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Sex and gender-based analysis and diversity metric reporting in acute care trials published in high-impact journals: a systematic review

David Granton ,[1] Myanca Rodrigues ,[2] Valeria Raparelli,[3,4] Kimia Honarmand,[2,5] Arnav Agarwal ,[2,6] Jan O Friedrich,[1,7] Benedetta Perna,[3] Riccardo Spaggiari,[3] Valeria Fortunato,[3] Gianluca Risdonne,[3] Michelle Kho ,[8,9] Sandra VanderKaay,[8] Dipayan Chaudhuri,[2,10] Carolina Gomez-Builes,[11] Frédérick D'Aragon,[12,13] Daniel Wiseman,[14] Vincent Issac Lau ,[15] Celina Lin,[16] Julie Reid,[2] Vatsal Trivedi,[1,11] Varuna Prakash,[1] Emilie Belley-Cote ,[2,17] Maha Al Mandhari,[11] Lehana Thabane ,[2] Louise Pilote ,[18,19] Karen E A Burns[1,2,7,20]

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For numbered affiliations see end of article.

Correspondence to
Dr Karen E A Burns;
Karen.Burns@unityhealth.to

ABSTRACT

Objective To characterise sex and gender-based analysis (SGBA) and diversity metric reporting, representation of female/women participants in acute care trials and temporal changes in reporting before and after publication of the 2016 Sex and Gender Equity in Research guideline.

Design Systematic review.

Data sources We searched MEDLINE for trials published in five leading medical journals in 2014, 2018 and 2020.

Study selection Trials that enrolled acutely ill adults, compared two or more interventions and reported at least one clinical outcome.

Data abstraction and synthesis 4 reviewers screened citations and 22 reviewers abstracted data, in duplicate. We compared reporting differences between intensive care unit (ICU) and cardiology trials.

Results We included 88 trials (75 (85.2%) ICU and 13 (14.8%) cardiology) (n=111 428; 38 140 (34.2%) females/women). Of 23 (26.1%) trials that reported an SGBA, most used a forest plot (22 (95.7%)), were prespecified (21 (91.3%)) and reported a sex-by-intervention interaction with a significance test (19 (82.6%)). Discordant sex and gender terminology were found between headings and subheadings within baseline characteristics tables (17/32 (53.1%)) and between baseline characteristics tables and SGBA (4/23 (17.4%)). Only 25 acute care trials (28.4%) reported race or ethnicity. Participants were predominantly white (78.8%) and male/men (65.8%). No trial reported gendered-social factors. SGBA reporting and female/women representation did not improve temporally. Compared with ICU trials, cardiology trials reported significantly more SGBA (15/75 (20%) vs 8/13 (61.5%) p=0.005).

Conclusions Acute care trials in leading medical journals infrequently included SGBA, female/women and non-white trial participants, reported race or ethnicity and never reported gender-related factors. Substantial opportunity exists to improve SGBA and diversity metric reporting and recruitment of female/women participants in acute care trials.

PROSPERO registration number CRD42022282565.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Broad search strategy, duplicate citation screening and data abstraction, and adjudication of sex and gender-based analysis (SGBA) reporting with a statistician.
⇒ First systematic review examining SGBA and diversity metric reporting in acute care randomised controlled trials published in high-impact general medical journals.
⇒ Inclusion of a diverse sample of acute care trials before and after Sex and Gender Equity in Research guideline publication.
⇒ Search restricted to selected journals and publication years, with assumption that if SGBA and diversity metric reporting were suboptimal in these high-impact journals, it would be of similar or lower quality in other journals.
⇒ We did not consider sex-specific disease prevalence or power issues related to SGBA.

INTRODUCTION

Biological sex and sociocultural gender are key determinants of health influencing all aspects of disease development and progression.[1] Sex-related differences in physiology, pharmacology, disease prevalence and underlying pathophysiology are well described.[2–9] Gender, as complex social construct, and gendered-social factors, including education level and employment status, have been increasingly recognised as important factors

in health.[6] More recently, there has been increasing recognition of the intersection between sex, gender and other factors such as race or ethnicity and their impact on health.[6 10 11] Notwithstanding, females and women are under-represented as participants in clinical trials[4 5 7 8 12] and statistical analyses infrequently address the impact of these variables on dosing, treatment effect and adverse events.[3 4 7]

