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Toward intersectional and culturally relevant sex and gender analysis in health research

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ABSTRACT

Current institutional frameworks in sex- and gender-based analysis (SGBA) are promising, but significant gaps remain in their relation to recent developments in research praxis. In this paper we draw from our own experiences with a national health research funding agency, the Canadian Institutes of Health Research (CIHR), to critically examine the uptake and implementation of its current frameworks and practices of sex and gender analysis in health research. We conducted semi-structured interviews with a cohort of 18 health researchers alongside an institutional policy analysis to show how sex and gender have been understood, integrated, and addressed within the agency and initiative.

Our findings reveal that attention to date has focused on representation (human *and* data) while deeper justice issues that are attentive to intersectionality, positionality and reflexivity—remain ambiguous. Finally, we discuss possible strategies for institutions to improve the uptake of knowledge, training, and policy to better support intersectional and culturally-relevant frameworks across the diverse research community.

1. Introduction

This paper draws from our experiences as grantees of the Canadian Institutes of Health Research (CIHR), Canada's federally funded health research agency. Increasingly, research teams in Canada are required to identify their approach to Sex and Gender Based Analysis (SGBA), and in some contexts, to assign a Sex and Gender 'Champion' in order to be eligible for funding. CIHR defines SGBA as an "analytical process used to assess how diverse groups of women, men, girls, boys, and gender-diverse people" are considered in health research ("How CIHR Supports the integration of SGBA" 2018). While current institutional frameworks in SGBA show some promise in advancing intersectional and culturally relevant gender equity, significant gaps remain in relation to recent developments in research praxis. This paper begins to fill this gap.

By way of disclosure, we are members of a team, which we refer to as The Achieving Strength, Health, and Autonomy through Renewable Energy Development for the Future (A SHARED Future) program of research, funded by CIHR in 2016 through the first funding initiative that required a Sex and Gender Champion as part of the application process (the Environment and Health Signature Initiative or EHSI). With little direction about the funding agency's expectation of the prior training, experience, or deliverables of a Champion, we, along with the other teams funded, scrambled to respond. Our program of research examines the extent to which intersectoral partnerships in the natural resources sector can contribute to new/restored understandings of wholistic Indigenous health. In addition to having an academic Sex and Gender Champion, our team decided to include a non-academic Indigenous organizational Co-Champion, whose representative participates regularly in team decisions and activities. The A SHARED Future (ASF) team is strong in Indigenous representation, with at least 50% of every aspect of our governance structure being filled by Indigenous peoples. Early in our own operationalization of the novel 'champion' role, we undertook an effort to synthesize the existing literature on critical and Indigenous-centered approaches to SGBA, including the Native Women's Association of Canada's Culturally Relevant Gender Based

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Analysis (CRGBA) framework, with our own expertise, practices, and limitations in regard to its implementation (Masuda et al., 2018).

Writing then from the positionality of a funded team within a large health research competition, we explore how funding agencies like CIHR are working to support and expand sex- and gender-based analysis and the extent to which this shifts power, relations, and knowledge production. Of note, we do not intend to spend our time deconstructing the differences between terms such as SGBA and CRGBA. Rather, we make use of our own positionality as advocates of critical and decolonizing perspectives of SGBA to engage with, and critique, the potential impacts and implications of efforts to advance "mainstream" SGBA within the broader health research community. Our experiences and observations within the EHSI program provide a unique opportunity to study the policy context, the ways in which other teams embraced and employed the novel role of the Champion, and how, given our team's governance structure and our particular focus on Indigenous ways of knowing, we could explore an intersectional approach to sex and gender analysis. In the section that follows, we outline the landscape of gender equity and identify key trends and gaps in how sex and gender have been understood by granting agencies and operationalized by health researchers.

2. Literature review

2.1. Gender equity and the academy

Recent advancements in feminist health research (e.g., Alvarez et al., 2018; Connell, 2012; Davies et al., 2019; Hankivsky, 2012; Hankivsky et al., 2018; Mena and Bolte, 2019; Pritlove et al., 2019; Springer, Hankivsky and Bates, 2012b) have been made possible through decades of feminist and intersectional scholarship and activism (Butler, 1990; Collins, 1990; Crenshaw, 1991; Haraway, 1988; Harding, 1983; hooks, 1984; Lorde, 1984; Maracle, 1996), which together have pushed researchers, academic institutions and organizations, including universities and research funding agencies, to work toward reducing structural barriers to gender equity. This is specifically the case in terms of research access and funding through improved health outcomes and advancements in gender-based analytics.

Feminist and intersectional scholars show us that there are several interlocking dimensions within the gendered dynamics of research where gender norms and gendered ways of knowing are problematically advanced, upheld and reproduced (Hamilton, 2020; Rose, 1997; Schiebinger et al., 2011; Yuval-Davis, 2012; Ahmed, 2009; Connell, 2012). Their research demonstrates that achieving equity is not only a matter of research method but also of representation and power – the former cannot be separated from the latter. This perspective therefore supports ongoing experiences of women, LGBTQ2S+ folks, Indigenous scholars, and scholars of colour in academia, specifically the ways in which they are scrutinized and surveilled. In the pursuit of normative ideals within a structural context of patriarchal white supremacy, "women of colour experience obstacles to academic success, including social isolation, a hostile work environment, the devaluation of their research, a questioning of their competences, a lack of mentoring, and excessive committee work." (Daniel, 2018, 145).

