Journal of Iranian Medical Council, Volume 9, Issue no. 1
http://dx.doi.org/10.18502/jimc.v9i1.20473

Review Article

Epidemiological Study of Gender Dysphoria in The Forensic Medicine of East of Iran During 2018-23

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Abstract

Background: Given the evolving cultural landscape and increased awareness of self-knowledge, particularly sexual identity, societal attitudes towards the Lesbian, Gay, Bisexual and Transgender/ Transsexual people (LGBT) community, specifically Gender Dysphoria (GD), remain complex and often characterized by misconceptions. This study aims to investigate the prevalence of individuals who identify as GD, and assess their level of understanding regarding gender identity. This study aims to determine the epidemiology of patients with GD in the forensic medicine of East of Iran in 2018-23.

Methods: In this cross-sectional study, clients with complaints of GD were investigated at East of Iran Forensic Medicine in 2018-2023. After receiving the permission to access the files archived in the branches of examinations and the Forensic Medicine Commission, the demographic and clinical information of the individuals was recorded in the attached checklist. Descriptive statistics for the study variables were presented in tabular and graphical formats.

Results: This study delves into the characteristics and experiences of 344 individuals seeking gender reassignment surgery, with the peak number of inquiries occurring in 2020 and 2021. Of the mentioned individuals, 138 were deemed ineligible for GD. The findings revealed that the majority of these individuals (65.4%) are female, with an average age of 24.22 years. Striking differences were observed in education, field of study, occupation, and psychiatric history between female and male applicants.

Conclusion: This study highlighted significant increase in gender dysphoria disorder, particularly among women and single individuals with diploma and post-graduate education in the East of Iran province. This trend reflects significant cultural shifts.

Keywords: Female, Gender dysphoria, Gender identity, Humans, Iran, Male, Prevalence, Sexual and gender minorities, Transgender persons

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Received: 6 Sept 2024
Accepted: 5 Mar 2025

Citation to this article
Rezazadeh Khaiyat F, Naghsh A, Mirzadeh M, Saadatian V. Epidemiological Study of Gender Dysphoria in The Forensic Medicine of East of Iran During 2018-23. *J Iran Med Counc*. 2026;9(1):3-12.

Introduction

Gender identity, an individual's internal sense of belonging to the male or female gender, is a complex and multifaceted subject that has garnered significant attention in recent decades. This concept, introduced by Robert Stoller in the mid-20th century, differs from gender role, the outward expression of masculinity or femininity. While gender role pertains to external behaviours and appearances, such as clothing choices, interests, and conversational topics (previously addressed by John Money), gender identity refers to an individual's deep-seated, internal understanding of their own gender. A mismatch between the sex assigned at birth and gender identity can lead to a condition known as gender dysphoria, characterized by significant distress and discomfort. Gender Dysphoria (GD) specifically denotes clinically significant distress arising from this incongruence and has replaced the older term "gender identity disorder," which carried greater social stigma. This condition presents numerous challenges for affected individuals, particularly in societies with conservative attitudes toward gender diversity.

Individuals experiencing gender dysphoria may seek various means to align their appearance and lives with their internal gender identity. This process, known as gender transition, can encompass social changes (such as name and clothing modifications), hormone therapy to induce secondary sex characteristics congruent with their gender identity, and/or gender-affirming surgeries. For instance, an individual assigned male at birth who lives as a woman is identified as a trans woman (Male to Female Transition-MTF), and conversely, an individual assigned female at birth who lives as a man is identified as a trans man (Female to Male Transition-FTM). The World Professional Association for Transgender Health (WPATH) has established a comprehensive framework for the assessment and treatment of these individuals, encompassing fully reversible, partially reversible and irreversible interventions (1,2). However, it is crucial to note that not all transgender individuals seek medical or surgical interventions, with some opting solely for social transition. This diversity in choices makes it challenging to obtain precise statistics on the transgender population; however, estimates suggest that approximately 25 million individuals worldwide are identified as transgender (3).