As early as 2007, researchers highlighted the need for reporting the primary outcome of trials disaggregated by sex or gender with a test of interaction to provide more equitable and inclusive evidence.[9 13] These have been defined as sexand gender-based analyses (SGBA). In 2013, the International Committee of Medical Journal Editors recommended routine reporting of data by sex.[14] In 2016, the Sex and Gender Equity in Research (SAGER) guideline was published to standardise and promote sex and gender reporting.[4] In acute care medicine, the implementation of sex-sensitive and gender-sensitive research remains an unmet need.[15] A 2011 review of 2336 diverse Emergency Medicine studies found that although 29% of authors considered sex or gender in their study design, only 2% reported their primary outcome by sex or gender.[16] A 2018 update of this study found that although the incorporation of sex and gender in the study design increased over time, the proportion taking sex or gender into consideration when reporting their primary outcome remained unchanged.[17] The effect of the SAGER guideline on reporting of acute care trials in leading medical journals is unknown.

We performed a systematic review to characterise reporting of SGBA, diversity metrics (ethnicity, race, gender-related factors) and the proportion of female/women participants included in acute care randomised controlled trials published in high-impact medical journals. We further assessed whether SGBA reporting and inclusion of female/women participants improved over time.

MATERIALS AND METHODS

Objectives

Our primary objectives were to characterise reporting of SGBA and representation of females/women in acute care trials. In secondary objectives, we aimed to describe diversity metric reporting (ie, ethnicity, race, income, education, marital status, employment status) and assess whether SGBA reporting and inclusion of females/women improved after publication of the SAGER guideline. This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses recommendations[18] and was registered on PROSPERO (CRD42022282565).

Data sources and searches

We systematically searched MEDLINE for acute care trials published in five journals including the *Journal of the American Medical Association* (*JAMA*), *New England Journal of Medicine* (*NEJM*), *British Medical Journal* (*BMJ*), *The Lancet* and *Annals of Internal Medicine* in 2014, 2018 and 2020. These journals were selected as seminal acute care trials are frequently published in these journals, and they rank among the top five general medical journals when sorted by h-index. Additionally, we theorised that if reporting of SGBA and diversity metrics was suboptimal among these selected leading general medical journals with high reporting standards, reporting would likely be suboptimal in other general medical journals and subspecialty journals. We selected these years to identify trials published before and after the 2016 SAGER guideline.[4] The search used keywords "Randomized Controlled Trial" or "Controlled Clinical Trial" or "Pragmatic Clinical Trial" or "Equivalence Trial" or "Clinical Trial, Phase III" regardless of their focus or language of publication (online supplemental material: search strategy).

Trial selection

We included parallel group trials that enrolled acutely ill (at least 50% acutely ill) adults (age greater than 18 years), compared two or more interventions or strategies and reported at least one clinical outcome (ie, mortality, length of stay. We defined acutely ill as necessitating admission to an intensive care unit (ICU) or receiving treatments typically initiated in the ICU with expected impact on short-term and long-term outcomes. Patients with an unstable cardiac diagnosis (eg, heart failure exacerbation, acute coronary syndrome) requiring hospitalisation were also considered acutely ill. Trials that assessed cardiology interventions or patients that would typically be admitted to a coronary care unit or cardiology ward were considered as 'cardiology trials'. All other trials were considered to be 'ICU trials'. We excluded case reports, case series, observational studies, cross-over, n of 1, cluster and quasi-randomised trials. Further, we excluded trials if the intervention was administered exclusively in the prehospital setting, emergency department or operating room and patients were not subsequently admitted to an ICU or monitored setting. Trials that enrolled predominantly outpatients, non-adults, evaluated elective procedures (eg, elective cardiac surgery or percutaneous coronary intervention) or included more than 50% inpatients who were not acutely ill at the time of treatment administration were also excluded.

Four reviewers (DG, AA, KH and JOF), working in pairs, screened citations initially by title and abstract and subsequently, by full text, independently and in duplicate. Disagreements were adjudicated by four investigators (KEAB, JOF, KH and DG). All citations were screened using Covidence software.[19]

Data abstraction and quality assessment

22 reviewers, mostly methodologists, (DG, AA, KH, JOF, BP, RS, VF, GR, MK, SV, DC, CG-B, FD'A, DW, VIL, CL, JR, VT, VP, EB-C, MAM and KEAB), working in pairs, abstracted data independently and in duplicate using a standardised data abstraction form. Disagreements were

