

Methods of Sex and Gender Analysis

M^a Teresa Ruiz Cantero

10 diciembre 2019



**INVESTIGACIÓN
CON DIMENSIÓN
DE GÉNERO**

What is Gendered Innovations?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



Tweet



Facebook



Methods of Sex and Gender Analysis

Sex and gender can influence all stages of research or development processes, from strategic considerations for establishing priorities and building theory to more routine tasks of formulating questions, designing methodologies, and interpreting data. Many pitfalls can be avoided—and new ideas or opportunities identified—by designing sex and gender analysis into research from the start. Sex and gender analysis work alongside other methodologies in a field to provide yet further “controls” (or filters for bias) providing critical rigor in science, medicine, and engineering research, policy, and practice.

This section presents state-of-the-art methods of sex and gender analysis. As with any set of methods, new ones will be fashioned and others discarded as circumstances change. The value of their implementation depends on the creativity of the research team. There is no recipe that can simply be plugged into research or development processes. Researchers will want to consider all methods and think creatively about how these methods can enhance their own research. Methods are applied in [Case Studies](#).

Analyzing Sex and Gender in each step of the research process:

[Rethinking Research Priorities and Outcomes](#)

[Rethinking Concepts and Theories](#)

[Formulating Research Questions](#)

[Analyzing Sex](#)

[Analyzing Gender](#)

[Analyzing how Sex and Gender Interact](#)

[Analyzing Factors Intersecting with Sex and Gender](#)

[Engineering Innovation Processes](#)

[Designing Health & Biomedical Research](#)

[Participatory Research and Design](#)

[Rethinking Standards and Reference Models](#)

[Rethinking Language and Visual Representations](#)

What is **Gendered Innovations**?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY
RECOMMENDATIONS

INSTITUTIONAL
TRANSFORMATION

VIDEOS

Print



Health & Medicine Checklist

This checklist is intended as an aid for researchers, grant writers, project directors and evaluators, and funding organizations addressing health and medicine. It presents key steps for incorporating sex and gender analyses into health and biomedical research. As such, it complements and should be read in conjunction with the methodology described in [Designing Health & Biomedical Research](#). Important resources when considering research design include: Oertelt-Prigione, S. et al., *Sex and Gender Aspects in Clinical Medicine*; Schenck-Gustafsson et al., *Handbook of Clinical Gender Medicine*; and Regitz-Zagrosek, *Sex and Gender Differences in Pharmacology*. Additional resources: U.S. National Institutes of Health online course: The Science of Sex and Gender in Human Health; the European Curriculum in Gender Medicine online course.

Step 1: Determining Relevance (see [Rethinking Research Priorities and Outcomes](#))

- Understand the analytical distinctions between “sex” and “gender.”
- Sex is likely relevant when a study involves human subjects, animals, tissues, or cells. Gender is likely relevant for humans and, in some instances, animals (see [Animal Research](#), Next Steps, #4).
- Sex and gender are also likely of relevance when the project develops or modifies health policies.
- Sex and gender must be investigated before they can be ruled out (see [Not Considering Sex Difference as a Problem](#)). Not all sex or gender differences are significant (see [Overemphasizing Sex Differences as a Problem](#)).
- Gender reduces less easily than sex to independent variables that can be included in a statistical analysis, but its explanatory power can be enormous (see [Analyzing Gender](#)).

Step 2: Literature Search

Perform a literature and database search with adequate terms for “sex” and “gender.” MeSH ([Medical Subject Headings](#))—the U.S. National Library of Medicine controlled-vocabulary thesaurus used for indexing articles for PubMed—does not distinguish consistently between sex and gender (in large part because authors do not). Hence, researchers need to develop search strategies to identify the full range of previously documented sex and gender differences.

