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The global evidence of gender inequity in academic health research: a living scoping review protocol

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The global evidence of gender inequity in academic health research: a living scoping review protocol

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Abstract

Objective: To describe the global evidence of gender inequity among individuals with appointments at academic institutions that conduct health research, and examine how gender intersects with social identities (e.g., age, race, disability) to influence outcomes.

Introduction: The gender demographics of universities have shifted and the characteristics of those who lead academic health research institutions are not representative of the people who work at these institutions, even after accounting for changing demographics over time. Synthesized evidence will guide decision-making and policy development to support the progress of gender and other underrepresented social identities in academia.

Inclusion criteria: Any quantitative, qualitative, or mixed methods primary research that reports outcome data related to gender equity and other social identities among individuals affiliated with academic or research institutions that conduct health research originating from any country.

Methods: Information sources will include electronic databases (e.g., MEDLINE, CINAHL), unpublished (i.e., gray) literature sources (e.g., websites of academic research institutions), reference scanning of relevant systematic reviews, and sources provided by experts on the research team. Searches will be re-run regularly to monitor the development of new literature and determine when the review will be updated. Study selection and data extraction will be conducted by two reviewers working independently and all discrepancies will be resolved by discussion or a third reviewer. Data synthesis will focus on summarizing information using descriptive frequencies and simple thematic analysis. Results will be reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension to scoping reviews.

Keywords: diversity; gender equity; knowledge synthesis; scoping review; living review

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Introduction

According to the World Health Organization (WHO) “gender refers to the socially constructed characteristics of women and men such as norms, roles, and relationships of and between groups of women and men”.[1] Gender related beliefs and behaviors are passed on via socialization starting in early childhood and can influence almost every aspect of an individual’s development. The existence of gender norms can become problematic if they lead to inequality when used to justify differential treatment (either implicitly or explicitly) between groups, or the discrimination and social exclusion of individuals that do not conform to cultural gender norms.[1] One classic example of this is the gender gap in science and mathematics related fields: research has shown that the majority of the population hold implicit biases that associate mathematical ability and scientific competency with maleness or masculinity and that this stereotype can negatively influence girls’ and women’s belief in their ability or desire to pursue a career in this field.[2,3]

While the gender demographics of universities have shifted and women now regularly outnumber men at both the undergraduate and graduate levels and in many professional schools,[4,5] the characteristics of leaders in health research in academic institutions fail to reflect this demographic shift, even after considering that ample time has passed for this change to occur.[6,7] The disparity is even more drastic when examining equity for women and non-binary individuals who are racialized, Indigenous, low socioeconomic status, or living with disability, among other factors. The persistence of inequitable representation across gender, racial, socioeconomic, and other social identities in spite of efforts to diversify participation in academic health research and leadership points to something deeper than a pipeline issue or simple lack of candidates.[6,7] This inequity represents a lost opportunity for utilizing the productivity and contributions of all genders, and a failure to gain return on the considerable investment in education for people of all genders. It can also lead to a lack of diverse role models and mentors for incoming students and junior researchers.[8]

In order to address gender inequity a number of universities have implemented policies and established committees to increase faculty diversity and have begun to report on employment equity within their institutions to increase transparency and draw attention to disparities internationally.[9] Additionally, many research agencies have begun to establish initiatives to promote and increase diversity and inclusion in academic research such as the Tri-Council Secretariat’s Advisory Committee on Equity, Diversity, and Inclusion Policy (ACEDIP) or the Athena Scientific Women’s Academic Network (SWAN) initiative in the United Kingdom, recently adapted and implemented in Australia as the Science and Gender Equity (SAGE) program.[10-12] In 2019, the TriCouncil Agencies in Canada, the group of three main federal research funders, have called on academic institutions to implement the Dimensions Charter to promote equity, diversity, and inclusion across multiple dimensions of individual characteristics that may influence how people interact with academic systems, structures, and the people within them.[12] These approaches show a willingness to acknowledge and address systemic inequities but they are limited by the current lack of synthesized evidence on this subject that limits reliable evidence-based decision making or policy development. Completing this synthesis of the literature is essential to not only deepen our understanding of gender inequity, but will also be a

fundamental step in developing quality indicators; such indicators could be used to monitor equity in academic health research and assess the effectiveness of interventions to inform future policy development.

