

Sex- and gender-based analysis and the *CJRT*: What can we do to combat bias in health research?

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Sex and gender have long been known to be strong predictors of health and many examples of health inequities can be at least partially explained by variations in these variables. Differences in these attributes can affect our risk of developing diseases (especially chronic conditions), the choice of and response to treatments, or how and when we seek health care. However, these important indicators are often overlooked in health research. Increasingly, however, consideration of these dimensions is a requirement of research from design to dissemination. For example, the Canadian Institutes of Health Research requires applicants to incorporate sex and gender into their research, when appropriate, while many journals include this as a requirement to publish. As such, I am excited to report that the *Canadian Journal of Respiratory Therapy* have updated our Author Guidelines to prompt authors to apply a Sex- and Gender-Based Analysis (SGBA) lens to their submissions, as appropriate.

While at times overlapping but ultimately describing different features, confusingly these terms are often used synonymously. Sex refers to biological attributes of physicality and physiology arising from chromosomal alignment in animals. Sex is predominantly categorized as female or male; however, intersex is an uncommon naturally occurring third category. In contrast, gender describes the socially constructed roles, behaviors, and societal norms associated with identifying as a man, a woman, or the increasingly growing gender-diverse identities in humans. Among the research and health community, gender is considered to be on a continuous spectrum as opposed to the simplistic binary of sex; therefore, the scientific community has not yet endorsed one accepted measurement [1–3]. Nevertheless, gender an important social determinant of health.

Sex and gender bias in reporting of research results have been well known [4, 5]. One downstream effect of this bias being that the systematic review and meta-analyses that often inform treatment guidelines and social policy are often composed of studies reporting results aggregated at the sex and gender levels, most arising from primary sources that are not sex- or gender-diverse. Negative distal health outcomes may then arise from treatment guidelines that don't consider sex-based differences in pharmacokinetic and pharmacodynamic properties or policy placement that differentially limits access to health care services among gender identities [6]. Despite awareness of this bias in reporting, in a 2016 internet survey of diverse sample of research journals, Heidari and colleagues [1] found 7% of their sample had SGBA policies in place for authors, whereas 75% of the remainder were unsure or unwilling to employ them.

The Tri-Council Policy Statement exists as the framework for ethical conduct for human research in the Canadian context. This document



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explicitly states that the principal of Justice applies and suggests that no particular group or community should bear a disproportionate amount of the burden or risk, nor be unduly excluded from the benefits, of participating in research [7]. The editorial board of the *Canadian Journal of Respiratory Therapy* has a role in combating this bias in reporting. As mentioned, we have updated our author guidelines (<https://www.cjrt.ca/author-guidelines/>) to reflect this and provide links to tools for conducting and reporting health research using SGBA. I encourage all researchers to review the sources cited here and consider applying SGBA to future research projects. In particular, Bauer et al. [2] developed a community-advised metric for trans-inclusive gender measurement, which I have found success employing in current research projects.

Furthermore, I would suggest the design phase be informed by a discussion of whether associations are borne of biological or sociocultural factors while analysts consider investigating for both sex- and gender-based effect modification. In addition, I also encourage all editors and reviewers of the journal to apply a sex- and gender-critical framework in future reviews, if appropriate. The guidelines developed by Heidari and co-authors [2] being a particularly useful tool.

In the meantime, and as always, wash your hands often while singing “Happy Birthday,” try not to touch your face, and wear your seatbelt.

A handwritten signature in black ink, appearing to read 'Justin Sorge'.

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