In Iran, this situation is compounded by additional challenges. As societal attitudes towards self-understanding, particularly gender identity, continue to evolve, a significant gap remains in public understanding of Lesbian, Gay, Bisexual and Transgender/transsexual (LGBT) individuals, especially those experiencing gender dysphoria. Studies indicate that limited research on this topic has been conducted in many Muslim countries, excluding Turkey and Iran, contributing to the perpetuation of misconceptions and social conflicts. (4). This underscores the urgent need for high-quality, multifaceted research in the Muslim world, particularly in Iran, to enhance public understanding and acceptance. Transgender individuals in Iran often face significant social stigma and discrimination, including ridicule, physical and verbal harassment, exclusion from educational opportunities, and limited employment prospects. These challenges can lead to increased risks of substance abuse, homelessness, sexually transmitted infections, such as HIV/AIDS, and elevated rates of suicide among this population (5).

Several studies in Iran have explored various facets of this issue. For example, a 2018 study by Dr. Shirdel compared the mental health of Iranian and Dutch transgender individuals, revealing that Iranian participants experienced higher levels of psychological distress and lower levels of familial support (6). Additionally, in 2018, Fallah Tafti *et al* in Tehran examined the impact of gender-affirming surgery on happiness and mental health in transgender individuals, demonstrating that surgery can lead to improvements in these indicators but emphasizing the importance of ongoing monitoring for these individuals' post-surgery (7). Another 2018 study by Dr. Valashany *et al* examined the perceived quality of life across eight domains in two groups of Iranian participants: 30 MTF and 41 FTM transgender individuals, and a control group of 142 age- and gender-matched individuals. This study indicated that transgender individuals, particularly MTF individuals, exhibited lower quality of life in both physical and psychological domains compared to the control group (8).

Given the significance of this issue and the existing

challenges, this study aims to investigate the prevalence and epidemiological characteristics of gender dysphoria in individuals presenting to the forensic medicine department of eastern Iran between 2018 and 2023. This study attempts to contribute to a better understanding of this phenomenon and to provide appropriate strategies for supporting transgender individuals in Iran by providing accurate and comprehensive data.

Materials and Methods

In this study, a descriptive cross-sectional design was employed to investigate the characteristics and co-morbidities of individuals referred for evaluation of GD. This study was conducted in accordance with the principles of the Declaration of Helsinki (1964) and received ethical approval with the ID number IR.IAU.MSHD.REC.1401.061. The project adhered to the ethical principles and the national norms and standards for conducting Medical Research in Iran Permission to access relevant files obtained from the Forensic Medicine Organization.

The study population comprised all files of individuals referred to the forensic medicine centers in eastern Iran between 2018 and 2023 who presented with a claim of transgender identity. The Forensic Medicine Organization was responsible for verifying these claims through clinical interviews, psychometric assessments, and medical evaluations. Confirmation of GD resulted in a diagnostic letter sent to judicial authorities, who then issued legal permits for gender reassignment, enabling individuals to pursue gender-affirming surgeries and obtain revised birth certificates. After excluding duplicate cases (those referred for re-commissioning) and cases with Disorders of Sexual Development (DSD), a total of 344 files were included in the final analysis. These files were accessed through archived records and the forensic computer system. To protect participant privacy, each file was assigned a unique identification code following ethical approval. Data were extracted anonymously using a standardized checklist designed to capture key information. This included demographic variables [age (in years), sex assigned at birth (male/female), highest level of education completed (*e.g.*, less than diploma, diploma, bachelor's degree, *etc.*)], clinical interview findings (*e.g.*, history of self-harm, tattoos, substance abuse, suicidal ideation, psychotic episodes), psychometric test results (Minnesota Multiphasic Personality Inventory-2 [MMPI-2], Thematic Apperception Test [TAT], Millon Clinical Multiaxial Inventory [MCMI-III]), and sex hormone status in relation to the sex assigned at birth, as reported by an endocrinologist. While these psychometric tests are not specifically designed for diagnosing GD or related comorbidities, they provide valuable psychological profiles for clinicians. The year of the initial referral served as the index date, as subsequent assessments often incorporated therapeutic interventions such as individual or group psychotherapy.

