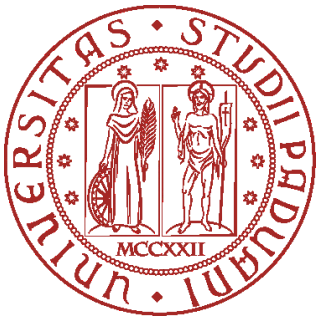

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Gender is size, and size is gender: a review of disordered eating behaviours among the transmasculine population

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Abstract

The aim of this review is to investigate the existing literature on disordered eating behaviours among the transmasculine community. The recent increase in scientific interest towards sexual minorities has led to concerns about their mental health and well-being, as findings suggest that they may be at a heightened risk for various forms of psychopathology and lower quality of life.

Transgender people experience elevated rates of disordered eating behaviours in comparison with their cisgender peers, due to factors such as gender dysphoria, high body dissatisfaction, social stigma and minority stress. The positive role of gender affirming medical care is highlighted, along with the benefits of access to gender affirming hormone therapy and/or surgeries. Eventually, the results of the review lead to an overview of possible implications and recommendations for healthcare professionals and relatives of a transgender person.

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I. Introduction

In recent years, the transgender community has received growing attention from the world, the media and the scientific community. The latter has started investigating the psychological characteristics of transgender individuals, evidencing that they may be more prone to developing various kinds of psychopathology (Dhejne et al, 2016), including disordered eating (Hartman-Munck et al., 2021; Diemer et al., 2015; Guss et al., 2017, Avila et al.). This review will specifically refer to disordered eating behaviours in the transmasculine population. Transmasculine individuals are people who were assigned female at birth (AFAB) but identify on the male side of the gender spectrum (MacDonald et al., 2016). The word transmasculine will be used here as an umbrella term that includes trans men, non-binary people, gender fluid people, and more generally any AFAB person that associates with a more masculine gender identity.

Table 1 proposes a summary of the transgender-related glossary encountered in the review.

I.II Disordered eating and eating disorders

Disordered eating refers to an array of unhealthy eating behaviours that include restrictive eating, compulsive eating, irregular and/or inflexible eating patterns, self-induced vomiting, specific food groups avoidance, diet pills use, steroid and creatine use, laxative, diuretic and enema misuse (Parker et al., 2020; Toni et al., 2017). In case of pathological frequency and severity, these patterns can meet the diagnostic criteria of an eating disorder, defined in the DSM-5-TR as "persistence disturbance of eating or eating-related behaviour that results in the altered consumption or absorption of food and that significantly impairs physical health or psychosocial functioning" (APA, 2022). They are notoriously life-threatening and debilitating conditions which have often proven resistant to treatment. Even though most research on the subject has been conducted on cisgender women, it has been shown that sexual minorities are indeed at a heightened risk of developing an adverse relationship with food and their bodies (Calzo et al., 2017).

Table 1 Definition of transgender-related terms.

Cisgender (*adj.)*	A person whose gender identity matches sex assigned at birth
Transgender (*adj.)*	A person whose gender identity differs from sex assigned at birth
Transmasculine (*adj.)*	Umbrella term to include AFAB transgender people that identify on the male side of the gender spectrum
AFAB	Assigned Female At Birth
Sex assigned at birth	Sex assigned by doctors at the moment of birth based on external genitalia appearance
Gender identity	A person's internal sense of their own gender
Gender expression	Way of expressing oneself through clothes, hairstyle, mannerism, etc.
Hormone replacement therapy (HRT) / Gender affirming hormone therapy (GAHT)	Hormone therapy with the purpose of aligning the sex hormone profile and therefore secondary sex characteristics to one's gender identity (in the case of transmasculine people, the administered hormone is testosterone)
Passing	Getting perceived from others as one's own gender identity
Misgendering	Referring to someone using language (e.g. pronouns, gendered compliments, etc.) that does not align with their gender identity
Transphobia	Negative attitudes, feelings or actions towards transgender people. Discrimination specifically directed to transgender people
Cisnormativity	The assumption that being cisgender is the norm

I.II Sexual identity

Sexual Identity is made up of four components: biological sex, gender identity, gender expression and sexual orientation (Killermann, 2016).

