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Research Paper

Introduction

Transgender identities and their experiences have become highly polarized and politicized within the country's current climate. The rights of transgender persons have become under siege, with the reasoning being built on a foundation of misinformation and ignorance. Taking a step back to reflect and review the different aspects that come together in curating the transgender identity is vital in understanding the fight for transgender rights. To identify as transgender is to resonate and embody a gender that is different from the one assigned to you at birth using physiological features like the genitalia. An important part of transgender identity is access to gender-affirming care, as a majority of transgender people experience gender dysphoria. Gender dysphoria is “psychological distress that results from an incongruence between one’s sex assigned at birth and one’s gender identity” (Jack Turban, M.D., M.H.S., 2022). Gender-affirming care is a range of different procedures and tools that allow transgender people to affirm their gender identity to fruition and make it a physical reality. Biologically certain gender-affirming resources help the body transition to embody the identity the person feels the most, whether that be a trans-women trying to appear more feminine or vice versa. Gender-affirming treatments are vital to the mental wellness of transgender people. Providing such care can be life-saving and has a direct influence on the suicide rate in LGBTQ+ people

more specifically transgender people. These treatments have also been proven to be safe contrary to bias belief that it is dangerous for individuals experiencing gender dysphoria.

Hormone Therapy

Hormone therapy is the first step in an individual journey in transitioning sex to their desired gender identity. Gender-affirming hormonal therapy (GAHT) is the use of hormones in an effort to reduce the production of hormones already produced in the body to be replaced by hormones that align with their gender identity, (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). These physiological changes will take place in the first few months of taking the hormones however it may take up to two years to fully see results. There is a range of different hormonal therapies that can be received in a variety of different ways, orally, by injection, pills, gels, and even sprays. The method of application varies based on the different individual needs each patient may have, such as cost and availability. It's important to note that GAHT isn't the final or only step in transitioning as gender identity is a mental feeling, not a physical one. GAHT is solely used to help the person better identify in their body in a way that they feel most comfortable. For many identifying as a male but living in a female body or vice versa can feel extremely limiting and frustrating which is the basis of gender dysphoria. These physical changes have long-lasting implications for how gender dysphoric individuals view themselves and their place in society.

Feminizing therapy is the use of hormones in an effort to feminize the body and create more of a feminine look. Feminizing GAHT usually consists of estrogen hormones with a combination of anti-androgens. Estrogen produces female characteristics such as breast growth, while antiandrogens are used to suppress male characteristics such as body hair. Anti Androgens

are used if the individual still has their gonads/testes, the presence of testes produce testosterone and the use of estrogen is not enough to lower testosterone levels to match that of a cis female level. The use of anti-androgens may result in a lower amount of estrogen needed to see results as there is less testosterone to compete with. There are three main prescriptions, cyproterone acetate (CPA), spironolactone, and GNRHas. CPA and GNRHas both work by lowering testosterone levels towards that of cis-females. Spironolactone is used as a receptor blocker which results in a lower decrease in testosterone levels. (Defreyne, J., Vander Stichele, C., Iwamoto, S. J., & T'Sjoen, G, 2023). “The U.S. Endocrine Society suggests aiming for estradiol levels of 100 to 200 pg/mL or 367 to 734 pmol/l and testosterone levels less than 50ng/dL or less than 2 nmol/l” (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). These parameters are an estimate of what the body is able to take in a safe way, there have not been any thorough studies connected to the exact amount of estrogen or testosterone needed. There is no specific time frame of therapy that is optimal or the most beneficial, as studies haven't yet dug deep enough to answer. However, it is believed that replicating the timing of cisgender female puberty with estrogen dosages every 2-3 months with a gradual increase over time can lead to the best development of physical traits like breasts (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). The changes on a physiological level will start to begin within the first 1-3 months of therapy, with a reduction in libido and a decrease in erections. This decrease in libido and sexual drive is attributed to the lack of free testosterone in the body as an effect of estrogen. Whether this is viewed as a negative thing is based on the individual, however those who don't like this lack of sex drive can opt to partially suspend testosterone levels to above 5 nmol per liter. Suspending testosterone levels to stay above 5 nmol can limit the feminizing effects of estrogen, leading to fewer physiological changes. After 3-6 months after taking estrogen, the body should

start to observe the development of breasts, however, it may take up to 2 years for them to fully develop. A helpful way to understand the process of GAHT is to think of it as putting the body through puberty all over again, and the process of puberty in adolescents takes place over the course of years. GAHT simply recreates the puberty process. Another effect of feminizing GAHT is the change in body fat and muscle distribution, leading to “an increase in both subcutaneous and internal or visceral fat” (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019), these fat deposits aren’t seen in such rates in cis-gendered males.