Data analysis was performed using SPSS 20 (IBM Corp., Armonk, NY, USA). Descriptive statistics (means, percentages) were used to summarize demographic and clinical characteristics. Given the likely non-normal distribution of the data, the Mann-Whitney U test was employed to explore potential associations between final diagnosis (GD *vs.* non-GD), psychometric test scores, psychiatric comorbidities, and demographic variables, comparing the participants assigned male at birth and those assigned female at birth.

Exclusion criteria

Individuals diagnosed with Disorders of Sexual Development (DSD) based on clinical examination were excluded due to the distinct etiology and classification of DSD within the DSM-5, which makes direct comparison with individuals experiencing gender dysphoria inappropriate for the research question.

Results

The study included 344 participants, with females making up the majority (65.4%, n=225) compared to males (34.6%, n=119). This equates to a female-to-male ratio of approximately 1.9:1. The mean age of the sample was 24.22±5.7 years, with the most common age category being 21 years old, and ages ranged from 16 to 50 years. The average age in the Assigned Male at Birth (AMAB) and Assigned Female at Birth (AFAB) groups were 25.03±5.8 and 23.79±5.7 years, respectively.

In terms of marital status, the majority of participants

were single (88.1%, n=302). A smaller proportion reported being divorced (9.3%, n=32) or married (2.0%, n=7). Regarding educational attainment, the majority of participants had a diploma or higher education (61.3%, n=212). Conversely, 35 participants (10.2%) had not completed their diploma. A breakdown by education level showed that 82 participants (23.8%) had attained a bachelor's degree, while 15 individuals (4.4%) had achieved a master's degree or higher.

Demographic differences by gender

The two groups had significant differences in educational attainment and marital status. A higher proportion of AFAB participants (51.4%) reported having education below diploma level compared to AMAB participants (48.6%). Conversely, a larger percentage of AMAB participants (70.0%) had attained a bachelor's degree or higher than AFAB participants (30.0%). Marital status also differed, with more AFAB participants identifying as single (64.0%) than AMAB participants (36.0%). The reverse pattern was observed for those who were divorced,

Tables 1 and 2 present a detailed breakdown of participants' fields of study and occupations categorized by gender identity (AMAB & AFAB). Statistically significant differences were identified between the two groups regarding occupation. Unemployed individuals constituted the largest category within both groups. Students comprised the second-largest group.

Psychiatric co-existing

Due to the non-parametric distribution of psychiatric co-morbidity data (Kolmogorov-Smirnov test), the Mann-Whitney U test was employed to explore gender differences. Statistically significant differences were identified between genders (IQR=2-1, median=2) for self-harm (IQR=2-2, median=2) (p= 0.011). Overall, a higher prevalence of psychiatric co-morbidities was observed in females compared to males, except for criminal and childbearing problems, which were slightly more frequent in males. However, it is important to reiterate that these findings pertain only to participants with a confirmed diagnosis of GD (Table 3).

Table 2. Occupation in two genders

Occupation	AMAB (N=115)	AFAB (N=221)
Unemployed	41(45.6)	49(54.4)
Student	25(32.1)	53(67.9)
Waiter	4(23.5)	13(78.5)
Sales	8(32)	17(68)
Driver	1(12.5)	7(87.5)
Instructor of the gym	0	8(100)
Self-Employment	30(33.3)	60(66.7)
Accountants	2(22.2)	7(77.8)
Others	4(36.4)	7(63.6)

Assigned Male at Birth (AMAB); Assigned Female at Birth (AFAB).

Referrals and final diagnosis

The data indicates variations in the number of individuals referred for evaluation between 2018 and 2022 (Figure 1).

Due to the non-parametric nature of the data, a Mann-Whitney U test was employed to assess potential

Table 1. Field of study in two genders

Field of study	AMAB N=21 (19.3%)	AFAB N=88 (80.7%)
Physical education	0	27(100)
Engineering	9(39.1)	14(60.9)
Medical and paramedical sciences	2(18.2)	9(81.8)
Accounting	3(30)	7(70)
Literature & theology	7(18.4)	31(81.6)

Assigned Male at Birth (AMAB), Assigned Female at Birth (AFAB).