More specifically, many speak of the push to 'perform the professor'– professor here being unquestionably set against the masculinist and white backdrop of norms and narratives that are tied to the profession (Ahmed, 2007; Jones, 2006; Mirza, 2006; Banchefsky et al., 2016). Beyond the direct professional costs, living and working in such an environment consumes significant amounts of additional time and social, mental, and emotional labour, and too often becomes entirely unbearable. From this perspective, it is clear that participation alone is not enough - as Ahmed (2009) notes - to simply 'include' others who look, speak, and act differently. We have a collective responsibility to reveal and dismantle the patriarchal structures that uphold inequitable gender-based power hierarchies within research institutions themselves.

2.2. Reflexivity, positionality, and intersectionality in health research

Although CIHR and other funding agencies continue to construct binaries of sex and gender, critical feminist scholarship shifts us away from this to make room for more nuanced approaches capable of attending to the interwoven inequities baked into our collective ways of defining and relating to gendered subjects (i.e. 'men' and 'women') (Butler, 1990; Connell, 2012; Schulz and Mullings, 2006). Rather than ceding to predefined categories, this work drives inquiry into how sex and gender interact socially, politically, economically, psychologically, and emotionally—along dimensions of difference in patriarchal, heteronormative, racist and colonial contexts (Ahmed, 2007; Arvin et al., 2013; Horn-Miller, 2005; Morgensen, 2012). These nuanced framings of gender reflect the anti-oppressive potential of relational and intersectional perspectives, which are commonly grounded in concepts of reflexivity and positionality (Butler, 1990; Rose, 1997). Further, these framings move us toward analyses of how the white masculinist gaze acts on gendered and racialized subjects to discipline bodies in ways that uphold particular (structurally racist, white supremacist, colonial, patriarchal and heteronormative) material, social and political arrangements.

Employing a reflexive process in research requires acknowledging our intersectional positionality, where we recognize and examine how our own backgrounds and assumptions influence our research practice (Hesse-Biber, 2007, 17; Palaganas et al., 2017, 427). Researchers are part of the social interactions in their projects (Ackerly and True, 2010; Palaganas et al., 2017), even those that involve large cohort studies or randomized control trials. So, reflecting on our own values, roles, and how these influence the research (and how the processes affect us) is vital (Hesse-Biber, 2007, 17; Palaganas et al., 2017; Parhoo, 2006). Reflexivity demands an "iterative and empowering process" (Palaganas et al., 2017, 426) that involves reflecting on self, representation, accountability, data collection and interpretation as fieldwork is "contextual, relational, embodied, and politicized" (Sultana, 2007, 376, 383). Kohl and Priscilla (2014) propose a kitchen table reflexivity; a "community-minded approach" to research and scholarship where informal conversations or "everyday talk" are important to build "spaces of comfort," and recognize the complex relations between people involved in the research process (748–751).

Feminist research methodologies often emphasize non-hierarchical and mutual learning while paying attention to how research questions and data collection methods are "embedded in unequal power relations between researcher and research participants" (Sultana, 2007, 375–376). Intersectionality is a framework to examine interlocking power differences and normativities that produce, invisibilize, and oppress different social categories and relations in regard to gender, ethnicity, race, class, sexuality, age, ability and other identities (Dhamoon, 2015; Lykke, 2010, 50; Locke, 2015, 174; Collins, 1998). An intersectional approach can challenge researchers' (and the readers of their published work) preconceptions about social identity and power, and their expectations and values in research and fieldwork. This approach allows them to become more aware of how some social categories are privileged and normalized over others, while "making visible the multifaceted discursive and performative movements and realities" of everyone involved in the research process (Locke, 2015, 173–180).

While literature that investigates the relationships between researchers and participants is available, the nature of group dynamics and decision-making in research teams themselves deserves more attention. Reflexivity in research team dynamics is important to the construction of research subjects and objects (Siltanen et al., 2008, 46), and reflexivity is not an "occasional tool" but a "continuous and fundamental feature of research practice" (Siltanen et al., 2008, 47; Sultana, 2007, 376). In turn, the reflexive process ought to be embedded in team dynamics. Beyond the basic ethical arguments, diversity tends to expand social sensitivity and capacity to read nonverbal cues in groups, this is particularly true for gender diversity with results showing

"greater equality in conversational turn-taking" (Bear and Anita, 2011, 148). Through regular check-ins during research to consider how team members are "individually responding to, and potentially influencing, processes of data construction and analysis" (Siltanen et al., 2008, 47), we can prioritize space for nuanced perspectives that seek to address inequities within current research team dynamics and practice.

2.3. Toward intersectional and culturally relevant gender-based analysis

Concepts such as SGBA are often established and implemented within a western lens and context. In light of this, research teams such as ours aim to advance anti-colonial approaches by centering non-western culturally relevant gender-based analysis (CRGBA) and illuminating the dimensions of gender inequities within, for example, health systems, natural resource development, postsecondary education (and so on) as a component of the broader effort toward revealing and confronting the colonial patriarchal system. In Canada, as mentioned in the introduction, the Native Women's Association of Canada (NWAC) has developed a robust CRGBA framework; we elaborate on this below (Culturally Relevant Gender Based Analysis: An Issue Paper, 2007, Native Women's Association of Canada, 2010).