While much of the available evidence on gender equity approaches the issue in binary terms and focuses on the representation between women and men, our intention is to use an inclusive approach to gender identity. Our working definition of gender equity includes equal rights and opportunities for individuals of all genders to participate fully in society and have their behaviors, wants, and needs valued on an individual basis rather than on socially-constructed gender roles.[13] However, we acknowledge that reviews are inherently limited by the fact that we must work with and report on the available evidence whether or not it aligns with the definition outlined here.

Our goal is to conduct a living scoping review to enable continuous surveillance and synthesis of the globally available evidence of gender inequity among individuals with appointments in academic institutions that conduct health research for any type of outcome.[14] Furthermore, where evidence is available, we will examine how different social identities intersect with gender to influence outcomes.[15] We did not identify reviews that addressed gender representation in academic health research from a global perspective through our scoping searches.

Review questions

Primary: What is the global evidence of gender inequity among individuals with appointments at academic institutions that conduct health research?

Secondary: How do gender and other identities intersect to influence outcomes among individuals with appointments at academic institutions that conduct health research?

Inclusion criteria

Population/Participants

We will consider studies that include individuals appointed at academic institutions that conduct health research. We will exclude other types of organizations such as research science councils that are affiliated with a governmental organization but are not academic institutions.

Concept

We will consider studies that describe gender inequity, including any outcomes related to gender equity (Table 1).

<insert Table 1 here>

Context

We will consider studies conducted in academic institutions that conduct health research. The context of health research in this review is based on the four pillars defined by the Canadian Institutes of Health Research (CIHR): biomedical, clinical, health services, and social, cultural, environmental and population health.[16] Academia and academic institutions will be defined as follows:

- Academia: the environment or community concerned with the pursuit of research and scholarship[17]
- Academic institution: university, college, or institute with a formal partnership/affiliation with a university or college

Types of sources

We will consider primary research studies of quantitative, qualitative, and mixed methods designs (Table 2).[18] We will not apply restrictions based on study year, language of publication, study duration, or publication status.

<insert Table 2 here>

Methods

Study Design

We will employ a living scoping review methodology based on guidance from the Cochrane collaboration.[14] This approach was selected because we expect this to be a dynamic body of literature where new evidence is likely to emerge on a regular basis. Broadly speaking, the conduct of a living scoping review entails regular surveillance of the published literature to determine when sufficient new evidence has amassed to warrant updating a review.[14]

Protocol and registration

We developed the protocol for this living scoping review in accordance with the Joanna Briggs Institute (JBI) Reviewer's Manual and the Cochrane Collaboration's guidance for living scoping reviews.[14,18] The final review will be reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis-Scoping Review (PRISMA Sc-R) checklist for scoping reviews,[19] as provided in Appendix I. The protocol for this scoping review was also registered in the Open Science Framework (https://osf.io/8wk7e/).

Consultation exercise and integrated knowledge translation approach

We will use an integrated knowledge translation (IKT) approach, where researchers and knowledge users (KUs) will engage in co-creating research to ensure that it is relevant and useful to KUs and increase the likelihood of uptake.[20] An IKT approach is especially relevant in this context as many members of the research team are academic health researchers and thus function in a dual role of investigator and knowledge user. The KUs include members of the Canadian Academy of Health Sciences, leaders of Canada's research-intensive universities, the science publisher Elsevier, an editor from *The Lancet*, and members of the WHO, SAGE, and the South African Medical Research

Council (SAMRC).The KUs have provided input to the funding application, research question, and protocol and will be engaged throughout the project through monthly updates and invitations to review and provide feedback on project documents (e.g., search strategy, screening questionnaires, charting form). They also have connections to broad networks of potential collaborators whom we will invite to an in-person meeting to prepare key messages and develop an evidence-based knowledge translation (KT) strategy to disseminate results to relevant audiences. Furthermore, we will engage KUs in a modified online Delphi exercise to identify and prioritize topics for future research in academic health as well as other disciplines.[21] At the end of the study, we will assess KU engagement through completion of the Patient and Public Engagement Questionnaire, an instrument with good construct validity.[22,23]

Conceptual and theoretical frameworks

We will primarily use a feminist theoretical model to provide context for our project and inform the approach to data extraction and presentation. Additionally, we will use a theoretical model for analyzing gender bias in medicine that hypothesizes that active efforts to raise awareness of unconscious bias and engage in continuous reflection on gender issues are essential to reducing gender disparity in academic institutions. We will also use the conceptual framework of the glass ceiling for women leaders, which posits that institutions that apply principles of justice to management policies are more effective in addressing gender disparities.[24,25] Finally, we will use an intersectionality lens, which examines how multiple social identities intersect at the individual level and reflect social and structural systems of privilege and oppression, to encourage a deeper appreciation of the lived experience of inequity.[15,26]

