Reporting and analysis of sex and gender in transitions of care for older adults: a methods study

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ABSTRACT

Objectives: Sex and gender-based analysis may improve understanding of transitions from long-term care to community or health services. Our study aims to assess how sex or gender was reported and analyzed in studies about care transitions for older adults.

Methods: We identified longitudinal studies from a 2017 scoping review on factors affecting care transitions of older adults (participants 60 years and older) and assessed transitions from long-term care to community or health services. We used a pretested coding sheet to assess the reporting of sex or gender in 5 sections of the studies: title and abstract, introduction, methods, results, and discussion.

Results: We included 20 longitudinal studies conducted in 3 countries (United States, Germany, and Finland) with the study durations ranging from less than 1 year to 10 years. Almost all of the studies reported a sex distribution of the sample (18/20; 90%). Sex or gender was discussed in the background and rationale by three out of 20 studies (15%). Twelve studies (60%; 12/20) planned to control for sex or gender in their statistical analysis. Association of sex with outcomes was reported by 45% (9/20) and 3 studies (15%; 3/20) provided disaggregated data on sex or gender.

Conclusion: Almost half of the studies assessing transitions from long-term care to community or health services did not control for sex or gender in their statistical analysis. This may be a missed opportunity for understanding potential sex or gender differences in the transitions in care for older adults.

There has been a growing recognition in the importance of integrating sex and gender in health research to better understand biological and sociological differences in patterns of health conditions and their management.[1] Sex is defined as the biological aspect of being male or female, while gender constitutes the social roles that individuals hold in society.[2] . Sex and gender are integrally related; thus research needs to consider sex, gender and intersecting identities.[2]

Globally, research funders require that research analyzes sex and gender considerations, including the National Institutes of Health in the USA, the Canadian Institutes of Health Research (CIHR), and the European Commission.[1,3,4] For example, the CIHR expect researchers to integrate sex and gender into research by following Sex and Gender research guidelines, such as Gender-Based Analysis Plus (GBA+), an analytic tool to assess if intersecting identity factors, including sex and gender, could impact policies, programs, and services.[5] Health Canada's Sex and Gender 2017-2020 Action plan aimed to facilitate consideration of sex and gender in all health research and policies by promoting Sex and Gender-based Analysis (SGBA).[6] In addition, global efforts are in place by the World Health Organization (WHO) to promote the consideration of sex and gender in guideline development. In their latest guideline development handbook,[7] the WHO recommends that researchers include disaggregated data on sex and gender because they influence the uptake of health services and health outcomes. Furthermore, the Cochrane handbook for systematic reviews recommends using the PROGRESS (Place of residence, Race, Occupation, Gender/Sex, Education, Social Capital, Socioeconomic Status) framework for health equity analysis in systematic reviews.[8,9]

There are known differences between men and women when transitioning to or from institutional long-term care (LTC) facilities that provide medical care and living assistance for dependent individuals.[10,11] Transitions are defined as the care a patient receives as they move from one care setting to another.[12] Older adults in LTC experience many transitions, including LTC facility to the community, LTC facility to health services (rehabilitation, hospital, ED use, first acute care use), and health services to LTC facility. Lack of family support for women in LTC has been associated with a higher incidence of discharge to home or community compared to men.[10] There is no clear linear relationship between sex and the proportion of being hospitalised to long-term care. Investigating the role of sex and gender in LTC hospitalizations is important to develop person-tailored interventions and to optimise care.[13] The relationship between sex or gender and health is complex and intersects with other drivers of inequities, discrimination, marginalization and social exclusion. The WHO categorized this relationship in three categories, including the interaction of sex and gender with other determinants of health, health behaviors, and the health system's response to gender.[14]

Proper integration of sex and gender in research can contribute to a better understanding of the relationship between LTC transitions and sex and gender. The objective of this study is to assess the reporting and analysis of sex and gender in longitudinal cohort studies of long term care transitions.