Like other intersectional approaches, NWAC's CRGBA framework differs from SGBA in that it focuses on how gender and colonialism intersect with and affect Indigenous communities (2010). For NWAC, CRGBA necessitates recognizing how settler colonial violence is enacted upon, and indeed produces gender differently, and it promotes understanding gender roles and relations to specific communities/nations while resisting influences of heteropatriarchal assumptions, values, and norms (Masuda et al., 2019, 4). Applying a framework like NWAC's CRGBA includes listening to the needs, perspectives and rights of Indigenous women, Two Spirit, non-binary, and queer peoples in order to support, prioritize, and advance action toward equity and self-determination for them and their communities. NWAC's aim is to move researchers toward a more inclusive understanding of sexual and gender identities, the gender galaxy, Two-Spirit traditions and approaches, and the tensions and limitations of such work thus far. Like Gaudry and Lorenz (2018) insist, we also aim to push the academy and research funders to "fundamentally reorient knowledge production based on balanced power relations" (p. 226) by critically engaging with culturally-relevant sex and gender-based dimensions.

Our literature review has focused on identifying key facets of a more materially transformative intersectional feminist approach. This literature helped inform our review of an institutional context that is attempting to move in this direction. Ours is essentially a study of implementation, or perhaps 'translation' of critical concepts within an institutional context and culture rooted in a positivist, biomedical, and of course masculinist and patriarchal tradition. With all that is known from the literature, we ask: how are concepts like SGBA actually being applied and to what extent are they impacting the health research community? Undertaking this critical analysis is intended to help identify areas for CIHR and other health research institutions to embrace ambitious approaches to SGBA and the benefits that will accrue in advancing intersectional, culturally relevant, and justice-informed approaches to gender and health equity.

3. Approach

3.1. Data collection and analysis

Our analysis draws from a critical review of key publicly available CIHR documents and a series of in-depth, semi-structured interviews involving key stakeholders with first-hand insights into CIHR history and current practice. The former includes eight policy documents and online resources that were gathered for data analysis; this included all Institute and Initiative authored documents that outlined or provided reference to gender and gender-based analysis from 2012 onward (see Table 1: Documents analyzed). The latter includes 16 key informant interviews.

Table 1
CIHR documents analyzed.

Title	Year
Shaping Science for a Healthier World: Strategy 2017	2017
EHSI Funding and Grant Guidelines	2017
CIHR Institute of Gender and Health: Sex and Gender Champions	2018
Discoveries for Life: Review of the Institute of Gender and Health	2018
Progress Update: SGBA in Action at CIHR	2018
Science is Better with Sex and Gender. CIHR IGH Strategic Plan.	2018–2023
CIHR Online Training Modules: Integrating Sex & Gender in Health Research	2020
How CIHR is Supporting the Integration of SGBA	2020

The interviewees included six of our own research team members, eight Nominated Principal Investigators (NPIs) from the pool of nine Environments and Health Signature Initiative (EHSI) funded projects, and two senior CIHR officials (both active at the time the EHSI was negotiated and approved). Questions largely centered on the following topics and issues: their understanding of the purpose, intentions, and goals of the funding opportunity, their experiences with the development of the initiative and/or the application submission process, their understanding and expectations of Gender Champions for integrating SGBA into their program of research, whether/how they have integrated SGBA into their research, and how relationships are evolving between NPIs and other members of their teams.

Once our team received University Research Ethics clearance for our protocol, the first author contacted all interview participants by email and conducted all interviews. All participants were given an opportunity to review a draft of this paper; no withdrawals were requested. Interviews lasted between 45 min and 1 h 45 min. Interviews with NPIs took place during a mandatory conference of CIHR EHSI NPIs in Toronto (November 2018). Interviews with senior officials occurred in spring 2019. Interviews with our team members spanned from fall 2018 to fall 2019.

All policy documents and interview transcripts were uploaded to qualitative data management software (NVivo 12) to enable and manage simultaneous processing and interpretation of the data. Informed by a grounded theory approach, we engaged in iterative thematic development alongside our reading of intersectional feminist frameworks and relevant literature. We used thematic and discourse coding and from there identified common themes, perspectives and concerns from researchers and common approaches to research in relation to gender. We then re-reviewed the policy documents and academic literature to situate and interpret our findings.

4. Findings

4.1. 'Taking up' gender in health research

4.1.1. Defining 'champions'

CIHR has long upheld a view of itself as a multidisciplinary research funding agency, but the reality is that it remains firmly rooted in a science-based tradition. While social scientists have made some headway over the years in terms of steering the organization toward accepting more broadly based epistemological and methodological issues and approaches in research, the primary strategic drivers and indeed audiences of CIHR discourses are scientists of a positivist orientation. This discourse is evident in SGBA+ policy. As of 2018, CIHR stated that it "places sex and gender science at the heart of experimental design, measurement, analysis, reporting and implementation" ("Science is Better with Sex and Gender" 2018, 5). Most obviously, this statement makes no reference to exploratory, qualitative or critical inquiry, or preventative upstream interventions on the social determinants of health. Thus, while the progressive growth of sex- and gender-based

analysis is seemingly clear for the institution, it certainly is not ubiquitous.

