



# The nature of co-morbid psychopathology in adolescents with gender dysphoria

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## ABSTRACT

Gender-referred adolescents (GR) have been reported to present with considerable psychiatric symptomatology compared to their age-peers. There is, however, little research on how they compare to adolescents referred due to mental health problems (MHR). We set out to compare psychopathology in adolescents referred to our specialized gender identity unit ( $n = 84$ ) and adolescents referred to a general adolescent psychiatric clinic ( $n = 293$ ) in a university hospital setting in Finland. Of the GR adolescents, 40.9% had not received any psychiatric diagnosis during adolescence. Eating disorders were less common in the GR than in the MHR group, but otherwise the prevalences of disorders did not differ statistically significantly. At the symptom level, the GR adolescents displayed significantly more suicidal ideation and talk and less alcohol abuse and eating disorder symptoms than did the MHR adolescents, but otherwise their symptom profiles were comparable. Additionally, the GR adolescents had significantly fewer total externalizing symptoms than did the MHR adolescents. Adolescents seeking gender affirming treatments present with psychiatric symptoms and disorders comparable to those seen among adolescent psychiatric patients. Medical gender affirming care may not be a sufficient intervention for treating psychiatric comorbidities of adolescents with gender dysphoria.

## 1. Introduction

Gender identity refers to a person's inner sense of their gender, which is a concept distinct from the sex assigned at birth based on biological characteristics. This inner sense of gender does not necessarily align with the birth-assigned sex (Goldhammer et al., 2019). This gender incongruence may result in distress and/or a need to seek treatment to modify bodily features to correspond with the inner sense of gender. The term gender dysphoria (GD) can refer both generally to the distress related to one's sex assigned at birth and specifically to the diagnosis introduced in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013). In this article, we use gender dysphoria in its broader, non-diagnostic meaning. We also use the umbrella term transgender to refer to gender minority identities in general and the term cisgender to denote a gender identity that corresponds with the person's birth-assigned sex.

The number of adolescents seeking treatment in specialized gender identity services has risen considerably during the past decade both in

North America and Europe, including Finland (Aitken et al., 2015; Wood et al., 2013; Kaltiala et al., 2019). Population studies suggest that up to 4% of adolescents identify as transgender (Connolly et al., 2016; Zucker, 2017; Kaltiala-Heino and Lindberg, 2019), and the proportion of adolescents experiencing feelings of GD appears to have increased (Kaltiala-Heino et al., 2019). At the same time, the demographics of this population have changed from predominantly prepubertal birth-assigned males to predominantly adolescent birth-assigned females with postpubertal onset of GD (Aitken et al., 2015; Kaltiala et al., 2019).

Almost half of the adolescents with features of GD in specialized gender identity services suffer from clinically significant psychiatric symptoms (e.g., Spack et al., 2012; Zucker et al., 2012; Kaltiala-Heino et al., 2015; Holt et al., 2016; de Vries et al., 2016), and according to some studies, even to an extent comparable to those of adolescents seeking psychiatric treatment (Zucker et al., 2012; de Vries et al., 2016; Stewart et al., 2021), and more than same-aged peers in primary health care (Becerra-Culqui et al., 2018). The most frequently reported

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disorders among adolescents with features of GD in the clinical setting are depression and anxiety disorders, and self-harm and suicidal ideation/behaviour are reported at least 2–3 times more commonly than among cisgender peers (Connolly et al., 2016; Kaltiala-Heino et al., 2018). Similarly in community samples, transgender identifying adolescents experience mental health problems much more commonly than their cisgender peers (Clark et al., 2013). In addition, an overrepresentation of eating pathology has been suggested among adolescents with features of GD or transgender identity both in clinical samples (Holt et al., 2016) and in general population (Diemer et al., 2015; Roberts et al., 2021). Additionally, a vast overrepresentation of autism spectrum disorders has been reported among these adolescents (Kaltiala-Heino et al., 2015; Holt et al., 2016; Chen et al., 2016; van der Miesen et al., 2016). Some studies have further observed increased substance abuse and risky behaviour in these populations (Olson et al., 2015; Day et al., 2017; Fish et al., 2021; Rider et al., 2019). It has been suggested that the sex differences in adolescent mental disorders, i.e., the overrepresentation of internalizing symptoms and disorders in females and of externalizing symptoms and disorders in males, may be reversed among adolescents with GD (Skagerberg et al., 2013, de Vries et al., 2016; de Graaf et al., 2018).