What is Gendered Innovations?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



Step 2: Literature Search

Perform a literature and database search with adequate terms for “sex” and “gender.” MeSH (Medical Subject Headings)—the U.S. National Library of Medicine controlled-vocabulary thesaurus used for indexing articles for PubMed—does not distinguish consistently between sex and gender (in large part because authors do not). Hence, researchers need to develop search strategies to identify the full range of previously documented sex and gender differences.

- Several studies suggest combining the name of a condition or biomedical research topic with standardized MeSH terms, such as “sex factors” and “sex characteristics,” or text words, such as “gender differences” and “sex differences.” A number of complex search terms have been developed that yield better results than “sex” or “gender” alone (Oertelt-Prigione et al., 2010; Moerman et al., 2008).
- In basic life sciences research, search terms related to the female/male distinction, such as sex steroid hormones, gonadal hormones, sex chromosomes, estrogens, and androgens or steroid receptors may be required.
- A database has been established that includes a survey of sex and gender related references in major clinical disciplines and biomedical basic research (see <http://bioinformatics.charite.de/gender/>. This website has two login prompts. At the first prompt, enter User: “gender” and Password: “ppgm”. At the second prompt, enter User: “guest” and Password: “guest”). In basic life sciences research, it may also be helpful to use search terms related to the female/male distinction, such as sex hormones or reproductive biology.
- Researchers have created a [search engine tool](#) which can help identify sex- and gender-related research in the U.S. National Library of Medicine’s PubMed database (Jenkins et al., 2012).

Step 3: Establishing Research Questions and Hypotheses (see [Formulating Research Questions](#))

- Using the results of steps 1 and 2, consider how the current project will include methods of sex and gender analysis (see [Rethinking Concepts and Theories](#)).
- Study design should allow for gathering of sex-disaggregated data.
- Study populations can be configured in different ways depending on the types of questions to be asked:

**Configuring
Human Study
Populations**

Study Characteristics and Considerations

What is Gendered Innovations?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



Configuring Human Study Populations		Study Characteristics and Considerations
Mixed-Sex		<ul style="list-style-type: none">● Study population should reflect the composition of the group of patients likely to be treated with the therapy under investigation.● Women and men should be matched for traits such as age, race/ethnicity, socioeconomic status, body composition, etc.; if not possible, these variables should be measured and controlled for.● Analyzing factors intersecting with sex and gender is critical to avoid overlooking sex differences and to avoid overemphasizing sex.
Single-Sex	Women Only	<ul style="list-style-type: none">● Women-only studies are useful for studying single-sex diseases, such as ovarian cancer.● Women-only studies may be used to close research gaps when a disease that affects both sexes (such as heart disease) has been understudied in women. See Case Study: Heart Disease in Women.● Women-only studies can analyze differences (such as reproductive status, age, etc.) among women.
		<ul style="list-style-type: none">● Men-only studies are useful for studying single-sex diseases, such as prostate cancer.

What is Gendered Innovations?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



Single-Sex		reproductive status, age, etc.) among women.
	Men Only	<ul style="list-style-type: none">● Men-only studies are useful for studying single-sex diseases, such as prostate cancer.● Men-only studies may be used to close research gaps when a disease which affects both sexes (such as osteoporosis) has been understudied in men. See Case Study: Osteoporosis Research in Men.● Men-only studies can be powerful tools for analyzing differences among men.

Step 4: Establishing Research Methods and Planning Data Analysis (see [Designing Health & Biomedical Research](#))

- Research instruments (questionnaires, surveys, or protocols, etc.) should be developed for both women and men or females and males (see [Rethinking Standards and Reference Models](#)).
- Data can be analyzed in many different ways. Clarify whether sex needs to be controlled for, or whether the study is investigating the effects of sex on outcomes.
- A study that includes both women and men must use statistical tests to determine the confidence with which similarities or differences can be asserted.
- Consider the following questions in data analysis:
 1. Does the treatment have a favorable balance of benefits and risks in a mixed-sex population overall?
 2. Is the treatment effective and safe enough to be indicated in both women and men?
 3. Are there sex differences in effect—i.e., is the treatment more effective or safer in one sex?
 4. Do differences between women's and men's existing treatment options make the proposed treatment more important for one sex?
- If the study population is matched for age, reproductive status, ethnicity, etc., is the study sufficiently powered for subgroup analysis? Can the efficacy and safety of the treatment be evaluated in specific subpopulations? If so, are these

What is **Gendered Innovations?**

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



differences among men.