METHODS

Study Selection

Studies that evaluate transitions from LTCs to the community were identified from a scoping review summarizing the literature on the transition from LTCs to the community.[12] A scoping review was identified from an evidence gap map of systematic reviews and studies which identified all relevant studies that met our interests. Evidence gap map is "a systematic search of a broad field to identify gaps in knowledge and/or future research needs that presents results in a user-friendly format".[15] For example, Welch's 2021 evidence gap included studies and reviews related to the effectiveness of home health services for older adults and assessed sex and gender as health inequity outcomes.[16] The scoping review included 36 studies of various study designs: cross-sectional, quasi-experimental controlled trials, randomized control trials, case-control, and quality studies. The authors conducted a comprehensive search of six databases (SCOPUS, PubMed, CINAHL, PsychInfo, Embase and Web of Science) to identify relevant studies. We evaluated the longitudinal cohort studies included in the review as they are the most appropriate for assessing long-term effects in subgroups.[17]

We included studies that involved participants 60 years

and older as transitions in care for younger adults are often related to individuals with disabilities.[18] We selected studies that reported any transition of care for older adults as an outcome which includes long-term care, community, acute care, and rehabilitation.

Data Extraction

A pretested coding sheet was used to collect characteristics of studies, their analyses and reporting of how sex gender was considered. We developed a data collection form based on the Sex and Gender Equity in Research (SAGER) guidelines and previous studies assessing sex and gender.[19-21] Data was collected independently and in duplicate (by AP and OD). Conflicts were resolved through discussion. We recognize that sex and gender are sometimes used interchangeably or incorrectly. Even though sex and gender are independent entities, they may be interrelated. Therefore we use the term 'sex or gender' in this article to refer to 'sex and/or gender' or 'sex and gender', where the slash indicates that sex and gender are distinctly defined but may be associated.[22-27] Our focus is on whether sex or gender was considered in analysis and reporting, thus we assessed reporting of either sex or gender for each item below. We assessed if articles identified sex or gender accordingly:

1. *Title and abstract*: Was sex or gender mentioned?
2. *Introduction and rationale:* Were sex or gender issues discussed?
3. *Methods:*
    a. Did the authors plan to control or adjust for sex or gender in their statistical model? Adjusting for sex or gender was defined as including sex or gender as a covariate in the statistical model.[28].
    b. Did the authors explicitly plan to report the size of association for sex or gender with outcomes?
4. *Results:*
    a. Did the authors report the proportion of male or female participants?
    b. Did the authors report the size of association for sex or gender with outcomes?
    c. Did the authors report the outcome data disaggregated by sex or gender?
5. *Discussion:* Did the authors discuss sex or gender issues related to their research?

We also collected the measures of association between sex on any transition of care for older adults.

RESULTS

Search Results

Out of 36 articles identified from the scoping review, 16 studies were excluded for not meeting our eligibility criteria. Fourteen studies were not longitudinal studies and, two studies included participants younger than 60 years.

Description of Sample

As shown in Table 1, the 20 included studies were conducted in 3 countries: Germany, Finland, and the United States, with 18 studies (90%, n=20) conducted in the United States. The duration of the studies varied from less than one year to 10 years long. The most common transition type assessed in the studies was a discharge from a nursing home to the community. Fourteen out of twenty (70%) studies included more female participants than male participants. Patient information was primarily collected from LTC institutions (12/20 studies) and population databases (i.e. national longitudinal survey) (4/20 studies). Health service (2/20 studies) and insurance databases (2/20 studies) were also utilized.

As shown in Table 2, five out of 20 studies reported the association of sex or gender transition of care for older adults from LTC to home or community. Five out of 20 studies included other outcomes, such as the likelihood of transitioning from LTC to living alone.

Reporting of Sex or gender in included studies

Title/Abstract and Introduction section

As shown in Table 3, four studies (20%, n=20) mentioned sex or gender in the title and abstract and, three studies (15%, n=20) discussed sex or gender issue in the introduction. For example, Mudrazija et al. included "gender differences" in the title while discussing the need for studies to consider how sex or gender is linked to LTC transitions as this may be an important factor.[10]

Methods section

Twelve studies (60%, 12/20) planned to control for sex or gender in analysis. Of those, nine studies (9/12) planned to report a measure of association for sex or gender with outcomes of interest and, three studies planned to control for sex or gender (3/12). The remaining eight studies (40%, 8/20) did not report methods to control for sex or gender or report a measure of association of sex or gender with outcomes. For example, Mudrazija et al. used gender as the main predictor variable in their analytic model, along with race, age, and education.[10]