Among those we interviewed, some noted that sex and gender was "very present", "first and foremost", and always under consideration in their research. That said, participants implemented sex- and gender-based analysis and gender diversity in their projects in varying ways, and the guidance from CIHR on the duties of Gender Champions, for instance, are quite open-ended. In 2018, two years after the requirement for Sex and Gender Champions in the EHSI Call for Proposals, the CIHR Institute of Gender and Health (IGH) defines a Sex and Gender Champion as:

> "… a researcher who possesses or acquires expertise in the study of sex as a biological variable and/or gender as a social determinant of health … Sex and Gender Champions are identified and selected by the team in their application. Their role is to ensure that sex and/or gender considerations are integrated into every step of the research project, as appropriate, including project rationale, experimental design, methods, analysis and knowledge translation." (Sex and Gender Champions, 2018).

Noteworthy from this statement is the absence of considerations of representation and power.

Several participants echoed that CIHR's approach and method for guiding Champions produced a great deal of 'empty space' in how teams take up gender in their work. According to those interviewed, the roles of their Champions varied depending on the needs of the research teams and how they supported the teams through, for example, observation, discussion, direction, design and peer review. Some acknowledged working with Gender Champions who attended to issues of equity. One participant noted that their project included a co-investigator that is a woman and a "specialist" in "gender differences". Another participant said they worked with a Gender Champion who was a "health equity scholar" and active with their committees to help "convene conversations." Some participants admitted that, at the half-way point of their five-year programs, they had not called on their Gender Champion yet, but others included the Gender Champion as a partner throughout the research process. Although some participants acknowledged working with a Gender Champion in ongoing ways, which was consistent with CIHR's strategic directions, three teams did not make such acknowledgements.

For members of our research team, the role and experience of the two Gender Champions was seen as crucial, particularly given the team's self-perceived dearth in previous experience and expertise in the area. One team member noted that the Gender Champions effectively spoke about relationships and relationality, which helped to "mobilize" us around gender. Another team member spoke about how we developed an internal review process for allocating our funds to different projects that involved the Champions by reading and internally peer reviewing project proposals and providing substantive feedback on the extent to which they "aligned with all the objectives" related to gender-based analysis. According to one team member, the Gender Champions play an important role in ensuring the team is producing "ethically sound, rigorous research" and act "as a sounding board", which maintains a clear, intentional, and dedicated space for discussions around sex and gender. Another member noted that one of the Gender Champions holds institutional knowledge of "what it means to do gender-based analysis" because they were "within the initial conversations from the beginning about what that was supposed to look like." The Gender Champions, then, worked to encourage a model that embraces experience, and engagement with projects, proposals, and relationships throughout the research process.

4.1.2. Power and parity

The EHSI research teams had vastly different understandings of gender and its relationship to power but rarely spoke about how this impacted the relational and political dynamics (and priorities) of the team. What they did speak about was gender *balance* on their teams, albeit their responses largely upheld a gender binary. Participants noted they had "gender parity" or "gender balance" on research committees and teams, and that they had "diverse" teams. One participant noted that they had a project co-led by two women, while another explained that even though there is a gender imbalance in their department "at the university level", public health "saves the day because there are much more women than men".

Furthermore, and critical, discussions of gender parity did not seem connected to issues of research team relationality and conceptual and methodological approaches. It is uncertain whether recognition of gender parity drove teams to engage in conversations about the role of gendered ways of knowing in research, the potential value of feminist methodologies, or the application of intersectionality, positionality, and reflexivity in their research projects. In effect, if teams see a balance between men and women as achieving diversity, teams may not be pushing beyond this gender binary.

The implications of this are concerning in two ways. First, it implicitly places the onus of implementation on the non-men in the room and relieves cis-gender men of any responsibility for the labour and risk of carrying out meaningful gender-based analysis in research. Second, and relatedly, it assumes that cis-gender women "naturally" hold the expertise and capacity to lead the way in dismantling patriarchal research structures and processes, even while it is certainly the case that women scientists are often accultured into those very structures as a strategy for success. Finally, it was not clear that teams were questioning and attending to gendered assumptions in ways that would allow non-binary and transgender people to feel relatively safe, or open up space to critically reflect on intersecting issues of race, ethnicity, class, and ability.

In some cases, participants noted that they did not include or consider sex and gender-related analysis in their projects at all, particularly in regard to research team composition and dynamics. One participant noted that they "hadn't thought about" the gender composition of their team, while another said sex and gender issues with the research team "didn't really come into the conversation". A participant said they "just really wanted to work with great smart people" who "were passionate". For this researcher, team composition was more about "who had the expertise", noting that they did not know "how many of my team or at least some of my team would identify from a gender perspective, but that's an interesting conversation". This perspective sheds light on how ahistorical and apolitical claims to "objectivity, meritocracy, color and gender blindness, race and gender neutrality, and equal opportunity" are put to use by researchers and institutions here and now (Solórzano, 1998, 122). Notably, these ongoing assertions of meritocracy erase histories of gender, racial and colonial violence and accumulation, while white male privilege is politically and materially maintained and status-quo institutional structures remain firmly in place.

