the Natural Science and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Council of Canada (SSHRC).
- Michael Smith Foundation for Health Research (MSFHR) BC researchers' salary award data from 2001-2018.
- Salary data at university institutions publicly available through UBC, Statistics Canada and the Canadian Association of University Teachers.

Data was analysed according to the number of grants and awards that were investigating women's health directly. Sex* (male or female) of researcher were used to understand the gendered climate in which awards are allocated in BC and Canada wide.

With this data, we exposed the research biases in BC. We found **women's health research was funded less often, for shorter terms and for lower funding amounts**, but the disparity doesn't end there. Women researchers, who are most likely to investigate issues pertaining to women's health, are less likely to receive funding than men. Within academia, we also found a growing gender gap as people advance through programs from undergraduate to faculty positions, women are underrepresented in published material, at conferences and symposia and in receiving awards.

* Note: while funding agencies may refer to gender analyses, for the most part, they have been collecting data on the sex of the applicant, and not their gender identity.

THE DATA

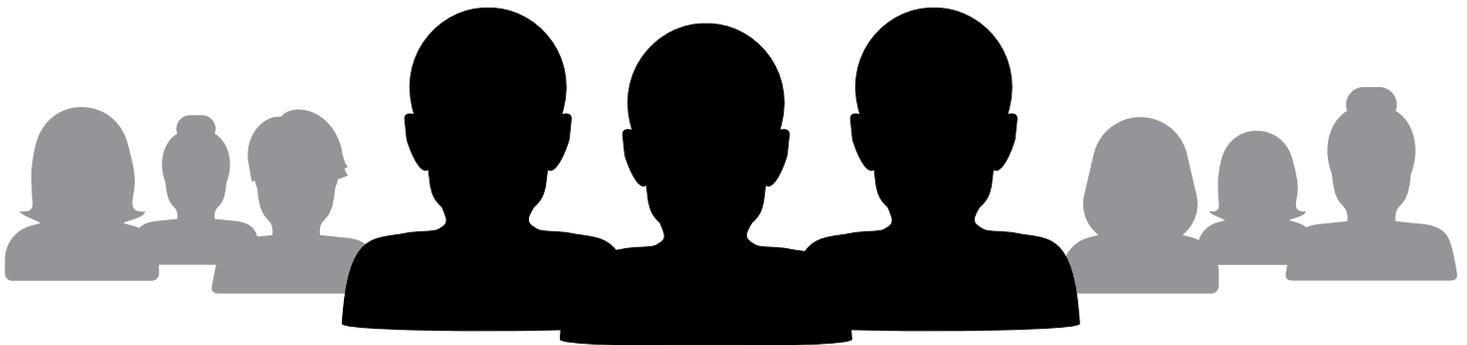
RESEARCH FUNDING

Women's health research is funded less often, for shorter terms, and lower funding amounts

- Women's health grants constitute **~7-8% of all open grants** (Operating and Project) awarded by CIHR in BC in the last ten years, and only 7% of CIHR New Investigator Awards were for women's health researchers.
- CIHR women's health grants were awarded for **shorter terms** than general health grants in BC (Operating: 9 months shorter, Project 2.4 months shorter).
- Women's health grants for the newest open competitions (project grants) were much **lower in funding** value than other health grants, with a median difference of >\$200,000 per term in BC.
- **5% of scholarships** and **9% of fellowships** went to trainees researching women's health in BC.
- 88% of scholarships in women's health were given to women in BC, **dropping to only 60%** of fellowships.
- Canada-wide, women's health researchers received **only 1% of award mechanisms** (C150, CRC, CERC, Brain Canada).
- **Only 1.2%** of Canada's research chairs are in women's health.
- On the positive side, women's health grants for CIHR's Foundation Scheme were **much higher**, with a median difference of >\$500,000 over 7 years in BC.

Women researchers are less likely to receive funding than men**

- Women were awarded **fewer** CIHR Operating (29.5%) and Project (40%) grants compared to men.
- Women received **less funding** per grant than men (median difference \$103,275) in BC.
- Women have **shorter funding terms** than men (median difference ~6 months) in BC.
- 65% of CIHR scholarships were awarded to women in BC, **dropping to 49%** of fellowships.
- On the positive side, an equal number of men and women were awarded early career CIHR Foundation grants, and the amounts **awarded were higher** in women (a median difference of \$131,787 over 5 years favouring women) in BC.