Search strategy

An experienced librarian developed the search strategy for this review in consultation with content experts and methodologists. Prior to conducting the searches, a second librarian peer reviewed the MEDLINE search strategy using the Peer Review of Electronic Search Strategies (PRESS) checklist.[27] The MEDLINE strategy for this review is included as Appendix II. Additional searches for gray literature will be guided by the Canadian Agency for Drugs and Technologies in Health (CADTH) Grey Matters checklist to identify potentially relevant sources.[28] Potential gray literature sources are provided in Appendix III. We will supplement the searches by scanning the bibliography of related systematic reviews, searching the 'Gender in Global Research' group project folder established by Elsevier (a KU on the project), and reviewing team member's personal files.

In accordance with the Cochrane guidance on living reviews, we will re-run electronic database searches at 12 months after the original search date to determine when to update the review.[14] The review will be updated if at least 10% new literature has amassed. If there is insufficient new literature to warrant an update, we will re-run the literature search monthly, again checking for at least 10% new citations compared to the original search results. At least one update is planned; however, the number of subsequent updates will depend on the availability of funding to complete the work.

Information sources

Information sources include electronic databases, relevant gray literature web sites, and web searches (Table 3). We will also scan references of included articles and relevant systematic reviews, and review sources provided by KUs and experts in the field.

<insert Table 3 here>

Study selection

Following completion of the search, all records were uploaded into EndNote version 8 for de-duplication.[29] Screening forms and guidance documents will be prepared based on the eligibility criteria and pilot-tested by the entire review team prior to level one (title/abstract) and level two (full-text) screening. The pilot tests will consist of 50 citations at level one and 20 full-text articles at level two, and will be repeated until there is sufficient agreement (≥75%) among reviewers. For both level one and two, the remaining screening will be completed by two reviewers independently using the Knowledge Translation Program's proprietary screening software (synthesiSR).[30] Discrepancies between reviewers will be resolved by discussion or a third reviewer. We will summarize the results of the search and selection process using a PRISMA flow diagram.[19]

Data extraction

Data will be collected using charting forms and guidance documents in consultation with the entire team. Prior to charting, the form and guidance documents will be pilot tested by the entire team using a sample of five to 10 full-text articles and revised iteratively to address issues identified in the pilot test until suitable agreement is reached among reviewers. We will collect data on study characteristics (e.g., publication type, publication year, study design), participant characteristics including intersectionality data on social identities (e.g., age, race, class), discipline or field (e.g., biomedical, clinical, health services) and outcomes (e.g., % grants awarded by gender, gender representation in faculty/institutions). We will collect and report data related to participant characteristics that address aspects of social, sex, and gender identity as reported by the authors of research articles included in our review. Where available, we will also collect data regarding the definitions of sex, gender, race, ethnicity, sexuality, Indigenous status, or disability status and descriptions of how these social identities intersect using author's definitions. We will utilize this information to avoid extrapolation and incorporation of erroneous assumptions into our data (e.g., extrapolating the % female of a population sample when only the % male is reported) as well as to form part of the data to be presented in the review results. Full charting will be completed by two reviewers independently and discrepancies between reviewers will be resolved by discussion or by a third reviewer.

Data presentation

We will summarize the data collected from included studies according to the types of populations, contexts or outcomes that are the primary focus of their research. Quantitative outcome data will be synthesized using descriptive frequencies, tabulation, and other visual means of displaying data (e.g., infographics). Information from qualitative studies will be synthesized using simple thematic analysis to identify prominent themes and constructs relevant to the research questions. The theoretical model of

gender bias in medicine and the conceptual framework of the glass ceiling will both be used, where appropriate, to inform the coding structure for the simple thematic analysis. Where available, intersectionality data will be summarized and cross-tabulated with outcome data to provide a broader perspective on factors that influence gender equity, and specifically, the intersection of gender with other identities highlighted by the Tri-Council Secretariat's ACEDIP and the Dimensions Charter.[10,12]

Potential impact of this research

To date there is little comprehensive mapping of the global evidence for gender inequity and its intersection with multiple social identities among academic institutions that conduct health research. Without a thorough understanding of how differences in representation in academic health research across multiple identities, including gender, come about, it is difficult to know how to develop interventions to address the issue and evaluate the impact of those interventions. This synthesis will serve as a guide to develop future research in the area of gender representation and a deeper examination into how intersecting identities can influence outcomes among individuals in academic institutions that conduct health research.

