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Adolescent development and psychosocial functioning after starting cross-sex hormones for gender dysphoria

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ABSTRACT

Purpose: To assess how adolescent development progresses and psychiatric symptoms develop among transsexual adolescents after starting cross-sex hormone treatment.

Materials and methods: Retrospective chart review among 52 adolescents who came into gender identity assessment before age 18, were diagnosed with transsexualism and started hormonal gender reassignment. The subjects were followed over the so-called real-life phase of gender reassignment.

Results: Those who did well in terms of psychiatric symptoms and functioning before cross-sex hormones mainly did well during real-life. Those who had psychiatric treatment needs or problems in school, peer relationships and managing everyday matters outside of home continued to have problems during real-life.

Conclusion: Medical gender reassignment is not enough to improve functioning and relieve psychiatric comorbidities among adolescents with gender dysphoria. Appropriate interventions are warranted for psychiatric comorbidities and problems in adolescent development.

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Introduction

Adolescence starts from puberty and ends approximately ten years later with the consolidation of adulthood personality structures [1,2]. The upsurge of steroid hormones in puberty initiates the maturation of the reproductive system and secondary sexual characteristics, and also vast structural and functional developments in the brain [3]. These biological changes are accompanied by extensive cognitive, emotional and social changes characteristic of adolescent development. The psychosocial developmental tasks of adolescence comprise sexual maturation (including adopting to the sexually maturing body and becoming capable of mutually satisfying, reciprocal romantic and sexual relationships), achieving independence from parents, and assuming an identity and responsible social role [1,4–6].

Gender Dysphoria (GD) refers to a marked discrepancy between the experienced gender and biological sex, causing clinically significant distress or impairment in functioning (DSM-5) [7]. Individuals with GD often wish to obtain hormonal and surgical treatments to align their body with the experiences gender. In ICD-10 the corresponding diagnosis is Transsexualism (ICD-10) [8].

Favourably progressing adolescent development manifests in the adolescent's functioning in relation to her/his own sexually maturing body, parents, peers, romance and sexuality, and school/future career [4,9,10]. The literature exploring adolescent development and functioning among adolescents

with gender dysphoria and/or transgender identity is scarce and scattered. The sexually maturing body is a core challenge for adolescents suffering from gender dysphoria. A recent review suggested that adolescent gender dysphoria/transgender identity is associated with both negative (rejection, bullying) and positive (closer relationship, inclusion, attention) features in parent and peer relationships, both delayed and advanced for age or risky sexual behaviours, and with school-related challenges that are primarily assumed to relate to prejudice and peer rejection [10].

Psychiatric comorbidities, particularly depression, anxiety disorders and autism spectrum disorders as well as suicidality and self-harming behaviours are common among adolescents seeking gender reassignment [10]. Psychiatric comorbidities cannot automatically be assumed to be secondary to gender dysphoria [11] and do not necessarily remit due to sex reassignment [12].

During the past ten years the number of adolescents contacting gender identity services in order to seek for medical gender reassignment has increased across Western countries [13–16]. The reasons for this are not known [10].

Medical approaches to adolescent gender dysphoria may comprise halting/delaying the physical maturation (puberty blocking), and cross-sex hormonal treatments. Surgical treatments are mainly available for legal adults [17,18]. Medical gender reassignment is expected to alleviate gender dysphoria, psychiatric comorbidities and related

psychosocial problems. Initial studies have suggested that puberty blocking with GnRH analogues may reduce psychiatric symptoms and improve functioning in gender dysphoric adolescents [19,20], but follow-up studies assessing the effectiveness and safety of hormonal interventions initiated during the developmental years are, however, scarce and biased by methodological problems to the extent that a recent meta-analysis concluded that they must be considered experimental [21,22]. There is an urgent need for follow-up studies on the outcomes of gender identity based hormonal interventions initiated during adolescent development.

The aim of this study was to evaluate the adolescent development of young people diagnosed with transsexualism and offered cross-sex hormonal interventions in one of the two gender identity units for minors in the period 2011–2017. We set out to evaluate the psychosocial functioning and need for psychiatric treatment of this patient group during the gender identity diagnostic phase and after about a year on cross-sex hormone treatment. We expected to see improvements in psychosocial functioning and a decrease in need for psychiatric treatment after starting the hormonal treatment that results in the desired changes in secondary sexual characteristics, which expectedly alleviates gender dysphoria.