** Women make up the majority of women's health researchers.

THE DATA

ACADEMIA

Women academics have lower salaries, receive less institutional funding opportunities, and are underrepresented in senior positions**

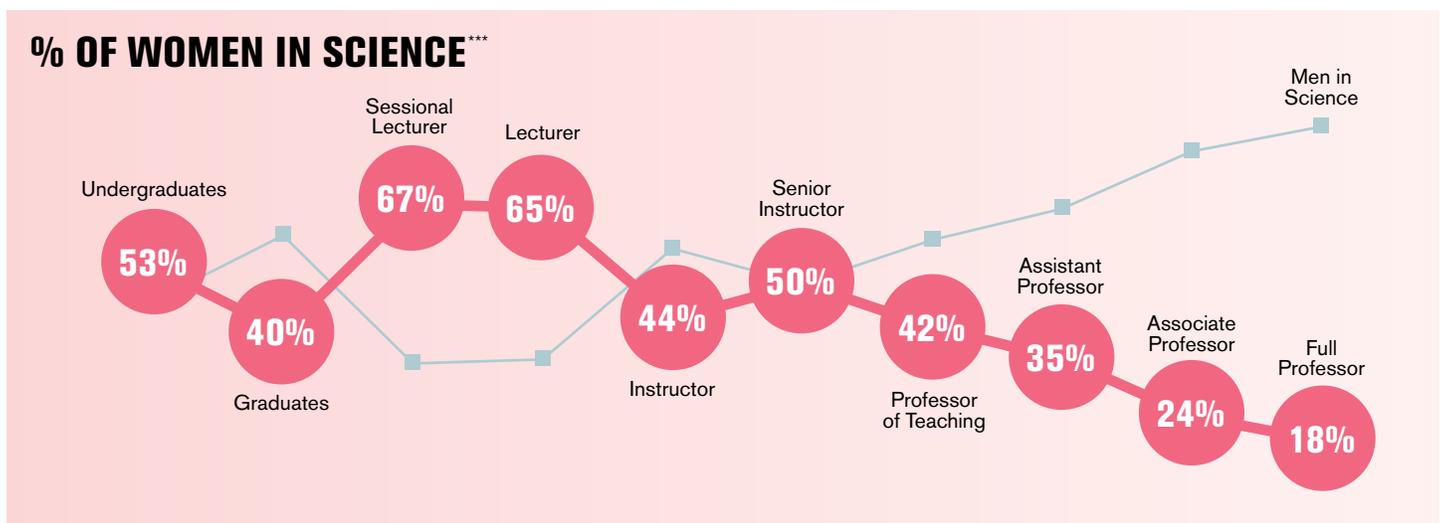
- Women are disproportionately **underrepresented in full professor** positions compared to non-tenured positions, and in undergraduate/graduate enrollment in UBC and North America.^{7,8}
- Male faculty members have **higher salaries than women** at UBC and SFU; UBC has the largest disparity at \$21,000 a year more overall for men, irrespective of rank.
- In 2018, in the Faculty of Science at UBC, the percentage of women represented was reduced from 53.4% in the undergraduate population to 18.8% full professors.
- In 2018, in the Faculty of Medicine at UBC, the percentage of women represented was reduced from 52% in the undergraduate population to **23.6% full professors**.
- Women receive **less money for research start-up** packages than men (average difference of over \$550,000) in the US, although difference in amount is larger for PhDs and less for MDs or MD/PhDs.⁹

Women are less visible in academia

- When the editor-in-chief of an academic journal is a man; female first authors account for **only 20-35% of articles**, compared with 36-45% when a woman is editor-in-chief.¹⁰
- Women are **more likely to be represented** in symposia and conferences when women are on the organizing committee.¹¹
- Women win fewer research prizes than men, only ~30%, particularly those with prestige and monetary awards, while they are **overrepresented in service awards** (50%) worldwide.¹²

These collective biases of underrepresentation of women’s health research, and women researchers mean that critical questions regarding women’s unique needs do not receive the study they need.

Improvements in women’s health research could have dramatic effects across Canada and globally. We are seeing signs of change from funding bodies and academic institutions, but in order to move the needle on gender equity and improve women’s health in our nation, we need clear and transformational solutions.