Table 3. Different characteristics in two genders

Variable	AMAB (N=119)	AFAB (N=225)	p-value
Suicide	40(47.6)	44(52.4)	0.004
Tattoo	18(29)	44(71)	0.310
Self-cutting	19(22.4)	66(77.6)	0.006
Psychiatric problems	18(42.9)	24(57.1)	0.230
Drug	6(25)	18(75)	0.219
Smoking	14(24.6)	43(75.4)	0.061
Criminal problems	6(54.5)	5(45.5)	0.158
Having child	6(54.5)	5(45.5)	0.158
Hormonal disorders	3(15.8)	16(84.2)	0.152
Physical illness	14(45.2)	17(54.8)	0.195

differences in the distribution of final diagnoses GD (IQR=2-1, median=1) across the five years of referral included in the study (2018-2023) (IQR=4-2, median=3). The results revealed a statistically significant difference ($p<0.000$) between the ranks obtained for GD diagnosis (112.41) and non-diagnosis of GD (213.41). This suggests that the final diagnoses of GD varied significantly across the different years the participants were referred for evaluation.

Among the 138 participants who received no final diagnosis of GD, a review of commission results, history taking, and psychological testing revealed alternative diagnoses for a subset of individuals. Notably, Attention Deficit Hyperactivity Disorder (ADHD) was exclusively diagnosed in females within this group. Of the 30 participants who remained undiagnosed, 29 were recommended to undergo group or individual psychotherapy for a period of 6 months to 1 year, to reassess their diagnosis after therapy. For the remaining participants, insufficient information precluded reaching a definitive diagnosis (Table 4).

Table 5 presents data on participants who received a final diagnosis (excluding the 13 individuals without a conclusive diagnosis). The table focuses on military service completion and its potential association with GD diagnosis. Notably, all the participants who reported an inability to complete the mandatory two-year military service due to the challenges of an all-male environment were subsequently diagnosed with GD. Conversely, the majority of participants who did complete their military service did not receive a confirmed diagnosis of GD.

The Minnesota Multiphasic Personality Inventory-2 (MMPI-2) and the Millon Clinical Multiaxial Inventory-3 (MCMI-3) were employed to assess personality traits among the participants. However,

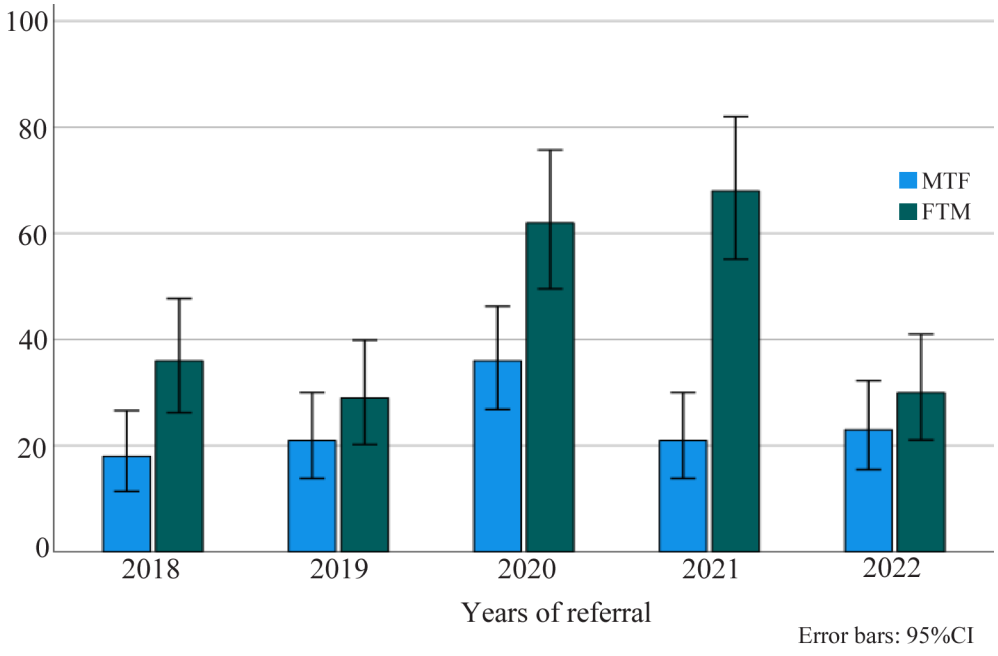

Figure 1. 6 years of referral in two genders.

