

Psychological characteristics of Italian gender dysphoric adolescents: a case–control study

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Abstract

Purpose Gender dysphoria (GD) is associated with clinically significant distress and impairment in social, scholastic, and other important areas of functioning, especially when early onset is reported. The aim of the present study is to assess the psychopathological features associated with GD in adolescence, comparing a group of gender dysphoric adolescents (GDs) with a group of non-referred adolescents (NRs), in terms of body uneasiness, suicide risk, psychological functioning, and intensity of GD.

Methods A sample of 46 adolescents with GD and 46 age-matched NRs was evaluated (mean \pm SD age = 16.00 \pm 1.49 and 16.59 \pm 1.11 respectively, $p > 0.05$). Subjects were asked to complete the Body Uneasiness Test (BUT) to explore body uneasiness, the Youth Self Report (YSR) to measure psychological functioning, the Multi-Attitude Suicide Tendency Scale (MAST) for suicide risk, and the Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ-AA) for GD assessment.

Results Adolescents with GD reported significantly higher levels of body uneasiness (BUT-GSI, $F = 380.13$, $p < 0.0001$), as well as a worse psychological functioning (YSR, $F = 13.06$ and $p < 0.0001$ for “total problem scale”

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and $F = 12.53$, $p = 0.001$ for “internalizing” scale) as compared to NRs. When YSR subscales were considered, GDs showed significantly higher scores in the “withdrawal/depression”, “anxiety/depression”, and “social problems” (all $p < 0.0001$). In addition, GDs showed significantly higher levels in the “attraction to death” and “repulsion by life” scales and lower scores in the “attraction to life” scale (all $p < 0.0001$). Finally, GIDYQ-AA score was significantly lower (meaning a higher level of gender dysphoria symptoms) in GDs vs. NRs ($p < 0.0001$).

Conclusions GD adolescents reported significantly higher body dissatisfaction and suicidal risk compared to NRs. In addition, results confirmed a significant impairment in social psychological functioning in adolescents with GD.

Keywords Gender dysphoria · Adolescents · Psychological functioning · Body uneasiness · Suicidal risk

Introduction

Gender dysphoria (GD) is a condition characterized by a marked incongruence between one’s experienced/expressed gender and the assigned one, and is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning, especially when an early onset is reported [1]. Indeed, gender dysphoric youths are described as a psychologically and socially vulnerable population. Several studies have reported that young people with GD more often show behavioral and emotional problems as compared with peers, and, in particular, significantly higher levels of internalizing problems (i.e., inner-directed and generating distress in the individual) than externalizing ones (i.e., outer-directed and generating discomfort and conflict in the surrounding environment) [2–5]. In addition, this population suffers from higher rates of suicidality (i.e., suicidal thoughts, suicide attempts, and rates) and self-harm behaviors; in both cases, age has been identified as an important vulnerability factor [6–10].

Psychological functioning is described as negatively affected by social marginalization and poor relations with peers [2, 11]. Indeed, the strongest predictors of co-occurring psychopathologies seem to be social ostracism and peer victimization, mainly related to low tolerance and acceptance of gender-variant behaviors [2, 12]. Furthermore, the difficulties experienced by adolescents with GD to connect socially and romantically with peers in the desired gender role may contribute to increased bullying and violence risk [3]. A cross-clinic comparative study on adolescents referring to a Canadian and a Dutch gender clinic showed significantly more behavioral and emotional problems in the Toronto-referred sample as compared with the

Amsterdam one [2]. According to the authors, this result may reflect the effect of a lower acceptance of gender non-conforming youth in some societies as compared to others [2, 13–15].

Although the Italian context has been reported as being poorly able to properly deal with gender dysphoric adolescents [3], studies investigating the psychological functioning of this population are lacking. In addition, although the centrality of body image concerns in GD development is well established [16–24], there are no studies investigating levels of body uneasiness in gender dysphoric adolescents.

Aims

To assess psychopathological features associated with GD in adolescence, comparing a group of gender dysphoric adolescents (GDs) with a group of non-referred adolescents (NRs), in terms of body uneasiness, suicide risk, and psychological functioning.

Methods

Study design

The study was conducted at the Sexual Medicine and Andrology Unit of the University of Florence and in the Gender Clinics of Rome, Milan, and Naples University Hospitals.

A consecutive series of gender-referred adolescents was evaluated on the first day of admission to the clinics by means of a clinical and psychometric assessment. In addition, a control group of non-referred (NRs) schoolmates was also considered.

The study protocol was approved by the Institution’s Ethics Committee.

Study procedures were fully explained during the first routine visit and prior to the data collection; after that, all the patients and control subjects as well as their parents provided a written informed consent to participate in the study.

Participants

Gender-referred adolescents attending several Italian Gender Clinics were enrolled in the study between September 2014 and February 2016, provided that they met the following inclusion criteria:

- Age younger than 18 years;
- Diagnosis of GD based on formal psychiatric classification criteria [1] and performed through several sessions

with two different mental health professionals with a specific training in child and adolescent developmental psychopathology and skilled in GD.

For the NRs group, the inclusion criteria included age below 18 years.

The exclusion criteria for both cases and controls were as follows:

- The use at any point in life of gonadotropin-releasing hormone analogues and cross-sex hormonal treatment;
- genital reassignment surgery;
- illiteracy;
- mental retardation.

Measures

Socio-demographic and clinical data were collected from both groups. In addition, GDs and NRs were asked to complete several psychometric tests, such as the Body Uneasiness Test (BUT, [25–27]), the Multi-Attitude Suicide Tendency Scale for adolescents (MAST [28–31]), the Youth Self Report (YSR, [32, 33]), and the Gender Identity/Gender Dysphoria Questionnaire (GIDYQ-AA, [34, 35]).