*** Based on data from UBC Faculty of science from 2018 <http://pair.ubc.ca/student-demographics/gender-drilldown/>

SOLUTIONS TO DRIVE EQUITY

MOVING THE DIAL ON WOMEN'S HEALTH RESEARCH

- **Dedicated funding calls for women's health research.** Funding more women's health research will increase research outputs, the translation of research into practice and policy, and lead to significant progress in women's health outcomes.
- **Ensure women's health research funding accounts for a larger percentage of the total budget.** The proportion of grants for women's health research is much lower than expected, given women are 50% of the population. Targeted percentages within health research funding will move the dial significantly in re-balancing the historic and systemic biases in research and ultimately the health and well-being of women.
- **Create dedicated endowed chairs for women's health.** There is a need for more action and funding to support diverse leadership among women's health researchers across the spectrum of health research.

SUPPORTING WOMEN IN RESEARCH

- **Ensure all granting agencies and universities are not just tracking gender metrics but correcting for discrepancies to ensure similar within-sex success rates, equal funding access/success rates, and salary levels.** Organizations must take action to remove or minimize biases based on gender, or other discriminatory variables.
- **Establish new awards and prizes for women only.** Women health researchers are underrepresented at every level of career stage in academic settings post PhD or MD, including awards and prizes. Women need to be supported and encouraged to apply for major awards and prizes.
- **Recruit more women into leadership positions and instigate term limits for all leadership positions.** Research shows us that women in leadership increases promotion of women researchers in publications and at conferences. Women, girls, and gender-diverse individuals need to see themselves in leadership positions to understand there is a future for them in academic medicine. Limiting term lengths allows for more agile leadership that reflects the population it serves.
- **Increase provincial and federal funding for all career stages and make funding predictable and stable.** It is important to fund all levels of career stages to instigate more breakthroughs at a faster rate. Funding stability and increasing open science funding is vital to ensuring Canada becomes the world leader in medicine and science that it is poised to be.

THE BC WOMEN'S HEALTH FOUNDATION'S COMMITMENT

With the support of our donors, the Foundation has been steadfast in facilitating strategic philanthropic investment in women's health research and equipment for 25 years. We work to ensure that all women in BC have equitable access to the highest quality healthcare when, where, and how they need it. We are committed to ensuring women and their health needs are validated as unique, real, and important through solutions-focused research and innovation. Our partnership with the Women's Health Research Institute (WHRI) has helped to support their research in women's health, provincially, nationally, and internationally. The WHRI has over 400 members embedded in post-secondary institutions and health authorities across the province, and is leading the way in fields such as cervical cancer and sexual health on a national and international scale.

The Foundation is dedicated to funding women's health research, education and awareness about women's health needs and the gender inequities they face, and advocating for changes so that we can have healthy women everywhere, capable of anything.

DEDICATED WOMEN'S HEALTH RESEARCH FUNDING

The Foundation has secured funding for women's health research grants at different career stages, distributed through a peer-review process with our partners at the WHRI:

- **Graduate Research Awards:** recognizing the importance of early mentorship and funding for new researchers, the Foundation began this donor-funded award program in 2019. It supports salary and research costs for PhD candidates or Post-Doctoral fellows to undertake women's health research under the mentorship of a WHRI member researcher.
- **Catalyst Grants:** a donor-funded program established by the Foundation in 2016, providing opportunities through the WHRI for critical insights into new ways to prevent, treat, or cure women's health issues, and lay the foundation for further investment and exploration.
- **Clinician Scientist Fellowship:** where recipients not only care for patients, but also investigate the conditions they treat. These Fellowships support clinicians with dedicated time to investigate the research questions they have developed through direct experience within their practice.
- **Funding for specific research streams:** project specific research funding is distributed across women's health disciplines including reproductive health, endometriosis, maternal and newborn health, and mature women's health.

EXPOSING BIAS TO DRIVE PROGRESS

The Foundation knows many people are unaware of the serious gender disparities in health research, and the impact these have on the health and well-being of the women of BC, and the community at large. The Foundation is dedicated to increasing the knowledge and awareness of this issue with the general public, partner organizations, and the government.

