

# Investigation of Axis 1 Psychiatric Disorders in Patients with Gender Dysphoria along with Gender Reassignment Surgery: A Descriptive Cross-sectional Study in Iran

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## ABSTRACT

**Introduction:** Gender dysphoria is characterized by a clear inconsistency between a person's experienced gender and the assigned gender, and gender reassignment surgery is part of its treatment. Considering the increasing access to such treatments, this study aimed to investigate Axis 1 psychiatric disorders in patients with gender dysphoria undergoing sex reassignment surgery.

**Method:** In this cross-sectional and descriptive study, 44 patients who underwent at least one sex reassignment surgery during the years 2018-2019 in the Welfare Organization, Taleghani Hospital and Tehran Gender Dysphoria Association and at least 6 months had passed since their first surgery. They were evaluated by interview and SCID-4.

**Results:** Our results showed that 86.4% of the subjects had Axis 1 psychiatric disorder before the operation, while 75% of them had these disorders after the operation. Also, among the cases studied before surgery, the prevalence of PTSD ( $P=0.002$ ) and social anxiety ( $P=0.008$ ) and specific phobia ( $P=0.049$ ) after surgery among transgender women was significantly higher than men.

**Conclusion:** Sex reassignment surgery reduced the rate of Axis 1 psychiatric comorbid disorders in these individuals, although this reduction was not large and no statistically significant difference was observed.

## KEYWORDS

Gender Dysphoria, Sex Reassignment Surgery, Axis 1 Psychiatric Illnesses, Transsexualism.

## Introduction

One of the most important aspects of human identity is gender identity, which is formed during the process of socialization in the form of formal and informal institutions [1]. In general, specific genders are assigned to children based on their anatomy and chromosomes at birth. For most children, this gender assignment corresponds to their gender identity, it is an innate sense to identify themselves as female or male. But some children may experience a contradiction and become transgender adults [2].

Thus, Gender Dysphoria (GD) is used according to the Diagnostic and Statistical Manual of Mental Health Disorders (DSM-5) to refer to those who have an obvious inconsistency between their expressed or experienced gender and the gender assigned at birth. These people express their dissatisfaction with the assigned sex as a desire to have the body of the opposite sex [3]. According to studies, the prevalence has been reported to be 6.8 / 100,000 for male-to-female (MF) transition and 2.6/100,000 for female-to-male (FM) transition [4, 5]. In this regard, according to DSM-5 statistics, the prevalence is 0.005 to 0.014% for birth-assigned males and 0.002 to 0.003 for birth-assigned females [6].

It has been shown that this disorder can lead to conflicts in relationships with family, peers, friends in various aspects of their daily lives and lead to social exclusion, interpersonal conflicts, symptoms of depression and anxiety, substance use disorders, negative feelings and weakness in self-esteem, and increased risk of self-harm and suicide [7]. The only way to get rid of this disorder in patients is sex reassignment (SR) which is done through hormone therapy and sex reassignment surgery (SRS) [8]. According to the standards of care of the World Professional Association for Transgender Health (WPATH), transsexual is referred to individuals who seek to change or who have changed their primary and/or secondary sex characteristics through feminizing or masculinizing medical interventions (hormones and/or surgery), typically accompanied by a permanent change in gender role. [9].

Simultaneous psychiatric disorders have been shown to affect the outcome and prognosis of GD. Accordingly, the evaluation of psychiatric illnesses in this group of patients is valuable. Numerous clinical and epidemiological studies have been conducted on patients with GD in several countries. However, the findings of various studies have shown some inconsistencies [10, 11]. Some studies have suggested that the prevalence of psychiatric disorders in patients with GD is similar to that in controls [12, 13]. On the other hand, some studies have shown that GD is associated with a higher prevalence of Axis 1 psychiatric disorders [14, 15]. According to research, social support is important for maintaining mental health, and low levels of this factor expose transsexual people to depression, anxiety and psychosis. Restrictions on transsexual people before and after gender reassignment, including rejection of these people by family and community, and negative environmental attitudes that can be greater in Iranian society for cultural and social reasons, put them in a more position [16, 17].

Therefore, according to the abovementioned cases, as well as due to recent developments and considering the provision of facilities for recent medical and surgical treatments for these people, which has led to an increase in access to such treatments, we decided to investigate Axis 1 psychiatric disorders in patients with GD who underwent SRS, because these cases need to be considered in the evaluation and treatment of these patients.

## Implementation Method

### Patient Selection

In this descriptive cross-sectional study, patients with gender dysphoria who underwent at least one gender reassignment surgery during the years 2018-2019 in the Welfare Organization, Taleghani Hospital in Tehran and Tehran Gender Dysphoria Association were studied.