Materials and methods

In Finland, the gender identity assessments required in order to proceed to medical sex reassignment interventions are centralized to two of the five university hospitals in the country. After the diagnostic assessments, legal sex change can take place after a period of about a year on cross-sex hormonal treatments, the so-called real-life phase of living in the desired role. Diagnostic assessments in Finnish health care take place according to ICD-10 [8]. Legal sex change and surgical treatments require the patient to have achieved legal majority (18 years). To proceed to legal sex change, the patient has to obtain a certificate from the gender identity unit that carried out the primary diagnostic assessments and from the other gender identity service (second opinion). Gender identity assessments for minors were initiated in 2011.

The study comprises a retrospective chart review of adolescents referred to one of the two gender identity service facilities for minors in Finland (Tampere University Hospital, Department of Adolescent Psychiatry) before age 18, who had been diagnosed with transsexualism and proceeded to cross-sex hormonal treatments and who had completed a follow-up of approximately a year after starting on cross-sex hormones (real-life phase).

The assessments conducted by the gender identity team comprise structured and free format assessments and interviews by a multi-disciplinary team and an evaluation of the adolescent's existing psychiatric and medical files [11]. Two of the authors (RK, MT) were involved in the clinical assessments of all the gender-referred adolescents during the study period. The research data was collected retrospectively

from the case files by a junior researcher (EH) trained and supervised by the first author. All information available after the clinical evaluations was used and the data was collected with help of a structured data collection form until the referral for the second opinion in the other adolescent gender identity unit was written. The study received approval from the ethics committee of Tampere University Hospital.

Between 2011 and 2017, 57 adolescents had been diagnosed with F64.0, transsexualism, and had been offered an opportunity to start hormonal sex reassignment. One of them did not want any treatment, two withdrew and two had started hormonal treatments but had not yet completed the real-life phase at the end of 2017. Thus, 52 patients were included in the study. Of these 11 were birth assigned males (transfemales) and 41 birth assigned females (transmales). They had a mean (sd) age of 18.1 (1.1) years at diagnosis, range 15.2–19.9 years (no difference between sexes).

Measures

Indicators of adolescent development

Adolescent development was evaluated in terms of age-appropriate living arrangements, peer relationships, school/work participation, romantic involvement, competence in managing everyday matters and need for psychiatric treatment.

Living arrangements were classified as (1) living with at least one parent/guardian, (2) living in a boarding school, with an adult relative, in some form of supported accommodation or the like, where supervision and guidance by a responsible adult is provided, (3) independently alone or in a shared household with a peer, (4) with a romantic partner. In the analyses dichotomized living arrangements (a) during gender identity assessment and (b) during the real-life phase living with (a) parent(s)/guardian(s) vs. in other arrangements. In Finnish culture, minors younger than 18 years usually live in the parental home, but leaving the parental home takes place earlier than in the majority of EU countries. Of young people aged 20–24, about a fourth are living in the parental home in Finland [23,24]

Peer relationships were classified as follows: (1) socializes with friends in leisure time, outside of activities supervised by adults, (2) socializes with peers only at school or in the context of rehabilitative activity, (3) spends time close to peers, for example in school or rehabilitative activity, but does not connect with them, (4) does not meet peers at all. In the analyses, peer relationships during (a) gender identity assessment and (b) the real-life phase were dichotomized to age-appropriate (normative) [1] vs. restricted or lacking [2–4].

School/work participation was classified as (1) age appropriate participation in mainstream curriculum, progresses without difficulties, (2) participates in mainstream curriculum with difficulty, (3) participates in rehabilitative educational or work activity, (4) not involved in education and working life. Age-appropriate participation during [1] was recorded if the adolescent attended mainstream secondary education or upper secondary education at a regular rate (a class per year in comprehensive school; has not changed more than once

between tracks in upper secondary education) or had proceeded to work life after completing vocational education. Participation with difficulty [2] was recorded if the adolescent was enrolled in mainstream education but had to repeat a class, studied with special arrangements (for example, in a special small group), or followed some form of adjusted curriculum. In the analyses, school/work life during (a) gender identity assessment and (b) real-life phase was dichotomized to normative [1] vs. any other (2, 3 or 4).

Romantic involvement was recorded (1) has or has had a dating or steady relationship, not only online, (2) has had a romantic relationship only online, (3) has not had dating or steady relationships. In the analyses we compared has or has had [1] vs. has not had [2,3] a dating or steady relationship during (a) gender identity assessment and (b) real-life phase. Sexual history was recorded in more detail in case histories during gender identity assessment, and for this period we also collected the experiences of (French) kissing (yes/no), intercourse (yes/no) and experience of any genitally intimate contact with a partner (petting under clothes or naked, intercourse, oral sex) (yes/no).

