

Biological Sex and the Medical Community

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ABSTRACT

There are numerous contributing factors to the overall health of a person as well as factors that dictate the best course of treatment. A great contributor to that decision is the biological sex, it can influence every decision that a medical provider makes for their patient. With transgenderism, let us not forget that in the medical community, knowing the biological sex of the patient is crucial for proper patient care and accurate diagnosis. In healthcare, the sex of a patient means more than just "male" or "female". It gives a clearer understanding of what the underlying issue may be. That includes taking reproductive organs into account for possible causes of abnormal signs and symptoms. As an even clearer picture, being able to identify the proper sex-chromosome pair (XX or XY) allows professionals to be conscious of X- linked recessive disorders.

The advantage of science is the field's ability to prove or disprove information. One such area involves the medical importance of knowing a person's biological sex. The word "*biological*" is an adjective and means relating to biology or living organisms (Merriam Webster). The root of the word biological is *biology*, meaning the study of life (What is Biology). The compound, bios and logy, was suggested in 1802 by German naturalist Gottfried Reinhold Treviranus, and introduced as a scientific term that year in French by Lamarck (Online Etymology Dictionary). The word "sex" is defined as either of the two main categories (male and female) into which humans and most other living things are divided based on their reproductive functions. According to the *Oxford English Dictionary*, the word "sex" itself stems from Old French, with an origin around 1200. In the medical community, professionals must know the original biological sex to provide the best care and treatment plans for their patients.

There are many diseases and disorders that only affect specific sexes. One of these is testicular cancer. According to Carlton, "Classically, the man or his partner finds a painless lump in the testicle. Some men present with complaints of diffuse pain, aching in the testicle, swelling or enlargement of the testicles, or hardness in the scrotum" (Brown 84). As medical providers, be that a nurse assistant, nurse, or doctor, professionals need to know the biological sex along with family history, because even though someone may identify as female, they are at risk for all disorders that exclusively affect the male sex. This allows medical staff to appropriately schedule yearly testicular exams to be able to identify the symptoms, especially in a timely manner when it comes down to cancer. The survival and curability rate for testicular cancer is normally high, but that depends on early detection. The sooner caregivers are aware of a patient's biological sex, the sooner they can identify the problem. Some males do not even experience any symptoms at all, so by the time they even realize there is a problem, it may be too late. As stated by an article, "Testicular cancer (TC) is the most common malignancy in males between the ages of 15 and 35. TC is the second most common cancer in men from 35 to 39" (Brown 83). Clearly this is something males need to be attentive of because of the high probability to develop this type of cancer, especially if a patient has a family history of this disease.

Another condition that strikes the male sex is prostate cancer, also known as *prostatic carcinoma*. The prostate is a small gland that creates seminal fluid. Epidemiology for this disease states that, "During the past 2 decades, the incidence of this neoplasm has dramatically changed, largely because of increased use and establishment of prostate cancer screening and testing programs with the use of the PSA blood test" (Hormone-Dependent Prostate Cancer

3). It is crucial for medical professionals to be aware of a patient's biological sex. This concept must be addressed on the first appointment with the primary care physician, or as soon as the patient arrives at the hospital. With that information, doctors will know to screen males for prostatic cancer. This ensures the ability to provide proper patient care. Once diagnosed with prostate cancer, one form of treatment used for this disease is hormone therapy. This can be an interference when a transgender is already on hormones to look like the opposite gender. The two main hormones aimed to keep under control in the treatment of prostate cancer are testosterone and androgen. Based on the article named Hormone-Dependent Prostate Cancer, "One of the most critically important strategies in the management of prostate cancer is achieving and maintaining effective suppression of serum testosterone levels in men treated with androgen ablation" (7). The hormones need to be carefully monitored while on hormone therapy. Any outside factors intervening with that can stifle proper treatment for this diagnosis. Communication is key in the medical community. Not only from provider to provider, but also from patient to provider.

Moving on to a quite common female-specific disorder, polycystic ovary syndrome, often referred to by its acronym, PCOS. In accordance with Madnani, "The common features of PCOS are irregular or anovulatory cycles with signs of hyperandrogenism like acne, seborrhea, hirsutism, alopecia, frank virilization, and with polycystic ovaries on pelvic sonography" (311). To correctly diagnose and treat a patient with PCOS, medical staff must first know that the patient is a biological female. Otherwise, they risk misdiagnosing the patient, along with not being able to stabilize the symptoms. If not communicated, the discovery of opposite gender may only be revealed until an ovarian cyst bursts, causing severe pain in the abdomen. From there, they might do a CT scan on the abdomen and realize that the patient is a biological female. The goal is to prevent any unnecessary sicknesses and decrease the time and severity a patient is sick for. Early detection is crucial in the medical community, as well as all factors that can contribute to that. Established from an article on polycystic ovarian syndrome, "The metabolic and reproductive abnormalities have predisposed women to develop infertility and endometrial cancer, necessitating early diagnosis and appropriate treatment" (Madnani 311). Even if a person decides to switch genders from female to male, many still decide to use their female reproductive organs to conceive a child. If PCOS is not diagnosed in a timely manner, infertility can develop, and they will lose the hope of carrying their own child. Again, knowing the biological sex of a patient goes further than determining just one diagnosis; it can lead to multiple other life-altering or life-threatening diagnosis, like endometrial cancer.