Sampling was performed by convenience method and the sample size was determined to be 44 people for finding Axis 1 psychiatric disorder of 10% taking into account the estimation error of 0.09 and the first type error of 0.05, and based on the following sample size formula.

$$n = \frac{p(1-p)Z_{1-\frac{\alpha}{2}}^2}{d^2}$$

Inclusion criteria were any gender reassignment surgery (partial or complete), age over 18 years, passing at least 6 months from the time of surgery and patient consent to participate in the study. Exclusion criteria were having a major physical illness and dissatisfaction to participate in the study. Furthermore, preoperative screening, including psychiatric interviews for the absence of serious psychiatric disorders, hormonal tests, and karyotyping if necessary, were performed for all patients before surgery.

Also, at the beginning, the goals, nature and process of the research were explained to the sample people, and their consent to participate in the research was obtained. The sample was assured that the information in their questionnaire would be kept confidential and reminded that the research results would be provided to them if desired. Also, in this study, no cost was imposed on patients and the code of ethics was obtained from Shahid Beheshti University of Medical Sciences.

### Method

The information needed to examine the presence of Axis 1 psychiatric illnesses was obtained through a complete interview according to SCID-4 (Structured Clinical Interview for DSM-4) and the disorders were diagnosed according to its coding. SCID-4 is based on the DSM-4 diagnostic criteria and is used for the clinical diagnosis of Axis 1 disorders. The reliability of the test-retest is also marked with a score of 0.85 for this tool. This tool was developed in 1983 to diagnose disorders. The tool includes an overview section where the patient can describe the onset of their current course of illness. Furthermore, this clinical version includes a design pattern that allows the researcher to discard a set of basic diagnostic classes that are not relevant to their study. This version includes 6

diagnostic patterns of Axis 1 disorders. These diagnostic patterns are: pattern A) mood cycle, pattern B) psychotic symptoms, pattern C) psychotic disorders, pattern D) mood disorders, pattern E) substance-related disorders, and pattern F) anxiety disorders.

In this study, the confounding variable was a history of psychiatric illness. When examining the extent of postoperative psychiatric disorders, the status of preoperative disorders was considered and comparisons were made and analyzed based on confounding levels.

## Statistical Analysis

In this study, SPSS v.21 statistical software was used. Also, mean and standard deviation were used to display quantitative data, and frequency and percentage were used to display qualitative data. Chi-square, independent t-test (Mann-Whitney) and analysis of variance (Kruskal-Wallis) were used to analyze the data. Significance level of 0.05 was considered for statistical tests.

## Results

Examination of the history of Axis 1 psychiatric illness in 44 patients with GD showed that 38 patients (86.4%) had Axis 1 psychiatric illness before surgery, so that 10 women (100%) and 28 men (82.4%) had axial 1 mental illness before surgery, and the proportion of patients with this disease before surgery was not statistically significant between men and women ( $P=0.310$ ).

The distribution of men and women in terms of the number of Axis 1 psychiatric illnesses was also examined and it was found that before surgery, 6 patients (13.6%) had no Axis 1 psychiatric illness, 18 patients (40.9%) had one illness, 8 patients (18.2 %) had two illnesses, 6 patients (13.6%) had three illnesses, 4 patients (9.1%) had four illnesses, and 2 patients (4.5%) had five illnesses. There was no statistically significant difference between men and women in terms of the number of Axis 1 psychiatric illnesses before surgery ( $P=0.227$ ). Also, it was found that after surgery, 11 patients (25%) did not have any Axis 1 psychiatric illness, 12 patients (27.3%) had one illness, 13 patients (29.5%) had two illnesses, 3 patients (6.8%) had 3 illnesses and 5 patients (11.4%) had four illnesses. However, there was no statistically significant difference between men and women in terms of the number of psychiatric illnesses after surgery ( $P=0.135$ ).

The data in Table 1 showed that the most common type of Axis 1 psychiatric disorder before sex reassignment surgery was MDD with an overall prevalence of 36.4% (22.8% -52.3%) followed by substance dependence with an overall prevalence of 25% (13.7% -40.7%) and that the least prevalence was sleep apnea, nightmare disorder and cyclothymia with 4.5% (0.79% -16.7%). Among the cases studied before surgery, the prevalence of PTSD ( $P=0.002$ ) and social anxiety ( $P=0.008$ ) was significantly higher among transgender women than men. However, no statistically significant difference was observed between the two genders in terms of other Axis 1 psychiatric disorders.