Table 4. Other diagnosis

Final diagnosis	Male N (%)	Female N (%)
Not verified GD	9(32.1)	19(67.9)
ADHD	0	8(100)
Other LGBT	25(32.9)	51(67.1)
Mode disorder	6(60)	4(40)
Personality disorder	2(18.2)	9(81,8)
Other psychiatric problems	3(60)	2(40)

Gender Dysphoria (GD), Attention Deficit Hyperactivity Disorder (ADHD), Lesbian, Gay, Bisexual and Transgender/transsexual people (LGBT).

Table 5. Military service in men

Military service	Yes GD N (%)	No GD N (%)
Exempt	8(57)	6(43)
Incomplete	4(100)	0(0)
Complete	4(30)	9(70)
Non-conscript	46(61)	29(39)

Gender Dysphoria (GD).

due to incomplete data for some participants, the sample size for these analyses varied. Data from the MMPI-2 was available for 180 participants. Analysis of the MMPI-2 revealed elevated scores on the Masculinity-Femininity (MF) scale in 48.9% of the participants. Additionally, 11.7% of the participants exhibited a response style indicative of feigning poor mental health (faking bad), while 4.4% exhibited a response style suggestive of feigning good mental health (faking good). In cases where multiple scales were elevated, the scale with the highest score was considered primary. Data from the MCMI-3 was available for a smaller subset of participants (n=38). Among this group, 38.2% received scores indicative of Dramatic Personality Disorder, while 15.8% received scores suggestive of narcissistic personality disorder and passive-aggressive personality disorder, respectively. Karyotyping was performed in 71 patients, and all results were normal. These findings did not contribute to the diagnostic process.

Discussion

The average age of the participants was 22.24 years old (SD= ±5.7), with ages ranging from 16 to 50 years old. It is worth noting that there was a peak in the age distribution at 21 years, which is consistent with the findings reported by Hedjazi, who observed a similar peak and an average age of 25.43 years (SD= ±6.3) (7). A five-year study conducted in Turkey revealed an average age of 16 years among gender dysphoric individuals of both sexes. In contrast, a study by Ciaran Judge in Ireland found a higher proportion of AMAB individuals (72.9%) compared to AFAB (27.1%), reflecting the 3:1 statistics of Western Europe, with an average age of 32 years (9). Additionally, Shirdel *et al* observed a higher average age among gender dysphoric individuals in the Netherlands compared to Iran (6).

This study also evaluated the status of marriage and education for clients. Of the 342, 303(88.1%) were single, 7(2%) were married and 32(9.3%) were divorced. Notably; Ciaran *et al* reported a different distribution, with 21% married and 18.8% having experience childbirth, 67.6% single and 7.8% divorced, and 3.9% divorced (9). This suggests a societal shift towards greater autonomy in marital decisions. Over time, individuals appear less inclined to acquiesce to unwanted or coerced marriages. Furthermore, there seems to be a growing acceptance of divorce as a viable option when marital compatibility is lacking, as well as 35 participants (10.2%) had a diploma under a diploma, 211(61.3%) had a diploma or associate degree, 82(23.8%) undergraduate and 15(4.4%) achieved an associate degree. In the study of Hejazi *et al*, there were 20% graduate of diploma, 43% associate degree, and 37% undergraduate and doctoral (10). This phenomenon can be ascribed to the rising levels of education within society.

