Title – '' Gender Incongruence/Dysphoria in Children & Adolescents Overview & Implications for Dentistry''

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Abstract –

Introduction
Over the past 10 to 15 years, there has been growing recognition that the traditional spectrum of gender defined dichotomised roles does not necessarily, or accurately, fit within a certain subsection of the population. A condition associated with gender incongruity that dental practitioners must be aware of is gender dysphoria.

Aims
Our role as dental & oral health care professionals necessitate us to provide safe & effective dental health care to all members of the population, as such it is essential for dental health care professionals to undertake appropriate professional development to increase their knowledge of gender dysphoria.

Overview of Gender Dysphoria
While gender incongruity is not considered a disorder on its own merit, when it is associated with significant distress or disability the term "gender dysphoria" is applied. The aetiological factors that underpin gender dysphoria is still yet to be fully understood, however, it is generally accepted that it arises from a combination of biological, psychosocial factors.
In the U.K, all paediatric and adolescents gender incongruence referrals are managed by specialist clinicians working within multidisciplinary clinics.

Implications for Dentistry
Our focus in this paper is to highlight and aid the dental team in the management of patients with gender dysphoria along providing clinical tips in the clinical management of these patients by dental clinicians.

Conclusion
It is important that dental healthcare professionals familiarize themselves with the aeitology, diagnosis and treatment pathway of this important subset of the population.

Gender Incongruence/Dysphoria in Children & Adolescents
Overview & Implications for the Dentistry

Introduction

Over the past 10 to 15 years, there has been growing recognition that the traditional spectrum of gender defined dichotomised roles of male masculinity and female femininity does not necessarily, or accurately, fit within a certain subsection of the population. This gender-nonconformity has historically resulted in stigmatisation and discrimination of a subsection of the population with detrimental effects for example harassment, assault and sexual violence.[1]

Gender identity is the subjective sense of belonging to a certain gender category, for example, male, female, common terms for gender variance are summarised in Table 1.[2] It is important to recognise that gender identity is not synonymous with sexual identity, the latter refers to how one thinks of one's self in terms of sexual attraction. While recognition and awareness of these factors has been improved in recent years, a particular symptom associated with gender incongruity that dental practitioners must be aware of is gender dysphoria.

Gender dysphoria - Overview:

The perceived mismatch or incongruity in one's birth sex and gender ranges on a wide spectrum. While gender incongruity is not considered a disorder on its own merit, when it is associated with significant distress or disability the term "gender dysphoria" is applied. The experienced distress or disability ranges from anxiety, depression, low self esteem to more serious self harming, and suicidal tendencies. Furthermore, gender dysphoric patients may have a strong wish to change their bodies either medically or surgically, or combination of both to closely align with their preferred gender identity.[3]

Gender dysphoric patients are a small but important subset of patients we as dental professionals may see on a regular basis. However, there is little published dental literature regarding the dental management of these patients. Management methods may include fostering a more inclusive, welcoming environment by using the correct pronoun to address an individual; understanding the journey of gender transition by way of medical or surgical intervention, and any implications of a gender transition on dental treatment.

This paper aims to provide an overview of the aetiology and diagnosis of gender dysphoria and discuss the role of the General Dental Practitioner (GDP) in the management of these patients.

Gender dysphoria - Aetiology:

The aetiological factors that underpin gender dysphoria is still yet to be fully understood, however, it is generally accepted that it arises from a combination of biological, psychosocial factors

Biological factors

The biological consideration for gender development can be classified into hormonal, sex chromosome[4], genetic and epigenetic contributions[5]. In particular, the sensitivity of the brain to sex hormones alters from high in the prenatal stage to low towards young adulthood.

The process of androgenization of the brain in the prenatal period has been implicated in gender development. The timing of the sex hormone secretion is of importance in the course of gender development and can be broken down into three sensitive periods:

1. Prenatal/perinatal[6]
2. Puberty[7]
3. For females, the first pregnancy[8]

Psychosocial factors

The human trait of psychosocial processing of verbal labeling and nonverbal cuing of children by parents, guardians and others will shape a child's gendered behavior by reinforcement either positive or negative[9]. This can be willful or subtle in the early stages of childhood following on to more explicit statements of gendered expectations.

Children will indulge in observational imitation and modeling, as well as the internalization of gender stereotypes, which will vary from culture to culture, and other related self concepts and socialization.