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Conflicts of interest

The authors declare no conflict of interest and would like to make the following declarations: ACT is a co-director and adjunct associate professor of the Queen's Collaboration for Health Care Quality Joanna Briggs Institute Centre and is also a member of the editorial advisory board for the JBI Evidence Synthesis Journal but will not be involved with any decisions related to this manuscript. HFK is an employer of Elsevier and the Mendeley solution that will be used for this project and is an offering within Elsevier's portfolio of Research Intelligence solutions. Mendeley operates on a freemium model, thus there will not be any commercial payment from the project to Elsevier for the use of Mendeley. HFK's time is being contributed in-kind to the project and they are receiving no remuneration from the project.

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Appendix I: PRISMA checklist

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist[19]

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	5-6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	7
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	6-7
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	8-9
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix I

Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	9
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	9
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	9
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	N/A
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	9-10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	N/A
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	N/A
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	N/A
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	N/A
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	N/A

Limitations	20	Discuss the limitations of the scoping review process.	N/A
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	N/A
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	10

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

Appendix II: Search strategy for MEDLINE database

MEDLINE

Database: Ovid MEDLINE: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE® <1946-Present>

Search Strategy:

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1 exp Gender Identity/

2 gender differences.mp.

3 (sex disparit* or sex difference?).mp.

4 gender identity.mp.

5 sex role.mp.

6 wom#n* role?.mp.

7 (man* role? or men* role?).mp.

8 gender* role?.mp.

9 servicewomen.mp.

10 gender*.ti,kf.

11 (gender* adj5 (analys#s or authorship? or balance? or bias* or capacity-building or characteristic? or comparison? or composition? or difference? or discrepanc* or disparit* or discriminat* or distribut* or divers* or equal* or equit* or gap or gaps or harass* or imbalance? or inequalit* or inequit* or issue or issues or parity or proportion* or represent* or role or roles or stereotyp* or structure? or trend* or underrepresent* or under-represent* or variation?)).tw,kf.

12 ((female? or wom#n* or male or males or man or "man's" or men or "men's" or sex or sexual) adj3 (bias* or discriminat* or equal* or equit* or gap or gaps or harass* or inequalit* or inequit* or stereotyp* or represent* or underrepresent* or under-represent*)).tw,kf.

13 ((female? or wom#n* or male or males or man or men) adj5 (investigator? or researcher? or scientist? or surgeon?)).tw,kf.

14 Sexism/

15 (sexism* or sexist?).tw,kf.

16 Dentists, Women/

17 Physicians, Women/

18 or/1-17 [GENDER FILTER]