In recording age-appropriate competence in managing everyday matters we expected that early adolescents (up to 14 years) would be able, for example, to do shopping and travel alone on local public transport, and to help with household duties assigned by their parents. Middle adolescents (15–17 years) were further assumed, for example, to be able make telephone calls in matters important to them (for example, when seeking a summer job), to deal with school-related issues with school personnel without parental participation, to select and start new hobbies independently and to fulfil their role in summer jobs and in similar responsibilities of young people. Late adolescents (18+ years), legally adults, were expected to have, in addition to the above, competence to talk to authorities such as professionals in health and social services, employment or educational institutions, to deal with banks or health insurance, to manage their financial issues and to manage their housekeeping if they chose to move to live independently of parents/guardians. Competence in managing everyday matters was recorded as follows: (1) the adolescent is able to cope age-appropriately outside home, (2) the adolescent needs support in age-appropriate matters outside home but functions age-appropriately in the home (manages her/his own hygiene, clothing and nutrition, participates in (younger subjects) or takes responsibility for (older subjects) housekeeping) and (3) the adolescent's functioning is inadequate both at home and outside home. In the analyses we focused in being age-appropriately able cope with matters outside of the home [1] vs. not [2,3].

Psychiatric disorders (depression, anxiety, suicidality/self-harm, conduct problems, substance abuse problems, psychoses, ADHD, autism, eating disorders) were recorded a) if they had required specialist level psychiatric treatment during or before the gender identity assessment, (i.e. the adolescent was in treatment, or treatment had been recommended but the adolescent refused it) and b) if they required specialist level psychiatric treatment during the real-life phase (i.e. the

adolescent was in treatment or the psychiatrist in the gender identity unit recorded that treatment was recommended or made a referral to psychiatric treatment irrespective of whether or not the adolescent complied with the recommendation).

Statistical analyses

Distributions of variables illustrating adolescent development are given for (a) the time of the gender identity assessment and (b) the real-life phase. Differences in proportions displaying age-appropriate functioning were compared using chi-square statistics/Fisher's exact test as appropriate. Cross-tabulations with chi-square statistics/Fisher's exact test as appropriate were used to explore functioning on a domain during the real-life phase according to functioning therein during assessment (i.e. school/work during real-life phase according to school/work during assessment etc.).

Need for specialist level psychiatric treatment before or during the gender identity assessment and during the real-life phase was compared using cross-tabulations with chi square statistics. Similarly, need for treatment according to the nine disorder dimensions recorded was compared between the two time periods. The associations between need for specialist level psychiatric treatment a) before or during the gender identity assessment, and b) during the real life-phase and functioning in the domains studied were explored using cross-tabulation with chi-square statistics/Fisher's exact test where appropriate.

The role of sex/gender and age were analysed by logistic regression. Functioning in peer relationships, school/work, managing everyday matters and dating/going steady were entered each in turn as the dependent variable with age and sex/gender as independent variables. Odds Ratios (OR) with 95% confidence intervals (CI) were calculated.

Results

Adolescent development and need for treatment during assessment and during real-life phase

During the gender identity assessment, three quarters of the adolescents lived with their parents. About three out of five displayed age-appropriate progress in school/work, four out of five functioned age-appropriately in dealing with matters outside home, and almost all had normative peer contacts. About three out of five had experienced dating/steady relationships before the end of the gender identity assessment (Table 1). In more detail about sexual development, 83% (43/52) had been in love/had a crush on someone, 56% (29/52) had experienced kissing, 8% (4/52) intercourse and 64% (33/52) any genitally intimate sexual contact with a partner by the end of the gender identity assessment.

During and before the gender identity assessment, half of the adolescents required specialist level psychiatric treatment, most commonly because of depression, anxiety, and suicidality/self-harm (Table 2).

In the end of the real-life phase, a majority had moved on to live independently of parents/guardians. The shares of

Table 1. Functioning in different domains of adolescent development during gender identity assessment and real-life phase among 52 young people diagnosed with transsexualism after starting gender identity assessments before age 18 [% (n/N)].