According to the minority stress theory, chronic stress produced, for example, by individual and structural discrimination may result in mental and physical health disparities (Meyer, 2003). The higher prevalence of poor mental health among transgender people has been suggested to be related to increased exposure to stigma and minority stress when compared to cisgender individuals (White Hughto et al., 2015; Chodzen et al., 2019). Furthermore, a connection between low self-esteem and psychopathology in transgender clinic-referred children and adolescents has been suggested, with higher level of self-esteem among birth-assigned females than males (Alberse et al., 2019), which may indicate that masculine behaviour is considered more acceptable in females than feminine behaviour in males, as some studies suggest (Sandnabba and Ahlberg, 1999; Ristori and Steensma, 2016). These studies are, however, cross-sectional and do not provide evidence on the longitudinal effects of minority stress on transgender adolescents. Another important factor affecting adolescent mental health is family adversities (Lee et al., 2013). Some studies have reported a higher presence of family adversities both in adolescents attending general mental health care services (Reay et al., 2015) and in adolescents attending gender identity services (Kozłowska et al., 2021).

The minority stress model suggests that psychiatric comorbidities develop as a consequence of discrimination and stress related to transgender identity and GD. Family conflict and parental rejection as a reaction to disclosure of transgender identity are risk factors for negative mental health outcomes in transgender adolescents (Mayer et al. 2014; Bosse et al., 2022). Psychiatric comorbidities have also been understood as a reaction to the developing sex characteristics that are in conflict with the inner gender experience (de Vries et al., 2016; Cohen-Kettenis et al., 2008) and consequently, gender affirming treatments are expected to relieve the comorbidities. However, mental disorders and family adversities may also precede the onset of GD in adolescence (Kaltiala-Heino et al., 2015; Kozłowska et al., 2021).

There have not, at least to the best of our knowledge, been many studies comparing the psychiatric symptomatology of adolescents with features of GD to those found in adolescents referred to general psychiatric care. Further information on the similarities or dissimilarities between the psychopathology of gender-referred and clinically referred adolescents is needed in order to redirect the mental health resources to better meet these groups' treatment needs. If the psychopathology were parallel in these two groups, the need for general psychiatric treatment of adolescents with features of GD would be underscored instead of relying on medical gender-affirming treatments as the only way to alleviate all the psychiatric symptomatology. Additionally, the clinical data has mainly focused on the internalizing disorders or symptoms of these adolescents and largely ignored possible externalizing problems,

on which more information is needed in order to form a comprehensive understanding that guides towards optimal treatment. Since behaviour considered feminine in birth-assigned males may be less readily tolerated than behaviour seen as masculine in birth-assigned females, one could expect that transgender birth-assigned females might present with less or slighter psychopathology. Possible reversal of sex differences in mental disorders could point to the primacy of gender experience over biology in the development of mental disorders, with implications for understanding GD and enhancing treatment planning. In order to shed further light on the treatment needs of adolescents with features of GD, we conducted this comparative study and sought answers to the following research questions:

Do adolescents referred for psychiatric assessment due to features of GD and adolescents referred to psychiatric treatment differ regarding

- 1) the number and nature of their psychiatric disorders and psychiatric symptoms and
- 2) family adversities that may dispose to psychiatric disorders and symptoms,

and

- 1) do they, in their diagnostic and symptom profiles, bear a greater resemblance to mental health referred adolescents of the same or the opposite sex?

## 2. Materials and methods

This study was conducted as a retrospective chart review of a sample of consecutively gender-referred adolescents in a gender identity unit and a comparison sample of mental health referred adolescent psychiatric outpatients.