Biological sex refers to the sex assigned at birth, that is: male, female or intersexed, determined by the newborn's apparent genitalia. In reality, its definition is not so straightforward, since biological sex can be itself intended in terms of chromosomes, internal and external genitalia, hormones and gonads (Ainsworth C., 2015; World Health Association, 2021). The several intersex conditions and other disorders of sex development have shown that these subdivisions may combine in multiple different ways and that biological sex is neither binary nor categorically definable.

Gender Identity is defined by the Gay & Lesbian Alliance Against Defamation (GLAAD) as "a person's internal, deeply held knowledge of their own gender" (GLAAD, 2022). Western culture tends to conceptualise gender as a binary construct. However, it can be better conceived as a spectrum with male and female at its extremes and huge

variety in the middle. Gender can therefore be binary (man or woman) or not, in case someone's identity does not fit neatly into one of these two labels.

Gender expression is represented by "ways of expressing and interpreting one's gender through clothes, hairstyles, mannerisms, body modifications, or name" (Katella, 2022). It is the manner in which we present and show ourselves to others.

Sexual and romantic orientation describe whom a person feels romantic and/or sexual attraction towards (if they do experience it). It is important to clarify that being transgender concerns the domain of gender identity and that sexual orientation is a different and separate component that has no influence on the others. Every component of an individual's sexual identity is separate, dynamic, indipendent, and can be best represented as a continuum.

I.III Transgender terminology

A person is said to be cisgender in the case in which their gender identity matches their sex assigned at birth. Transgender is instead an umbrella term used to refer to people whose gender identity does not match the sex assigned at birth. Misgendering refers to the act of addressing someone with pronouns, form of addresses or gendered language that do not reflect their gender identity.

People who are transgender can experience "gender dysphoria", defined as "psychological distress that results from an incongruence between one's sex assigned at birth and one's gender identity" (American Psychiatry Association, 2022). While the DSM-5-TR uses the diagnostic term "gender dysphoria" (Table 2), replacing the old "gender identity disorder", the ICD-11 has adopted the label "Gender Incongruence", moving it out of the "Mental and behavioural disorders" chapter and into the new "Conditions related to sexual health" chapter. Gender dysphoria is a diverse feeling of distress that concerns many transgender people, and that is experienced with different intensities and modalities across individuals, time and circumstances.

Transgender people may want to entrust themselves to gender affirming care, that "can include any single or combination of a number of social, psychological, behavioural or medical (including hormonal treatment or surgery) interventions designed to support and affirm an individual's gender identity" (World Health Organisation, 2023).

Table 2 Gender dysphoria – diagnostic criteria by DSM-5-TR (APA, 2022)

Gender dysphoria in children (F64.2)

A. A marked incongruence between one's experienced/expressed gender and assigned gender, of at least 6 months' duration, as manifested by at least six of the following (one of which must be Criterion A1):

1. A strong desire to be of the other gender or an insistence that one is the other gender (or some alternative gender different from one's assigned gender).
2. In boys (assigned gender[1]), a strong preference for cross-dressing or simulating female attire; or in girls (assigned gender), a strong preference for wearing only typical masculine clothing and a strong resistance to the wearing of typical feminine clothing.
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. In boys (assigned gender), a strong rejection of typically masculine toys, games, and activities and a strong avoidance of rough-and-tumble play; or in girls (assigned gender), a strong rejection of typically feminine toys, games, and activities.
7. A strong dislike of one's sexual anatomy.
8. A strong desire for the primary and/or secondary sex characteristics that match one's experienced gender.

B. The condition is associated with clinically significant distress or impairment in social, school, or other important areas of functioning.

Specify if: with a disorder/difference of sex development (e.g., a congenital adrenogenital disorder such as E25.0 congenital adrenal hyperplasia or E34.50 androgen insensitivity syndrome).
Coding note: Code the disorder/difference of sex development as well as gender dysphoria

Gender Dysphoria in Adolescents and Adults (F64.0)

A. A marked incongruence between one's experienced/expressed gender and assigned gender, of at least 6 months' duration, as manifested by at least two of the following:

1. A marked incongruence between one's experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics).
2. A strong desire to be rid of one's primary and/or secondary sex characteristics because of marked incongruence with one's experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics).
3. A strong desire for the primary and/or secondary sex characteristics of the other gender.
4. A strong desire to be of the other gender (or some alternative gender different from one's assigned gender).
5. A strong desire to be treated as the other gender or some alternative gender different from one's assigned gender).
6. A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one's assigned gender).