	During gender identity assessment	During real life phase	<i>p</i> Value
Living with parent(s)/guardians	73% (38/52)	40% (21/50)	0.001
Normative peer contacts	89% (46/52)	81% (42/52)	<0.001
Progresses normatively in school/ work	64% (33/52)	60% (31/52)	0.69
Has had dating or steady relationships	62% (32/50)	58% (30/52)	0.51
Is age-appropriately able to deal with matters outside of the home	81% (42/52)	81% (42/52)	1.0

Table 2. Need for specialist level psychiatric treatment, and disorder/symptom dimensions requiring this treatment during and before gender identity assessment, and during real life phase [% (n/N)].

	During and before gender identity assessment	During real life phase	<i>p</i> Value
Need for psychiatric treatment	50% (26/52)	46% (24/51)	0.77
Need for treatment due to ...			
depression	54% (28/52)	15% (8/52)	<0.001
anxiety	48% (25/52)	15% (8/52)	<0.001
suicidality/self-harm	35% (18/52)	4% (2/52)	<0.001
conduct problems/antisocial	14% (7/52)	6% (3/52)	0.18
psychotic symptoms/psychosis	2% (1/52)	4% (2/52)	0.56
substance abuse	4% (2/52)	2% (1/52)	0.56
autism	12% (6/52)	6% (3/52)	0.30
ADHD	10% (5/52)	2% (1/52)	0.09
eating disorder	2% (1/52)	2% (1/52)	1.0

those progressing age-appropriately in school/work, dealing age-appropriately with matters outside of home and being involved in dating/steady relationships did not change from the assessment phase to the end of the real-life phase. The proportion of those functioning age-appropriately in peer relationships decreased from the assessment period to the real-life phase (Table 1). The share of those requiring specialist level psychiatric treatment during real-life due to any reason was similar to that during and before the assessment, but treatment needs due to depression, anxiety and suicidality/self-harm had diminished (Table 2).

Changes within different domains of functioning

Of those adolescents with-age appropriate peer contacts during assessment (46/52), 91% (42/46) continued to have age-appropriate peer contacts during the real-life phase while 9% (4/46) no longer had these. Of those with difficulties in peer contacts (6/52), all continued to have difficulties in this field. ($p < 0.001$)

Of those who progressed age-appropriately at school (working life) during assessment (33/52), 85% (28/33) continued to do so during the real-life phase, but 15% (5/33) did not. Of those with problems at school (work) (19/52), 84% (16/19) continued to have problems, but 16% (3/19) ceased to have problems in this field. ($p < 0.001$)

Of those who had had age-appropriate skills in dealing with matters outside home (42/52), 88% (37/42) continued to be able to do so but 12% (5/42) functioned below the age-appropriate level during the real-life phase. Of those who

had had difficulties in dealing with matters outside home (10/52), half (5/10) continued to do so, but half (5/10) no longer had problems in this field ($p = 0.02$).

Of those who had experiences of dating/steady relationships during the assessment (32/50), 66% (21/32) had dating/steady relationships during the real-life phase, and 34% (11/32) did not. Of those who had not had any dating/steady relationships by the end of the gender identity assessment, 44% (8/18) had and 56% (10/18) did not have these during the real-life phase. ($p = 0.12$)

Of those not needing psychiatric treatment before or during the assessment (26/52), 73% (19/26) did not need any during the real-life phase but in 27% (7/26), a need had emerged. Of those who had needed (25/51) psychiatric treatment during or before the assessment, 68% (17/25) still needed it during the follow-up but 32% (8/25) did not. ($p = 0.004$)

The role of psychiatric comorbidities for functioning during real life

Need for psychiatric treatment before or during the real-life phase was not associated with functioning in peer relationships or romantic relationships during the real-life phase. Those needing psychiatric treatment before or during gender identity assessment were more likely to not function age-appropriately in school/work (47% (15/32) vs. 82% (14/17) functioned well, $p = 0.02$), and borderline significantly less likely to cope well with managing everyday matters outside home (72% (23/32) vs. 94% (16/17) managed well, $p = 0.06$) during the real-life phase.

Concurrent need for psychiatric treatment during the real-life phase was associated with a smaller proportion functioning well at school/work [42% (10/24) vs. 74% (20/27), $p = 0.02$] and in taking care of everyday matters [67% (16/24) vs. 93% (25/27), $p = 0.02$].

No associations were found between age and sex (gender) and functional outcomes.