The gender-referred (=GR) sample comprised 84 adolescents with features of GD attending the Tampere University Hospital gender identity unit seeking gender affirming treatments during the years 2018–2020 and whose gender identity assessment (at least the initial stage) had been completed by the data collection time in 2020–2021. The role of this nationally centralized unit is to carry out a comprehensive assessment of eligibility for hormonal and later surgical interventions of minors presenting with features of GD. The assessment consisted at minimum of a review of their earlier health and social welfare records as well as structured and free-format initial interviews with the adolescents and their guardian(s) conducted by members of the multi-disciplinary team. The adolescents' earlier health and social welfare records were requested from their previous health and social care contacts with the adolescents' and the guardians' due permission. Based on the record information and the initial clinical interviews, the assessment procedure was either continued, with additional interviews and psychological tests conducted by the team members, or discontinued. The present study utilised earlier records and case files of the initial assessments, as well as subsequent assessments if available.

The comparison sample included 293 adolescents referred to psychiatric treatment in the adolescent psychiatric outpatient unit in Tampere University Hospital during the years 2004, 2014 and 2017 (=mental health referred/MHR). The comparison data were originally collected in order to ascertain if the symptom profiles of adolescent psychiatric patients had changed during the 2000s (Reinsalo and Kaltiala, 2019), including the 100 first new admissions of each study year in the sample. All medical and social welfare records on these adolescents were used in data collection.

The study was duly approved by the Ethics Committee of the Tampere University Hospital and the appropriate research permission was obtained from the Tampere University Hospital administration.

2.1. Measures

Data were collected using a structured data collection form. The sociodemographic variables included were sex assigned at birth, and age and family constellation on admission to the gender identity unit (living with both parents/with one parent/in foster care/without a guardian). Specialist level psychiatric care and child welfare contacts during adolescence (age 13≥) prior to or at the time of the first contact to the gender identity unit were also recorded.

Psychiatric diagnoses during adolescence were recorded and are reported according to the International Statistical Classification of Diseases (ICD-10) (World Health Organization, 2004) at the level of main classes (i.e., F10–19, F20–29, F30–39...) (Table 1).

Psychiatric symptoms during adolescence were recorded according to a 21-item symptom checklist (Reinsalo and Kaltiala, 2019; Kaltiala-Heino, 2010; Lindberg et al., 2012) developed in the study clinic for service development and research purposes (Table 3). Each symptom was recorded as present / absent.

Family adversities were recorded with a 10-item checklist similarly developed for describing and comparing patient groups, each adversity noted as present / absent (Reinsalo and Kaltiala, 2019; Kaltiala-Heino, 2010; Lindberg et al., 2012) (Table 2).

Similar data had previously been collected from the case files of the MHR adolescents (Reinsalo and Kaltiala, 2019).

2.2. Statistical analyses

Sociodemographic, symptom and family variables and diagnoses were compared between GR and MHR adolescents using cross-tabulations with chi-square statistics. Symptom profiles were likewise compared between GR birth-assigned females and (1) females and (2) males in the MHR sample, and GR birth-assigned males and (1) males and (2) females in the MHR sample. Using Bonferroni correction for multiple comparisons, the cut-off for statistical significance was set at  $p < 0.002$ .

Differences between the GR and MHR samples in diagnoses, symptoms and family adversities were next analysed using logistic regression controlling for (1) age and sex assigned at birth, and (2) age, sex assigned at birth, family constellation and child welfare interventions during adolescence.

Finally, total, internalizing, externalizing and other symptom scores (see Table 3) were compared between GR birth-assigned females/males

and both sexes in the MHR sample using ANOVA.

3. Results

3.1. Group descriptions

The majority of the adolescents in both the GR and the MHR groups were birth-assigned females, with a greater majority in the GR group (84.5% vs. 64.2%,  $p < 0.001$ ). The GR group had a higher mean(sd) age than the MHR group (16.2(1.3) vs. 15.6(1.6) years,  $p = 0.002$ ). Most were living with at least one parent (GR 89.2% vs. MHR 80.9%,  $p = ns$ ). The MHR adolescents had more often been placed in foster care (13.3% vs. 3.6%,  $p = 0.04$ ) and been in contact with child welfare services (44.0% vs. 29.3%,  $p = 0.01$ ). These characteristics differing by group were controlled for in multivariate analyses.