ADVOCATING FOR SYSTEMIC CHANGE

The Foundation is committed to working with partners and other funding groups to ensure that women's health research is a priority, and that there is a commitment to incorporating sex and gender analysis in all health research at local, provincial, and national levels. We are leading the charge for real change in how women's health is viewed and valued through ongoing advocacy, to ensure policy commitment to dedicated women's health research.

The BC Women's Health Foundation's vision is to ensure all women, across all life stages, have equitable access to the highest quality healthcare when, where and how they need it. In order to achieve this women's health research must be recognized and supported at all levels of funding and academia.

Incremental change is not enough. We are intentional in advancing and transforming women's health research.

We acknowledge that the BC Women's Health Foundation carry out our work on the traditional, ancestral, and unceded territory of the Coast Salish peoples – x^wməθk^wəyəm (Musqueam), Sk̓w̓x̓wú7mesh (Squamish), Stó:lō and Səl̓ílwətaʔ/Selilwitulh (Tsleil-Waututh) Nations.



REFERENCES

- 1 Rademaker, M. (2001) Do Women Have More Adverse Drug Reactions? *American Journal of Clinical Dermatology* 2 (6): 340-351. DOI: 10.2165/00128071-200102060-00001
- 2 Government of Canada, Cervical Cancer. (2017) Available at <https://www.canada.ca/en/public-health/services/chronic-diseases/cancer/cervical-cancer.html> Accessed September 2020.
- 3 Women's College Hospital. (2016) The Health Gap. Available at: <http://thehealthgap.ca/> Accessed September 2020.
- 4 World Health Organization. Gender and Women's Mental Health. Available at: https://www.who.int/mental_health/prevention/genderwomen/en/ Accessed September 2020.
- 5 Dusenbury, M. (2017) Doing Harm: The Truth About How Bad Medicine and Lazy Science Leave Women Dismissed, Misdiagnosed, and Sick. Harper One And references therein – excerpt available at: http://www.bbc.com/future/story/20180523-how-gender-bias-affects-your-healthcare?ocid=global_future_rss Accessed September 2020.
- 6 Hoffmann, D. E., & Tarzian, A. J. (2001). The Girl Who Cried Pain: A Bias against Women in the Treatment of Pain. *The Journal of Law, Medicine & Ethics*, 28(4): 13–27. Available at: https://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=1144&context=fac_pubs Accessed September 2020.
- 7 Shen, A. (2017) Data on number of professors and their salaries released after five-year hiatus. *University Affairs*. Available at: <https://www.universityaffairs.ca/news/news-article/data-number-professors-salaries-released-five-year-hiatus/> Accessed September 2020.
- 8 D'Armiento, J, Witte, S, Dutt, K., Wall, M, McAllister, G. (2019). On behalf of the Columbia University Senate Commission on the Status of Women. Achieving women's equity in academic medicine: challenging the standards. *The Lancet*. 393: 10171 (E15-E16). Available at: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)30234-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)30234-X/fulltext) Accessed September 2020.
- 9 Sege R, Nykiel-Bub L, Selk S. (2015) Sex Differences in Institutional Support for Junior Biomedical Researchers. *JAMA*. DOI:10.1001/jama.2015.8517
- 10 Filardo G, da Graca B, Sass DM, Pollock BD, Smith EB, Martinez MA. (2016) Trends and comparison of female first authorship in high impact medical journals: observational study (1994-2014) *BMJ*. DOI: <https://doi.org/10.1136/bmj.i847>
- 11 Casadevall, A., & Handelsman, J. (2014). The presence of female conveners correlates with a higher proportion of female speakers at scientific symposia. *MBio*, 5(1). DOI: 10.1128/mBio.00846-13
- 12 Ma Y, Oliveira DFM, Woodruff TK, Uzzi B (2019) Women who win prizes get less money and prestige. *Nature* 565, 287- 288 Available at: <https://www.nature.com/articles/d41586-019-00091-3?source=Snapzu> Accessed September 2020.

The BC Women's Health Foundation commissioned this report from Dr. Liisa Galea, Scientific Advisor at the Women's Health Research Institute.

Recommended Citation: The Research Divide. BC Women's Health Foundation, September 2020.

For support interpreting or using this report please complete the contact form at <https://www.bcwomensfoundation.org/contact/>