A significant decline in approvals for gender reassignment surgery was observed across the study period. In 2018 and 2019, 86% of the patients received approval, while the rates progressively decreased to 61% in 2020, 25% in 2021, and a mere 0.056% in 2022. This shift in approval rates coincides with the East of Iran Forensic Medicine Organization's implementation of a multi-stage evaluation process. This new approach includes mandatory group or individual psychotherapy for at least one year to ensure the stability of the patient's decision and minimize the risk of post-surgical regret. In a study of 6,793

individuals from 1972 to 2015 in the Netherlands, the number increased from 34 in 1980 to 686 in 2015 (11). This indicates a growing public awareness and comprehension of this disease, which underscores the urgency of addressing this issue. A Turkish study conducted from 2016 to 2022 revealed a significant increase in referrals for gender dysphoria, with 60% of all referrals occurring between 2020 and 2022. This trend mirrors the increasing prevalence observed in Iran (4).

This study included 344 participants seeking gender-affirming care. The sample composition was predominantly AFAB with 225 participants (65.4%) compared to 119 participants (34.6%) who identified as AMAB. This translates to a female-to-male ratio of 1.9:1. Consistent with findings from Taiwan (12), the current study demonstrated a higher prevalence of AFAB individuals. This potentially reflects cultural pressures associated with escaping traditional male roles in Taiwanese society. Interestingly, a previous study by Saberi (13) conducted in Tehran reported a higher proportion of AFAB applicants for gender reassignment (52.7%); This suggests a potential shift in the demographic seeking gender-affirming care over time, with the current study showing a higher percentage of AMAB individuals. The study identified a potential association between gender identity and career aspirations. Women seeking gender reassignment surgery exhibited a higher interest in sports compared to men. It is important to note that participation in sports is not gender-specific and can be enjoyed by both sexes. Further research is needed to explore the underlying reasons for this observed difference. According to Iranian regulations regarding medical exemptions for military service, individuals with confirmed GD are permanently exempt. This exemption could incentivize some men seeking to avoid military service to misrepresent their gender identity (14).

According to the objectives of the study, the frequency of co-existing in clinical interviews was checked. There were 62 people (18%) who got tattoos out of 344 people. In the study of Hidjazi *et al*, 3.9% was reported, which shows a multifold increase (10). The increase can be attributed to a shift in societal perception. Unlike the past when tattooing was often stigmatized as a psychological disorder, it is now widely accepted and integrated into mainstream culture. Regarding the investigation of drug abuse, cigarettes, and hookah were calculated separately, since they are less important than alcohol and drug use, and people who were both cigarette or hookah users and used alcohol or drugs were excluded from alcohol and drug users. As a result, among 344 people, 24 people (7%) used drugs or alcohol, and 57 people (16.6%) only used cigarettes or hookah. In Saberi's study, narcotics and cigarettes were observed at 11.6%, and in the study by Hijazi *et al*, drug abuse was reported at 8.8%, although the specific type of narcotic was not specified, limiting direct comparison (10,13). In the study of Ciaran Judge *et al* in Ireland, among 218 participants, 52(23.85%) had a history of smoking and 56(26.0%) were current smokers, and they also checked separately that 20 individuals (9.17%) were alcohol users, which had no obvious difference with the present study (9).

The study found a high rate of suicide, with 84 out of 344 people, which is 24.4%, having attempted suicide. Majority of these attempts involved the use of razor blades or pills. This percentage is similar to a previous study by Hedjazi *et al*, which reported a rate of 20.6%, and Saberi's study, which reported a rate of 19.4% (19). The frequency of suicide attempts was 24.7%, similar to Ciaran Judge's study (25.3%), but Hejazi reported a lower prevalence of 15.6% for self-mutilation in their study (9,10).

Regarding past psychiatric diagnoses, 42 participants (12.2%) reported a history of treatment with psychoactive medications for conditions other than GD, such as obsessive-compulsive disorder, anxiety, or depression. This finding contrasts with Saberi *et al* who reported a higher prevalence of psychological disorders (41.1%), primarily depression. Similarly, Ciaran Judge *et al* observed a higher rate of depression (43.3%) alongside schizophrenia (3.67%) and bipolar disorder (2.29%) in their study population. Also, in this study, asthma (11.45%), dyslipidemia (21.6%), and hypertension (9.7%) were investigated. In the study carried out under the title of physical diseases of the patients, there were 31(9%) patients (15). A study by Meybodi *et al* involving 79 individuals with gender dysphoria identified major depressive disorder (33.7%), specific phobia (20.5%), and adjustment disorder (15.7%) as the most prevalent psychiatric

comorbidities (15).