In the GR group, mental health care services had been used in childhood by 34.5%, and 82% in adolescence. Furthermore, 69.9% of the GR group had received specialized psychiatric care as adolescents and 17.9% had been inpatients on an adolescent psychiatric ward. Similar data were unfortunately not available on the MHR group.

3.2. Diagnostic and symptom profiles among the gender-referred and mental health referred groups

The GR adolescents had no psychiatric diagnosis significantly more often than the adolescents referred to general psychiatric care ( $p < 0.001$ ) (Table 1). The MHR group had more often been diagnosed with an eating disorder (ED) (F50–59) ( $p < 0.001$ ). Otherwise, there were no statistically significant differences in diagnoses distributions (Table 1).

In bivariate analyses, the GR adolescents had numerous internalizing symptoms statistically significantly more commonly and less commonly many externalizing symptoms (Table 3). However, when confounders were controlled for, in the GR group the differences persisted only in more common suicidal ideation and talk and less common alcohol abuse and eating disorder symptoms (Table 3).

The GR and MHR groups did not differ in mean total, internalizing or other symptom scores, but the GR group had a lower mean(sd) externalizing symptoms score (0.9(1.1) vs. 2.3(2.4),  $p < 0.001$ ) (Table 4).

3.3. Family adversities

In bivariate analyses, several family adversities were less common

Table 1

Psychiatric diagnoses among gender-referred and clinically referred adolescents. (% , n/N; OR (95% CI)) according to being gender-referred, controlling for a) age and sex, and b) age, sex, accommodation and family risk factors.

	Gender-referred	Mental health referred	p	OR (95% CI) Model1 controlled for sex and age	p	OR (95% CI) Model2 controlled for age, sex, family constellation and child welfare contacts	p
No F00–F99 diagnosis*	40.9 (36/88)	7.2 (21/293)	<0.001	10.1 (5.1–20.7)	<0.001	6.5 (3.0–13.7)	<0.001
Substance use disorders F10–19	-	2.4 (7/293)	0.2	-	-	-	-
Schizophrenia spectrum disorders F20–29	-	4.1 (12/293)	0.04	-	-	-	-
Mood disorders F30–39	34.1 (30/88)	40.3 (118/293)	0.2	0.6 (0.4–1.2)	0.06	0.9 (0.5–1.6)	0.7
Anxiety disorders F40–49	25.2 (31/88)	39.2 (115/293)	0.3	0.8 (0.4–1.3)	0.3	0.9 (0.5–1.5)	0.6
Somatoform disorders F50–59	2.3 (2/88)	18.4 (54/293)	<0.001	0.07 (0.02–0.3)	<0.001	0.04 (0.01–0.2)	<0.001
Personality disorders F60–69*	2.3 (2/88)	2.0 (6/293)	0.6	1.8 (0.3–10.5)	0.5	6.3 (0.7–58.0)	0.1
Mental retardation F70–79	-	2.0 (6/293)	0.2	-	-	-	-
Pervasive developmental disorders F80–89	5.7 (5/88)	16.4 (48/293)	0.006	0.6 (0.2–1.6)	0.3	0.6 (0.2–1.6)	0.3
Emotional and behavioural disorders with onset in childhood F90–99	30.7 (27/88)	41.3 (121/293)	0.05	0.8 (0.5–1.3)	0.4	0.8 (0.4–1.4)	0.5