4.1.3. Rules, norms and performativity

Institutional rules and bureaucratic norms impact how research teams engage meaningfully, or not, with gender (Kenny, 2014). At the time of this writing, the CIHR training modules (for integrating sex and gender in health research) continue to reinforce categorical conceptions of sex and gender and fall short of adequately addressing intersectionality, positionality, and reflexivity (Online Training Modules 2020). Moreover, CIHR treats quantitative and qualitative research separately, rather than intricately connected (ibid). Several teams reflected this larger institutional approach to gender.

One interview participant remarked that their team "easily ticked those [male/female] boxes without us even having to try", framing the discussion as bureaucratic, implying that "ticking boxes" is a sufficient end in considering gender in research. Another participant responded to the question of gender by explaining that gender and other equity issues

are being addressed at the political level in their project's relations with industry and institutional partners: "we've kind of convinced ourselves we're addressing some of that equity issue including gender" by dealing with it "at that somewhat high level perhaps". Even with good intentions, however, there is a vast difference between satisfying administrative quotas on equality versus striving for equitable and reflexive relations in research processes.

Indeed, apart from considerations of GBA+, issues of gender and other forms of "diversity" have long been taken up by research and other institutions through tokenistic standards of inclusion. In contrast, feminist scholars propose relational and intersectional approaches to SGBA that "have the potential to disrupt a number of problematic trends in sex/gender research including: binary constructions of sex (male vs. female) and gender (masculine vs. feminine), the treatment of sex and gender as easily separable, and the disconnection of sex/gender from other health-influencing factors" (Hankivsky et al., 2018, 3).

In the EHSI cohort of NPI interviewees, some demonstrated deeper consideration of sex- and gender-analysis and relations. Participants spoke about their own embedded processes for maintaining equity as a group. Participants noted the aspiration of having equity processes "embedded" and "operational" beginning with the design of their research projects. One participant noted that "ethical tensions" resulting from "fundamental injustices" in a research project can have a "rippling" effect of equity issues across the research team. In this case, the team was aware of issues "around power and who convenes the conversation … in what way and how we're convening". One team had an equity committee that did "careful thinking about how we're equipping the team" to think about gender equity and developing frameworks and internal processes to deal with equity dynamics. Another participant spoke of their embedded process of equity reflection:

> "… we've created that space and narrative, of evaluating a reflective conversation across the project. So, we're undertaking some team-wide reflections in an arts-based narrative way that is also reflected back to the team. So, it's sort of an arts-based scenario reflective practice that's surfacing all sorts of tricky issues … we're still working through what that means … and we're actively fitting it into how we design our annual meetings."

She also noted how subjectivities influence equity:

> "I think we all have our own personal lenses on these issues … being aware of what it means to be experiencing gender and gender related power dynamics in that process is a constant learning journey. So, I've got my own personal learning journey … It's confusing, it's infuriating, it's kind of sometimes really funny. It's just, you know, it's a big hodgepodge of really experiential stuff."

This participant further reflected on the ways that gender categories and performativity are expressed between researchers and teams, noting the "inter-connectedness and relationships" involved, and that it is important to "surface" dynamics that develop throughout research processes. She shared her own struggles as a younger scholar working in a male-dominated field, reflecting on her experiences of overt gender assumptions and biases as well as the subtler, relational and epistemological tensions. She describes her realization of just how "strong" and clear the performance of gender categories became as she observed that nearly all her male colleagues were working with the "hard, biophysical, earth, you know, tangible stuff", while female colleagues were nearly all situated in the "squishy, social, and human" sciences. She went on to reflect on the subsequent "epistemological clash going on between those worldviews. It's a different way of—well, it's an ontological thing—and that is manifesting in what is called research and what is seen as valid". For her, these are rather different ways of approaching complex issues like sex and gender; some are focused on "linear", "concrete" and data-centric components, while others are more interested in "complexity and systems and interactions … and there is clearly a gender dimension to that".

4.1.4. Gender as 'data'

One common response from the EHSI NPI interviewees was to conceive of sex and gender as solely a 'data problem', often disconnected from larger dimensions of health. Several interviewees pointed to limitations in data or research scope as reasons why they did not consider gender dynamics in their analysis. One participant noted they were "mainly doing observations, so it's a challenge to delve into a person's identified gender." The same participant remarked that they asked "about the gender element in interviews" but only in relation to whether "data reports are male or female," because the data sources they had "were limited in terms of what … we can glean from it" regarding gender. Some participants said that they only noted gender concerning individuals involved in the research. One participant noted that they integrate gender questions into their research questionnaire, but gender was "not a core aspect of our research questions'' so they did not "have detailed information about … gender roles for example … if you think from a data and research question perspective we are not specifically interested in — in very specific gender questions". One researcher spoke quantitatively, noting that they had "probably 98.5% who identify as female or male, and then perhaps less than 1% who identify in any other category", stating that this accounts for the "male-female binary" in their project. Ultimately, these responses point to a limited scope for SGBA in quantitative projects, which deferred to their methodological limitations rather than considering whether other approaches might be warranted to overcome such limitations.

5. Discussion

5.1. Toward intersectional and relational approaches

Some teams–including ours–engaged in ongoing reflection practices around gender dynamics, while prioritizing collaborative decision-making processes. One of our team members noted their practice of checking-in before starting "to see where team members are at in terms of their level of understanding and preparedness and willingness to take gender centered approaches in the research". Another team member noted the importance of "bringing people together even though everybody's so busy and everybody has other things going on … being able to spend that time in a room … to bring everybody back together on the same page to report on things, to have formal and informal conversations". This consistent space for conversation and sharing allows teams to consider more collaborative and reflective forms of project management.