**Table 1.** Investigation of Axis 1 Psychiatric Disorders before Sex Reassignment Surgery in Terms of Gender

Axis 1 psychiatric disorder	Total (N=44) N/%	Woman (N=10) N/%	Man (N=34) N/%	P-value
<b>MDD</b>	16/36.4%	4/40%	12/35.3%	0.786
<b>Social anxiety</b>	4/9.1%	4/40%	0/0%	0.002
<b>Specific phobia</b>	7/15.9%	3/30%	4/11.8%	0.166
<b> OCD</b>	3/6.8%	2/20%	1/2.9%	0.125
<b>Adjustment disorder</b>	8/18.2%	2/20%	6/17.6%	0.865
<b>Bulimia nervosa</b>	3/6.8%	0/0%	3/8.8%	0.999
<b>PTSD</b>	9/20.5%	5/50%	4/11.8%	0.008
<b>Substance dependence</b>	11/25%	2/20%	9/26.5%	0.678
<b>B1D</b>	4/9.1%	2/20%	2/5.9%	0.218
<b>B2D</b>	3/6.8%	0/0%	3/8.8%	0.999
<b>Sleep arousal disorder</b>	4/9.1%	0/0%	4/11.8%	0.559

<b>Sleep apnea</b>	2/4.5%	0/0%	2/5.9%	0.999
<b>Nightmare disorder</b>	2/4.5%	0/0%	2/5.9%	0.999
<b>Cyclothymia</b>	2/4.5%	0/0%	2/5.9%	0.999

Our results showed that Axis 1 psychiatric disorder was absent in 4 patients (9.1%) before and after surgery, 2 patients (5.4%) did not have a disorder before surgery, while 7 patients had a disorder after surgery. (15.9%) also had a disorder before surgery that was resolved after surgery. There was no statistically significant difference in the proportion of patients who had a change before and after surgery in terms of Axis 1 illnesses ( $P = 0.180$ ).

According to Table 2, the most common Axis 1 psychiatric disorder after surgery was specific phobia (34.1%) followed by substance dependence (18.2%). Dysthymia, substance-induced mood disorder, NOS depression, panic disorder, PTSD, and adjustment disorder were the least common with 2.3%. Statistical analysis showed that after surgery, there was no statistically significant difference between the two genders in terms of Axis 1 psychiatric disorders ( $P > 0.05$ ) and only the prevalence of specific phobia was higher among women than men (60% vs. 26.5%). This increase was statistically significant ( $P=0.049$ ).

**Table 2.** Investigation of Axis 1 Psychiatric Disorders of the Individuals After Sex Reassignment Surgery in Terms of Gender

<b>Axis 1 psychiatric disorder</b>	<b>Total (N=44) N/%</b>	<b>Woman (N=10) N/%</b>	<b>Man (N=34) N/%</b>	<b>P-value</b>
<b>MDD</b>	6/13.6%	2/20%	4/11.8%	0.606
<b>Social anxiety</b>	3/6.8%	2/20%	1/2.9%	0.125
<b>Specific phobia</b>	15/34.1%	6/60%	9/26.5%	0.049
<b>OCD</b>	4/9.1%	1/10%	3/8.8%	0.999
<b>Substance dependence</b>	8/18.2%	3/30%	5/14.7%	0.270
<b>Dysthymia</b>	1/2.3%	0/0%	1/2.9%	0.999
<b>Substance-induced mood disorder</b>	1/2.3%	0/0%	1/2.9%	0.999
<b>NOS depression</b>	1/2.3%	1/10%	0/0%	0.227
<b>Panic disorder</b>	1/2.3%	0/0%	1/2.9%	0.999
<b>GAD</b>	2/4.5%	0/0%	2/5.9%	0.999
<b>B2D</b>	3/6.8%	0/0%	3/8.8%	0.999
<b>PTSD</b>	1/2.3%	0/0%	1/2.9%	0.999
<b>Adjustment disorder</b>	1/2.3%	0/0%	1/2.9%	0.999
<b>Physical illness-induced mood disorder</b>	6/13.6%	2/20%	4/11.8%	0.606
<b>REM sleep behavior disorder</b>	2/4.5%	0/0%	2/5.9%	0.999
<b>Sleep apnea</b>	6/13.6%	2/20%	4/11.8%	0.606
<b>Cyclothymia</b>	2/4.5%	0/0%	2/5.9%	0.999
<b>B1D</b>	4/9.1%	2/20%	2/5.9%	0.218

## Discussion

Gender dysphoria or GD is a condition in which there is a significant inconsistency between the gender with which a person is born and the gender that the person experiences, which causes dysfunction and distress [18]. These people tend to change their gender with hormone therapy and gender reassignment surgery [19, 20]. Given the recent advances that have led to more access to gender reassignment surgery for these individuals, and since the consequences of this surgery on postoperative psychiatric status are largely unclear and these cases are important in the evaluation and treatment of these individuals, this study aimed to evaluate Axis 1 psychiatric disorders in patients who underwent sex reassignment surgery.