As one of the leading causes of death in women, ovarian cancer is a medical condition that particularly targets the female sex as well. This kind of cancer starts in the female organs that produce eggs, the ovaries. As reported by Birrer, "Ovarian cancer kills more American women than any other gynecologic cancer and is, for the same group, the fifth most common cause of cancer-related death" (367). Knowing if a patient is at a higher risk due to a family history of cancer in the female organs is imperative to medical care. This way, proper preventative measures can be taken. This is because there are usually no symptoms in the initial stages of ovarian cancer. By the time the cancer has spread to the ovaries, it spreads quickly to the peritoneum and other parts of the body. Most of these cancers are stage 3 or 4 upon diagnosis. Even so, having all that information at hand is useless to a provider if they are not aware that the person, they are treating is a biological female. Interestingly enough, "Although all human ovary cells, including epithelial, stromal, and germ cells, may undergo neoplastic transformation, 80% to 90% of malignant ovarian tumors come from the single layer of epithelial cells covering the ovaries" (Birrer 367). For this reason, ovarian cancer is also known as epithelial ovarian cancer. Having knowledge of a patient's female biological sex, means being able to consider ovaries as a cause for abnormal symptoms.

X-linked Recessive Disorders

Another concept to be aware of is X-linked recessive diseases and disorders. This category of medical illnesses is described by Del Vecchio as, "X-linked recessive diseases are genetic disorders caused by gene's abnormalities placed on the X chromosome" (2). With the X chromosome linked disorders, males are the primary victims, and the patient population most affected by these types of diseases and disorders. While there are approximately 270 conditions

known so far, some examples are: Duchenne's Muscular Dystrophy, Red-Green color blindness, and Hemophilia. Identifying the biological sex of a patient is important in these cases as well since they affect the chromosomes, and no surgeries or procedure can change that. Despite most affected patients being males, "Affected females are the rare result of an affected male and a carrier female mating" (Del Vecchio). This information highlights the rarity of a female patient contracting X linked conditions. Susceptibility to different disorders do vary upon either male or female biological sex.

Being aware of a patient's biological sex is pivotal in all stages of patient care. Medical providers will have a better understanding of what they are assessing and can take proper actions according to the sex and the symptoms of the patient. Everyone can contract a cold, a fever, or even athletes' foot. However, there are certain life-threatening diseases that categorically affect either male or female reproductive systems. For males, a couple of them are testicular cancer and prostate cancer. For females, PCOS and epithelial ovarian cancer are quite common. Though some people get reproductive organs fully removed, other disorders can affect patients through something they cannot change no matter how much they try, their genetic chromosomes: XX or XY. This is why it is necessary to know a patient's biological sex in the medical community. Professionals will be able to provide the best care and treatment plans for their patients.

Works Cited

- "Biological." *The Merriam-Webster.com Dictionary*, 7 Dec. 2022, www.merriam-webster.com/dictionary/biological.
- Biology | Search Online Etymology Dictionary. www.etymonline.com/search?q=biology.
- Birrier, M. J., et al." Etiology and Pathogenesis of Epithelial Ovarian Cancer." *Disease Markers*, Vol. 23, No. 5-6, Oct. 2007, pp. 367-767. *EBSCOhost*
<https://search.ebscohost.com/login.aspDirect=true&db=aph&An=27621366&site=ehost-live>
- Brown, Carlton Gene. "Testicular Cancer: An Overview." *Urologic Nursing*, vol. 24, no. 2, Apr. 2004, pp. 83-93. *EBSOhost*, <https://search.EBSOhost.com/login.aspx?direct=true&db=aph&AN=12797514&site=ehost-live>
- Del Vecchio, C., et al." When Sex Matters: A Complete Model of X-Linked Diseases." *International Journal of General Systems*, vol. 47, no. 6, Aug. 2018, pp. 549-68. *EBSCOhost*,
<https://doi.org/10.1080/03081079.2018.1473391>.
- "Hormone-Dependent Prostate Cancer: An Evaluation of Current and Emerging Novel Therapies." *Urology Times*, Oct. 2010, pp. 3-16. *EBSCOhost*,
<https://search.EBSOhost.com/login.aspx?direct=true&db=aph&AN=54592571&site=ehost-live>
- Lim, Alane, and Scott Dutfield. "What Is Biology?" *livescience.com*, 2 Feb. 2022, www.livescience.com/44549-what-is-biology.html.
- Madnani, Nina, et al." Polycystic Ovarian Syndrome." *Indian Journal of Dermatology, Venereology & Leprology*, vol. 79, no. 3, May 2013, pp. 310-21. *ESBSCOhost*, <https://doi.org/10.4103/0378-6323.110759>.
- Sex, n.1: Oxford English Dictionary*. www.oed.com/viewdictionaryentry/Entry/176989.