Discussion

The aim of this study was to assess the adolescent development of those adolescents who were diagnosed with transsexualism and offered cross-sex hormonal interventions during the subsequent real-life phase, when the cross-sex hormonal treatment was initiated and started to produce the desired changes in physical appearance. Moving to live independently, relationships with peers, romantic involvement, ability to take care of everyday issues age-appropriately outside home and need for psychiatric treatment were assessed as proxies for adolescent development. Earlier empirical research on outcomes of medical sex reassignment interventions initiated during developmental years was scarce and offered little advice on the impact of treatments on adolescent development [10,21,22].

We observed that the majority of the adolescents diagnosed with transsexualism and offered cross-sex hormonal treatments displayed age-appropriate functioning in the

domains studied during the gender identity assessment, as is to be expected given that severe psychopathology and markedly lowered functioning may complicate the possibilities to assess identity achievement and may constitute a contraindication for medical treatment. Nevertheless, a considerable share also had difficulties in different domains of functioning. What is more, even if the majority also functioned well in the domains studied during the first year on cross-sex hormones, no statistically significant improvements in functioning were observed in the group as a whole, and in the domain of peer relationships the share of those with normative contacts decreased. This is in disagreement with earlier studies suggesting improved functioning and reduced psychiatric symptoms in adolescent onset hormonal treatment of gender dysphoria [19,20], and likely due to older age, more difficult psychopathology and different intervention (cross-sex hormones vs. GnRH analogues) in our sample. Our subjects were all post-pubertal and halting of development was thus not possible.

The majority of the adolescents diagnosed with transsexualism were still living in the parental home during the gender identity assessment, which is to be expected and culturally normal as they were in the age range of 15.2–19.9 years. During the subsequent real-life phase, the share of those living in the parental home decreased. This concurs with progression of adolescent development. Given the knowledge of normative timing of leaving the parental home in Finland [21,22], the increasing proportion of those no longer living with their parents likely indicates positive progress in adolescent development instead of, for example, negative parental reactions to sex reassignment, which has also been reported in the literature [25], particularly as most of those leaving the parental home went to live with romantic partners (data not shown). Due to excellent social security benefits, moving to live independently does not necessitate regular income from employment and is therefore not a proxy for good functioning in other domains of life.

The difficulties in peer relationships commonly reported among adolescents with transgender identities have been associated with prejudice and discrimination [10,26]. Anxiety disorders, particularly social anxiety, could relate both to victimization and distress created by not being able to satisfactorily present oneself according to one's perceived gender. With the appearance of the desired physical characteristics, passing in the desired role is expected to be facilitated and self-confidence to increase. Positive changes in connection with peers could be expected. However, of those who had difficulties in peer relationships during the gender identity assessment, all continued to have them in the follow-up, and almost one in ten of those functioning well in this domain during the assessment developed difficulties in follow-up. This was contrary to our expectations and suggests that difficulties in peer relationships cannot be attributed to difficulties in passing in the desired role.

About two out of five of the adolescents diagnosed with transsexualism had experienced dating or steady relationships by the end of the gender identity assessments, and an equal share during the real-life phase. For comparison, recent

Finnish data on 15-year-old adolescents reveals that about a half of them have experienced dating/steady relationships (unpublished observation). Steady relationships in adolescence may be short and not dating/going steady exactly during the real-life phase cannot be taken as an indicator of delayed development. Earlier studies have shown that clinically referred adolescents with gender dysphoria display normative emotional development in regard to romance and dating but show slight delays in behavioural level sexual development [27,28]. Compared to earlier findings on all gender-referred adolescents, the adolescents now studied had experienced falling in love and dating/steady relationships about equally frequently but had slightly less often engaged in sexually intimate behaviours than both all gender-referred adolescents and same aged adolescents in general population (Kaltiala-Heino et al. [28]). These observations do not suggest remarkable delays in sexual development. During the real-life phase, a considerable share also gained their first experiences of dating/steady relationships, which suggests favourable progression of adolescent development.

If the adolescents diagnosed with transsexualism had had difficulties at school/work as during the gender identity assessment, they mainly continued to have difficulties during the real-life phase. Only a minority moved from progressing with difficulties to progressing normatively, and equally many deteriorated during follow-up. Improved functioning as a consequence of alleviating gender dysphoria and passing better in the desired role is commonly assumed but has not previously been researched in relation to education/work. Our findings suggest that treatment of gender dysphoria does not suffice to improve functioning in education and working life. Difficulties in school adjustment and learning are common among gender-referred adolescents and often not properly addressed, on the assumption that treatment of gender dysphoria would relieve an array of problems [11,29]. Educational difficulties need to be fully addressed during adolescence regardless of gender identity.