\*excluding F64.x

**Table 2**  
Family adversities among gender-referred and mental health referred adolescents. (%; OR (95%CI))

	Gender-referred n=84	Mental health referred n=293	p	OR (95% C) Model1 controlled for sex and age	p	OR (95% CI) Model2 controlled for age, sex, family constellation and child welfare contacts	p
Family violence	10.7	21.8	0.01	0.4 (0.2–0.9)	0.02	0.5 (0.2–1.1)	0.07
Parental substance use problems	2.5	24.6	<0.001	<b>0.08 (0.02–0.3)</b>	<0.001	<b>0.08 (0.02–0.3)</b>	<0.001
Parental divorce or separation	8.4	42.5	<0.001	<b>0.1 (0.06–0.3)</b>	<0.001	<b>0.09 (0.03–0.2)</b>	<0.001
Bereavement	3.7	17.7	<0.001	0.2 (0.05–0.6)	0.004	0.2 (0.05–0.6)	0.005
Parental severe somatic illness	1.2	16.7	<0.001	0.06 (0.007–0.4)	0.005	0.06 (0.008–0.4)	0.006
Parental severe mental disorder	7.2	31.1	<0.001	<b>0.2 (0.07–0.4)</b>	<0.001	<b>0.2 (0.06–0.4)</b>	<0.001
Severe financial difficulties	2.4	13.7	<b>0.002</b>	0.2 (0.04–0.6)	0.01	0.1 (0.01–0.5)	0.01
Severe problems related to siblings	5.1	12.3	0.04	0.4 (0.1–1.2)	0.1	0.4 (0.1–1.5)	0.09
(Suspected) sexual abuse within the family	-	2.7	0.14	-	-	-	-
Other*	14.8	17.1	0.39	0.8 (0.4–1.7)	0.6	0.9 (0.4–1.8)	0.7
Family adversities sum score (mean(sd))	0.54 (0.86)	2.00 (1.62)	<0.001				

\*miscellaneous

**Table 3**  
Symptom profiles of gender-referred and mental health referred adolescents. (%; OR (95% CI)).

	Gender-referred n=84	Mental health referred n=293	p	OR (95% CI) Model1 controlled for age and sex	p	OR (95% CI) Model2 controlled for age, sex, family constellation and child welfare contacts	p
suicidal ideation & talk <sup>a</sup>	70.2	50.5	<b>0.001</b>	1.8 (1.0–3.1)	0.04	<b>2.8 (1.6–5.2)</b>	<b>0.001</b>
suicide attempt <sup>a</sup>	10.7	8.9	0.37	1.0 (0.5–2.3)	0.93	1.1 (0.4–2.8)	0.9
self-harming behaviours <sup>a</sup>	61.4	39.2	<0.001	1.9 (1.1–3.2)	0.02	2.2 (1.2–4.0)	0.007
positive psychotic symptoms <sup>c</sup>	21.4	20.8	0.51	1.0 (0.6–1.9)	0.92	1.3 (0.6–2.6)	0.5
depression <sup>a</sup>	67.9	59.0	0.09	1.0 (0.6–1.7)	0.97	1.7 (0.9–3.0)	0.1
manic behaviour <sup>a</sup>	1.2	6.1	0.05	0.2 (0.02–1.3)	0.09	0.3 (0.03–2.1)	0.2
non-physical aggression towards other people <sup>b</sup>	6.1	28.0	<0.001	0.2 (0.09–0.61)	0.003	0.3 (0.1–0.8)	0.01
temper tantrums <sup>b</sup>	3.7	24.6	<0.001	<b>0.2 (0.05–0.5)</b>	<b>0.002</b>	0.2 (0.05–0.6)	0.008
violent behaviour towards other people <sup>b</sup>	6.2	19.5	<b>0.002</b>	0.4 (0.2–1.2)	0.10	0.5 (0.2–1.4)	0.2
breaking and destroying property <sup>b</sup>	1.2	14.3	<0.001	0.1 (0.02–1.0)	0.05	0.2 (0.02–1.3)	0.09
inappropriate sexual behaviour <sup>b</sup>	-	7.5	0.003	-	-	-	-
alcohol abuse <sup>b</sup>	6.0	27.0	<0.001	<b>0.1 (0.06–0.4)</b>	<0.001	<b>0.2 (0.06–0.5)</b>	<b>0.001</b>
substance use <sup>b</sup>	1.2	11.9	<b>0.001</b>	<b>0.09 (0.01–0.7)</b>	<0.001	0.2 (0.02–1.3)	0.08
truancy/school refusal <sup>b</sup>	46.4	50.9	0.28	0.8 (0.5–1.2)	0.29	1.2 (0.7–2.0)	0.6
property crimes <sup>b</sup>	1.3	9.9	0.005	0.2 (0.02–1.3)	0.09	0.3 (0.03–2.3)	0.2
eating disorder symptoms <sup>a</sup>	16.0	26.3	0.04	<b>0.3 (0.2–0.7)</b>	<b>0.002</b>	<b>0.3 (0.1–0.6)</b>	<0.001
isolation <sup>c</sup>	23.5	16.4	0.10	1.7 (0.9–3.1)	0.11	1.9 (0.9–3.6)	0.09
impulse control problems <sup>b</sup>	16.0	31.5	0.004	0.6 (0.3–1.2)	0.1	0.7 (0.3–1.4)	0.3
running away <sup>b</sup>	-	9.6	<b>0.001</b>	-	-	-	-
anxiety <sup>a</sup>	90.5	69.3	<0.001	2.5 (1.1–5.6)	0.03	3.6 (1.5–8.4)	0.003
attention problems <sup>c</sup>	37.8	41.6	0.31	0.9 (0.5–1.5)	0.7	1.2 (0.7–2.1)	0.6
other	17.1	24.9	<b>0.001</b>	0.5 (0.3–0.9)	0.02	0.5 (0.2–0.9)	0.03