The Body Uneasiness Test (BUT, [27]) is a self-rating scale exploring different areas of body-related psychopathology [25, 26]. The instrument is composed of two parts: BUT-A (34 items) and BUT-B (37 items). The BUT-A explores five areas: weight phobia (WP, fear of being or becoming fat), body image concerns (BIC, i.e. worries related to physical appearance), avoidance (A; body image related avoidance behavior); compulsive self-monitoring (CSM; compulsive checking of physical appearance) and depersonalization (D; detachment and estrangement feelings toward the body). Mean scores of the items composing each subscale are obtained, together with a Global Severity Index (GSI), that is the average rating of all 34 items composing the BUT-A. The BUT-B lists 37 body parts and functions, asking respondents to rate how often they happen to dislike each experience or each body part. Two scores are derived from respondents' ratings to the BUT-B: the positive symptom total (PST, i.e., the number of symptoms rated higher than zero) and the Positive Symptom Distress Index (PSDI, i.e., the average rating of those items constituting the PSI). For all subscales, higher scores indicate greater body uneasiness.

Behavioral and emotional problems were assessed through the Italian version of the YSR [33]. The YSR tests are part of the system of evaluation on an empirical basis by Achenbach et al. [32, 33, 36] and aim to evaluate the presence of potentially problematic behaviors listed within behavioral scales. The answers can be rated on a

three-point scale (0 = not true; 1 = sometimes true; 2 = very true). The scales consist of about 100 items, grouped in 8 syndrome scales according to a dimensional approach: “anxiety and depression” (evaluates the presence of depressive symptoms such as sadness, irritability, loneliness, low self-esteem, and not feeling loved); “withdrawal and depression” (evaluates social closure, tendency to isolate, shyness, and discretion); “somatic complaints” (evaluates the tendency to express anxiety and concern through physical disorders such as nausea, stomach pain, and headache); “social problems” (evaluates the difficulty within the relationships with peers such as being teased and not getting along with peers); “problems of thought” (evaluates the presence of thoughts and perceptions that are not reflected in reality); “problems of attention” (evaluates the difficulty in maintaining concentration and the tendency towards hyperactive behaviors such as impulsivity, irritability, and motor restlessness); “rule transgression behavior” (evaluates the tendency to assume delinquent behaviors such as stealing, lying, setting fires, and using alcohol or drugs); and “aggressive behavior” (evaluates the presence of aggressive, provocative, and destructive behaviors towards people or property). Moreover, it is possible to evaluate behavior through the following three general scales: the “total problem scale”, as well as the “internalizing” scale (i.e., indicating inner-directed behaviors and generating distress in the individual) and the “externalizing” scale (i.e., indicating outer-directed behaviors and generating discomfort and conflict in the surrounding environment). Regarding psychometric properties, Achenbach et al. [32, 33] can be consulted.

The MAST is a 30-item scale, which measures attitudes on four components: “attraction to life”, “attraction to death”, “repulsion by life”, and “repulsion by death” [28, 29]. In particular, the “repulsion by life” component reflects such experiences as pain and stress; “attraction to death” represents religious convictions or perceptions that death is a superior way of being; “attraction to life” is based on the degree of satisfaction with life and a sense of well-being; and “repulsion by death” reflects fears of death. Each item is presented on a 5-point scale from 1 (strongly agree) to 5 (strongly disagree). To facilitate interpretation of data analyses, the items for each subscale were reverse scored. A mean item response is calculated for each of the four attitude subscales, with higher scores reflecting greater agreement. Studies validating an Italian version of the MAST are not available yet, although some preliminary data on its reliability and validity have been provided [30, 31].

The Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ-AA) is a 27-item questionnaire evaluating GD [34, 35]. Each item is rated on a 5-point response scale, with the past 12 months as the timeframe. The response options are always (coded as 1),

Table 1 Socio-demographic and clinical characteristics of GD sample divided according to gender

	MtFs (n=20)	FtMs (n=26)	Age adj. $d \pm SD$	Adjusted p
Educational level (years of school)	10.00 \pm 0.29	10.61 \pm 0.26	0.612	0.118
	MtFs (n=20)	FtMs (n=26)	HR [95% confidence interval]	Adjusted p
Parental cohabitation, % (n)	97.8 (45)	0 (0)	–	–
Adoptive child, % (n)	20.0 (4)	0 (0)	1.82 [0.12–27.18]	0.662
Current smoker, % (n)	16.7 (3)	25.0 (8)	1.28 [0.09–17.33]	0.854
Failure at school, % (n)	16.7 (3)	25.0 (8)	0.85 [0.36–2.03]	0.718
Substance abuse % (n)	0.0 (0)	25.0 (8)	–	0.10
GD onset <6 years old, % (n)	66.7 (13)	33.3 (9)	7.16 [0.60–85.25]	0.119
Deep uneasiness for pubertal onset % (n)	66.7 (13)	66.7 (17)	1.30 [0.15–11.57]	0.340
In love with same genotypic sex, % (n)	80 (16)	81.8 (21)	0.62 [0.23–14.43]	0.771
Lifetime intimate relationships, % (n)	16.7 (3)	66.7 (17)	9.33 [0.70–124.37]	0.091
Lifetime sexual intercourse, % (n)	20 (4)	50 (13)	3.01 [0.30–53.01]	0.292
Lifetime significant friendships, % (n)	83.3 (17)	91.7 (24)	–	0.998
Lifetime maltreatment, % (n)	33.3 (7)	9.1 (24)	–	0.998
Suicidal Ideation, % (n)	83.3 (17)	90 (23)	2.74 [0.11–66.36]	0.537
Suicidal attempts, % (n)	16.7 (3)	11.1 (3)	0.41 [0.17–10.12]	0.414

Data are expressed as mean \pm SD when normally distributed and as percentages and absolute number, reported in round brackets, when categorical. In square brackets, the absolute ranges of SCL-90-R scales are reported

The multivariate analysis (entering age as a covariate) has been performed using ANCOVA for linear variables and binary logistic regression for dummy variables

BUT Body Uneasiness Test, *NRs* non-referred adolescents, *MtFs* male-to-female adolescents, *FtMs* female-to-male adolescents, *BMI* body mass index

often (2), sometimes (3), rarely (4), or never (5). Lower scores are associated with higher GD. Internal coherence was satisfactory for the Italian validated version (α value of about 0.97 [34, 35]).

Finally, data on reported height and weight were collected to obtain body mass index (BMI).

