



Editorial

Do Gender Differences in Medicine Really Matter?

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Conventionally, medical research was conducted on animals and humans and included both male and female species. Scientific evidence suggests that males and females differ in several aspects, so sex- and gender-specific clinical research gains importance as it takes into consideration all the differences. For most of documented history of medicine, females have been excluded from medical research and scientific knowledge production, meaning that female exclusion from clinical trials for centuries has meant women's diseases that are often misdiagnosed, missed, or remain a total mystery. Moreover, in reality, numerous gaps exist in conducting gender-specific research and participation of women in clinical trials.^[1]

However, the past two decades have witnessed an increase in focus and discussion on gender and sex differences in medicine. Gender medicine refers to the medical field integrating gender and sex perspective in medicine which has been suggested to be very important in approach to epidemiology, pathophysiology, clinical manifestations, disease progression, diagnosis, prevention, response to treatment, and research. A number of definitions have been put forward by different organizations. In general, gender refers to the array of socially constructed relationships and roles, attitudes, personality traits, values, behaviors, relative power, and influence that society ascribes to both males and females on a differential basis. Gender characteristics and roles do not exist in isolation, but are defined in relation to one another. Sex differences are referred to as different biological and physiological characteristics of males and females, such as reproductive organs, chromosomes, hormones, and anatomical construct. Hence, sex differences refer to differences in fixed biological construct and are unchangeable, but gender differences relate to attitudes in society as well as economic, ethnic, and sociopsychological differences which vary from society to society and are changeable. Both the factors can be difficult to separate and most of the times inter-related and used interchangeably. A study showed that 9.3% of the research papers in anesthesiology international journals reported both sex and gender terms and the terms "gender" and "sex" were interchangeably used in about 90% of the articles.^[1] Gender attributes are fluid and not a binary term but expresses the coexistence of masculinity or femininity traits expressed to different degrees.^[2]

This editorial is an effort to discuss whether gender differences in medicine really matter. Gender medicine, the study of sex and gender differences, is a novel medical discipline which integrates the sex and gender-perspective in medicine, where biological as well as social differences affect the health of both men and women differently in terms of psychological and social impact, prevention, clinical signs, therapeutic approach, prognosis of disease, and research.^[2]

Historically, since the times of Hippocrates, scientists, philosophers, and the physicians were all men and throughout the history of medicine much of the medical research has been done on male cells, male animal models, and dominantly male participants excluding females. Results of

such male dominated studies were applied uniformly to both male and female patients until late the 90s when medical research started to show the important influence of sex and gender on almost all aspects of health and disease affecting both males and females differently.^[2]

The US National Institutes of Health (NIH), in 1994, issued guideline to evaluate and study the gender differences in clinical trials to ensure adequate investigation into safety and efficacy of drugs in all range of patients who would be using the therapy.^[3] Since the drug development studies and preclinical research predominantly used male animal models, it was not surprising to know that between 1997 and 2000, eight of the ten prescription drugs were withdrawn from the US market as they posed greater health risks for women as compared to men.^[2] Such reports lead to implementation of policies to support and mandate scientific researchers to consider sex and gender at all levels of scientific medical research by most of the funding agencies from Europe and North America.^[2]

Concept of gender medicine was initiated with Bernadine Healy's 1991 article "The Yentl Syndrome" showing worse outcome among women following heart attacks, because their symptoms were different from men. After that, gender-specific clinical research protocols have increasingly and progressively being included in the study.^[4] Since 1997 at Columbia University, studies began to systematically examine differences between men and women with the establishment of the Partnership for Gender-Specific Medicine, in 2002 at Karolinska Institutet and in 2003 at Charité Universitätsmedizin Berlin. The Institute of Medicine, U.S.A in 2001 and 2010, declared that being a man or a woman has significant influence on the course of disease and should be considered in diagnosis and therapy.^[5] In 2010, the Canadian Institutes of Health Research, in 2014, the European Commission, and in 2016, US NIH have endorsed integrating gender and sex usually as male/female binaries or sex as a biological variable in scientific health research. In spite of all the evidences and advocacy, still in the biomedical literature sex and gender are often inappropriately conflated. More importantly influence of gender is rarely studied, because it lacks quantitative tools for analyzing the influence of gender on health outcomes.^[6] With sensitization about gender medicine, remarkable policy advances have been made all over the world to increase participation of women in research studies. Organizations like the Society for Women's Health Research in Washington are promoting research and improvement in women's health through science, policy, and education, especially research on biological sex differences in disease. For the 1st time in 2017, women accounted for more than 50% of research participants for approved drugs in the US Food and Drug Administration drug trials. Several journals have started asking the authors for subgroup analyses by sex.^[1]