19 exp "Academies and Institutes"/

20 exp Academic Medical Centers/

21 exp Education, Professional/

22 exp Faculty/

23 exp Schools, Health Occupations/

24 exp Universities/

25 exp Hospitals, Teaching/

374 26 ((hospital? or medical centre? or medical center? or health care centre? or health care center?
375 or healthcare centre? or healthcare center? or science? centre? or science? center?) adj3 (educat* or
376 teach* or train* or universit*)).tw,kf.
377 27 (academe or academia* or academic* or dean or deans or faculty or faculties or professor* or
378 scholar*).tw,kf.
379 28 ((interim* or semester* or sessional) adj3 (instruct* or teach*)).tw,kf.
380 29 ((health or healthcare or medical or medicine or dental or dentistry or nursing or nutrition or
381 pathology or pharmacy or rehab or science?) adj3 (academy or academies or educat* or institut* or
382 school? or universit*)).tw,kf.
383 30 ((education* or research* or upper learning) adj3 (academic or academy or academies or
384 institut* or universit*)).tw,kf.
385 31 ((teaching or training) adj3 (academic or academy or center? or centre? or college? or
386 hospital? or institut* or universit*)).tw,kf.
387 32 ((medicine or medical) adj3 (department? or dept or depts)).tw,kf.
388 33 (allied health adj3 (department? or dept or depts)).tw,kf.
389 34 (audiology adj3 (department? or dept or depts)).tw,kf.
390 35 ((dentistry or dental) adj3 (department or dept or depts)).tw,kf.
391 36 (epidemiolog* adj3 (department or dept or depts)).tw,kf.
392 37 (nursing adj3 (department? or dept or depts)).tw,kf.
393 38 (nutrition adj3 (department? or dept or depts)).tw,kf.
394 39 (occupational therapy adj3 (department? or dept or depts)).tw,kf.
395 40 (pharmac* adj3 (department or dept or depts)).tw,kf.
396 41 (physiotherapy adj3 (department? or dept or depts)).tw,kf.
397 42 (physical therapy adj3 (department? or dept or depts)).tw,kf.
398 43 ((rehabilitation therapy or rehab therapy) adj3 (department? or dept or depts)).tw,kf.
399 44 (pathology adj3 (department? or dept or depts)).tw,kf.
400 45 (research adj3 (department? or dept or depts)).tw,kf.
401 46 (tenure* or non-tenure* or nontenure*).tw,kf.
402 47 Research Personnel/
403 48 (research adj2 (personnel or staff or worker?)).tw,kf.
404 49 ((audiolog* or clinical or clinician? or dental or dentist* or dietition? or epidemiolog* or health or
405 healthcare or health care or health science? or medical or nurs* or nutrition* or patholog* or
406 pharmacist? or physician? or physiotherap* or psychologist? or STEMM or technologist? or therapist?)
407 adj2 (researcher? or scientist?)).tw,kf.
408 50 exp "Awards and Prizes"/
409 51 Financing, Organized/
410 52 Research Support as Topic/
411 53 exp Training Support/
412 54 (award* or grant or grants or prize or prizes).tw,kf.
413 55 ((financial* or fund or funded or funding or funds or research or training*) adj1 support*).tw,kf.

414	56	(research adj3 (fund or funded or funding or funds)).tw,kf.
415	57	Authorship/
416	58	authorship?.tw,kf.
417	59	((first or principal or senior or guarantor) adj author?).tw,kf.
418	60	("Canadian Association of Professors of MEDICINE" or CAPM).tw,kf.
419	61	or/19-60 [ACADEMIA]
420	62	18 and 61 [GENDER AND ACADEMIA]
421	63	exp Animals/ not (exp Animals/ and Humans/)
422	64	62 not 63 [ANIMAL-ONLY REMOVED]

Appendix III: Potential gray literature sources

Canadian Research Organizations:

- Canadian Institute for Health Information: www.cihi.ca
- Canadian Centre on Substance Use and Addiction: www.ccsa.ca
- Canadian Agency for Drugs and Technologies in Health: www.cadth.ca
- Canadian Foundation for Healthcare Improvement: www.cfhi-fcass.ca
- Canada Health Infoway: infoway-inforoute.ca
- Canadian Patient Safety Institute: www.patientsafetyinstitute.ca
- Canadian Partnership Against Cancer: www.partnershipagainstcancer.ca
- Mental Health Commission of Canada: www.mentalhealthcommission.ca
- National Research Council: nrc.canada.ca
- Social Sciences and Humanities Research Council: www.sshrc-crsh.gc.ca
- Canadian Institutes of Health Research: www.cihr-irsc.gc.ca
- Canadian Centre for Gender & Sexual Diversity: www.ccgsd-ccdgs.org

International Research Organizations

- Humboldt Foundation: www.humboldt-foundation.de
- Institute of International Education: www.iie.org
- Karolinska Institute: ki.se
- Pan-American Health Organization: www.paho.org
- Rand Corporation: www.rand.org
- World Health Organization – Global Health Workforce Network: www.who.int/hrh/network

Gender Advocacy Organizations

- Society for Canadian Women in Science and Technology: www.scwist.ca
- Science in Australia Gender Equity (SAGE): www.sciencegenderequity.org.au
- UK Equality Challenge Unit – Athena SWAN Charter: www.ecu.ac.uk/equality-charters/athena-swan/
- Academic Women's Association: University of Alberta: uofaawa.wordpress.com
- American Medical Women's Association: www.amwa-doc.org
- Centre for Gender Advocacy - Fight gender oppression!: www.genderadvocacy.org
- European Gender Portal for Equality in Science: www.genderportal.eu
- ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers: www.colorado.edu/eer/research-areas/women-science

General Gray

- Government of Canada: publications.gc.ca
- GreyNet International: www.greylit.org

- SIGLE (System for Information on Grey Literature in Europe): www.opengrey.eu
- National Technical Information Service (NTIS): www.ntis.gov