Statistical analyses

Continuous variables were reported as mean \pm standard deviation, or median and quartiles, for non-normally distributed variables, whereas categorical variables were reported as numbers and percentages. The independent sample t test and the χ^2 were used for continuous and categorical variables, respectively, to compare GDs and NRs and male-to-female (MtFs) with female-to-male persons (FtMs). A univariate analysis of variance (ANCOVA) was used to compare the continuous variables among groups, entering age as a covariate and BMI, when appropriate. Post-hoc paired contrasts with Tukey B test were performed for the pairwise comparison among the groups. Pearson's correlation was used to evaluate the associations between different variables within each group. Finally, linear and logistic regression analyses were used for multivariate analysis (adjusting for age) whenever appropriate. All analyses

were performed using SPSS version 23 (SPSS Inc., Chicago, IL, USA).

Results

Differences in terms of psychological well-being between GDs vs. NRs

Of the 47 GDs who met the participation criteria, 46 (97.1%) agreed to participate to the study (mean \pm SD age = 16.35 \pm 1.32 years). The MtF:FtM sex ratio of the GD sample was 1:1.3. No significant differences were found in terms of age between MtFs and FtMs (16.00 \pm 1.49 vs. 16.59 \pm 1.11 years old, $p > 0.05$), as well as in other socio-demographic characteristics, as reported in Table 1.

A control group of 46 NRs, of similar age, was also enrolled (15.78 \pm 2.13 years, $p = 0.13$ vs. GD). The M:F sex ratio of the NR sample was 1:1.6. In addition, GDs did not differ in terms of educational level and rates of parental cohabitation compared to NRs (10.35 \pm 0.26 vs. 9.78 \pm 0.26 years of education; 97.8 vs. 95.7% cohabited with both parents; both $p > 0.05$). Moreover, no differences in terms of BMI were found between GDs and NRs (21.62 \pm 2.72 vs. 20.76 \pm 1.94 kg/m², $p > 0.05$).

Because several of the assessed psychological features are generally considered age-correlated, all the following results have been adjusted for age. In addition, because BMI may influence body dissatisfaction [21, 22, 27], all results related to BUT were adjusted also for BMI.

Considering YSR, GD adolescents reported significantly higher *T* scores in both the “total problems” (60.91 ± 7.46 vs. 55.30 ± 6.16 ; $F = 13.06$, $p < 0.0001$, Fig. 1a) and “internalizing” scales (62.43 ± 11.18 vs. 53.57 ± 11.64 ; $F = 12.53$, $p = 0.001$, Fig. 1b), when compared to NRs. No significant differences were found in the “externalizing” scale (Fig. 1c). The percentage of adolescents scoring in the clinical range ($T > 63$) on both the “total problems” and “internalizing” scales was significantly higher in GDs vs. NRs (17.4 vs. 10.9 and 47.8 vs. 17.4%, respectively, for the “total problems” and “internalizing” scales; both $p < 0.0001$). No significant differences were found between the rates of adolescents

within the clinical score ($T > 63$) in the “externalizing” scale (13 vs. 19.6%, $p > 0.05$).

When YSR subscales were analyzed, significant differences were found between groups in the “withdrawn/depression”, “anxiety/depression”, and “social problems”, with GDs showing significantly higher scores (all $p < 0.005$ vs. NRs, Fig. 1d–f).

Considering suicidal risk, according to the MAST test, GDs showed significantly higher scores in the “attraction to death” (2.98 ± 0.57 vs. 2.17 ± 0.58 ; $F = 46.22$, $p < 0.0001$, Fig. 2a) and “repulsion by life” scales (3.04 ± 0.46 vs. 2.08 ± 0.56 , $F = 78.5$, $p < 0.0001$, Fig. 2b), and lower scores in the “attraction to life” (3.32 ± 0.55 vs. 4.05 ± 0.49 , $F = 44.14$, $p < 0.0001$, Fig. 2c).

When BUT was analyzed, GDs showed significantly higher body uneasiness compared with the NRs (BUT-GSI, 3.05 ± 0.49 vs. 0.61 ± 0.58 , $F = 380.13$, $p < 0.0001$). Accordingly, scores of several BUT subscales (including:

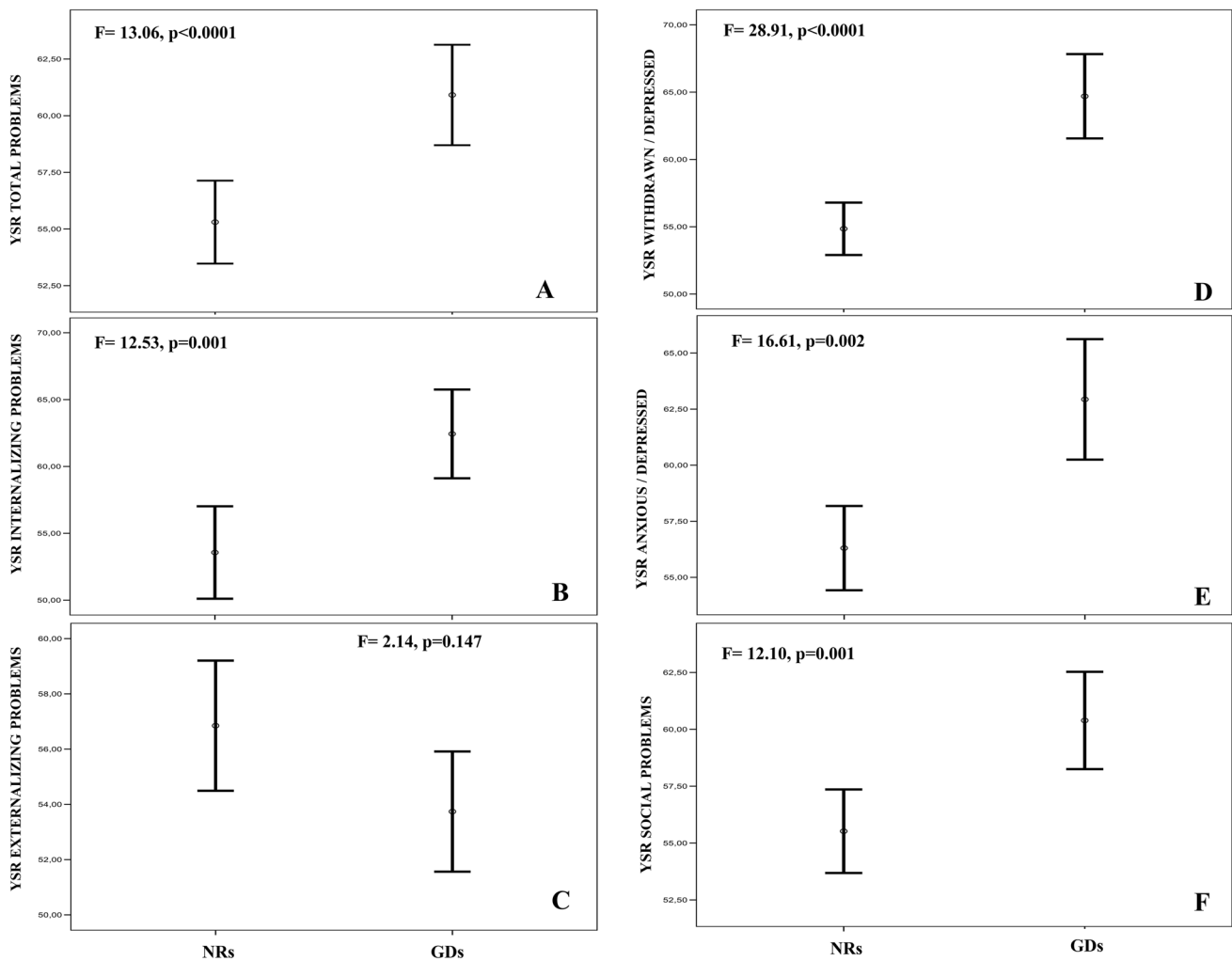


Fig. 1 YSR “total problems”, “internalizing problems”, “externalizing problems” scales (a–c) and “withdrawn/depression”, “anxiety/depression”, and “social problems” subscales (d–f) in GDs and NRs.

Statistics: Univariate analysis of variance (ANCOVA) entering age as covariate. YSR Youth Self Report, GDs adolescents with gender dysphoria, NRs non-referred adolescents

“weight phobia”, “depersonalization”, “avoidance”, “compulsive self-monitoring”, “body image concerns”, and “positive symptoms distress index”) were significantly higher in the GD group compared to the NR one (all $p < 0.0001$, Fig. 3b–g). In addition, GDs showed significantly higher BUT scores when compared with the normative ones (data not shown [26]).

Moreover, GIDYQ-AA score was significantly lower (i.e., a higher level of gender dysphoria symptoms) in GDs vs. NRs (2.27 ± 0.40 vs. 4.92 ± 0.34 , $F = 1137.77$, $p < 0.000$). Similar results were observed for the subjective indicator of GD (GIDYQ-AA, $F = 639.62$, $p < 0.0001$), as well as for the social, somatic, and legal GD indicators (all $p < 0.0001$).

When the GD sample was stratified according to gender, no significant differences were found in the YSR, MAST, BUT, and GIDYQ-AA scores between MtFs and FtMs (all $p > 0.05$).

Finally, Table 2 shows body uneasiness related to different body parts as derived by ANCOVA and Post-hoc Tukey *B* test. Results were obtained by stratifying the total sample according to gender (male NRs, female NRs, MtFs, and FtMs). MtFs showed significantly higher distress as compared to NRs in all the body areas (all $p < 0.0001$), with the exception of height. In addition, MtFs scored higher than FtMs in specific body areas (head shape, skin, eyes, nose, chin, mustache, beard, shoulders, arms, and knees; all $p < 0.005$). When FtMs were considered, they scored higher in height, breast, hips, and buttocks when compared to both MtFs and NRs (all $p < 0.0001$).

Correlates of behavior and emotional problems and body uneasiness in GDs

Considering the GD sample, the YSR total problems *T* score showed a significant correlation with general body uneasiness levels (BUT-GSI, $r = 0.338$, $p = 0.022$, Fig. 4a), as well as with body dissatisfaction related to weight phobia (BUT-WP, $r = 0.321$, $p = 0.030$, Fig. 4b) and avoidance (BUT-AV, $r = 0.353$, $p = 0.016$, Fig. 4c).

Furthermore, BUT-GSI showed a significant correlation with the legal indicator of gender dysphoria (GIDYQ-AA, $r = -0.398$, $p = 0.006$, Fig. 5a). In addition, BUT-GSI was positively correlated with MAST repulsion by life ($r = 0.543$, $p < 0.001$, Fig. 5b) and negatively with attraction to life ($r = -0.498$, $p < 0.0001$, Fig. 5c).

All the aforementioned associations were confirmed at multiple linear regression analyses, after adjusting for age.