Step 4: Establishing Research Methods and Planning Data Analysis (see [Designing Health & Biomedical Research](#))

- Research instruments (questionnaires, surveys, or protocols, etc.) should be developed for both women and men or females and males (see [Rethinking Standards and Reference Models](#)).
- Data can be analyzed in many different ways. Clarify whether sex needs to be controlled for, or whether the study is investigating the effects of sex on outcomes.
- A study that includes both women and men must use statistical tests to determine the confidence with which similarities or differences can be asserted.
- Consider the following questions in data analysis:
 1. Does the treatment have a favorable balance of benefits and risks in a mixed-sex population overall?
 2. Is the treatment effective and safe enough to be indicated in both women and men?
 3. Are there sex differences in effect—i.e., is the treatment more effective or safer in one sex?
 4. Do differences between women's and men's existing treatment options make the proposed treatment more important for one sex?
- If the study population is matched for age, reproductive status, ethnicity, etc., is the study sufficiently powered for subgroup analysis? Can the efficacy and safety of the treatment be evaluated in specific subpopulations? If so, are these subpopulations defined consistently enough to ensure evidence-based clinical practice?

Step 5: Interpreting Data through Concepts and Theoretical Models

- Analyze all concepts and theoretical models for unfounded assumptions (see [Rethinking Concepts and Theories](#)).
- Studies should take care not to:
 - ◆ Assume that findings in one sex apply to the other.
 - ◆ Create a non-representative norm, such as assuming a male norm for a disease that affects both sexes or a technology used by both women and men (see [Rethinking Standards and Reference Models](#)).
 - ◆ Pathologize normal biological processes, such as pregnancy or menopause.

What is **Gendered Innovations?**

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

DESIGN THINKING

POLICY RECOMMENDATIONS

INSTITUTIONAL TRANSFORMATION

VIDEOS

Print



Step 5: Interpreting Data through Concepts and Theoretical Models

- Analyze all concepts and theoretical models for unfounded assumptions (see [Rethinking Concepts and Theories](#)).
- Studies should take care not to:
 - ♦ Assume that findings in one sex apply to the other.
 - ♦ Create a non-representative norm, such as assuming a male norm for a disease that affects both sexes or a technology used by both women and men (see [Rethinking Standards and Reference Models](#)).
 - ♦ Pathologize normal biological processes, such as pregnancy or menopause.
 - ♦ Interpret results in a sex- or gender-blind manner.

Step 6: Reporting Findings (see [Analyzing Sex](#)).

- Report the sex of research subjects and materials.
- Report null findings. Researchers should report when sex differences (main or interaction effects) are not detected in their analyses to reduce publication bias and enable meta-analysis.
- Check that sex or gender differences are properly visualized in the tables, figures, and conclusions (see [Rethinking Language and Visual Representations](#)).
- Check that sex and gender related findings are presented correctly in the title, abstract, and keywords.

Step 7: Establishing Conclusions and Making Recommendations

- Where significant sex differences and gender effects emerge, what follow-up research is necessary?
- Do results have specific implications for women and men patients? Do these differences have implications for clinical practice or future research?
- How can results showing significant sex or gender differences be translated into preventive, diagnostic, and therapeutic practices to improve patient outcomes?

Works Cited

This Checklist is adapted from: Nieuwenhoven, L., & Klinge, I. (2010). Scientific Excellence in Applying Sex- and Gender-Sensitive Methods in Biomedical and Health Research. *Journal of Women's Health, 19* (2), 313-321.