For our research team, centering gender throughout the research process has opened up space for deeper epistemological and ethical considerations, which has encouraged us to prioritize the intersectional dimensions of gender. When scholars shift assumptions and perspectives around how we come to know what we know, our understanding of 'knowledge', and what qualifies as knowledge, we can begin meaningful conversations about how to move toward intersectional and culturally relevant gender analysis. In our research program, we dedicate collective space to have conversations about epistemology, ethics, leadership, and relational tensions. These spaces include gatherings of scholars, Elders, community members, as well as the research committee. Team members noted that a commitment to epistemological change also requires a de- or anti-colonial agenda that is critical of political economic paradigms rooted in colonialism, and is therefore focused on shifting the material conditions of colonialism.

Several research teams who were focused on deeper and more intersectional engagement with gender noted the need for ongoing and intentional engagement with research ethics. For them, ethics is not finished once the ethics application is complete. Ethical practice must be addressed internally, relationally, and politically. One interviewee argued that the process of ensuring that ethical relationships flourish in

research projects requires putting Indigenous communities – and women and non-binary folks specifically – "at the forefront of how we're conceiving things" and to "have a serious conversation with communities about how they want to be engaged". Another interviewee noted that having ongoing and intentional space to discuss ethics and leadership, as team members noted, can ensure projects are more reflexive.

Several participants noted that researchers must practice reflexivity in the everyday moments of research. One participant emphasized the importance of reflexivity and conversations about ethics on research teams:

> "… just because you're doing something … which aligns with Indigenous principles of protecting and preserving the environment for future generations, that doesn't mean that it's ethical … I don't think it necessarily allows you to be reflexive … and I think we're talking about those, and are having those discussions: that just because you're in that role, just because you think you're doing good for the community doesn't mean that you are."

As Liboiron articulates, good intentions and care are simply not sufficient to ensure positive material outcomes, or even less harmful ones for that matter (2021). With researchers who are conscious of their own positionality and are consistently reflective of Indigenous and non-western ways of operating, the research process can move from a focus on quotas or tokenized forms of gender and racial representation toward more comprehensive practices of reflexivity and accountability.

Concerning ethics in research, honouring multiple points of view was another common theme for some interviewees. Ethics requires that researchers move beyond their "own little silo of knowledge", as we often have different ways of "being trained in the academy and how to collaborate", especially when contrasted to how training evolves with many Indigenous-led teams. One participant felt that "there's just too much mixed up with settler colonialism and the arrogance of the academy," and another noted the importance of communities developing their own approaches to research ethics, "holding and making decisions around how funds get used". Another team member reflected on how they decide "ownership of intellectual property" and how the community is represented in collaborative projects. And a third team member raised concerns about the peer review process, noting a "lack of literacy on the peer review committee about some of the core parameters" including "Indigenous Ways of Knowing", and lack of knowledge of gender and gender Champions. The team member expanded on this by reflecting that, from their observations, peer reviewers often work in unrelated fields and thus lack familiarity, knowledge and/or experience with such issues.

5.2. Institutional challenges and ways forward

The challenges of implementing sex- and gender-based analysis in Canadian health research are similar to those experienced in other national contexts (Hankivsky et al., 2018). National funding agencies worldwide have developed a variety of policies and practices for including SGBA in health research, albeit almost invariably with insufficient conceptual explanations of sex and gender diversity, a lack of practical guidance on how to operationalize SGBA in research projects, and a lack of intersectional and reflexive analysis of gender in relation to other forms of inequity (Hankivsky et al., 2018). Studies also note the importance of moving "beyond statistical quantification" of differences between men and women, and challenging binary categorical thinking through improved gender theoretical development in policy and training by health funding agencies (Hammarström and Hensing, 2018, p. 2).

Responses from interview participants indicate varied forms of understanding and engagement with gender analysis in health research projects, from seriously limited to relatively robust. Within the structural conditions of research institutions like CIHR, research teams 'take up' gender quite differently. Some researchers focused on gender parity in their data, others strived to create gender equity, others deployed narratives of meritocracy to justify the absence of gender-based analysis in their research altogether, while some did have worthy attention to intersectionality, reflexivity and positionality on their teams.

Across the pool of participants in our case study of the EHSI, there was a lack of consistency in the degree that Sex and Gender Champions were engaged in the research and the degree to which SGBA was prioritized on teams. While some researchers made efforts, consistent with the cutting-edge scholarship in the field, to reflect on team relations and lead conversations about how gender inequities effect their research and team dynamics, other researchers had just begun to consider gender dynamics during our interviews. Finally, the methods that some teams used to embed and operationalize processes for considering gender dynamics on research teams lacked attention to intersectionality, reflexivity and positionality, and perhaps most importantly, failed to scrutinize the ways that gender and sexual identities operate within larger cultural and political systems of patriarchy, heteronormativity, racism and colonialism.