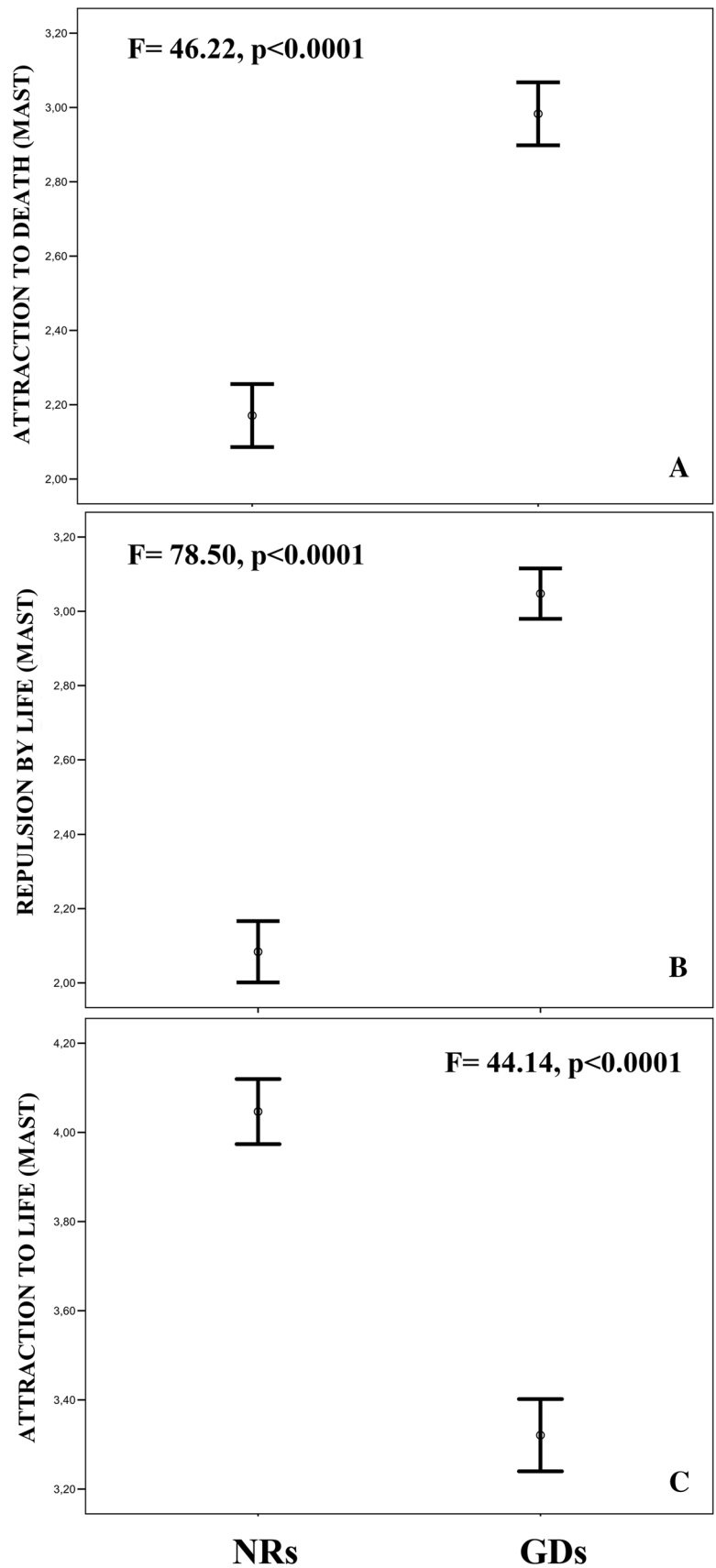
Discussion

To the best of our knowledge, this is the first study performed in Italy presenting data on the psychopathological correlates of a GD adolescent population. In particular, we provided information regarding body uneasiness, suicidal risk, and psychological distress, which represent relevant moderators of outcome for medical treatment options [37–39]. The main results of the present study are the following: (1) Italian adolescents with GD show significantly higher body uneasiness levels compared with the a group of NR youths of similar age; (2) Italian adolescents with GD show higher suicidal risk than the comparison group; (3) a sex ratio favoring MtFs was found; and (4) psychological problems (higher levels of internalizing condition vs. NR) and social functioning (poorer vs. NR) of Italian adolescents with GD confirm results from the previous studies from different countries.

Even though the centrality of body image concerns in GD development has frequently been reported [16–23], to date, no study had specifically focused on body dissatisfaction in adolescents with GD. Our data show that body-related uneasiness is significantly higher in adolescents with GD compared to a sample of NR pairs. A similar figure was observed when GDs’ BUT scores were compared to normative ones. In addition, when the GD sample was stratified according to gender, a significantly higher distress was observed in sexual dimorphic body parts (e.g., head shape, skin, nose, chin, mustache, beard, shoulders, and arms in MtFs vs. FtMs and in height, breast, hips, and buttock in FtMs vs. MtFs). These body parts are, in fact, gender-related and, once modified by pubertal modifications, they may prevent the adolescent with GD from intermingling with peers and may impair social relationships. Furthermore, the positive correlation observed between body uneasiness levels and poor psychological functioning highlights the important role of body image concerns on psychological well-being. Indeed, body dissatisfaction assessment should be part of clinical practice as it is associated with several psychological outcomes, such as poor self-esteem, sexual dysfunctions, as well as pathological eating behaviors, which may arise as a dysfunctional coping strategy to modify one’s body shape or weight [23, 40, 41]. Therefore, body uneasiness could be responsible of a series of different psychiatric co-occurring problems, including depression, eating disorders, and social phobia, which could interfere with both the psychological and medical treatments in GD adolescents.

In line with international recommendations [3, 42, 43], these results stress the importance of providing the early medical interventions, such as pubertal suppression with gonadotropin-releasing hormone analogues, in selected cases of GD in adolescence. Puberty suppression is, in fact,

Fig. 2 MAST “attraction to death” (a), “repulsion by life” (b), and “attraction to life” (c) scales in GDs and NRs. Statistics: univariate analysis of variance (ANCOVA) entering age as covariate. *MAST* Multi-Attitude Suicide Tendency Scale, *GDs* adolescents with gender dysphoria, *NRs* non-referred adolescents