Masculating hormone therapy is the use of hormones to induce virilization, which is the development of characteristics that are associated with male hormones otherwise known as androgens, using testosterone. Masculinizing GAHT uses testosterone to develop male characteristics over time from a time period of 2-5 years which is a little longer than that of estrogen GAHT. The target range of testosterone levels in those in masculine GAHT should be “between 320 and 1,000 ng/dL” (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). It’s important to note that such as seen in feminizing GAHT studies have not been conducted on a scale that will allow for a concrete number or set range. The different characteristics that people who take on masculizing GAHT include voice pitch drop, an increase in facial hair, and body hair density. Many of these physical changes can be observed in the first few months of administration, but as said before it will take several years for maximal results to be achieved. Menstruating individuals will start to observe the loss of vaginal bleeding around 2-6 months of starting therapy, this cycle stops due to the testosterone suppressing certain hormones in the pituitary gland that are responsible for inducing a menstrual cycle (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). We can also observe a change in body composition as seen in feminizing GAHT but with the opposite results, leading to a decrease in overall fat mass and an

increase in lean muscle mass. Testosterone is known to have certain effects on behavior, which can be seen as a negative impact, one being aggression. A rapid increase in testosterone that comes with masculinizing GAHT can result in overexcitement and lead people to feel more energetic and stronger, which can lead to more aggressive tendencies. Along with a potential risk of aggression, individuals may experience an increase in libido and a higher sex drive.

Potential Risks

There is a common misconception that the use of GAHT is detrimental to an individual's health in the long term, however, there are no current studies or research that support this claim. Along with any medical intervention, there are certain risks involved, however, in GAHT there is a very low risk of any complications that can lead to death or serious illness. Perpetuating misinformation that GAHT can cause cancer or other serious illness is not only false but limits the options available to transgender individuals. This false argument only prevents the real risk from actually being seen and understood which leaves room for error in decision making. It is believed that transmasculine individuals who participate in GAHT are at risk for Oncological complications. Oncological risk refers to the development of tumors throughout the body. While it is true that hormonal manipulation can cause certain types of cancer GAHT has shown no evidence of putting trans people at risk. A well-known fact is that prolonged exposure to estrogen can lead to a higher risk of breast cancer, meaning that transmasculine people taking testosterone are at a lower risk of breast cancer due to their low estrogen levels due to the increase in testosterone. "In a study of 795 Dutch trans men on testosterone therapy yielding data for 15,974 person-years, only one case of breast cancer was diagnosed. This translated to a rate of 5.9 per 100,000 person-years, similar to the rate observed in the cisgender male population"

(Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). This study presents the fact that transmasculine people are at no more risk than their cisgender counterparts, showing no basis in the Oncological risk surrounding transmasculine people. When hormones are manipulated this can change the bone health of the individual, leading to a decrease in bone density and mass, however, the opposite has been observed in transmasculine men. “Van Caenegem et al. [77] described a small increase in [trabecular BMD](#) at the [distal radius](#) over the first year of GAHT in a group of 23 transmasculine people. The increase in trabecular BMD may be caused by the aromatization of testosterone to estrogen as well as a testosterone-mediated increase in muscle mass, leading to higher [bone remodeling](#) due to strain on the bone” (Defreyne, J., Vander Stichele, C., Iwamoto, S. J., & T'Sjoen, G, 2023). Transmasculine individuals are not at risk of losing bone density as some may argue, instead they actually experience an increase in bone density contributed to the effects of testosterone and increased muscle mass presented in transmasculine people. Another potential risk that may be argued that transmasculine people may face is an absence of fertility, however, this isn't true. We know testosterone stops vaginal bleeding and menstruation however when testosterone is stopped it is still possible for pregnancy to take place. “It has been hypothesized that testosterone therapy may lead to polycystic ovarian morphology, and therefore, transmasculine people should proceed with [fertility preservation](#) before initiating GAHT” (Defreyne, J., Vander Stichele, C., Iwamoto, S. J., & T'Sjoen, G, 2023). Although there has not been a significant amount of findings or research supporting this, it is suggested that transmasculine individuals preserve their eggs before GAHT, as a preventive measure.

The risk of Oncological complications in transfeminine individuals is a bit more complicated as the studies done are not conclusive and don't provide enough data to create a

solid stance. It is seen that transfeminine people don't have a higher risk of breast cancer as one might assume based on the amount of estrogen they are intaking, however, rates of breast cancer among them match that of "and remains similar to the low rate of one in every 1,000 for cisgender males" (Rachel Ann Heath Ph.D., & Katie Wynne Ph.D. 2019). Transfemine individuals are also at a lower risk of prostate cancer when compared to that of their cisgender male counterparts.

GAHT On Mental Health

In understanding the effects that GAHT has on a physiological level, both in transfeminine and transmasculine individuals, we must investigate the effects these physical changes can have on the mental well-being of these individuals. Gender-affirming care has a direct influence on the quality of life that transgender people experience. For many throughout the pandemic not having access to GAHT was extremely hard, "the delay of gender-affirming healthcare was not merely an inconvenience but could be considered "a life or death situation" (P2585, transgender man, 16). Indeed, access to timely gender-affirming care has been associated with reductions in suicide attempts and ideation (Almazan & Keuroghilan, 2021)" O'Handley, B., & Courtice, E. L. (2022). The lack of access to GAHT and other gender-affirming treatments can cause real-life implications that can be so serious that death can be a result.

Resources

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