A key takeaway is that the inconsistencies in gender analysis across teams is at least partly caused by the lack of sufficient direction that was available at the time from CIHR regarding Sex and Gender Champions. As a first step, research institutions could provide greater clarification and support around the role(s) and opportunities for involvement and leadership of such Champions within research teams, as well as providing adequate training to support designated gender advocates to critically engage with grounded, practical methods of employing gender analysis in research programs. That said, consistency is not necessarily the issue, per se, as all teams could develop their own reflexive, intersectional processes. In this sense, the focus should be on helping to prepare Champions and teams to effectively develop a comprehensive process that pushes their research and their team toward culturally relevant and intersectional gender equity. The future of gender analysis and equity in health research requires not only improving consistency and increasing representation, but also empowering teams to move beyond this to implement meaningful strategies.

In this sense, our findings affirm that 'balance' and 'parity' are not necessarily related to intersectional gender equity. Greater parity *may* help to push teams toward reflexive conversations and practices or the adoption of intersectional frameworks in their research and team relations, but it may simply create another space for performing the (masculinist) professor. Put differently, achieving male/female parity has the potential to open up space for teams to question gendered ways of knowing, gender binaries, and how structural forces of patriarchy, heteronormativity, sexism, racism and colonialism shape their research, but only if team members are familiar with, or at least open to such ways of seeing. Otherwise, parity might serve and reproduce gender binaries by erecting performative and tokenistic measures of 'success'. This allows teams to falsely believe that gender equity has been 'achieved'. Indeed, if parity and diversity are seen solely as quantifiable goals, what does this 'do' (materially, socially, politically) for the institution? Further, if parity and representation are necessary but insufficient conditions for gender equity, what specific role should they play in helping research teams and institutions move toward intersectional and relational gender frameworks? And, together, how might these improve the material resources and conditions for marginalized researchers and communities?

Our findings also illustrate the urgent need for researchers (ourselves included) to reflect on and make changes to their relationship with research and knowledge in ways that better integrate intersectional and relational conceptualizations of gender. Research institutes could increase space and resources for currently marginalized research communities, and could better support and more proactively seek out research teams that are engaging in such processes. Also, they could shift funding processes to better support reflexive and community-driven research, and the trust-building dialogue-work needed to achieve this.

Although community-led research does not imply that gender analysis will be adequately applied, the researchers we spoke to who were doing community-driven EHSI programs were more likely to use an intersectional and reflexive framework in their conceptualization of gender.

Regarding institutional support, our analysis found that funding institutions must improve training and education significantly if they intend to move their governance structures and funded projects toward intersectional gender equity. For instance, CIHR could reinterpret its approach to articulating sex and gender and apply NWAC's lens of CRGBA that sufficiently explores how colonialism, structural racism, and heteronormativity are perpetuated in Canadian research. This same lens must be applied to CIHR itself, to internally explore the ways that the institution has been shaped by and contributes to such structural harms. To do so, we recommend that research institutes work more closely and reciprocally with thought leaders and front-line communities on critical and Indigenous feminist perspectives as well as institutions who adopt best practices (i.e., NWAC). From our perspective, more rigorous methods of SGBA in quantitative research will only happen if researchers are convinced to take them seriously and are equipped with enough expertise on sociopolitical dimensions of health to do justice to the conceptualization, design and interpretation of research and data. At minimum, funding institutions could offer case examples and tutorials of how research teams have already employed meaningful and creative approaches to gender in their projects, which will help researchers think beyond 'ticking the box'. Further, researchers seeking funding must be required to move beyond superficial approaches, some of which we have shown even within this small sample of CIHR-funded research programs. A strong signal from funding institutions that this is no longer acceptable will encourage, and indeed compel, investigators to advance richer intersectional conceptualizations of sex and gender in their projects. Requiring a robust articulation of the competencies, roles, and anticipated contributions of Sex and Gender Champions on funded research teams will necessitate some form of evaluative component by the funding agency to ensure compliance. This will surely require shifts in how researchers allocate their time, energy, funding and resources.

The 2019 Tri-Agency Statement on Equity, Diversity and Inclusion (EDI) commits the three public research funding organizations in Canada to supporting equitable access to funding opportunities. The Agencies also commit to promoting the integration of equity, diversity, and inclusion-related considerations in research design and practices, and increasing equitable and inclusive participation in the research system, including on research teams (Equity, Diversity and Inclusion in the Research System 2019). As a comparator, a new Tri-Agency funding program in Canada, called New Frontiers Research Fund, has EDI requirements that include consideration of gender-based analysis in assessing grant proposals. The EDI protocols define equity, diversity, and inclusion, and focus on gender identity and gender expression as part of the diversity component of the protocols. The protocols include links to reports on strengthening research capacity through gender inclusion, and they suggest specific scholarship on gender equity, diversity, gender distribution across academic disciplines, gender in academic recruitment and in corporate governance. The protocols use "gender-based analysis plus (GBA+) … to highlight go[ing] beyond gender [to] include the examination of a range of intersecting identity factors" (Best Practices in Equity, Diversity and Inclusion in Research, 2019). In short, the Tri-Agency speaks more directly than CIHR alone to the importance of intersectional diversity in research design, composition, and analysis.