B. The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if: with a disorder/difference of sex development (e.g., a congenital adrenogenital disorder such as E25.0 congenital adrenal hyperplasia or E34.50 androgen insensitivity syndrome).
Coding note: Code the disorder/difference of sex development as well as gender dysphoria.

7. Specify if: posttransition: the individual has transitioned to full-time living in the experienced gender (with or without legalization of gender change) and has undergone (or is preparing to have) at least one gender-affirming medical procedure or treatment regimen-namely, regular gender-affirming hormone treatment or gender reassignment surgery confirming the experienced gender (e.g., breast augmentation surgery and/or vulvovaginoplasty in an individual assigned male at birth; transmasculine chest surgery and/or phalloplasty or metoidioplasty in an individual assigned female at birth).

[1] Sex assigned at birth.

II. Literature review on disordered eating behaviours among the transmasculine population

II.I Research approach

A literature review was conducted on articles reporting transgender subjects dealing with mental health issues, especially disordered eating. The literature search was conducted using the PubMed and Google Scholar search engines. To obtain potentially relevant papers, the following search terms were used: “transgender eating disorders”, “disordered eating transgender”, “gender variance and disordered eating behaviours”, “transgender population psychopathology”. In addition, backward reference of selected papers has proved useful to gather additional reference material. In order to write an introduction that avoided any discriminatory and/or outdated language, webpages of well-recognised Human Rights and LGBTQ+ associations were searched, as these provided the most accurate and recent definitions and terminology, in line with the feelings and self-perception of the transgender community.

II.II Inclusion and exclusion criteria

The papers from the search were taken into consideration only if the eligibility criteria for the review were met. No exclusion was made depending on the participants’ age, ethnicity, education or any other sociodemographical variable. The articles selected were those exploring a relationship between being a transgender person and mental health issues, with a particular focus on disordered eating. It was not required that the participants in the studies had received an official diagnosis of gender dysphoria/gender incongruence or any clinically significant eating-disorder. The studies had to include participants who were assigned female at birth, identified as part of the transgender community, and reported maladaptive eating patterns. Studies had to be published between the year 2010 and 2023 and had to be written in the English language to match inclusion criteria.

II.III Results

II.III.I Prevalence of disordered eating behaviours among the transgender community

It is difficult to estimate the prevalence of disordered eating in the transgender population, as the conceptualisation of "disordered eating" and "transgender person" in the scientific literature often varies. Wide variation has been found across studies, with the percentage of transgender youth with an official eating disorder disgnosis ranging from 2% to nearly 18% (Coelho et al., 2019). Duffy et al. (2019) report the highest rates of eating disorder diagnosis within a sample of 678 transgender youths (17.6%) compared to 1.8% of cisgender female youth and 0.2% of cisgender male youth (n = 237,844 and n = 127,227; respectively).

A national online survey sampled Canadian trans youths (n = 923, aged 14-25), showing that of the 14-18 year old transgender adolescents, 42% reported engaging in binge eating, 48% reported fasting, 18% reported vomiting as a way to control weight, 7% used diet pills and 5% used laxatives, with a lower but still significant percentage of the 19-25 year old youth engaing in the same behaviours (Watson et al., 2017). A survey by Diemer et al. (2015) of 289,024 college students shows that 15.82% transgender individuals reported an eating disorder diagnosis, compared to 1.85% of the cisgender heterosexual women counterpart, more than a four-fold increase in the odds of reporting an eating disorder diagnosis compared to cisgender heterosexual women. In a community sample of 988 transgender individuals in the US (mean age = 29), 13.8% of the participants were told they had an eating disorder by their physician or mental health provider, such as anorexia nervosa (6.1%), bulimia nervosa (2.5%), binge eating disorder (2.1%) or non-specified eating disorder (3.6%). Furthermore, 13% reported at least one episode of binge eating in the last 28 days, 23% reported dietary restriction, 1.4% reported self-induced vomiting, 1.2% reported laxative use and 7.4% reported episodes of excessive exercise (Nagata et al., 2020).