Syndromic Conditions[10]

On rare occasions, gender dysphoria can be associated with genetic abnormalities such as Turner Syndrome and Klinefelter syndrome. Turner syndrome is a chromosomal condition occurring in females, it is characterized by a partial or complete absence of X chromosomes. The most common feature is the relatively short stature of an individual and it is associated with premature ovarian failure by the time of birth. Most individuals will not undergo puberty unless they receive medical hormone replacement therapy.

Klinefelter syndrome, which is a male chromosomal condition that may result from the presence of two or more X chromosomes. Individuals tend to be taller than average and infertile with occasional gynecomastia. They tend to have high levels of anxiety, depression along with emotional immaturity and attention deficit hyperactivity disorder. Additionally, there has been to be a link shown to associate Klinefelter syndrome with Autism Spectrum Disorder.

Gender Dysphoria - Signs & Symptoms [11]

While it is important to note that children may engage in gender nonconformity activity and that is a normal part of development, gender dysphoric symptoms may manifest by the ages of two to three years old in the following ways;[12]

1. Negative feelings towards one's body

2. Prolonged distress in being referred to as the assigned gender
3. Wishful thinking of changing gender
4. Insisting on being referred to by a different gender

The majority of gender dysphoric individuals state that their symptoms and experiences start in early childhood [13]. However, some do not present themselves until adulthood. Other non-specific problems such as anxiety, depression, alcoholism and recreational drug use may be related to the lack of acceptance of one's self or by societal and/or familial acceptance of their gender non-conforming behaviours.

Gender dysphoria - Diagnostic Assessment[14]

Historically, gender dysphoria has been treated as a mental disorder, but in this era there is a greater appreciation of it being placed in a separate section of conditions related to sexual heath or sexual and gender health. An important distinction is that the term gender dysphoria does not automatically apply to people who identify as transgender but only to those who exhibit a significant distress or disability regarding a perceived incongruity of their expressed gender and assigned sex or to people post transition who no longer fit the diagnostic criteria of gender dysphoria but require ongoing care. The latter group is given the term "post-transition".

The diagnostic criteria for gender dysphoria are based on the Diagnostic and Statistical Manual of Mental Disorders, fifth Edition (DSM-5). It is based on the required presence of both of the following criteria in **ALL** age groups:

1. Marked incongruity between assigned gender at birth and expressed or perceived gender that have been present for greater than a six-month period.

2. Clinically significant distress or functional disability form this gender incongruity

As gender dysphoria is expressed in a variety of ways in different age groups. The DSM-5 requires certain manifestations to be present in childhood & adolescents depending on the age of presentation.

Gender dysphoria- Children & Adolescents Presentation

Butler et al[15] summarised the various manifestations of gender dysphoria in children and adolescents, these manifestations are in addition to those required for all age groups, six or more of the below criteria must be present in children & adolescents for the diagnosis of gender dysphoria. They are as follows;

1. A strong desire to be of the other gender or an insistence that one is the other gender.
2. A strong preference for wearing clothes typical of the opposite gender.
3. A strong preference for cross-gender roles in make-believe play or fantasy play.

4. A strong preference for the toys, games or activities stereotypically used or engaged in by the other gender.
5. A strong preference for playmates of the other gender.
6. A strong rejection of toys, games and activities typical of one's assigned gender.
7. A strong dislike of one's sexual anatomy.
8. A strong desire for the physical sex characteristics that match one's experienced gender.

Gender dysphoria - Management of Gender Children and Adolescents[16]

In the U.K, all paediatric and adolescents gender incongruence referrals are directed towards the Gender Identity Development Service (GIDS) at the Tavistock clinic, London. This service is provided by specialist clinicians working within multidisciplinary clinics. Patients requiring NHS gender identity services, the first point of referral in a non-acute setting is via a referral which can be completed online. A variety of different professionals such as general medical practitioners, teachers and social workers, for example, can make a referral to the GIDS. While the mentioned referrer list is in no way exhaustive, it is generally professionals who act as safe guardians to children and adolescents can make a referral to GIDS and this may include GDPs.

Gender Identity Development Service

Psychosocial

An initial assessment by a psychosocial team is commenced before any medical intervention is considered. This may be emotional to the patient as the aim will be to record a lifelong mental functioning status along with recollections of specific childhood gendered behavior. Psychometric measures are used to assess behavioral and emotional function, including assessment of the presence of autistic spectrum disorder given that 35% of young people that present to the GIDS exhibit moderate to severe autistic traits [17]. There is also an in-depth discussion with adolescents regarding their sexuality and fertility along with possible preservation interventions. A confirmation of a gender dysphoria diagnosis is achieved by a 6-month period of engagement with the psychosocial team. A confirmation of an individual treatment plan is subsequently made and regularly reviewed. Psychological therapies are made available throughout the patient's course treatment.