From here, we ask: How can funding institutions and researchers more meaningfully implement such advancements? CIHR and others keep statistics on funding by gender but our study shows that it has not sufficiently moved beyond the binary tick-boxes of sex and gender for NPIs, never mind other members of the team. Even at the NPI level, if we consider amounts of funding in all CIHR grant programs, the data shows that men were awarded more money than women from 2000 to 2016 (Gender Equity Data Analysis, 2017). The peer review process is certainly one mechanism at the outset of funding research; peer review committees are now (as of 2020) being asked to carefully review not only the short statement in the front matter of CIHR applications, but also to look for evidence of gender-based analysis in the team, the questions, the data collected, and the analysis. Once funded, it becomes the responsibility of the NPI and the Sex and Gender Champions to monitor and support their teams. This is one of many ways that funder responsibilities are increasingly downloaded onto researchers. Moreover, all agencies must recognize how inequitable these roles are vis-à-vis the balance between recognition (NPI's are very valorized) and labour. In turn, we suggest all agencies consider ways to better support SGC's within the grant. We emphasize that this will indeed impact the kinds of research that is funded, hopefully addressing the major lacunae that has resulted in CIHR's–and many others–longstanding neglect of intersectionality. As a result, we would expect far more support for currently underfunded research on, for instance, the Calls to Justice outlined in the Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls (2019), as well as important work linking structures of racism and colonialism to environmental contamination, toxicity, and food and water insecurity, alongside the many other environmental and reproductive justice issues occurring across Canada.

Meaningful research partnerships with organizations can help build practical strategies to better operationalize CRGBA on teams. Building such partnerships requires time, effort and ongoing engagement. While many in the health research community are supported with cash, equipment, and in-kind contributions from other government agencies, pharmaceuticals, and industry partners, this is not always possible. Additionally, such collaborations may be antithetical to many Indigenous organizations. Many of the organizations with expertise in intersectional and CRGBA will be not-for-profits, often operating on shoestring budgets and facing many different forms of exclusion.

CIHR required the nine EHSI teams to set aside $50,000 in their budgets to participate in a CIHR-organized mid-term and end-of-grant roundtable; the funding agency could make similar 'set aside' requirements in research team budgets for operational activities and learning across teams related to gender analysis. If the funds are not used for these purposes, an audit could require the funds returned to CIHR for failure to comply. While such a heavy-handed approach may seem problematic to some, structural responses to create a set of social and cultural norms about how gender diversity is valued in all aspects of the research enterprise seems crucial.

Some of the lessons from our own work in seeking to implement intersectional and CRGBA includes commitments to open conversation and support for leadership from Indigenous peoples, Black people, and People of Colour, collective decision-making, continuous ethical evaluation, and epistemological growth, although we still have a way to go yet. Gender and Indigenous—or non-Western—Ways of Knowing cannot be separated, as they are interconnected. In a research initiative dedicated to environments and health, researchers should be aware that women, LGBTQ2S+, Indigenous and non-white people are disproportionately affected by environmental and health injustices. Yet, gender and Indigeneity are often an afterthought for research teams. With administrative requirements reduced to a 'tick-box' and peer reviewing that lacks adequate knowledge of non-western Ways of Knowing, implementing intersectional and culturally relevant approaches becomes a significant challenge for research teams. Meaningful gender-based analysis is context-specific, so an institutional and standardized approach is myopic, as it assumes a singular way of being and knowing – assuming singular truths and universality instead of culturally-specific and critically-grounded analysis.

6. Conclusion

To be fair, funding agencies and researchers have made progress to

better integrate sex and gender analysis in health research. The international recognition of CIHR's institutional work is notable (Equity, Diversity and Inclusion (EDI) in Action at CIHR, 2020), yet CIHR continues to reflect the structural norms (and harms) within Canadian health research, which perpetuates a minimalist approach to advancing gender-based health equity, while nearly ignoring intersectionality and cultural relevance altogether. As a result, competitions result in funded teams that fall short on, or completely ignore SGBA, as is evidenced in our data–a concerning finding indeed.

That said, our analysis indicates that some research teams are, perhaps by virtue of including investigators with specific competencies, working toward intersectional, reflexive and embedded practices of SGBA. And even when researchers are not, they are often open-minded about the concept. Researchers and the institutions they are embedded in, however, must model and support SGBA more systematically, while recognizing and attending to the ways in which SGBA still systematically excludes Indigenous–and many other non-western epistemologies, expertise, and priorities as part and parcel of the feminist research agenda. In this sense, there was a clear lack of engagement with intersectional and culturally relevant gender analysis in both the training modules and the interview data we collected. We suggest that CIHR further resource its knowledge and training infrastructure to provide adequate support (and requirements) for researchers to conceptualize and apply an intersectional lens that is grounded in an understanding of sociopolitical structures of racism and colonialism and how they shape our research and our lives. The current developments are promising, but they are not systematic or systemic, and in an era of truth, healing, and reconciliation, particularly the evidence and calls for justice arising from the National Inquiry into Missing and Murdered Indigenous Women and Girls, they miss the critical importance of intersectional and culturally-relevant analysis.

Credit author statement

Sarah Rotz: Conceptualization, Methodology, data design and collection, Writing – original draft preparation and revisions John Rose: data collection and analysis, writing. Jeff Masuda: Conceptualization, writing-reviewing and editing Diana Lewis: writing, reviewing and editing, Heather Castleden: Supervision, Conceptualization, writing-reviewing and editing.

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