A possible explanation for these very high rates of disordered eating may be that transgender people, especially those who seek gender-affirming medical care, undergo more mental health assessments than the ordinary population, making it more likely to receive an eating disorder diagnosis. In addition, the higher rates of psychopathology and the co-occurrence of multiple psychiatric disorders can lead to increased treatment-seeking and frequent mental health screenings. On the other hand, it is also possible that

many behaviours denoting a possible unhealthy relationship with food and/or exercising in this population may go undetected due to inadequate diagnostic criteria and/or tools, as Hartman-Munick and colleagues (2021) report. In a study by Avila and colleagues (2019) involving 106 transgender youths presenting at a clinic for gender-affirming care, participants were assessed on the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Cooper, 1993) during their gender clinic visit, with 15% obtaining elevated EDE-Q global score but with up to 63% reporting to have had attempted to manipulate their weight. However, the EDE-Q and other commonly used eating disorders questionnaires have not been psychometrically validated in the transgender population, and therefore individuals are likely to get misclassified. Importantly, they stated that among their participants, disordered eating did not necessarily correlate with high scores on the EDE-Q, suggesting that it might not be the most suitable screening tool for this population. Due to considering eating disorders as "cisgender white women disorders", these tools assess mainly for thinness-oriented disordered eating, contributing to the under-recognition of maladaptive patterns in sexual minorities, ethnic minorities and men. Therefore, diagnostic criteria with a focus on skinny ideals are skewed towards stereotypical female presentations, and may not be appropriate to assess disordered eating across the whole gender spectrum, as concerns about masculinity typically revolve more around the drive for muscularity and leanness, leading to behaviours that do not focus on dietary restriction and/or purging but rather on muscle building (excessive excercise, bulking), anabolic steroid use, elevated protein consumption and rigid practices around recording the macro-nutritional values of ingested food (Murray et al., 2019).

Another limitation of the studies included in the prevalence estimation is that they are mainly conducted in Western countries and on young participants, lacking data about adults and non-Western societies. One study by Barnhart et al. (2023) used the Chinese version of the 12-item short EDE-QS to examine 200 Chinese transgender adults, with 31% of them probably having an eating disorder.

II.III.II Body dissatisfaction and gender dysphoria

Body dissatisfaction, defined as the negative self-appraisal of one's physical appearance, has consistently been associated with onset and maintenance of eating disordersin the general population. This is of particular concern for the transgender population, as

perceiving incongruency between one's body and one's identity may lead to a sense of nonaffirmation, distress, uneasiness and therefore to an increase in body dissatisfaction (Testa et al., 2017; Jones et al., 2018). In fact, experiencing low congruence between external appearance and internal sense of self is found to be associated with lower levels of body satisfaction (Kozee et al., 2012), suggesting a link between body image and gender dysphoria.

Transmasculine individuals experience the same sociocultural stressors affecting their peers, but in addition they also face a unique set of body- and gender-related stressors. Puberty may be experienced as particularly traumatic in that they may feel that their body is developing in a direction that does not align with their felt identity. In this sense, maladaptive behaviours such as excessive exercise can be manifested with the goal of building muscle and getting closer to the "male ideal" (Guss et al., 2017). Restrictive eating and other compensatory behaviours could instead be a way to reduce curves tipically associated with a female body (such as breasts or hips) and gendered weight distribution. Qualitative interviews conducted by Romito et al. (2021) support these findings and report that many participants motivated their disordered eating with the aim of decreasing distress related to body parts that are a reminder of one's biological sex. The authors of the study concluded that it may represent a dysfunctional strategy to avoid unwanted pubertal changes, minimise secondary sex characteristics and alleviate feelings of gender dysphoria.

Body dissatisfaction secondary to gender dysphoria may be focused on specific body parts, such as the chest or genitalia. A study by Becker et al. (2015) showed that body dissatisfaction in trans men was related to all female or biological-sex related body parts, and not just sex-specific body parts. The researchers commented that a halo effect could be a plausible explanation: poor body image related to sex-specific body parts may spread to a general dissatisfaction with the totality of one's body image.

Witcomb and colleagues (2015) compared 200 transgender people, 200 cisgender people with eating disorders and 200 cisgender controls. Not surprisingly, the highest rate of body dissatisfaction was presented by participants with eating disorders. The transgender group exhibited greater body dissatisfaction than cisgender controls and, most notably, transgender men had comparable levels of body dissatisfaction to cisgender men with eating disorders, reporting discontent with sex-specific body parts, body shape and weight. Importantly, body dissatisfaction and weight concerns have also been

identified as risk factors for self-harm and suicide attempts in transgender people (Olson et al., 2015; Mak et al., 2020; Quarshie et al., 2020).

