REUE | Editorial

# Gender perspective in scientific articles: from neutrality to scientific rigor

## *Perspectiva de género en artículos científicos: de la neutralidad al rigor científico*

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Historically, scientific literature has been built upon an androcentric model assumed to be universal, treating women or other gender entities as deviations or "statistical noise." This supposed neutrality constitutes a technical deficiency that compromises societal safety and hinders scientific progress. Scientific articles that use general categories such as "patients" or "users" without distinguishing between men and women often provide partial conclusions based on incomplete data.[1]

In 1991, cardiologist Bernardine Healy published an editorial entitled "The Yentl syndrome",[2] which initiated awareness of inequality in health care for women by highlighting diagnostic and treatment biases in the care of women with cardiac disease, whose symptoms were often underestimated, underdiagnosed, and undertreated. Furthermore, she emphasized the importance of including more women in clinical studies to better identify their symptoms and improve treatments.

Currently, these issues persist. Miguens *et al*.[3] describe in a review how gender biases continue to be present in common conditions such as stroke, atrial fibrillation, or pain.

## Sex and gender

Authors of scientific articles must take into consideration essential conceptual clarifications, as one of the major obstacles identified in articles for reproducibility and the conduct of meta-analyses is the careless and interchangeable use of the terms "sex" and "gender." Although these are 2 interacting variables, they are not equivalent:

– Sex (biological dimension): refers to physical, chromosomal, hormonal, and anatomical attributes. In research, it is a critical variable that influences how the body responds to diseases and treatments.

– Gender (sociocultural dimension): is a set of learned social differences. It defines socially constructed roles, behaviors, and identities. It is dynamic, changes over time, and shows cultural variations. It influences how individuals perceive their health, access medical services, and experience disease.

In scientific articles, it must be clearly defined how both dimensions have been measured and analyzed.

## The paradigm shift

Integrating the gender perspective and sex analysis into medical research, scientific knowledge production, and clinical practice is the cornerstone for achieving equitable health outcomes.[4]

Applying a gender perspective involves analyzing and questioning how social constructions of gender generate inequalities to act and eliminate them. This is achieved by integrating equality at all stages of research projects and implies avoiding gender bias in diagnosis and health care delivery.

By incorporating sex and gender as distinct yet interacting variables, an ideal framework is created to promote health equity and foster personalized and inclusive health care.[5] This approach will promote the development of gender-sensitive clinical guidelines, improve the precision of diagnostic tools, and contribute to better health outcomes for all individuals, regardless of their sex or gender identity. Moreover, sex and gender are not mutually exclusive;[6] they are related and influence health in different ways.

## Guidelines for incorporating sex and gender

Several tools are available to help integrate the dimensions of sex and gender into scientific work.

Their use is already recommended in new author guidelines that include the sex and gender perspective,[7] as proposed by Burillo et al. among the challenges for Rev Esp Urg Emerg for the year 2026.

The **SAGER guidelines (Sex and Gender Equity in Research)**[4] are established as the standard for reporting sex and gender in all phases of a scientific article, setting directives

to ensure equity at every step of research: study design, data analysis, results, and interpretation.

– If the study focuses on a single sex or gender, this must be clearly specified to avoid inappropriate generalizations to the entire population, both in the title and abstract.

– In the introduction, authors must conduct a literature review with a gender perspective, reporting whether former studies show relevant differences or similarities according to sex/gender. The approach must be justified by explaining why sex and/or gender are relevant variables for the proposed hypothesis.

– In the methodology, it is mandatory to explain how participants were classified and to ensure a balanced sample. Any exclusion (e.g., pregnancy) must be scientifically justified. It is also recommended that research teams be mixed to reduce bias.

– In the results, data must be presented disaggregated by sex and gender to identify differentiated patterns, and specific statistical tests should be conducted to evaluate whether sex or gender modify the effect under study.

– In the discussion and conclusions, a critical interpretation is required to analyze whether findings are due to biological factors, social factors, or their interaction. If a gender analysis could not be performed, this must be explicitly stated as a limitation, discussing how this affects the validity of the study.

In Spain, Sugrañes *et al*.[8] propose the **PROGÉNEROS Decalogue,** based on international (SAGER guidelines, WHO, NIH) and national standards, providing a simple and applicable tool for different types of research.

Ten practical recommendations are proposed, covering everything from study design to publication of results. It serves as an operational tool guiding the entire scientific process, from the formulation of the initial question to the dissemination of findings and is useful for researchers/authors to apply these variables in their studies, as well as for reviewers and editors to verify whether this aspect has been considered.

Ignoring the dimension of sex and gender in research, scientific articles, and medical practice has serious and systemic consequences that directly affect people's health:

– Inadequate clinical care: Failure to consider these variables results in medical care that does not respond to the specific needs of patients, which is harmful regardless of their sex or gender.

– Loss of lives and resources: Historically, failure to consider sex and gender has cost human lives and led to inappropriate use of economic resources.

– Erroneous diagnoses and outcomes: From a methodological perspective, ignoring these variables can lead to false negatives (failing to detect real differences in how a disease manifests or how a treatment works) or false positives (detecting non-existent differences due to inappropriate statistical analyses).

– Limitation of scientific progress: Medical knowledge stagnates when gender norms and stereotypes are not questioned, preventing a deep understanding of patients' needs, behaviors, and attitudes toward disease.

– Lack of reproducibility: Biomedical research that omits these data presents reproducibility problems, meaning that scientific findings are not always reliable for general application in clinical practice.

Thus, integrating the gender dimension is not only a matter of equity, but also an added value that brings excellence and creativity to science. In line with this new paradigm, in this issue of Rev Esp Urg Emerg, Kovacs *et al*. follow current recommendations, analyzing the temporal evolution of sex differences in out-of-hospital cardiac arrest.[12] At the international level, agencies such as the U.S. National Institutes of Health (NIH), the Canadian Institutes of Health Research (CIHR), and the European Commission (Horizon Europe) require researchers to address these considerations in research proposals and manuscripts. In Spain, the Science Law (Law 14/2011, amended in 2022)[9] mandates the inclusion of the gender perspective in research, and the Fundación Española para la Ciencia y la Tecnología (FECYT) has incorporated sex/gender analysis criteria into its Quality Seal for Spanish scientific journals (9th edition), promoting an editorial policy that ensures equity and rigor. Articles that include these analyses improve the quality of systematic reviews, allowing identification of variations in disease prevalence and development, thereby facilitating the creation of more precise health policies.

The integration of the gender perspective in scientific articles is not merely an ethical option or an addition, but a fundamental requirement for rigor, validity, and methodological excellence. By analyzing disaggregated data and performing critical interpretations with this perspective, researchers not only comply with current legal requirements, but also improve research quality and ensure that findings are applicable and beneficial to the entire population.

Consistent with this new paradigm, in this issue of Rev Esp Urg Emerg, Kovacs *et al*. follow current recommendations, analyzing the temporal evolution of sex differences in out-of-hospital cardiac arrest.[10] We hope that this example will spread and that Rev Esp Urg Emerg will become a reference publication in this approach, helping to fill existing gaps in scientific knowledge.[11,12]

## ARTICLE INFORMATION

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