On their developmental path towards emotional, social and economic independence from parents, adolescents gain competence in taking care of increasingly demanding matters outside home. Delays in this could be associated with gender dysphoria through psychiatric symptoms secondary to gender dysphoria and lack of self-confidence related to challenges in self-presentation. Such problems could be expected to be alleviated with gender affirming hormonal treatments. In taking care of matters at an age-appropriate level, a greater share had improved than had declined during the real-life phase. Thus, favourable progression of adolescent development was seen in the group studied, even if a fifth of the subjects continued to function on a lower than age-appropriate level during the real-life phase.

Need for treatment due to depression, anxiety and suicidality/self-harm was recorded less frequently during the real-life phase than before it. This is in line with the conclusion of a relatively recent meta-analysis [30] that in adults with gender dysphoria, cross-sex hormonal treatment alleviates anxiety, and may also reduce depression or depressive symptoms. However, need for psychiatric treatment overall did

not decrease from the level before and during the gender identity assessment to the real-life phase. New needs had also emerged about as frequently as need for treatment diminished. Cross-sex hormonal treatment is not enough to alleviate psychiatric comorbidities which in adolescents with gender dysphoria may also precede gender identity concerns [11] and will likely have equally many and complex underpinnings as they have in any population. A large-scale register study among adults likewise found that psychiatric needs were not alleviated with gender reassignment [12]. Depression, anxiety and suicidality/self-harm are often assumed to be secondary to gender dysphoria, and our findings may be interpreted as lending some support to that assumption among adolescents, similarly as earlier research seems to imply for adults [30].

Both earlier and concurrent need for psychiatric treatment were associated with not progressing age-appropriately at school/work and in taking care of matters outside home during the real-life phase, even though need for psychiatric treatment was, somewhat unexpectedly, not associated with functioning in peer relationships and romantic relationships. This further underlines the need to actively address psychiatric comorbidities among adolescents with gender dysphoria.

The study was based on file information on all adolescents diagnosed with transsexualism and proceeding to cross-sex hormone treatment after entering gender identity earlier than age 18 in one of the two centralized gender identity service facilities for minors in Finland. The two gender identity units for minors operate on similar principles, receive equal numbers of referrals and during the study period prescribed cross-sex hormones to similar numbers of adolescents. The follow-up period was approximately only a year, which inhibits drawing conclusions on long-term outcomes. However, as during adolescence, both physical, cognitive, emotional and social aspects of development are in a constant state of change [3], one year is a very relevant period.

Collected from medical files, the data is as accurate as clinical documentation can be. Because gender identity assessments and medical gender reassignments in minors involve numerous controversies (Kaltiala-Heino et al. [10]), the documentation is likely to be done particularly meticulously. The study unit operates within the field of adolescent psychiatry, and particular attention is always paid to adolescent development illustrated in age-appropriate functioning. Data collection was carried out in a structured way, which adds to the reliability of the study. Most of the recorded issues are clear-cut and concrete (living arrangements; progressing one class per year at school or having a job; socializing with peers in leisure time; being in (an offline) steady relationship). Age-appropriate capacity taking care of matters outside home may be somewhat more abstract and difficult to quantify. Ambiguous details were discussed between the authors and rated in consensus.

The disorders that were the reason for need for psychiatric treatment were recorded as they appeared in the documentation produced by the gender identity team or were

recorded in case files obtained by the gender identity team from the adolescent's local services and classified on a robust level. They were not always systematically recorded with ICD-codes, and we were not able to ascertain the accuracy of the diagnostic work. However, the diagnoses mentioned in this paper represent problem categories that are the basis for treatment offered. A better understanding of psychiatric comorbidities could have been obtained by using structured diagnostic interviews.

Conclusion

Among adolescents diagnosed with transsexualism, difficulties in adolescent development and functioning in life domains appropriate to late adolescence do not disappear with cross-sex hormone treatment. Cross-sex hormone treatment may alleviate depression and anxiety but does not have a positive impact on psychiatric comorbidities at large. Even deterioration as regards psychiatric treatment needs and functioning occurs during the first year of cross-sex hormone treatment. Not all psychiatric and psychosocial problems in adolescents displaying gender dysphoria are secondary to gender identity issues and will not be relieved by medical gender reassignment. An adolescent's gender identity concerns must not become a reason for failure to address all her/his other relevant problems in the usual way.

Disclosure statement

No potential conflict of interest was reported by the authors.

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