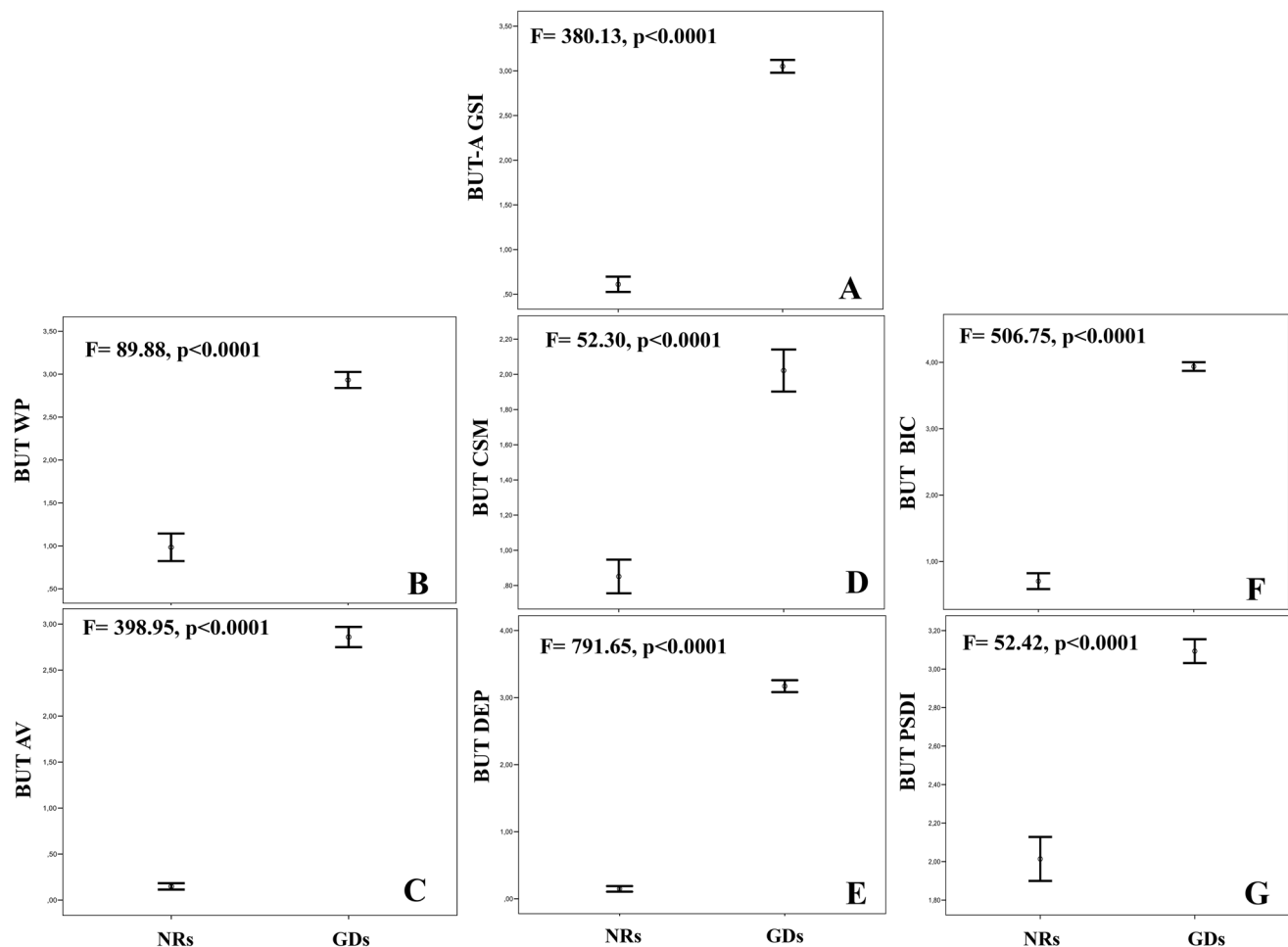


Fig. 3 BUT-Global Severity Index (BUG-GSI, **a**), “weight phobia” (BUT-WP, **b**), “avoidance” (BUT-AV, **c**), “compulsive self-monitoring” (BUT-CSM, **d**), “depersonalization” (BUT-DEP, **e**), “body image concerns” (BUT-BIC, **f**), and “Positive Symptoms Distress

Index” (BUT-PSDI, **g**) in the GD group compared to the NR one. Statistics: univariate analysis of variance (ANCOVA) entering age and BMI as covariate. *BUT* Body Uneasiness Test, *GDs* adolescents with gender dysphoria, *NRs* non-referred adolescents

described to be beneficial for GD adolescents by giving a relief of their prolonged distress and by improving quality of life [3, 38, 44]. Furthermore, delaying treatment until adulthood or even late adolescence may have negative consequences on a psychological and physical level. Some GD adolescents may, in fact, develop psychiatric co-occurring problems such as anxiety or depression.

Regarding suicidal risk, we have here demonstrated, for the first time, that Italian adolescents with GD are significantly more vulnerable to suicide than NR ones using a specific assessment tool for suicide risk (the MAST, [28–31]). The previous studies, focusing on the pediatric population, have reported self-harm and suicidality as part of the clinical presentation of a considerable part of gender-referred children with GD aged 5–11 years [45]. In addition, a higher completed suicide rate has been reported in adults with GD, as compared to those without GD [11, 46, 47] Regarding adolescents, prevalence of

self-harm and suicidal thoughts in clinical referred samples has been reported [48, 49] without comparison to a control group. Aitken [45] cited the unpublished data by Steensma et al. [12] on the prevalence of self-harm/suicidality in clinic-referred adolescents with GD from Canada and The Netherlands and compared the prevalence rates with the standardization data for referred and NR youth. Adolescents with GD of the Toronto sample had the highest rate of self-harm/suicidality, whereas the Dutch youth with GD had a rate closer to the referred youth. All three of these groups had higher rates than the non-referred youth. The explanation why adolescents with GD are more vulnerable to suicide risk yields different hypotheses, with social ostracism being considered one of the main factors [45]. Other reasons may rely on the condition of GD itself as causing high levels of distress and impairment or on its link with co-occurring behavioral and emotional problems [45].

Table 2 Summary of means, standard deviations, and statistical differences in dislike of body parts (BUT-B) between male NRs (mNRs), female NRs (fNRs), MtFs, and FtMs, as derived by ANCOVA and post-hoc Tukey *B* test after adjustment for age and BMI