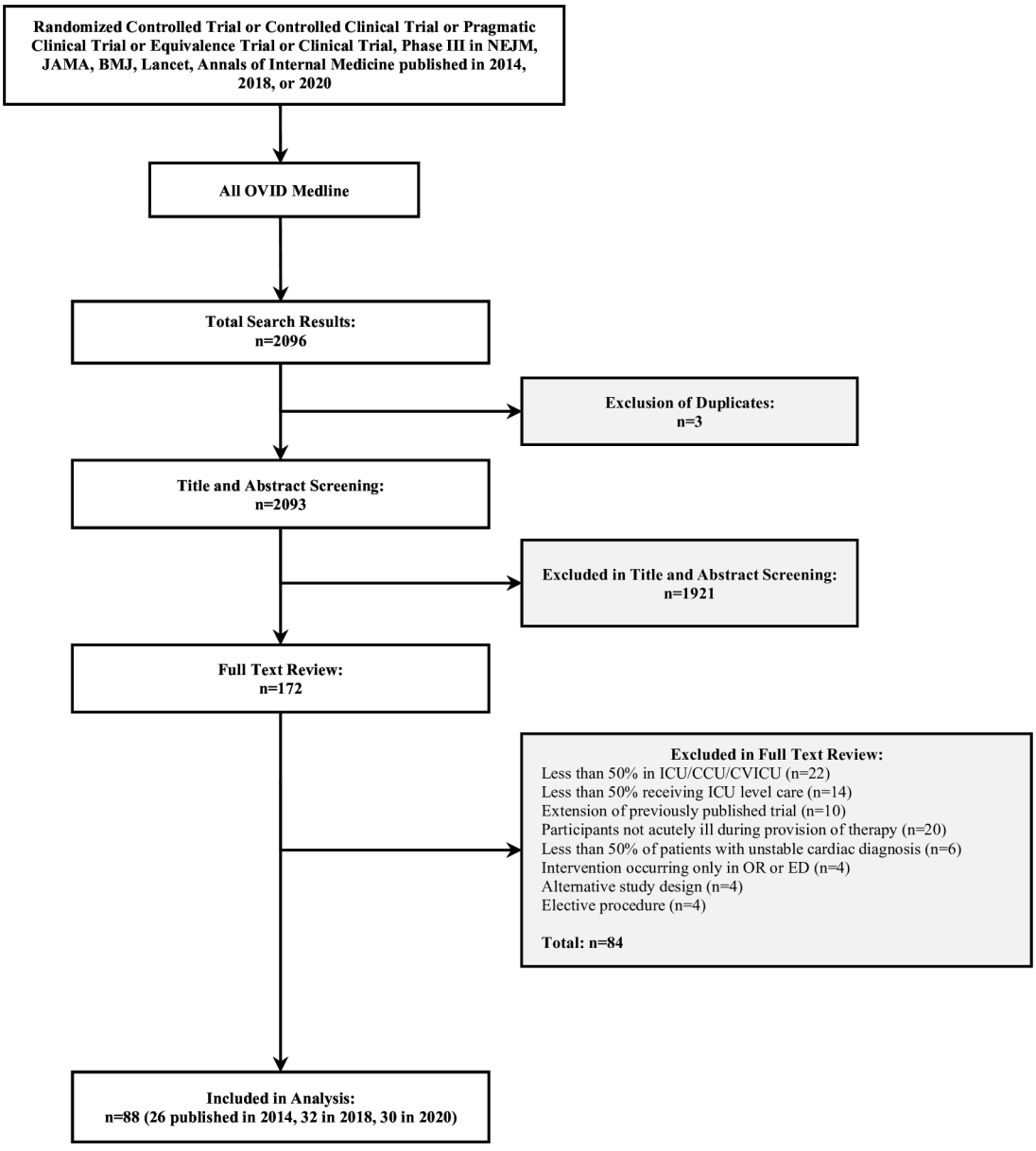

Figure 1 Trial identification. *BMJ*, *British Medical Journal*; CCU, coronary care unit; CVICU, cardiovascular intensive care unit; ED, emergency department; ICU, intensive care unit; *JAMA*, *Journal of the American Medical Association*; *NEJM*, *New England Journal of Medicine*; OR, operating room.

resolved by adjudication by two investigators (DG and KEAB).