Compulsive body checking has been linked as well to severe body dissatisfaction and discomfort with one's physical appearance in the transmasculine population (Mirabella et al., 2020). Around 23% of the transmasculine sample in this study reported restrictive conducts and calorie-counting, 14% reported bulimic behaviours, 9% reported compulsive eating. Severe caloric restriction, skipping meals or avoiding social gatherings that involved food were also common practices. Some participants report that other than being driven by the hope to alter their body, they were also moved by the desire to damage it and self-harm. Over-eating was instead appraised as a measure to gain weight in order to hide body shape and sex-specific characteristics, and engagement in binge-eating was more common during high levels of perceived discomfort and uneasiness. Interestingly, respondents from the same study reported that their partaking in weight management behaviours was conscious and intentional, related to their wish to align their physical body to their identity, while the literature on cisgender individuals with eating disorders typically shows low self-awareness and denial of the condition.

It has also been suggested that transmasculine people engage in maladaptive eating strategies and excessive excercise in order to induce amenorrhea, defined as the absence of a menstrual period (Jones et al., 2018). In fact, restrictive eating patterns lead to a suppression of the hypothalamic pituitary axis, causing hypothalamic amenorrhea (a form of secondary amenorrhea) and a reduction in Gonadotropin-releasing hormone (GnRH) secretion, which ultimately results in a transition back to a prepubertal hormonal pattern as the release of luteinising hormone (LH) and follicle stimulating hormone (FSH) decreases in amplitude (Riddle and Safer, 2022).

Some research proposes that if disordered eating actually leads to alleviation of gender dysphoria, then this would reinforce the maladaptive behaviour (Zamantakis and Lackey, 2022). Supporting this stance, two case reports by Ristori and colleagues (2019) describe how these behaviours were deemed effective in enabling the subjects to get closer to their gender ideals. These results show the urgency and the need to help the transgender community in reaching a sense of comfort and easiness through social acceptance and access to gender affirming medical care, reducing the need to resort to these dangerous behaviours to deal with their gender dysphoria.

II.III.III Social stigma and minority stress

The transgender community has historically been a marginalised minority group, and transgender individuals have always been subject to long-lasting prejudice and stigma at the individual, interpersonal and systemic level. Minority stress can be defined as "excess stress experienced by individuals in stigmatised social categories as a result of their social position, through processes such as discrimination, violence victimisation, the pressure of concealing one's identity, social alienation, and internalised social stigma" (Diemer et al., 2015). The experience of discrimination on transgender youths was linked to higher levels of all disordered eating behaviours in a study by Watson and colleagues (2017). The striking effects of harassment and family rejection on body image perception have also been documented by Velez et al (2016). Minority stressors may have an impact on one's perception of their own body, leading to lower appreciation and discomfort. Not only, transgender individuals could be more resistant in accepting their transgender identity, with consequently poorer mental health outcomes. Data by Uniacke et al. (2021) suggest in fact that internalised transphobia was one particular risk factor for disordered-eating symptoms.

The high rates of experienced discrimination have been associated with increased risk of several forms of psychopathology, such as drug abuse, suicide attempt and ideation, depression and risky sexual behaviour (Diemer et al., 2015). In a study by Muratore et al. (2022), sociocultural pressures, internalisation of body image ideals and social comparison are associated with higher disordered eating in transgender adults, as it is shown in cisgender women and other sexual minorities. The additive property of minority stress perceived by sexual minority populations on top of these sociocultural pressures makes them particularly vulnerable to developing maladaptive eating patterns.

Concerns about passing, or getting perceived in alignment to one's gender identity, may reflect not only a way to feel more comfortable in one's own skin, but also as a way to avoid harassment and transphobia from society. Worries about passing in public may cause great anxiety and a stricter adherence to gender norms, especially in places where it is not safe to be recognised as transgender (Romito et al., 2021; Anderson et al., 2019). In support of this stance, it has been shown that individuals who are more visually gender nonconforming are at increased risk of mistreatment and discrimination and have worse mental health outcomes in comparison to gender-conforming trans people (Diemer et al., 2018).

