Web Roundup: Beyond Using More Female Rats: Gender Disparities in Biomedicine

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By

Recently, physicians, public health experts, and anthropologists (among others) have pointed to a prevalence of gender, class, race, age, and ethnic bias in biomedical research and the specific ways in which knowledges about bodies are created and reproduced in biomedicine.

In the 19th century, when the long-standing idea of women's inferiority was brought into question more publicly, biological theories began to reproduce narratives about the biological differences between women's and men's brains. These theories cast women as emotional and disordered, characteristics that were "explained" by the influence of female physiology on the mind. Thus, biomedical research long excluded women and female non-human animals, such as rodents, based on the belief that fluctuating ovarian hormones "cloud" the mechanisms of how bodies work. As a result, the white, male body was established as both the normative research subject and the representative of the human species. Recently, meta-analyses of biomedical and neuroscience studies have debunked the idea that males are "less hormonal," and hence better research subjects, than female animals.

The practice of excluding women from clinical research has persisted despite evidence that gender can be a critical determinant of health. The 100 year-old notion that "a woman's disposition is a direct product of the activity in her ovaries" shapes biomedical and neuroscientific research today. For example, women make up just over a half of 35 million people living with HIV globally, but a meta-analysis has shown that women represented a median of 11% in HIV cure trials, and 19% in anti-retroviral drug trials. Excluding women from such trials is especially dangerous given that estrogen puts HIV into a dormant state, making it more difficult for the immune system and pharmacotherapy to fight it, and women respond differently than men to some treatments. Similarly, although the Centers for Disease Control and Prevention (CDC) states that cardiovascular diseases are the number one killer of women in the US, most research on the topic is conducted with male subjects. This presents an especially concerning trend as women are less likely to exhibit the classic symptoms of heart attacks commonly observed in men and thus are more likely to be misdiagnosed after a heart attack.

In 1977, the US Food and Drug Administration (FDA) banned "most women of childbearing potential" from participating in clinical studies following the thalidomide scandal, which caused birth defects in over 10,000 children, mostly across Europe. The FDA ban, while intended to protect, thus reinforced the trend of excluding women from clinical trials. The ban was removed in 1993, but because of the strict regulations that remain, researches often opt to conduct clinical trials on men and collect data from women after a drug is released on the market. Additionally, in 2015, The National Institute of Health (NIH) issued a mandate for funding preclinical research, requiring that research design must "accoun[t] for sex as a biological variable" by including female research subjects.

The issue of gender bias in clinical trials of course doesn't end with the exclusion of women. One of the issues lies precisely in the reinforcement of the gender binary within the biomedical community. Trans, gender non-binary, and other non-cisgender folk in general have been practically invisible in biomedical research, with the occasional exception in mental and sexual health research. The issue of invisibility and exclusion is especially striking as non-cis people are more likely to experience structural violence, poverty, homelessness, unemployment, precarity, and lack of access to healthcare (known social determinants of health). For example, a 2019 study found that "transgender population have a higher reported history of myocardial infarction in comparison to the cisgender population."

However, efforts to include more women, female non-human animals, and non-cis persons in clinical trials may not improve the outcomes unless there is careful consideration given to how stereotypes influence studies – and, their results. Or, as Dr. Ann Fink, a feminist neuroscientist at Lehigh University put it, "[w]e've gone from excluding women and female animals to this ham-handed implementation of sex as biological variable." Dr. Fink pointed out that sex is biological, and gender social[1], and that drawing conclusions about gender from non-human animals who don't share such a social construct both reaffirms stereotypes, and, more importantly to consider, reproduces dangerous medical practices. For example, in 2013 the FDA recommended that women take half the dose of the sleeping pill Ambien than men, because of the severity of the reported side effects. It turned out that body weight, and not sex, was the cause of incorrect dosing, and interpreting the problem through the lens of sex could have had serious consequences for healing practices. Dr. Fink argued that the problem is that researchers, in an attempt to adhere to the National Institute of Health (NIH) mandate, look for sex differences where they might not exist (in a statistically meaningful way, at least). Relatedly, Dr. Rebecca Shansky, a neuroscientist at Northeastern University, added that "research can be improved by studying the sexes in parallel or in the same cohort, instead of experimenting on one sex after the other and

making the first set of results the standard. And when a study tries to model a condition that may be more prevalent in one sex, researchers should start with just a few of the other sex, then look for hints that there might be a sex difference".

Being attentive to gender in clinical research is especially important today, as income disparities between the bourgeoisie and the poor are radically increasing, widening the health gap, reproducing the uneven distribution of care, and producing specific *bio-inequalities* (Fassin 2009). Policies of *structural adjustment*—first and foremost privatization and user fees—required by trans-governmental agencies such as the IMF or the World bank have increased global health inequalities (Smith-Nonini 2006). A recent report published by the Center for Global Development has shown that even as low- and middle-income countries become wealthier, prices of essential drug prices rise and hence limit access to affordable medicine, and already at least one third of the global population doesn't have regular access to pharmaceuticals. However, affordability of pharmaceuticals is hardly an issue limited to low- and middle-income regions, as drug manufacturers globally drive price hikes. So, not only is it not enough to "just use more female rats", but we need to think about the ways in which biomedicine as a cultural system became inseparable from late capitalist and colonial logic and use that as a starting point for dismantling the health systems that punish the sick.

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[1] On critiques of the sex/gender binary, among others see Butler (1993) and Fausto-Sterling (1992; 2012).

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