We abstracted data related to trial design (objective, primary outcome, location), funding, participant diversity (sex, gender, race, ethnicity, income etc), if an SGBA for the primary outcome was performed, details related to the SGBA (specified a priori in the methods section of included trials, depicted using a forest plot, corrected for multiple comparisons and whether a sex-by-intervention interaction was performed with an accompanying frequentist or Bayesian test of significance).[9 13] We also noted whether trials featured a sensitivity analysis by sex. We did not consider reporting of sex or gender as a covariate in an adjusted analysis to be a valid SGBA.[20] Trials needed to report both a treatment and subgroup variable to be considered a SGBA. We considered analyses that assessed for a sex-by-intervention interaction to represent more robust SGBA.[9 13 20 21] We examined online supplemental materials and appendices of all included trials to ensure that SGBAs were not missed. A graduate student in statistics (MR) working with a biostatistician (LT) confirmed SGBA reporting and features of SGBA.

We recorded terms used by trial authors to report sex or gender in headings (ie, sex or gender) and subclassifications (eg, male/female/other, man/woman/other) in baseline characteristics tables and SGBA. We assessed for concordance (sex subclassified as female/male/other or gender subclassified as man/woman/other) between table headings and sex/gender subclassifications within baseline characteristics tables. Any other combination of terminology between headings and subheading was deemed discordant terminology. In trials that reported

Table 1 Characteristics of acute care trials

Acute care trial characteristics	No of trials (%)
Type of trial	
Intensive care	75 (85.2)
Cardiology	13 (14.8)
No of participants	
≤250	15 (17)
251–500	17 (19.3)
501–1000	23 (26.1)
1001–3000	24 (27.3)
≥3001	9 (10.2)
No of centres	
Multicentre	83 (94.3)
Single centre	5 (5.7)
Continent of origin	
Europe	49 (55.7)
North America	24 (27.3)
Oceania/Australia	7 (7.9)
Asia	4 (4.6)
South America	4 (4.6)
Year of publication	
2014	26 (29.6)
2018	32 (36.4)
2020	30 (34.1)
Journal	
New England Journal of Medicine	35 (39.8)
Journal of the American Medical Association	35 (39.8)
The Lancet	17 (19.3)
British Medical Journal	1 (1.1)
Annals of Internal Medicine	0 (0)
Trial population	
Cardiovascular	24 (27.3)
Neurologic	22 (25.0)
Respiratory	18 (20.5)
Infectious disease	11 (12.5)
Gastrointestinal	6 (6.8)
Renal	5 (5.7)
Musculoskeletal	1 (1.1)
Endocrine	1 (1.1)
Type of intervention	
Pharmacologic	50 (56.8)
Non-pharmacologic	36 (40.9)
Pharmacologic and non-pharmacologic	2 (2.3)

SGBA, we noted if subclassification terms were inappropriately used interchangeably between baseline characteristics tables and SGBA. We did not assess for concordance of race and ethnicity terminology throughout included trials, however, we did assess if these were appropriately presented as distinct entities within baseline characteristics tables.

We used the Gender Outcomes International Group: to Further Well-being Development framework to characterise diversity metrics and domains encompassed by gender such as gender identity, gender relations, gender roles and institutionalised gender.[6 21–23] We collected data regarding participant gendered-social factors including income, education, marital or employment status. We documented how race and ethnicity were reported and the number of trial participants by category. Finally, we noted whether trials discussed the implications of SGBA when conducted or identified the absence of an SGBA as a limitation. We did not assess trial risk of bias as our goal was to focus on SGBA and diversity reporting in selected high-impact medical journals.

Subgroup analyses

A priori, we planned to compare SGBA reporting in ICU versus cardiology trials.

Statistical analysis

We used descriptive statistics including counts and proportions, means and SD to summarise binary and continuous data, respectively. We used the χ^2 test with Yates' correction to compare: (1) SGBA reporting before and after the publication of the 2016 SAGER guideline and (2) SGBA reporting in ICU versus cardiology trials. All analyses were conducted in WinPepi[24] and Stata MP (StataCorp, V.17). We created figures using Microsoft Excel and Stata.[25] All statistical analyses were performed with a level of significance set at p=0.05.

We tabulated the pooled proportion of females/women: (1) in cardiology and ICU trials, (2) by publication year and (3) before (2014) versus after SAGER (2018 and 2020) guideline publication using the metaprop command in Stata, with random-effects models.[26] We assessed whether the proportion of female/women trial participants differed before and after SAGER guideline publication using meta-regression (R^2) using the meta command with regress subcommand in Stata in a random-effects model.

Deviations from preregistered protocol

While we largely adhered to our preregistered PROSPERO protocol, methods that were not identified in our initial protocol include the use of the GOING-FWD[23] framework to characterise diversity metrics, evaluating the concordance of sex and gender terminology, subgroup analyses comparing female/women inclusion in cardiology versus ICU trials, and statisticians (MR and LT) confirming features of included trial SGBA.