Historically, in India, there is paucity of sex- and gender-specific research and representation of women in clinical trials has always been deficient due to several factors, discussion on which is out of preview of this editorial. Government of India in 1911 set up the Indian Research Fund Association for sponsoring and coordinating medical research, which after independence in 1949, was redesignated as the Indian Council of Medical Research (ICMR), one of the oldest and largest medical research bodies in the world responsible for formulation, coordination, and promotion of biomedical research. In 2017, ICMR issued guidelines stating that women have an equal right to participate in the trials and their informed consent is mandatory as like other participants. Several women health initiatives were formed in India to study various aspects of gender medicine focusing especially on women health. Most significant and unique, a signature initiative of women cardiologists "Women in Cardiology and Related Sciences" (WINCARS) which was formed in 2015 to study and bring a change in cardiac health of women and membership of WINCARS increased from just 5 in 2015 to presently more than 500 national and international female cardiologists. The Indian Journal of Cardiovascular Disease in Women (IJCDW) is an initiative of WINCARS to promote and addresses the health care and research related issues of women, in particular cardiovascular diseases. A research paper "Gender differences in heart failure hospitalization post myocardial infarction" by Rongali *et al.* published in this issue of IJCDW concluded that the risk of recurrent heart failure hospitalizations after myocardial infarction was more in women when compared to men and though the risk of recurrent heart failure was more, there was no increased risk of mortality in women when compared to men. Extensive scientific evidence now suggests that gender is an important independent risk factor after ethnicity, age, comorbidities, and taking into account the scored risk factors. Moreover, sociocultural dimension of gender integrating environment, lifestyle, stress, and other variables cannot be replaced by biological parameters, so clinical care algorithms must include gender-based assessment.^[7] Data suggested that more than 10,000 articles have been published exploring gender and sex differences in almost all clinical areas of medicine.^[7]

Detailed review of literature related to gender medicine as to how various diseases differ between men and women is not discussed in this editorial due to space constrains. The present scientific evidence definitely calls for a drastic change in our medical research methodology, education, and health-care system which needs to be reimaged and rewritten with increased focus on participation of women in removing gender inequality from all aspects of health-care system, because sex and gender differences in medicine do matter that too very significantly. This editorial emphasizes

on the importance and urgency to increase our scientific understanding of the sex and gender differences of diseases in basic and clinical research fully integrating the study of sex and gender into biomedical research, generating scientific evidence, and its implementation in public as well as general health care of population. Gender-specific medicine, the new dimension of medicine, needs not only increased investment in research but also rethinking and reorganization of medical teaching and health-care policy, because sex and gender dependent differences exist in every aspect and every level of human health and disease.

REFERENCES

1. Bajwa SJ, Kurdi MS. Gender based research and women in clinical trials: Improving women's health care. *Med Life Clin* 2020;2:1023.
2. Mauvais-Jarvis F, Bairey Merz N, Barnes PJ, Brinton RD, Carrero JJ, DeMeo DL, *et al.* Sex and gender: Modifiers of health, disease, and medicine. *Lancet* 2020;396:565-82.
3. NIH Guidelines on the inclusion of women and minorities as subjects in clinical research. *Fed Reg* 1994;59:14508-13.
4. Lippi D, Bianucci R, Donell S. Gender medicine: Its historical roots. *Postgrad Med J* 2020;96:480-6.
5. Aggarwa NT. What is Gender Medicine? Available from: <http://www.cmsdocs.org/news/what-is-gender-medicine> [Last accessed on 2022 Oct 23].
6. Nielsen MW, Stefanick ML, Peragine D, Neilands TB, Ioannidis JP, Pilote L, *et al.* Gender-related variables for health research. *Biol Sex Differ* 2021;12:23.
7. Regitz-Zagrosek V, Seeland U. Sex and gender differences in clinical medicine. *Handb Exp Pharmacol* 2012;214:3-22.

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