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Sex and Gender Health

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"Men are from Mars, women are from Venus." This well-known metaphor originally intended to describe the psychological differences between men and women in romantic relationships in 1992, may actually be explained by fundamental differences in physiological, psychological, social and epidemiological factors. Physiologically, males and females differ in their genetic, hormonal and anatomical compositions. Psychosocially, males and females have different perceptions, behavioral patterns and social/cultural functions. Epidemiologically, males and females also vary in their exposure and susceptibility to risk and protective factors of diseases. These important sex and gender differences likely contributed to health inequalities such as disease prevalence and treatment outcomes in males and females.

Currently, in many fields of biology and medicine, only a small amount of studies have attempted to examine these fundamental sex and gender health differences and have addressed how to account for these differences when providing appropriate healthcare. Furthermore, appropriating treatment is not as simple as the male and female dichotomy when contextualizing sex and gender in the present society and culture. The discourse between gender equality and Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Asexual, Ally (LGBTQIA†) rights prompted us to reflect on whether sexual biases as well as heteronormativity have influenced our thoughts underlying scientific studies and medical practice.

In an attempt to draw broader attention to and devote more efforts to the study of sex and gender health in biomedical research, this issue of the *Yale Journal of Biology and Medicine* (YJBM) is dedicated to sex and gender health. According to the American Psychiatric Association, sex is defined as a person's biological status (male/female) and gender as the attitudes, feelings or behaviors associated with a person's biological sex (boy/man or girl/woman). Topics covered in this issue encompass not only physical health including reproduction, HIV treatment and chest pain, but also mental health including addictive disorders, depression and suicide. In addition, this issue includes perspectives on sex and gender differences and biases associated with clinical practice, healthcare provision and psychiatric counseling. There is also an additional manuscript included in this issue that is a rollover from a previous issue on the aging brain.

In particular, we would like to first highlight three articles about substance-related addictive disorders. Rutherford et al. reported a preliminary study on tobacco smoking and the resting maternal brain. By comparing the EEG profiles of frontal electrodes between smoking and non-smoking mothers, the authors found an increased low-frequency band spectral power in tobacco-smoking mothers. This finding may account for the different neural responses to infant signals and caregiving behaviors of substance-using mothers as shown in previous studies. In another original contribution on tobacco smoking, Verplaetse et al. examined the individual and combined influences of gender, smoking status, and stress on major depression disorder (MDD) diagnoses. They discovered that in women, stressful life events and smoking were more likely related to new MDD diagnosis than in men. Apart from tobacco smoking, marijuana use among females is highly prevalent in the United States while our knowledge concerning the effects of marijuana is fairly limited. Dr. Brents reviewed this body of knowledge on the relationship between the endocannabinoid system and female reproduction. She suggested that the interaction between these two systems

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†Abbreviations: LGBTQIA, Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Asexual, Ally; HIV, human immunodeficiency virus; EEG, electroencephalography; MDD, major depression disorder; T, transgender.

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is very intricate and could be disrupted by the intake of exogenous cannabinoids. This collection of articles about addictive disorders provides us with more insight on the prevention, diagnosis and treatment of diseases in females and males. These articles also suggest that more biomedical studies on sex/gender health are warranted.

From a psycho-sociological perspective of sex and gender health, studies in this issue have shown that sexual perception, sex/gender biases and heteronormativity cast wide but subtle influences on clinical practices. Dr. Walter and her colleagues examined patient preferences for physician gender in the emergency department. It is encouraging that the majority of emergency department patients in their study reported no gender preference for physicians in both routine and emergency visits. However, in some specific scenarios like visits involving sensitive issues, patients reported a same-sex physician preference. In order to enhance patient healthcare, emergency department physicians should recognize the existence of such preferences and adjust their communication style to mitigate potential compliance issues.

Regarding sex/gender biases and heteronormativity our issue includes two very intriguing perspectives. Erik Eckhert wrote an eloquent sociohistorical article on the medicalization of queer bodies and the need to challenge the social institution of heteronormativity. He argued that the medicalization of queer bodies neither erases the biases from sexuality studies and healthcare, nor helps to better provide care to LGBTQIA populations, especially transgender (T) patients. On the other hand, heterosexual patients undergoing psychiatric treatment, suffer from societal biases and gender stereotypes as well. According to Dr. Metzl et al., many psychiatric charts dictated by clinicians in the midwest United States in 2001, attributed patients' depression and anxiety to the pressure of maintaining heteronormativity. For example, women's depressive symptoms were often attributed to relationships with the men in their lives while men's depressive symptoms were often attributed to living up to expectations of being family providers. The authors highlighted that the rhetoric nature of psychiatric treatment implicitly reinforces heteronormative presumptions from society.

Taken together, the articles in this issue represent a broad variety of topics on sex and gender health, however, they are all related to clinical practices. Nonetheless, it is equally important to consider sex/gender as biological variables in the preclinical stage. To address this issue, Yasmin Zakiniaeiz, wrote a perspective piece to underscore the importance of studying and reporting sex-related differences in preclinical work. She summarized a brief history of female inclusion in preclinical research and explained possible reasons for the previous and current opposition to female inclusion. Moreover, Zakiniaeiz presented potential solutions to reduce sex biases in preclinical biomedical research.

This issue covers a wide range of themes related to sex and gender health including physical and mental health, reproductive health, biases in clinical practice, and interventions to achieve sex and gender equality. Researchers, healthcare providers, educators and policy makers, often neglect sex and gender as potential biological variables of consideration. By decreasing sex and gender biases in both preclinical and clinical research, we can acknowledge the healthcare of a more inclusive population and better understand the differences or lack of differences between sexes and genders. Additionally, more interdisciplinary and comprehensive studies on this topic are needed to develop sex/gender-tailored healthcare approaches and improve treatment outcomes.