Patient and public involvement

Members of the public and patients were not involved in the design, interpretation or dissemination of this study.

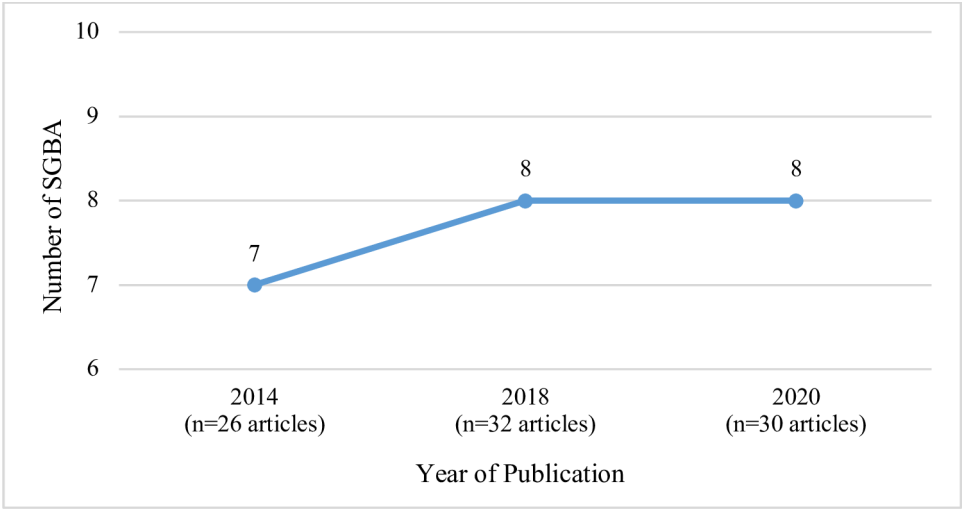

Figure 2 Reporting of sex and gender-based analyses (SGBA) in acute care trials over time.

RESULTS

After removal of duplicates, we identified 2093 citations for title and abstract review. We excluded 1921 citations, leaving 172 trials for full-text review. Of these, 88 trials met inclusion criteria including 75 (85.2%) ICU and 13 (14.8%) cardiology trials (figure 1). Four trials required adjudication by KEAB and DG. Most trials were multicentre (83 (94.3%)) and 55 (62.5%) trials included less than 1000 participants. Trials were predominantly from Europe (49 (55.7%)) and North America (24 (27.3%)) and published in *NEJM* (35 (39.8%)), *JAMA* (35 (39.8%)) and *The Lancet* (17 (19.3%)) (table 1). A similar number of trials were included across each of the years of publication. Acute care trials typically evaluated cardiovascular, neurologic or respiratory interventions. Of these, more than half (50 (56.8%)) were pharmacological interventions.

Reporting of sex-based and gender-based analyses

23 (26.1%) trials reported an SGBA of which most were prespecified (21/23 (91.3%)) and depicted in a Forest plot (22/23 (95.7%)). Most SGBA (19/23 (82.6%)) reported a sex-by-intervention interaction with an associated Frequentist or Bayesian test for significance. Five trials (5.7%) included a sensitivity analysis based on sex. Only one trial discussed the implications of SGBA on the primary outcome. Of the trials that did not conduct an SGBA, none identified the lack of an SGBA as a limitation.

Seven of 26 trials (27%) published in 2014 conducted SGBAs, while 8/32 (25%) trials in 2018 and 8/30 (27%) trials in 2020 reported SGBAs (figure 2). There was no difference in the proportion of trials that reported SGBAs before and after publication of the SAGER guideline (7/26 (27%) vs 16/62 (25.8%); p=0.88). Significantly fewer SGBAs were reported in ICU vs cardiology trials ((15/75 (20%) vs 8/13 (61.5%) p=0.005).

Sex or gender of included trial participants

There were 111 428 total trial participants, including 38 140 (34.2%) females/women and 73 288 (65.8%) males/men. Only one trial included an 'other' category—characterising a participant as 'living as female'.[27] There were more female/women participants in ICU (30 903 (37.1%), 75 trials; n=83 199) vs cardiology trials (7237 (25.6%); 13 trials; n=28 229), (p<0.001). Similar findings were observed in the pooled prevalence of females/women in ICU versus cardiology trials (p=0.005). There were no differences in the pooled prevalence of female/women participants across publication years (p=0.62) and before versus after SAGER guideline publication (p=0.59) (online supplemental figures 1–3). Meta-regression evaluating female/women representation across years indicated no improvement over time (R^2 of 1.01%). (online supplemental figures 4–5).