Results section

The majority of the studies (90%, 18/20) reported the distribution of the sample by sex; 13 studies only reported the proportion of females, and 5 studies reported the proportion of both females and males. All of the studies that planned to control and report measures of association for sex or gender with outcomes of interest, reported these analyses as planned. Eight studies (40%, 8/20) did not control for sex or gender. Only three studies (15%, 3/20) disaggregated their outcome data by sex or gender. For example, Martikainen et al. found a 34% lower age-adjusted risk of death for women and a fully-adjusted 10% less likely for women to return to the community.

Discussion section

In the discussion section of these studies, only four studies (20%, n=20) mentioned sex or gender in the interpretation of the results. For example, Martikainen et al. found that older adults enter an institution. However, after adjusting for various factors including age and living arrangement (living with a spouse or alone), the female gender provided a slight protective effect.[11]

Findings on association of sex or gender with transition outcomes

As shown in Table 2, a total of nine out of twenty studies (45%, n=20) reported the association of sex or gender with transition in care outcomes using different measures of association, including relative risk (1 study), odds ratio (5 studies), and hazard ratios (3 studies). Five studies (25%, n=20) reported an association of sex or gender for the transition from LTC to home or community while, four studies (20%, n=20) reported an association of sex or gender for other transition outcomes. There was variation in direction and size of association across sex or gender.

DISCUSSION

Main Findings

Twelve studies (60%, n=20) controlled for sex or gender in their statistical models. Since authors were not contacted, we are uncertain whether the authors of the remaining eight studies attempted to control for sex or gender analyses or completely omitted sex or gender from their analysis. Nine studies (45%, n=20) adjusted for sex or gender in their statistical analysis model and reported a measure of association for sex or gender with an outcome. Three studies (15%, n=20) only adjusted for sex or gender, and eight studies (40%, n=20) did neither. The three studies (15%, n=20) that only adjusted for sex or gender have data on sex or gender but do not report an association of sex or gender. This is a missed opportunity to help understand potential differences across sex or gender, as required by NIH and expected by CIHR and WHO.[1,3,7]

Strengths and Limitations

This was a pilot study to assess sex and gender reporting and analysis in longitudinal studies assessing the determinants of LTC transitions including, sex or gender and age. These studies were identified from a scoping review which used a comprehensive search of 6 databases.[12] We included the studies using predetermined inclusion criteria. Data extraction was conducted independently in duplicate to minimize the bias in the research process.

One of the limitations of our study is that we relied on what was reported in the studies and we did not attempt to contact authors. Authors may have considered sex or gender in their analysis but may not have reported it. Our assessment was conducted using a small sample size of studies that may be unrepresentative of sex or gender reporting in longitudinal studies of long-term care transitions.

Implications

The inadequate reporting on sex or gender in these longitudinal studies could undermine understanding of

the association of sex and gender with transitions in care for older adults. Improved reporting and analysis of sex and gender could better inform the design of policies and programs to optimize transitions for older people. Including sex and gender in research has many benefits such as cost savings for health care, better policies and programs, and better health outcomes.[29] Throughout history, scientific research failed to account for sex and gender in research, harming vulnerable individuals, especially women. The European Union's decision to require integration of sex and gender in research strengthens scientific research by promoting a research design that is more inclusive for both men and women.[4] Incorporation of sex and gender in research could be improved by disaggregating data by sex and gender, including equal numbers of each sex and gender in the sample, and reporting all data with sex and gender variables.[30] Multiple factors may influence the reporting of sex and gender including, funding policies, journal policies, training on sex and gender analysis in academic training.[31]

Our pilot study was on methods and analysis of observational studies related to sex and gender. Future studies should promote sex and gender analysis in observational studies such as policies by funders and journals. Future research could include investigating the development and the evaluation of reporting guidelines on sex and gender analysis.[32]

Conclusion

Over half of studies reported or controlled for the association of sex or gender to some extent. However, there remains a gap in meeting the SAGER guidelines for reporting and analyzing sex or gender differences in these studies. There is a need for better reporting of analysis of sex or gender in research so that healthcare can be designed to meet the needs of diverse populations.

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