There will be a subset of patients who may present with psychological issues beyond gender dysphoria that may need treatment prior or in parallel to the gender treatment process. A decision by the treating team can be made to halt the gender treatment where evidence of a coexisting mental health condition gives rise to patient being untreatable until their co existing in reasonably well controlled.

Endocrinology

Puberty Suspension

A referral may also be made to a paediatric endocrinology clinic for consideration of possible puberty suspension or blocking as part of the gender treatment process. This is usually done with the therapeutic intervention of a gonadotropin-releasing hormone analogue. At the GIDS in London, around 38% to 40% of patients attend the paediatric endocrinology clinic following initial psychosocial assessment.

The world professional association for transgender health guidelines[18] require the patients reach stage two of the Tanner puberty classification system before the above medical intervention is prescribed. This is due to a strong likelihood of gender dysphoria symptoms resolving post puberty.

Given the long-term effects of the puberty suspension hormone are still being investigated, preliminary results indicate a loss of bone mineral content. Hence, patients are recommended to take regular vitamin D supplements.

Butler et al[19] recommend a series of investigations as outlined in Table 2.

Cross-Sex Hormone Treatment

The therapeutic cross sex hormone (testosterone or oestradiol) may be considered when a preferred gender has been confirmed following a detailed psychological exploration. At GIDS this will only be considered if the patient is able to give informed consent (i.e. when 16 years old) and there is evidence that the patient is presenting in a coherent manner in their preferred gender role and there are no escalating mental health issues.

Relevance of Gender Dysphoria in Children & Adolescents in Dentistry

Research surrounding gender dysphoria & implication for dentistry is scarce. While it is difficult to know the exact reasons for this, it generally a reflection of the general systematic barriers encountered by this population causing a lack of access to dental healthcare combined with a relatively small population size that has historically been stigmatized and discriminated against. This results in real ramifications as borne out in a recent survey which shows that 28% of transgender individuals have postponed receiving dental health care due to fear of discrimination and 50% felt there was a lack of provider knowledge regarding caring for transgender individuals[20]. Hyper-sensationalism in the media recently have sought to attribute the large increase in referrals (and/or diagnosis) and management of gender dysphoria as an artificially inflated and falsely diagnosed condition due overexuberant (sometimes insidiously motivated) medical doctors along adolescents and children motivation to be ‘’trendy’’. This so called ‘’contagion’’ theory has been roundly discredited by experts in the field. As dental healthcare clinicians we have no interest in discussing or engaging in this destructive debate. It is not polemical to state this condition has always afflicted a subset of a population that until recent times have largely gone unnoticed either unwilfully or by design.

Our role as dental & oral health care professionals necessitate us to provide safe & effective dental health care to all members of the population, regardless of one’s own thoughts/beliefs. As such it is essential for dentists and oral health care professionals to undertake appropriate professional development to increase their knowledge of gender dysphoria.

Depending on the stage a patient is on in their gender dysphoria treatment pathway they maybe undertaking hormonal intervention such as puberty suspension hormone therapy and cross-sex hormone therapy. Due to a lack of research in this subset of the population there is a lack of evidence of any oral conditions or anomalies that can occur more frequently in this

population. It is not difficult to see there is a substantial knowledge gap existing. In our specialist field of Orthodontics, an obvious question we pose is whether patients on puberty suppression therapy can affect a relatively commonly used treatment modality of functional appliance therapy?, a treatment based around the peak pubertal growth spurt of a patient. Likewise, in Paediatric dentistry & General dentistry does hormone therapy affect eruption sequence/times of the dentition?

These are just some examples of the ‘’known unknowns’’. Our focus in this paper is to highlight and aid the dental team in the management of patients with gender dysphoria along providing clinical tips in the clinical management of these patients by dental clinicians.

Dental Team/Practice Management

All member of the dental team should familiarise themselves with the common gender variances that exist as outlined in Table 1. It is particularly important to avoid assuming a patient’s gender visually and to ask patients their preferred pronoun. Table 3[21] outlines common pronouns that can be used. However, some patients may prefer not to use pronouns and like to be referred to by their name only. The children and young people group outlined ten tips (Table 4[22]) that are aimed to aid medical professionals working with transgender patients, while this was primarily aimed at doctors, these are of use to dental professionals.