Sex and gender reporting

In table 2, we summarise the terminology used to report participant sex and gender in baseline characteristics tables and SGBA. Of the 32 trials that featured a sex or gender heading in their baseline characteristics table, most (31 (96.9%)) reported sex, only 1 (3.1%) trial reported gender. Of these trials, 17 (53.1%) used discordant terminology between the heading and subclassification within baseline characteristics tables. Four (17.4%) trials used sex and gender subclassifications interchangeably between baseline characteristics table and SGBA.

Race and ethnicity reporting

Race and ethnicity were usually reported as distinct entities. Only 25 (28.4%) trials reported race or ethnicity (table 3). Of these, one trial had incomplete data,[28] two trials did not report race and ethnicity as distinct entities,[27 29] one trial reported trial participants as 'black' or 'not black'[30] and another trial did not report mutually exclusive race categories,[31] precluding pooling of these trials (table 3). Among the remaining 20 trials that reported race or ethnicity, participants were predominantly (78.8%) white. Of these, six trials categorised participants as 'white' or 'not white'.[32–37] We did not find significant differences in race and ethnicity reporting

Table 2 Use of sex and gender terminology in reporting acute care trials

Acute care trial characteristic	No of trials (%)
Heading (label) used in baseline characteristics table	
Sex	31 (35.2)
Gender	1 (1.1)
Not provided	56 (60.2)
Sex or gender subheading used in baseline characteristics table	
Men/women	18 (20.5)
Women	3 (3.4)
Men	7 (7.9)
Total reporting gender	28 (31.8)
Male/female	16 (18.2)
Female	1 (1.1)
Female sex	13 (14.8)
Male	5 (5.7)
Male sex	25 (28.5)
Total reporting sex	60 (68.3)
Concordance of table of baseline characteristics heading with subclassification	
Yes	15 (17.1)
No	17 (19.3)
Not applicable (ie, heading not provided)	56 (63.6)
SGBA heading	
Sex	18 (20.5)
Gender	3 (3.4)
Not provided	2 (2.3)
Not applicable (ie, no SGBA)	65 (73.9)
SGBA sex or gender subclassification	
Male/female	17 (19.3)
Men/women	5 (5.7)
Not provided	1 (1.1)
Not applicable (ie, no SGBA)	65 (73.9)
Sex or gender subclassification used interchangeably between table of baseline characteristics and SGBA (n=23)	4 (4.6)

SGBA, sex-based and gender-based analysis.

between ICU and cardiology trials (5/13 (38.5%) vs 20/75 (26.7%); p=0.4).

Reporting of gendered-social factors

No trial reported gendered-social factors.

DISCUSSION

Despite reporting recommendations, SGBAs were infrequently reported among our sample of acute care trials published in high-impact medical journals over a 7-year period. Only one-third of acute care trial participants were females/women. Most trials that included a sex or gender heading in their baseline characteristics table reported participant sex. Discordant sex and gender terminology were noted in over half of the included trials between headings and subheadings within baseline characteristics tables, and in approximately 20% of trials between baseline characteristics tables and SGBA. Nearly 80% of acute care trial participants were white. Less than 30% of acute care trials reported race or ethnicity. No trial reported on income, education, marital status or employment status. Only one trial featured an 'other' category in their sex or gender demographic reporting, which included one participant. SGBA reporting and inclusion of female/women participants did not improve over time. Compared with ICU trials, cardiology trials reported significantly more SGBA. It is unclear why reporting of SGBA has not improved over time despite publication of the SAGER guideline. Possible explanations include delays in knowledge dissemination and time required for guideline adoption (as trials may have been designed and conducted several years prior to publication), lack of enforcement by journal editors and peer reviewers, concerns regarding multiplicity and false positives in subgroup testing, and the effect (real or perceived) sex-specific disease prevalence may have on the decision to conduct SBGA. Substantial opportunity exists to improve SGBA and diversity metric reporting and recruitment of female/women participants in acute care trials.

