

## The Neurobiological Basis of Gender Dysphoria

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### Abstract

In this short but detailed article, in consideration of the psychological health and social impact on the fundamental role that the topic of Gender Dysphoria (DG) is playing in particular in recent years on both the national and international scene and given the increase in case, transgenderism has received an unprecedented amount of attention from both the media and the scientific community.

After having clarified what is recognized today as gender dysphoria, the evolution of the term itself will be examined in detail to promote greater awareness of what is identified as such.

Furthermore, the evolution from a diagnostic point of view will be explored in depth and the latest studies that have attempted to outline the role of neuronal connections in transgender subjects will be shown.

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In consideration of the psychological, health and social impact on the fundamental role that the topic of Gender Dysphoria (DG) is playing in particular in recent years on both the national and international scene and given the increase in cases, the topic of gender identities among young adults, is an increasingly relevant and urgent issue, which involves not only adolescents, but also adults and society in conscious choices.

Although this is a phenomenon that is difficult to estimate numerically, a progressive increase in prevalence over the years is evident, as demonstrated by the increase in the number of both male and female transsexuals.

In the most recent studies if we refer, in fact, to the data collected between 2018 and 2021 by the Service for the adaptation of physical and psychological identity (SIFIP) of the San Camillo of Rome, it appears it is evident how cases of gender dysphoria (when an individual does not identify with their biological sex) have increased by 315% [1].

In recent years, Gender Dysphoria (GD) previously defined as transsexualism or gender identity disorder has received great attention, so that those affected are not stigmatized.

Terminology in the field of gender identity is constantly changing [2].

Gender identity refers to the perception that the subject has of himself as a man, woman or other, but sometimes sexual orientation is not so clearly defined, but tends to manifest itself along a continuum of possible sexual identifications [3].

In fact, there was no longer talk of a disorder, but of gender inconsistency, only to move on today to define this phenomenon with the term gender dysphoria.

In the latest edition of the Manual, the DSM-5, there is a radical change in the name of the disorder, which is renamed Gender Dysphoria, placing it in a separate chapter [2].

This modification underlines the fundamental and necessary role of distress, without which we cannot speak of a psychiatric disorder. "It is important to underline that gender non-conformity does not in itself constitute a mental disorder. The critical element of Gender Dysphoria is the presence of clinically significant distress associated with the condition" [2]. Many transgender people do not experience distress related to their condition and should therefore not be diagnosed with Gender Dysphoria.

Adding to the innovation of the name are also some clarifications in the criteria and the separation of the diagnosis from Sexual Dysfunctions and Paraphilic Disorders [4].

Gender dysphoria means a strong, pervasive and persistent identification with the opposite sex associated with anxiety, depression, irritability and the need to live as belonging to the opposite gender from the sex assigned at birth.

People with gender dysphoria report being victims of a biological accident and living trapped in a body incompatible with their subjective gender identity.

Individuals with DG may experience severe, disturbing, and long-lasting symptoms and have a strong desire to change their body through medical and/or surgical interventions to make it more closely aligned with their gender identity.

There are several studies published that have tried to clarify gender dysphoria, an interesting IPSOS research from 2021 says that 1% of the world population does not recognize themselves in the gender assigned at birth.

The ICD-10 (The International Classification of Mental and Behavioral Disorders; World health organization, 1993) places transsexualism among sexual identity disorders and defines it as follows:

- The individual wishes to live and be accepted as a member of the opposite sex; this is usually accompanied by a desire to make one's body, with surgical or hormonal treatment, as suitable as possible for one's preferred sex;
- The transsexual identity has been persistently present for at least two years;
- The picture does not represent a symptom of another mental syndrome, such as schizophrenia, and is not associated with a chromosomal abnormality.

On 19 June 2018, the World Health Organization eliminated transsexuality from the ICD, which is no longer considered a mental disorder.

Within the new section included in the manual: "Conditions relating to sexual health", there is the diagnosis of "gender incongruence"

The disorder of those who do not recognize their biological sex would be due to an alteration in the activity of specific networks of brain regions. This is supported by a new study that calls into question the interpretation based on neuroanatomical differences and surgery for sex change.

In the latest update of the International Classification of Diseases (ICD-11), gender incongruence was removed from the category of mental disorders and inserted into a new chapter, that of sexual health conditions [5].

It's important because, GD is not more a psychiatric condition. Nevertheless, we are not totally agreeing in considering it as sexual condition, only.

However, both DSM and ICD changes are the consequences so a new point of view about transsexualism. With the advent of brain-scanning technologies, the study of the biological basis of homosexuality has evolved considerably. Despite the numerous challenges in this field of research, there is currently much evidence to support the theory that biological, neurological, hormonal or chromosomal factors significantly contribute to the development of sexual identity [6].

In the last two decades, thanks also to the improvement of techniques for analyzing brain activity, many biomedical studies have been conducted on the biological characteristics that determine sexual orientation. Differences in brain function and anatomy have been documented between homosexual and heterosexual people.

LeVay's studies are an example of the experiments that have provided empirical evidence to support the theory that, in addition to their sexual orientation, homosexual and heterosexual people are different from a psychological, biological and anatomical-morphological point of view [4,6]. Homosexual men would show areas of the brain (e.g. hypothalamus and corpus callosum) and neuronal connections similar to those of heterosexual females [7]. Savic, Berglund and Lindstrom carried out a series of research observing brain symmetry (or asymmetry), nerve connections and other factors related to brain activity in homosexual men [8]. and lesbian women, observing that the brains of homosexual men have several similarities with that typical of heterosexual women, while that of homosexual women resembles that of heterosexual men [9-11].

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