BUT Body parts	fNRs	mNRs	MtF	FtM	<i>F</i>	<i>p</i>
Height	1.14 ± 0.22	1.02 ± 0.28	0.95 ± 0.26	3.09 ± 0.23***	11.56	<0.0001
Head shape	0.10 ± 0.14	0.16 ± 0.17	2.10 ± 0.16***	0.27 ± 0.14	43.76	<0.0001
Skin	0.37 ± 0.18	0.22 ± 0.23	2.9 ± 0.20***	1.18 ± 0.19***	29.28	<0.0001
Hair	0.71 ± 0.20	0.42 ± 0.25	3.85 ± 0.24***	0.95 ± 0.20	37.00	<0.0001
Forehead	0.72 ± 0.12	0.68 ± 0.16	2.00 ± 0.15***	0.21 ± 0.13	57.64	<0.0001
Brows	0.72 ± 0.17	0.38 ± 0.21	1.90 ± 0.20***	0.66 ± 0.17	10.51	<0.0001
Eyes	0.14 ± 0.14	0.24 ± 0.17	1.85 ± 0.16***	0.77 ± 0.14***	36.34	<0.0001
Nose	0.93 ± 0.22	0.57 ± 0.28	2.90 ± 0.27***	1.10 ± 0.23	17.96	<0.0001
Lips	0.11 ± 0.15	0.22 ± 0.19	2.00 ± 0.18***	0.94 ± 0.15***	26.86	<0.0001
Mouth	0.14 ± 0.14	0.00 ± 0.17	1.09 ± 0.16***	0.93 ± 0.14***	11.60	<0.0001
Teeth	0.35 ± 0.18	0.45 ± 0.23	1.20 ± 0.21***	1.15 ± 0.19	10.75	<0.0001
Ears	0.11 ± 0.11	0.12 ± 0.14	1.05 ± 0.13***	0.11 ± 0.12	18.59	<0.0001
Neck	0.72 ± 0.12	0.10 ± 0.15	2.05 ± 0.14***	0.18 ± 0.12	70.36	<0.0001
Chin	0.75 ± 0.15	0.15 ± 0.18	1.95 ± 0.17***	0.72 ± 0.15	22.01	<0.0001
Moustache	0.64 ± 0.19	0.16 ± 0.25	4.99 ± 0.23***	1.75 ± 0.20***	91.73	<0.0001
Beard	0.18 ± 0.19	0.17 ± 0.23	4.99 ± 0.22***	1.18 ± 0.19***	117.75	<0.0001
Body hair	1.25 ± 0.24	0.82 ± 0.31	4.99 ± 0.29***	1.19 ± 0.25	47.42	<0.0001
Shoulders	0.18 ± 0.15	0.10 ± 0.18	2.89 ± 0.17***	1.12 ± 0.15***	45.05	<0.0001
Arms	0.28 ± 0.14	0.28 ± 0.17	1.94 ± 0.16***	1.22 ± 0.14***	19.42	<0.0001
Hands	0.28 ± 0.18	0.16 ± 0.23	1.84 ± 0.22***	1.97 ± 0.19***	19.54	<0.0001
Chest	0.94 ± 0.20	0.11 ± 0.26	3.06 ± 0.24***	2.95 ± 0.21***	29.43	<0.0001
Breast	0.86 ± 0.19	0.08 ± 0.24	2.95 ± 0.22***	4.76 ± 0.12***	105.50	<0.0001
Stomach	0.25 ± 0.19	0.10 ± 0.24	1.75 ± 0.22***	1.86 ± 0.19***	17.39	<0.0001
Belly	0.75 ± 0.20	0.27 ± 0.26	2.85 ± 0.24***	2.78 ± 0.21***	35.18	<0.0001
Genitals	0.73 ± 0.13	0.28 ± 0.17	3.95 ± 0.16***	4.20 ± 0.14***	180.74	<0.0001
Buttocks	0.46 ± 0.23	0.31 ± 0.29	1.89 ± 0.27***	3.10 ± 2.4***	26.46	<0.0001
Hips	0.28 ± 0.19	0.25 ± 0.25	0.99 ± 0.23***	3.17 ± 0.20	37.19	<0.0001
Thighs	1.03 ± 0.23	0.24 ± 0.29	2.10 ± 0.27***	3.06 ± 0.23***	22.93	<0.0001
Knees	0.50 ± 0.17	0.05 ± 0.21	1.10 ± 0.20**	0.34 ± 0.71	5.01	0.003
Legs	0.71 ± 0.20	0.50 ± 0.25	2.50 ± 0.23***	2.08 ± 0.20***	16.42	<0.0001
Ankles	0.75 ± 0.17	0.12 ± 0.22	1.05 ± 0.20**	0.26 ± 0.18	7.21	<0.0001
Feet	0.46 ± 0.16	0.12 ± 0.20	1.99 ± 0.19***	0.23 ± 0.16	24.35	<0.0001
Smell	0.36 ± 0.15	0.04 ± 0.19	2.90 ± 0.18***	0.16 ± 0.15	43.80	<0.0001
Body sounds	0.14 ± 0.14	0.11 ± 0.17	0.99 ± 0.16***	0.71 ± 0.14***	6.46	<0.0001
Sweating	1.07 ± 0.24	0.39 ± 0.31	3.04 ± 0.28***	1.27 ± 0.25	10.34	<0.0001
Blushing	0.82 ± 0.21	0.63 ± 0.26	1.90 ± 0.24**	1.06 ± 0.21	3.00	0.04

MtF male to female, FtM female to male

p* < 0.01; *p* < 0.001

Considering epidemiological data, the MtF:FtM sex ratio of the GD sample is 1:1.3. This value confirms the recent shift from a ratio favoring MtFs (prior to 2006) to a ratio favoring FtMs (2006–2013) [50]. The inversion of sex ratio recently reported may be related to the higher social stigma and difficulty in seeking professional help for transition experienced by natal boys compared to natal girls [50, 51].

Regarding psychological functioning, adolescents with GD showed significantly higher levels of “internalizing problems” according to the YSR scale, in particular in

terms of depression and anxiety, as compared to the control group. These results in an Italian sample are in line with worldwide data [37, 38, 48, 49, 52, 53], reporting higher prevalence rates of co-occurring psychiatric problems in referred gender dysphoric adolescents, as compared with the general population. One explanation of the higher degree of behavioral and emotional problems among adolescents with GD is likely due to the level of tolerance or acceptance of gender-variant behaviors in different cultures [2], which confirms the central role of homo- and transphobic attitudes towards gender non-conforming behaviors