Search engines

- TRIP database: www.tripdatabase.com
- Google: www.google.ca/advanced_search
- Google Scholar: scholar.google.com

Thesis

- Center for Research Libraries Foreign Dissertation: www.crl.edu
- DART-Europe E-theses Portal: www.dart-europe.eu
- Electronic Theses Online Service (ETHOS) | British Library: ethos.bl.uk
- Open access dissertations: https://oatd.org/
- Thesis Canada Portal: www.bac-lac.gc.ca

Conferences

- Gender Summit: gender-summit.com
- The Canadian Coalition of Women in Engineering, Science, Trades and Technology www.ccwestt.org

Other

- Association of Faculties of Medicine of Canada: afmc.ca
- Association of American Medical Colleges: www.aamc.org
- U15 | Group of Canadian Research Universities: www.u15.ca
- U of T Gender Equity Report: faculty.utoronto.ca/reports/gender-equity-report
- Institute for Gender and the Economy (GATE) at the Rotman School (U of T): www.gendereconomy.org

Table 1: Examples of outcomes related to gender equity

Faculty workforce	• Representation by gender in university/faculty/department • Academic rank/position (sessional instructor, assistant professor, associate professor, full professor, dean, director; status [part-time, full-time, contract, tenure-track]; salary)
Service	• Courses taught (number of required hours, types of hours, class sizes; course type - undergrad, postgrad, continuing education) • Administration/non-teaching activities (number of hours; types of committees – institutional/local [e.g., REB, hiring, thesis], national [e.g., grant reviewers], international [e.g., editorial roles, journal peer-reviewers]; membership vs. leadership [e.g., chair])
Recruitment and hiring	• Recruitment data (number of applicants by gender, interviews, new hires/accepted offers for all ranks vs. assistant/associate without tenure vs. associate/full professor; number of publications at time of recruitment)
Promotion	• Promotion opportunities (time to promotion through the academic ranks; number of grants/publications/awards, etc. at time of promotion)
Academic leadership	• Gender representation in academic leadership (types of leadership [departmental, faculty, university, national, international]; leadership promotion; leadership training; academic administration [e.g., associate/vice dean/dean+]) • Supervision (number and gender of students; number of students that graduated under their supervision reported by degree type; number of mentees)
Scholarly Output or Productivity	• Publications (position of authorship, i.e., first/senior author vs. middle author); number of: journal articles, conference publications, books/book chapters; first author, senior author, citations, downloads; other altmetric data) • Funding (number of grants including number of nominated principal applicant, principal applicant, co-applicant, collaborator; value of grants; source; internal vs. external grants [peer-reviewed vs. non-refereed]; infrastructure funding) • Presentations (number of: keynote, panels, workshops, oral, poster; international, national, local; invited vs. submitted) • Intellectual property (number of patents, registered copyrights)
Recognitions	• Distinctions, honours, prizes, awards (teaching innovation, citizenship, research, quality improvement, mentorship; monetary and non-monetary)

Other	• Contextual factors (size of university, location of university, country, public or private university) • Infrastructure (office space, administrative support, research space) • Knowledge and technology translation activities (number of research uptake strategies lead) • Maternity/paternity/family leave • Collaboration activities (investigator for a joint national/international collaboration, such as a paper or grant; author and/or editor of an international book; collaboration between academia and industry/corporate; involvement in interdisciplinary research) • Qualitative considerations (perceptions around promotion, finances, support)

Table 2: Examples of study designs

Design Category	**Examples**
Experimental	• Randomized controlled trial • Non-randomized controlled trials
Quasi-experimental	• Controlled before-after studies • Interrupted time series
Observational	• Cohort studies • Case-control studies • Case series
Qualitative	• Narrative • Phenomenological • Grounded theory

Table 3: Examples of information sources

Electronic Databases	• MEDLINE • EMBASE • PsycINFO • CINAHL • Web of Science • JBI Evidence-based Practice Database • Cochrane and Evidence-Based Medicine (EBM) Reviews Database • Campbell Library Index
Gray Literature Sources (see Appendix II for a complete listing)	• Health and gender equity organizations (e.g., Humboldt foundation) • Databases of gray literature (e.g., GreyNet international) • Internet search engines (e.g., Google Scholar) • Dissertations and theses (e.g., DART-Europe E-theses Portal) • Conferences on gender equity (e.g., Gender Summit) • Academic research associations (e.g., Association of Faculties of Medicine of Canada)