Our study has several strengths including a broad search strategy, duplicate citation screening and abstraction, inclusion of diverse acute care trials before and after SAGER guideline publication, adjudication of SGBA with a statistician and scrutiny of appendices of included trials for SGBA.[4] Our study also has limitations. First, we only examined trials published in selected journals and years that frequently publish landmark acute care trials. The decision not to include subspecialty journals (eg, cardiology) may have resulted in a lower number of acute care cardiology trials. However, this approach enabled us to sample trials from journals with high standards for publication before and after SAGER guideline publication. Second, our search was conducted solely with the MEDLINE database, and thus theoretically could miss citations, however, the risk of missing citations is low given we only focused on very high-impact journals. Third, the period after SAGER guideline publication may not have been long enough to permit guideline adoption, and we did not capture the date of individual trial registration or conduct. However, awareness of the importance of SGBA dates back to at least 2007.[13] Notwithstanding, current guidance documents pertaining to conduct of subgroup analyses recommend that they be conceptualised a priori, hypothesis generating and limited to those with biological plausibility to minimise the risk of false-positives.[38 39] Approaches to the conduct of SGBA were not addressed in these trials. Fourth, trials may feature substudies

Table 3 Reporting of race and ethnicity in acute care trials

Race or ethnicity reported	No of trials reporting	Trial participants N (%)
Not black	1	748/882 (84.8)
White	20	14 274/18 106 (78.8)
Asian	8	1549/8610 (18)
Black or African American	12	1067/10 325 (10.3)
Not white	6	443/4759 (9.3)
Hispanic or Latino	9	715/9873 (7.3)
Ethnicity: other/mixed/unknown/not collected	3	79/1301 (6.1)
Race: other/mixed/unknown/not collected/participant declined	13	782/12 872 (6.1)
American Indian or Alaska Native	3	15/1182 (1.3)
Hawaiian or Other Pacific Islander	1	3/839 (0.4)

published after the parent trial which specifically address SGBA and diversity metric reporting not examined in the initial publication. Our findings, therefore, may underrepresent SGBA reporting as we did not search for such substudies. However, the ideal time to report SGBA and diversity metrics in participant demographics would be within the initial trial publication or in an accompanying supplement given the impact this has on trial generalisability, while substudies can feature more detailed analyses and discussion. Fifth, we did not consider sex-specific disease prevalence or evaluate power issues related to SGBA. Sixth, we restricted studies to those with adult participants. Finally, we did not assess trial risk of bias as our goal was to characterise SGBA and diversity reporting.

SGBAs are important as they identify potential differences between sexes or genders in pharmacokinetic and/or pharmacodynamic effects of interventions, pathophysiology, presentation and disease course.[40] Similar to other subgroup analyses, SGBAs are subject to limitations of power, potentially resulting in false negatives or false positives related to multiple comparisons.[41 42] Therefore, trialists may be dissuaded from conducting an SGBA without a strong rationale.[43 44] At a minimum, SGBAs are hypothesis generating and permit pooling of sex or gender-disaggregated data in subsequent meta-analyses. Prior reviews in cardiovascular disease found that one-third of trials conducted stratified analyses by sex or gender and noted that SGBA reporting increased over time.[43 45–47] Conversely, we found that only 26% of acute care trials reported SGBA with no temporal improvement in SGBA reporting. Similar to other cardiology and neurology reviews, we identified that few trials reported SGBAs with a test for interaction.[20 45 46 48–52]

Our review is novel in examining SGBA reporting, and the discordant use of sex and gender terminology within baseline characteristics tables and between these tables and SGBAs. A review of 75 state and federal databases in the USA found that 49% of databases used gender and sex terminology inappropriately, often conflating the terms. Only 8/38 (21.2%) databases provided additional, non-binary, gender classifications.[53] Accurate reporting of disaggregated sex and gender data is necessary as a precursor to the conduct of SGBA. Conflation of these variables in reporting participant characteristics, conducting analyses and interpreting findings, is likely to overstate the generalisability of findings and miss opportunities to identify the impact of these characteristics, alone or in intersection with other factors, on outcomes. Additionally, we noted that acute care trials enrol nearly 80% white participants, two-thirds of whom are males/men. We also found that race and ethnicity were heterogeneously reported using various classification systems. Poor race and ethnicity reporting were compounded by incomplete or missing data and legislation in some countries that prohibits collection of data related to participant race and ethnicity.[54] The under-representation of racial minorities in acute care trials impairs the generalisability of findings to clinical practice.[10 55]