In a study that examines the mental health of trans people, 10 of the 12 individuals who experienced ADHD before their GD diagnosis were female. Similar to the present study, all the subjects with a final diagnosis of ADHD were female (16). It is noteworthy that 76 participants (22.1%) without a GD diagnosis were recommended for psychotherapy due to mental-sexual disorders categorized as homosexuality or bisexuality since they were not accepted. Lifestyles in Iran had made them more inclined to determine one of the stereotyped genders in their existence because they could not continue their social and legal life in Iran with an ambiguous gender identity.

Although psychological tests Minnesota Multiphasic Personality Inventory 2 and Millon Clinical Multiaxial Inventory 3 (MMPI2[1] & MCMI3[2]) are not specific for diagnosing GD, they can offer valuable insights into participants' psychological profiles for psychiatrists. In the present study, the MMPI-2 test was examined among 180 people, and the highest elevation was observed on the Masculinity-Femininity (MF) scale and the lowest elevation on the Hypomania (Ma) scale. Another study of 108 transgender individuals seeking gender reassignment reported the highest elevations on scales related to Masculinity/Femininity and Psychotic Deviation (PD) and the lowest on Social Introversion (SI) (17). In studies, the prevalence of personality disorders among GD patients were reported between 15 and 80%, the most of which was Borderline Personality Disorder (BPD), but in the current study, only 10% of the participants met criteria for BPD and dramatic personality disorder emerged as the most prevalent diagnosis (18).

Hormonal therapy is a cornerstone treatment for GD, demonstrably improving patients' quality of life. However, it is not without potential drawbacks. Increased risk of cardiovascular diseases and hormone-sensitive tumors are documented side effects (19). The risk of death from cardiovascular disease in women treated with ethinyl estradiol hormone therapy is 3 times higher than in cisman and ciswoman (20). The most frequently observed complications in AMAB patients are acne (44.8%) and erythrocytosis (5.6%), while AFAB patients experience a higher prevalence of venous thromboembolism (1.9%) (21). Research has also explored the effects of hormone therapy on bone density and muscle composition, though further investigation is warranted (22,23). The long-term psychosocial implications of hormone therapy also require evaluation (12). In a study after 40 years of treatment, Park *et al* observed that suicidal thoughts were reduced, a psychiatric illness secondary to GD was resolved, and the mental health of people improved. Consequently, close monitoring through regular screenings, examinations, and blood tests is crucial for patients undergoing hormonal therapy (24).

Study limitations

The study was limited by the difficulty in accessing older physical files, as opposed to more recent cases that are digitally archived. Additionally, multiple visits by individual clients resulted in the creation of new case numbers, necessitating careful review and removal of duplicate entries.

Conclusion

This study highlights a significant increase in gender dysphoria disorder, particularly among women and single people with diploma and post-graduate education within the traditionally conservative East of Iran province. This threefold increase can be attributed to a confluence of factors, including a cultural shift towards greater acceptance of gender identity appears to be underway, increased media representation of gender non-conforming individuals, and improved accessibility to diagnosis and treatment within Iran. The MMPI test results further support these findings, indicating that many female and male individuals with gender dysphoria exhibit gender non-conforming behaviors and reject traditional gender roles associated with their assigned sex at birth.

Ethical approval

This study was conducted in accordance with the 1964 Helsinki Declaration.

Funding

No funding was received.

1. Minnesota Multiphasic Personality Inventory 2
2. Millon Clinical Multiaxial Inventory 3

Acknowledgement

The study was conducted in accordance with national ethical guidelines and standards for medical research in Iran (Approval No: IR.IAU.MSHD.REC.1401.061). Necessary permits were obtained from the Forensic Medicine department. Given the retrospective nature of the study and the use of anonymized data, informed consent was waived. To ensure participant confidentiality, each case was assigned a unique code. Date: 16 July 2022.

Conflict of Interest

The authors have no competing interests to declare.

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