II.III.IV Weight as an healthcare barrier

Gender-affirming surgeries often have body mass index (BMI) requirements, as there are concerns that an elevated BMI may be connected to poorer surgical outcomes. Even if research reports mixed results about this BMI-medical complications link, surgeons usually set their own weight threshold for interventions. As a consequence, transgender patients may feel pressured to lose weight to be eligible for surgery and they could implement unhealthy weight management strategies in fear they will not be given access to the interventions. This could even posit a post-surgery risk, since adequate nourishment is needed for proper wound healing. On the other hand, no guidelines usually exist on weight restoration for malnourished patients, even if they are at particular risk of surgical complications, such as hypoglycemia and leukocytopenia during anaesthesia. Moreover, anorexia and bulimia nervosa have been demonstrated to be connected with heightened risk of cardiac complications under anaesthesia (Riddle and Safer, 2022).

II.III.V Gender affirming care

Gender affirming care can encompass several domains, such as the social, legal, medical and surgical. Social affirmation regards changing one's name, pronouns, appearance and clothing. Legal affirmation includes changing one's documents (driver's license, ID, passport, etc.) by updating them with the elected name and correct gender markers. Medical and surgical affirmations concern hormone therapy (in the case of transmasculine people, testosterone) and other interventions (in the case of transmasculine people, they can be chest reconstruction/mastectomy, hysterectomy/oophorectomy, and genital reconstruction surgeries as phalloplasty or metoidioplasty). Gender affirming care has to be customised on the needs of the patient (Riddle and Safer, 2022). Gender affirming medical care is often deemed life-saving by transgender people and results in a significant improvement in quality of life and psychological functioning (Baker et al., 2021; Rowniak et al., 2019; Van Leerdam et al., 2023; White et al., 2016). Dhejne and colleagues (2016) reviewed 11 longitudinal studies assessing transgender people pre- and post-gender affirming medical care (hormonal or surgeries). All studies except for one showed an improvement of psychiatric morbidity or psychopathology following gender affirmation therapy. The one paper that found no differences explained the findings by the low level of overall psychopathology that was already found pre-treatment. Another longitudinal study by Van De Grift et al. (2017)

observed a general improvement in psychopathology after gender affirming hormone therapy (GAHT) had been initiated. The possibility to transition medically has been found to be associated with a significant improvement in body dissatisfaction in transgender adults (Jones et al., 2018), with possible consequent improvement in disordered eating symptoms. Their analysis demonstrated that transgender individuals who had not started GAHT reported significantly higher levels of drive for thinness and bulimia (in addition to higher levels of body dissatisfaction, anxiety, depression, and low self-esteem) in comparison to participants who had started GAHT. GAHT may in fact aid recovery from disordered eating since fat gets redistributed in a way that is more congruent with one's gender identity and makes therefore weight restoration more tolerable. A previous study by the same authors (Jones et al., 2016) reviewed several papers exploring body dissatisfaction and disordered eating in the transgender population, and reported that medical and surgical interventions reduced body dissatisfaction in transgender men. Similar results were obtained by Testa et al. (2017), who investigated 288 transmasculine individuals and found that gender affirming medical interventions reduced experiences of nonaffirmation of one's gender identity, leading to an increase in body satisfaction and a decrease in disordered eating symptoms. The aforementioned paper by Jones et al. (2018) also noticed that the protective role of GAHT against disordered eating is not direct: what GAHT primarily does is reducing body dissatisfaction, perfectionism, anxiety and increasing self-esteem, effects that combined can alleviate the symptoms. In fact, when the mentioned risk factors for disordered eating were controlled for, there was no longer a significant difference between people on GAHT and those who were not. Similarly, the study by Testa and colleagues (2017) found that for transmasculine individuals, relationships between all gender affirming medical interventions and eating disorder symptoms were mediated by the improvement in body satisfaction. These findings taken together act as another support for the association between body dissatisfaction, gender dysphoria and disordered eating and show the importance of access to the desired hormonal and surgical interventions.

II.IV Implications for relatives and healthcare professionals

As it can be inferred by the review findings, disordered eating behaviours in the transgender population must not be overlooked. There is a strong need for skilled professionals and informed parents to minimise the likelihood of developing an adverse relationship to food intake and exercising and to intervene in the most appropriate way to permit recovery. The role of family and healthcare professionals in a transgender person's life has an important influence on their well-being. Watson et al. (2017) report that social support in terms of perceived family support, school connectedness, friend caring and social support had an important effect on mitigating the influence of stigma: 71% of transgender youth with high levels of stigma and no protective factors reported binge eating, in comparison to 40% of youth with at least two protective factors. It was particularly family connectedness that seemed to be related with the lowest probability of maladaptive eating behaviours. Simons et al. (2013) describe the positive role of parental support, showing that it is associated with higher life satisfaction, less feelings of "being a burden" and fewer depressive symptoms overall. In addition to the effects on one's well-being, family involvement may influence the point in time when the person refers to gender affirming health care, with those presenting later receiving less support and showing increased mental health issues (Riddle et al., 2022).