Similar to others, we found that females/women (vs males/men) were under-represented in acute care trials.[12 56] Additionally, we identified that representation of females/women in acute care trials did not improve over time. A review of author guidance documents from 190 academic journals found that only 24% of journals explicitly distinguished between or defined the terms sex and gender, and only 34% had a policy for reporting sex or gender.[57] Under-representation is important because it limits generalisability of findings and may exacerbate existing sex-based and gender-based disparities in healthcare including access to potentially beneficial interventions. In turn, this limits the conduct of sex-specific analyses and opportunities to tailor therapies to specific participant groups. Of recent concern is the effect that the under-representation of participants of various sex, gender identity, race, ethnicity and other diversity metrics, may have on the development and implementation of artificial intelligence and machine learning algorithms.[58] The reasons for lower representation of females/women in trials are multifactorial. Studies suggest that the diagnosis, treatment and outcomes of females/women (vs males/men) differ based on sex and gender-disease prevalence and presenting symptomology.[7] Fowler

et al reported that despite males/men and females/women having similar disease severity at ICU admission, females/women over 50 years were less likely than males/men to be admitted to ICU and receive life-prolonging measures.[59] Similar findings have been reported in cardiology, where cardiovascular risk is often underestimated in females/women resulting in a lower referral rates for interventions including percutaneous coronary intervention for acute coronary syndrome[12] and worse outcomes including mortality.[59 60] Referral biases limit opportunities for females/women to be approached for and included in clinical trials.[7] This compounds the fact that females/women less frequently meet eligibility criteria due to comorbidities that vary in prevalence by sex and gender. The impact of gendered-social factors, cultural and socioeconomic influences on trial eligibility remains poorly characterised.

CONCLUSION

Our findings highlight a strong need for improved reporting of SGBA, diversity metrics and female/women representation in acute care trials.[61] Efforts to educate researchers about the importance of these metrics as determinants of health, and enhance collection and reporting of sex, gender, and other diversity metrics are needed. Standardised and mandatory reporting requirements by funding agencies and journals may facilitate adherence to the PROGRESS PLUS[62] and SAGER reporting frameworks.[4]

Author affiliations
[1]Department of Medicine and Interdepartmental Division of Critical Care, University of Toronto, Toronto, Ontario, Canada
[2]Department of Health Research Methods, Evidence and Impact, McMaster University, Hamilton, Ontario, Canada
[3]Department of Translational Medicine, University of Ferrara, Ferrara, Italy
[4]University Center for Studies on Gender Medicine, University of Ferrara, Ferrara, Italy
[5]Division of Critical Care, Mackenzie Health, Vaughan, Ontario, Canada
[6]Division of General Internal Medicine, Department of Medicine, McMaster University, Hamilton, Ontario, Canada
[7]Critical Care and Medicine Departments, Unity Health Toronto, Toronto, Ontario, Canada
[8]School of Rehabilitation Science, McMaster University, Hamilton, Ontario, Canada
[9]Physiotherapy Department, Research Institute of St. Joe's Hamilton, St Joseph's Healthcare Hamilton, Hamilton, Ontario, Canada
[10]Department of Medicine, McMaster University, Hamilton, Ontario, Canada
[11]Department of Anesthesiology and Pain Medicine, University of Toronto, Toronto, Ontario, Canada
[12]Department of Anesthesiology, Universite de Sherbrooke, Sherbrooke, Quebec, Canada
[13]Centre de Recherche du Centre Hospitalier, Universite de Sherbrooke, Sherbrooke, Quebec, Canada
[14]Departments of Medicine and Critical Care Medicine, McGill University, Montreal, Quebec, Canada
[15]Department of Critical Care Medicine, University of Alberta Faculty of Medicine & Dentistry, Edmonton, Alberta, Canada
[16]Department of Medicine, Division of Physical Medicine & Rehabilitation, McMaster University, Hamilton, Ontario, Canada
[17]Department of Medicine, Divisions of Cardiology and Critical Care, McMaster University, Hamilton, Ontario, Canada
[18]Department of Medicine, McGill University, Montreal, Quebec, Canada
[19]Department of Medicine, Research Institute of the McGill University Health Centre, Montreal, Ontario, Canada
[20]Department of Medicine, University of Toronto, Toronto, Ontario, Canada

X Myanca Rodrigues @MyancaRodrigues, Michelle Kho @khome and Louise Pilote @fwd_going

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ORCID iDs
David Granton http://orcid.org/0009-0005-8711-1110
Myanca Rodrigues http://orcid.org/0000-0001-7953-773X
Arnav Agarwal http://orcid.org/0000-0002-0931-7851
Michelle Kho http://orcid.org/0000-0003-3170-031X
Vincent Issac Lau http://orcid.org/0000-0002-9939-7348
Emilie Belley-Cote http://orcid.org/0000-0002-5071-076X
Lehana Thabane http://orcid.org/0000-0003-0355-9734
Louise Pilote http://orcid.org/0000-0002-6159-0628

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