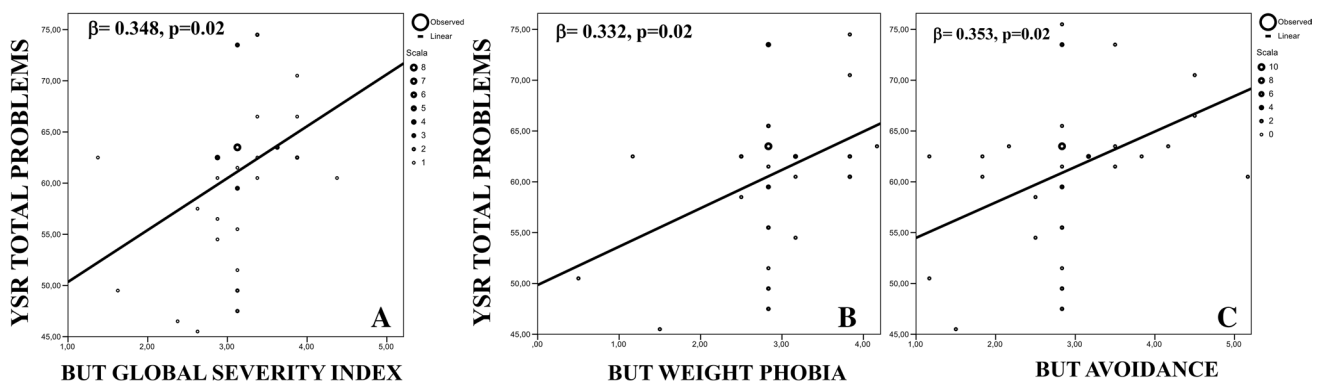


Fig. 4 Correlation between BUT Global severity Index, BUT weight phobia and BUT avoidance with YSR total problems in the GD sample (a–c). Statistics: linear regression analyses were used for multi-

variate analysis (adjusting for age and BMI). *BUT* Body Uneasiness Test; *GD* gender dysphoria

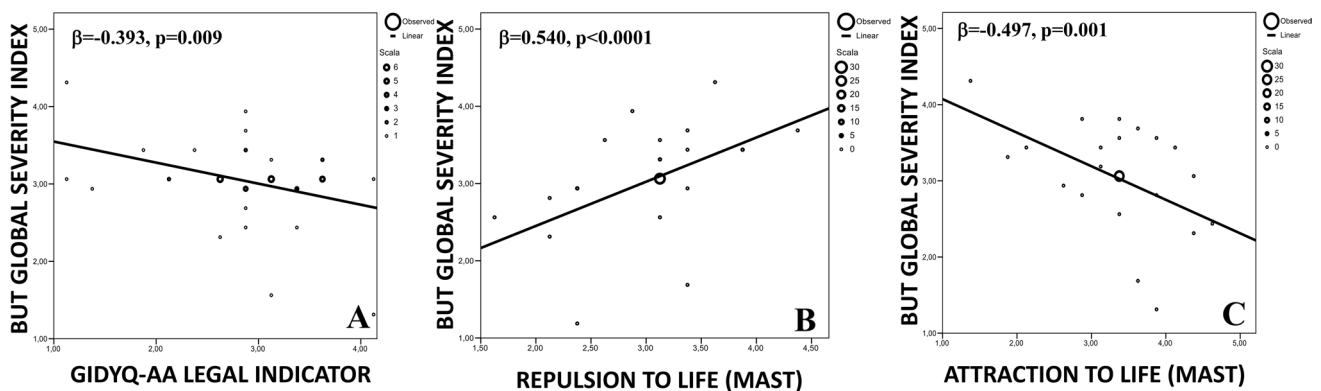


Fig. 5 Correlation between GIDYQ-AA legal indicator, MAST repulsion by life, MAST attraction to life with BUT Global Severity Index in the GD sample (a–c). Statistics: linear regression analyses were used for multivariate analysis (adjusting for age and BMI).

GIDYQ-AA Gender Identity Gender Dysphoria Questionnaire for Adolescents and Adults, *MAST* Multi-Attitude Suicide Tendency scale, *BUT* Body Uneasiness Test, *GD* gender dysphoria

[13–15]. Accordingly, a recent study showed that psychological distress and functional impairment in GD persons are more strongly predicted by experiences of social rejection and violence than by gender incongruence per se [54]. This hypothesis has been confirmed also by results from a series of cross-national, cross-clinic comparative studies [2] between the Toronto and Amsterdam clinics, where GD adolescents from the Canadian clinic showed significantly more co-occurring internalizing behavioral and emotional problems. This explanation could be applied also to our data, considering that the Italian context has been described as discriminating and with high levels of homo/transphobia [13–15, 55, 56]. When social functioning was analyzed, adolescents with GD had significantly higher rates in the “social problems” YSR subscale when compared to the control group. This data confirm results from other studies where social ostracism and peer victimization have been described to be risk factors for co-occurring general psychopathology in gender non-conforming youth [57, 58].

Furthermore, in a recent study [11], adolescents with GD resulted more vulnerable to bullying experiences, reporting significantly higher rates of gender/sexual forms of discrimination when compared to both clinical and non-clinical control groups. These findings have clinical implications suggesting the importance of reducing psychosocial vulnerability in gender non-conforming youth and improving knowledge and acceptance on gender non-conforming behaviors and feelings on cultural and social levels [2, 11].

Some limitations of this study have to be considered. First, regarding the sample characteristics, sample size is small and the possibility of type II errors should be considered. In addition, our sample is mainly made up of adolescents evaluated at a hospital-based clinic making it difficult to generalize results to patients who either seek private health care services or to adolescents who do not come to the professionals’ attention. However, GD is described as a rare condition and because of the difficulty in coming out for transgender adolescents due to social ostracism as

previously described, subjects with gender issues still do not always seek help. From this perspective, the multi-centric nature of the present study and the participation of gender clinics located in the northern, central, and southern part of the country is a considerable strength. Another limit is in the research method that relied on self-report measures by the adolescents without comparing these data with more information from other sources such as parents and/or teachers. Finally, validation studies for a MAST Italian version are missing.

In conclusion, the present study confirmed the importance of an accurate psychopathological assessment in adolescents with GD. Only a multidisciplinary approach integrating psychopathological and medical competences could challenge the profound distress in the early GD, associated with internalizing problems, body uneasiness, and high suicidal risk. This position is taken for granted in several western countries. However, there is an urgent need for this kind of approach in Italy, as the current Italian context has, in fact, been described as being poorly able to properly face the needs of transgender youth due to a lack of specialized services and to the high stigma associated with an atypical gender development or expression [3].

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval The study protocol was approved by the institution's Ethics Committee.

Informed consent All patients have provided their written informed consent to participate to the study.

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