<sup>a</sup> internalizing  
<sup>b</sup> externalizing  
<sup>c</sup> other

among the GR adolescents than among the MHR group but the differences persisted only for parental divorce, substance use and mental disorders after controlling for confounders (Table 2).

### 3.4. Sex and gender differences

In the MHR group, females scored higher on internalizing symptoms and males scored higher on externalizing symptoms. In the GR group, the birth-assigned females scored higher on both dimensions (Table 4). GR birth-assigned females scored similarly to both sexes in the MHR

group on internalizing, and lower than either on externalizing symptoms. GR birth-assigned males scored lower than MHR females and equally to MHR males on internalizing, and lower than either on externalizing symptoms (Table 4).

## 4. Discussion

A considerable share of GR adolescents had not received any psychiatric diagnosis during their adolescent years, but they nevertheless presented with symptom profiles very similar to those among MHR

**Table 4**

Total, internalizing, externalizing and other symptom scores by sex among gender-referred (GR) and mental health referred (MHR) adolescents. (Mean(sd))

	GR assigned female n=71	GR assigned male n=13	MHR female n=188	MHR male n=105	p, GR ass. female vs. MHR females	p, GR ass. female vs. MHR males	p, GR ass. male vs. MHR females	p, GR ass. male vs. MHR males
Total symptom score (range 0–22)	5.4 (2.9)	2.6 (2.7)	6.2 (3.4)	5.9 (3.9)	0.1	0.4	<0.001	0.004
Internalizing sum score (range 0–7) <sup>a</sup>	3.5 (1.4)	1.6 (1.7)	3.2 (1.7)	1.6 (1.7)	0.2	<0.001	0.001	0.9
Externalizing sum score (range 0–11) <sup>b</sup>	0.9 (1.1)	0.5 (0.7)	2.0 (2.2)	3.0 (2.6)	<0.001	<0.001	<0.001	<0.001
Other sum score (range 0–3)	0.9 (0.9)	0.5 (0.7)	0.8 (0.8)	0.8 (0.8)	0.3	0.8	0.2	0.08

<sup>a</sup> differences within groups (gender-referred, mental health referred) between sexes both statistically significant at level  $p < 0.001$ <sup>b</sup> differences within groups between sexes only statistically significant among the mental health group ( $p < 0.001$ )

adolescents. The GR adolescents had experienced fewer family adversities than the MHR adolescents. The GR adolescents resembled the MHR adolescents of their assigned sex on internalizing symptoms scores and scored lower than either sex on externalizing symptoms. Few studies have so far compared psychopathology among gender-referred adolescents with that of mental health referred adolescents. Our study adds to earlier research by focusing on both internalizing and externalizing psychopathology and controlling for family adversities.

