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Sex and gender bias in the research pipeline: Translational pitfalls

Marjorie R. Jenkins
Texas Tech University, USA

In 2001, a landmark report from the Institute of Medicine, "Does Sex Matter?" stated that sex and gender are both basic human variables and important health determinants. Although broadly utilized, the two terms are often used inappropriately even in the scientific literature. "Gender" refers to the socially constructed roles and behaviors that society considers appropriate for men and women. "Sex" is a biological construct, and includes chromosomes, cells, and tissues. Sex and gender are variables which all humans have without exemption. Scientists must be prepared to produce discovery research that incorporates the question and application of the answer to the question "Does Sex/Gender Matter?" at the earliest stages of research.

In medicine, sexes and genders are not considered equally, especially in relation to research. In fact, the medical research pipeline is lined with males. Basic science literature reveals that the majority of studies utilizes male cells or male animals, or don't bother to report the sex at all. If both sexes are studied, data analysis by sex is not reported. This statistic does not improve in human clinical trials, where approximately 65% of subjects are men; when both sexes are studied, and less than 15% report data analysis by gender. Considering this bias in the research pipeline, it is not difficult to follow the linear pathway from male cell lines to male animals to males as human subjects. However, at the final critical juncture of translating research findings to patient care, the approach suddenly broadens to include both men and women. This leads to overwhelmingly and predominantly male data being applied clinically to females.

There is a growing body of scientific knowledge on sex and gender differences as it relates to all levels of human function. Few would argue that as cancer research scientists we dare not overlook these foundational variables lest life-saving discoveries be misapplied towards the number two killer of both men and women.

Biography

Marjorie R. Jenkins' academic career focuses on the cultivation of multidisciplinary research and education efforts in sex and gender health. Her academic endeavors include building interdisciplinary research and professional education programs to aid the clinical translation of research findings. She serves as the Chief Scientific Officer for the Laura W. Bush Institute through which she oversees a 5 campus peer-reviewed grant program. Her educational program development includes creating 4-year curricular threads in gender-specific women's and development of gender-specific training programs for practicing physician's nurses and pharmacists. She has been invited to present over 100 lecture presentations throughout Texas and nationally, and has been instrumental in stimulating sex- and gender-specific clinical, research and educational platforms.

Marjorie.Jenkins@ttuhsc.edu