Sex and gender: you should know the difference

Embryos do not have a "gender"; rather, they have a "sex." Gender refers to social and cultural distinctions between sexes, not biological ones. An embryo's "maleness" or "femaleness" should therefore be defined by its biological sex (i.e., sex chromosome pair).

We recognize that "sex" and "gender" are often synonyms in regular speech. But, as reproductive medicine specialists who might tout services in "gender selection/determination" or even care for patients who are transgender, it is imperative that we dictate the use of the proper terminology, not just among ourselves, but also during dialogue with patients, policymakers, and other stakeholders. Failing to do so may have unintended consequences that we will attempt to point out.

THE DICTIONARY, WORLD HEALTH ORGANISATION (WHO), AMERICAN CONGRESS OF OBSTETRICIANS AND GYNECOLOGISTS (ACOG), FOOD AND DRUG ADMINISTRATION, AMERICAN SOCIETY OF REPRODUCTIVE MEDICINE (ASRM), AND PERSONHOOD

The rise of "gender," and its interchangeability with "sex" is well documented both in academia and in the public arena, as is its criticism (1). Ultimately, while various academic specialties define the terms differently, it is important for us to reflect on current definitions to guide our call to action.

The *Oxford English Dictionary* defines "sex" as "either of the two main categories (male and female) into which humans and many other living things are divided on the basis of their reproductive functions." The WHO defines "sex" as the "biological and physiological characteristics that define men and women." The WHO further defines "gender" as the "socially constructed roles, behaviors, activities and attributes that a given society considers appropriate for men and women." In the 2011 Committee Opinion on "Healthcare for Transgender Individuals," the ACOG defines "sex" as the "designation of a person at birth as male or female based on anatomy and biology" (2).

Prior to 2011, the FDA used the term "gender" to refer to the physiological differences between male and female but changed position, distinguishing "sex" as a biological classification and "gender" as a "person's self-representation as male or female, or how that person is responded to by social institutions" (3).

The ASRM Ethics Committee uses the term "sex" when discussing selection/determination of embryos (4). This 2015 document replaced two documents titled "Sex selection and PGD [sic]" and "Preconception gender selection for nonmedical reasons" from 2008 and 2004, respectively. Currently (at the time of this writing), on the ASRM website, the terminology remains "Gender/Sex Selection," implying that the two terms are synonyms and highlighting the evolution of the Ethics Committee's sensitivity to distinguishing between these two terms.

A recent PubMed query identified 51 scientific publications with the term "gender selection" in the title. This term is inaccurate because we are unable to determine the gender of an embryo, or a neonate for that matter, only its chromosomal sex. For those clinics, physicians, and/or laboratories offering couples the option of choosing embryos based on sex chromosomes, the term "sex selection" or "sex determination" should be used instead.

While one could take this academic convention further, we will concede our efforts beyond the embryo stage and stop short of calling for "gender reveal" celebrations to be renamed "sex reveal" celebrations. We understand that parents may have ingrained convictions about the future gender identity of a fetus.

Furthermore, ASRM should consider, perhaps within its Ethics Committee document on sex selection, formally adopting definitions of sex and gender that are in step with its peer organizations. Doing so may be important in further policy refinements and testimony preparation when ASRM or individual members testify regarding personhood measures. Admittedly, using the terms interchangeably is a nuance that might escape most policymakers, but consistently referring to an embryo's sex is more aligned with ASRM's stance on personhood measures.

THE INTERSECTION OF SEX AND GENDER: LESSONS LEARNED AND IMPROVING LGBT HEALTH CARE

It is important to take a moment to highlight the origin of the medical community's wariness of exerting a paternalistic force in "gender determination." Beginning in the 1950s and continuing for many decades, physicians promoted the assignment of "gender" at birth for intersex infants or those with ambiguous genitalia. This often involved "genital corrective surgeries" to attempt to match the anatomy to the assigned gender. Examples include clitorectomies in virilized XX infants with congenital adrenal hyperplasia and removal of a micropenis in XY infants with creation of a neovagina. Many children with a Y chromosome were assigned a female gender, given that it was easier to create a vagina than a functional penis. Initial protests to this approach came from intersex advocacy groups, citing a lack of long-term data and significantly high levels of psychological stress in those subjected to nonconsensual surgery (5).

In the late 1990s, the issue entered the mainstream media with the case of David Reimer, an XY infant who underwent gender reassignment surgery at 22 months old after a circumcision procedure resulted in inadvertent penile amputation. He was raised from that point on as female but struggled with gender dysphoria and transitioned to living as a male at the age of 15. He suffered from depression and committed suicide at the age of 38 (5).

The interplay between sex and gender is complex and involves genetic, hormonal, and sociocultural factors. The principles of patient autonomy and nonmaleficence dictate that we, as physicians, should not assign gender. Based on this

philosophy, and given our ability with embryo biopsy and aneuploidy screening, we believe that one can "select" and/or "determine" only the sex of an embryo. The gender cannot be determined until later.

Finally, this distinction has consequences as it relates to our care of LGBT patients and our position as proponents and providers of assisted reproductive technologies. We are often involved in the care of transgender and gender-nonconforming patients. This may include hormonal management during transition or assistance in fertility preservation or family building. We should welcome these patients, and understanding a distinction between biologically defined "sex" and one's self represented "gender" is the first step in improving their health care experience.

A CALL TO ACTION

In summary, we call on our peers and stakeholders to use, and advocate for, the use of "sex" instead of "gender" when discussing the chromosomal makeup of an embryo in academic, public policy, and lay-media settings. We also recommend adopting definitions similar to our complimentary medical societies and mainstream health care agencies and attempting to have our literature to conform to the above.

Our field has long pushed beyond the social stigmas of infertility, miscarriage, menopause, and sexual dysfunction to provide compassionate care for our patients. This issue provides an opportunity for us to continue in that tradition.

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