#### 4.1. Psychiatric disorders and psychiatric symptoms among gender-referred and mental health referred adolescents

Unlike the MHR group, a considerable share of the GR adolescents had not received a psychiatric diagnosis in adolescence. This may suggest less severe psychopathology among GR adolescents than among those referred to adolescent psychiatric care. However, at the symptom level, there were few differences between the GR and the MHR when age, sex, family constellation and child welfare contacts were controlled for. The GR adolescents displayed suicidal ideation and talk more commonly and alcohol abuse and eating disorder symptoms less commonly than the MHR group. At the symptom dimension level, the GR group also scored lower on externalizing symptoms.

These results partly concur with those of earlier studies (Zucker et al., 2012; de Vries et al., 2016; Steensma et al., 2014), where gender-referred adolescents displayed behavioural and emotional difficulties mainly comparable to those in clinic-referred samples. The GR adolescents displayed fewer externalizing symptoms than the MHR adolescents, which is consistent with the studies suggesting that internalizing symptoms are more prominent than externalizing symptoms among GR adolescents (Zucker et al., 2012; de Vries et al., 2016; Skagerberg et al., 2013). Adolescent population studies have seldom focused on externalizing behaviours and symptoms in transgender adolescents, but the few that have report increased externalizing problems compared to those found in general population samples (e.g., Day et al., 2017; Fish et al., 2021; Rider et al., 2019). The transgender identifying adolescents in these population samples may represent a different group from adolescents with clinically significant GD, since externalizing psychopathology does not seem to be a major problem for the GR group.

The GR group presented less commonly than the MHR group with a diagnosis of ED or ED symptoms. Some clinical and population studies have reported an overrepresentation of eating pathology in transgender adolescents, at least when compared to general population samples (Holt et al., 2016; Diemer et al., 2015; Roberts et al., 2021). Diemer et al. (2015) hypothesized that ED behaviours in transgender adolescents could be attributed to attempts to accentuate or suppress gendered characteristics, to minority stress and/or to greater likelihood of contact with mental health professionals among transgender individuals. Case reports have suggested that GD may predispose to an eating disorder but also that an eating disorder may precede the onset of GD (Strandjord et al., 2015; Couturier et al., 2015; Romito et al., 2021), but the research available does not permit conclusions on causality. Gender

minority-specific factors are not easily disentangled from other factors underlying disordered eating (Romito et al., 2021). In both GD and ED, anxiety revolves around bodily characteristics. Comorbidity of GD and ED, and also similarities and differences between GD and ED in adolescence deserve more research.

Suicidal ideation has been reported in both clinical and population studies to be elevated among transgender identifying adolescents (Connolly et al., 2016; Stewart et al., 2021; Becerra-Culqui, 2018), and in this study, it appeared to be even more common than among mental health referred adolescents. Although in our study there was no difference between these groups in suicidal attempts, self-harming thoughts and behaviours have been shown to increase the risk of suicide (Castellví et al., 2017) so the pervasive suicidal ideation in this group warrants special clinical attention.

#### 4.2. Family adversities

Among the GR adolescents there were fewer family adversities possibly predisposing them to psychiatric disorders or symptoms than among the MHR. Given that the symptom profiles of the two groups were nevertheless fairly similar, family adversities may play a lesser role in the psychopathology of adolescents with GD than in adolescent psychiatry at large. However, more detailed phenomena, such as possible differences in family dynamics and parent-child relationships, could not be scrutinized with the methods applied in the present study.

#### 4.3. Symptom dimensions compared to controls of the same and opposite sex

Among the GR adolescents, birth-assigned females scored higher than birth-assigned males on both internalizing and externalizing dimensions, while among the MHR adolescents, females scored higher on internalizing symptoms and males on externalizing symptoms. GR adolescents resembled the MHR adolescents of their assigned sex on internalizing symptoms scores and scored lower than either sex on externalizing symptoms. This is partly in line with earlier findings, where internalizing symptoms mainly override externalizing symptoms in this group (e.g., de Vries et al., 2016; Skagerberg et al., 2013). Our results do not lend support to the possible inversion trend of the sex-typical pattern of internalizing vs. externalizing symptoms suggested in some studies (Skagerberg et al., 2013; de Vries et al., 2016; de Graaf et al., 2018), where GR birth-assigned females showed more externalizing problems and GR birth-assigned males more internalizing problems.