The results of the present study showed that the most common type of pre-surgery Axis One psychiatric disorder was the prevalence of PTSD and social anxiety, which were significantly higher among transgender women than men. After surgery, only specific phobia was the most common significant psychiatric disorder among patients. However, in general, there was no statistically significant difference in the proportion of patients who underwent a

change in terms of developing Axis 1 illnesses. There was no statistically significant difference between men and women in the proportion of patients with Axis 1 psychiatric illnesses after surgery.

Gender dysphoria is an issue related to culture and society. In Iranian examples, due to the fact that it is a taboo and these people are rejected by the family and society due to behaviors opposite to their genders and after gender reassignment due to honor issues, post-surgery problems, high costs of surgery, the lack of a sexual partner and other factors, they are still in social isolation [21, 22]. Also, transsexual people can live with their families without gender reassignment because they have not yet taken action to change their gender, due to the lack of family support, the objective aspects of their lives are less exposed to unfavorable conditions. Meanwhile, patients with gender reassignment surgery are often excluded from the family due to the fact that they have changed their gender and manifested themselves as a new gender in society, and the severity of their gender identity disorder affects the subjective and objective aspects of their lives [23, 24]. Beyond the discomfort of the incompatibility between biological gender and the gender experienced, it has been found that these individuals often experience the stress of discrimination, social exclusion, violence, and shame, and these factors are believed to be associated with poor indicators of mental health [25, 26].

In a study by Cohen and Goren on 163 transsexuals who had undergone surgery 2.5 years ago on average, the feeling of contradiction between the anatomical gender and the gender identity of the patients disappeared and up to 64% of the individuals were very satisfied and most of their complaints were about social interactions [27]. Freitas et al. reported in a systematic study that out of 577 people with GD, 307 (53.2%) had at least one mental disorder in their lifetime. Among the high frequency of Axis 1 disorders, mood disorders were the highest frequency (243 patients, 42.1%), followed by anxiety disorders (155 patients, 26.8%) and substance use disorders (85 patients, 14.7%) [5]. In a similar research to the present study, Mazaheri Meybodi et al., a study of 83 GD patients requesting gender reassignment to determine the prevalence of psychiatric comorbidity using SCID-4, it was found that 62.7% of patients had at least one psychiatric comorbidity, which the most common disorders were major depression (33.7%), specific phobia (20.5%) and adaptive disorder (15.7%), respectively [11]. In comparison, 86.4% of our study population had Axis 1 psychiatric illness before surgery, the most common disorders were major depression (36.4%), substance dependence (25%) and PTSD (20.5%), respectively. Dhejne et al. in a review study stated that although the level of psychopathology and psychiatric disorders is higher in transsexual people who go to service centers at the time of the assessment than in the general population, after gender-affirming medical interventions, it reached normal values and improved in many cases [15]. In our study, 86.4% of the individuals had Axis 1 psychiatric disorder before surgery, while 75% of the individuals had these disorders after surgery. These findings could generally indicate an improvement in the general condition of people with gender dysphoria after gender reassignment surgery. A systematic review study conducted by Wernick et al. in 2019 showed that gender reassignment surgery can lead to numerous and obvious improvements in the psychological functioning of individuals with gender identity disorders, but due to methodological differences in the studies, further research is needed to evaluate the psychological consequences of this surgery [28].

What is certain is that in our society, despite the negative attitudes towards transsexual people and the lack of proper cultural and social context, most of these patients suffer from depression, suicidal thoughts, and even lack of support from family and society. To prevent the consequences, it is necessary to use psychological therapies (individual, group, family) and inform the society about these people [7, 29]. In general, although there is little documented information on the subject of the present study in our society, it provides useful information about the demographic generalities and postoperative conditions of transsexuals, however, it is a preliminary step in addressing this disorder. Therefore, it is suggested to conduct additional studies with a larger sample size considering a homogenized control group to have the ability to compare these people with ordinary people in society and to do before-and-after studies that are not limited to retrospective history in order to take better steps towards the general health of these people like other people in society.

## Conclusion

Overall, based on the results of this study, it is inferred that sex reassignment surgery and achieving the desired gender characteristics as much as possible in people with GD decrease the rate of Axis 1 psychiatric comorbid disorders in these people. However, this decrease was not statistically significant in the proportion of patients who

had changed their status before and after surgery in terms of developing Axis 1 psychiatric illnesses.

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