Clinical Management

Dental clinicians can ask for a copy of common blood investigations that would have been carried out in patients undergoing puberty suspension hormone therapy (Table 2) which can help ascertain a patient’s fitness to undergo certain dental procedures. Puberty suspension hormone therapy can result in possible "hot flashes" for the patients that may lead to possible vasovagal syncopies. Hence, the provision of a cool environment and easy access to medical emergency supplies goes without saying. It can also affect the patient’s mood and mental wellbeing, hence, dental professionals must be vigilant for the clinical manifestations of depression, for example, poor motivation to maintain good oral hygiene, a neglected dentition and attempts to self-harm, for example, ligature marks in the triangle of safety or scarring on wrist. Appropriate specialist intervention must be sought to safeguard the patient’s wellbeing. Furthermore, it is not uncommon that some patients will struggle to control their weight or have poor energy levels, these are known side effects of puberty suspension hormone therapy.

Patients on cross sex hormone therapy may have more serious medical side effects that may impact the provision of care from dental professionals.

Patients who are on testosterone hormone therapy can be at risk of

1. Polycythemia
2. Abnormal liver function
3. High blood pressure
4. High cholesterol levels

Patients who are on oestrogen hormone therapy can be at risk of

1. Cardiac problems
2. Development of blood clots
3. Abnormal liver function

In light of the above it is important that any complicated or surgical dental interventions planned are discussed with the patients' medical team at GIDS or their general medical practitioner.

Conclusion

Gender dysphoria is a term related to the distress caused to patients by a perceived incongruity between their biological sex and perceived gender. It has long been a discriminated group of marginalized people with often detrimental effects on the population. It is important that dental healthcare professionals familiarize themselves with the aeitology, diagnosis and treatment pathway of this important subset of the population along with the possible ramifications for the provision of dental care.

Declaration of Interests

The authors declare no conflict of interest in the production of this paper

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Table 1 - Common Gender Variance

Trans male	A person who is assigned female at birth but identifies and lives as a man
Trans female	A person who is assigned male at birth but identifies and lives as a female
Agender	A person who either feels they have no gender identity, or who identify not as male or female but 'neutral.'
Bigender	A person who sees themselves as having two gender identities. The separate genders could both be male, or female, mixed or other – and may be felt at the same time or entirely distinctly
Cisgender	A person who identifies with the same biological gender they were born with
Genderfluid	A person for whom gender is unfixed: they fluctuate between different identities aside from their biological assignment
Gender neutral	A synonym for 'agender': A person who identifies with no gender.
Gender queer	An umbrella term covering any feelings about gender alternative to society's traditional expectations
Nonbinary	A person who doesn't identify as simply female or male
Transgender	An umbrella term for A person whose gender identity is different from what is typically associated with their assigned biological sex at birth.

Table 2 – Blood Investigations During Puberty Suspension Therapy

Full blood count
Iron/ferritin
Urea & Electrolytes
Renal and liver function tests
Bone profile
Vitamin D
Testosterone
Oestradiol
Follicle stimulating hormone (FSH)
Luteinising hormone (LH)
Prolactin
Bone density scan

Table 3 - Gender Pronouns

Subjective	Objective	Possessive	Reflexive
She	Her	Hers	Herself
He	Him	His	Himself
They	Them	Theirs	Themself
Ze	Hir/Zir	Hirs/Zirs	Hirself/Zirself

Table 4 – Top tips for Treating Transgender Patients

Seeing - Trans-friendly posters / leaflets / messages in the waiting area would make patients feel comfortable to have the conversation	Referral - Make a quick referral with the patient's consent to the gender identity services clinic as soon as it is discussed with you, following the appropriate NHS protocol, so that specialist help can be sought.
Patience – when someone comes to you for support, please listen and actively research so that you can find training, advice and guidance to support your practice	Holistic approach - Differentiate between trans health issues and ones that aren't – treat within your competence and expertise and make sure appropriate support is found for trans health issues via the gender identity services clinic.
Participation - The patient should be a full participant in decisions and given support, advice and guidance to do this.	Sensitivity - Gender identity disorder was reclassified in 2013 to not be a mental health condition – be aware when discussing it with your patients not to "lump" it with mental health.
Pronouns - Use correct pronouns that the patient has chosen	Cooperation - Work in partnership with your specialist gender identity services so that you have access to information, advice and guidance.
Advice - Please advise your patients that they can request for their name and gender to be changed on their records without needing a gender recognition certificate.	Discretion - Remember that clinical examinations can be distressing and need to be treated sensitively due to gender dysphoria