Disapproval of gender nonconforming behaviour and discrimination due to it have been suggested as important antecedents of excessive psychiatric morbidity among adolescents with GD (e.g., Goldhammer et al., 2019; Diemer et al., 2015; Chodzen et al., 2019). Minority stress seems to be especially related to suicidality and depression (e.g., Pelligane and Ciesla, 2022), which were higher in the GR group than in the MHR group or then equal. This may suggest that minority stress could

play a role in the development of mental disorders in GR, especially when the smaller number of family adversities in this group is also taken into consideration. However, masculinity in girls appears better tolerated in society than does femininity in boys (Sandnabba and Ahlberg, 1999; Ristori and Steensma, 2016). Therefore, the GR birth-assigned males could be expected to have more symptoms than females, but in this study, birth-assigned GR females scored higher on both internalizing and externalizing symptoms. This suggests that the factors underlying the mental health problems among adolescents with features of GD may be multifaceted (Romito et al., 2021; Kozłowska et al., 2021; Kaltiala-Heino et al., 2018) and not solely explained by the minority stress model. This underscores the importance of a comprehensive treatment approach with GR adolescents not neglecting this group's general psychiatric treatment needs at the expense of medical gender-affirming treatments. This does not undermine the importance of influencing societal attitudes in order to decrease the possible stress and discrimination experienced by these adolescents due to their minority status.

#### 4.4. Limitations of this study

The present study was based on a retrospective chart review. Retrospective data collection ensures that the phenomena studied are not influenced by the research itself. The approach is not prone to selection or recall bias but depends for its reliability on the quality of recording in clinical practice. The symptom checklist and the family adversity checklist focused, however, on phenomena important in adolescent psychiatry and it can be assumed that these were carefully elicited and recorded. They were rated as present if this was clearly so stated in the case files. Milder symptoms or family issues not actively distressing to the patients may go unnoticed in case files, but there is no reason to assume that this would cause systematic bias between the groups compared.

The number of birth-assigned males in the gender-referred group was small, and for them this affects the generalizability of the results. The small number of gender-referred adolescents assigned males at birth risks type II errors in statistical analyses; namely differences that do indeed exist may not reach statistical significance. Future research should pursue bigger samples of gender dysphoric birth-assigned male adolescents.

The possibility of impression management can likewise not be ruled out. Some adolescents in the gender-referred group may have attempted to suppress psychiatric symptoms in the hope of ensuring rapid access to medical gender reassignment.

#### 4.5. Conclusion

Adolescents with features of GD seeking gender affirming treatments seem to resemble adolescents referred to psychiatric care in number of symptoms, and the quality of these symptoms differs only slightly. Most remarkably, the clinically gender-referred adolescents presented with fewer psychiatric diagnoses, externalizing symptoms and ongoing family adversities. However, suicidal ideation was even more common than among mental health referred adolescents. Additionally, especially regarding the internalizing symptom dimension, they resembled mental health referred adolescents of the same birth-assigned sex. The results of this study underscore the wide-ranging and diverse psychiatric treatment needs present in this group of adolescents in general that should not be overlooked by relying solely on medical gender affirming care as the only available treatment option.

#### Authors' contributions

Milla Karvonen discussed the core ideas of the study, interpreted the results and had main responsibility of writing the manuscript. Max Karukivi and Kim Kronström discussed the core ideas and participated in interpreting the results and writing the manuscript. Riittakerttu Kaltiala

discussed the core ideas of the study, conducted the data analyses, participated in interpreting the results and writing the draft and supervised the work.

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#### Declaration of Competing Interest

The authors declare that they have no conflicts of interest.

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