Gender affirming medical care should assist in fostering positive relationships with family and friends as part of its program aimed at the improvement of quality of life of the transgender person. Clinicians should be aware of disordered eating behaviours as a significant health concern for the transmasculine population. They should acknowledge the pecularities of sexual minorities and the unique challenges that these populations face, other than the complexities of factors involved in the onset and maintenance of specific mental health issues in these populations. They need to take into account that gender dysphoria and disordered eating behaviours may be connected, and that eating disorder-specific treatment by itself may be ineffective if not accompanied by gender-affirming medical care. Ristori et al. (2019) showed in two case reports how traditional eating disorder treatment was ineffective on its own, and that an improvement was observed only after gender-affirming treatments were provided. On the other hand, hormones and surgery may not be enough to reduce disordered eating symptoms to a safe level, so a cross-disciplinary collaboration between eating disorder specialists and gender clinicians is strongly recommended. Unfortunately, data about professionals' knowledge on

transgender issues does not paint an optimistic picture. Hartman-Munick (2021) documents that transgender adults accessing eating disorder treatment encountered a lack of understanding from their providers about how gender dysphoria is linked to body image, other than facing misgendering or non-recognition and non-consideration of their gender identity. The National Transgender Discrimination Survey reported that 50% of participants had to teach professionals about transgender healthcare. In another study, 62% of respondents noted that eating disorders-specialised clinicians were not trained in transgender health care. This is of particular significance if we note that having a healthcare provider with solid knowledge about transgender health has been shown to be the most important predictor of accessing care (Riddle et al., 2022).

The healthcare system needs a shift towards a more inclusive environment by adding gender neutral restrooms and showing more diversity in the materials offered to families and patients (Coelho et al., 2019). Other important recommendations for professionals to implement are being aware of the patient's name and pronouns and using them regardless of whether the patient is present or not, using inclusive language both in speech and in written medical forms, using gender-related terminology with which the patient feels most comfortable (especially for specific body parts that may be particularly dysphoria-inducing, e.g. saying "chest" instead of "breasts"), not making assumptions about which gender affirming medical interventions a patient has had or wants to have, and only asking questions to which they need to know the answer for clinical reasons (Riddle et al., 2021).

The economic barriers to healthcare are another main concern that transgender people may have to deal with, in countries where it is not free or affordable.

The risks of food restriction and starvation may be overlooked when it is deemed efficient in reducing gender dysphoria and in the case one does not have the means and economic resources to cover the costs of gender affirming surgeries, as a participant interviewed by Zamantakis and Lackey (2022) reports.

III. Conclusion

Transmasculine people face unique challenges that increase their likelihood of developing disordered eating behaviours. More adequate screening instruments are needed to aid clinicians recognise disordered eating behaviours within this population. On top of ordinary stressors, transmasculine individuals refer high levels of body dissatisfaction and minority stigma that seem to be the main precursors of psychopathology. Feelings of gender dysphoria seem to be particularly central in the presentation of disordered eating symptoms, that appear to represent a way to promote congruence between external appearance and gender identity. In transmasculine people, several unhealthy behaviours around eating and/or exercising are implemented in order to affirm one's masculinity and decrease sensations of gender dysphoria by permitting to "pass" more and align their body with their identity. The weight requirements of gender affirming surgeries can also lead a potential patient to develop concerns about weight gain in fear they may not be eligible for the desired medical interventions. Gender affirming medical care has proven to be the most helpful tool in improving the quality of life and wellbeing of transmasculine people, that benefit from the alleviation of body dissatisfaction and from the physical changes that make them more comfortable in their own bodies. Given the complex and intricate link between gender dysphoria-derived body dissatisfaction and disordered eating, it is required to consider the issues together, with a tight collaboration across mental health treatment and gender affirming medical care as the most suitable way to enhance the quality of care and address the needs of this population. Current evidence points to the necessity of training for healthcare providers in informative and trans-competent care, as knowledge on transgender issues is reportedly scarce.

IV. Appendix

IV.I Extracts from qualitative studies and interviews

Main topic	Quote
Body dissatisfaction and gender dysphoria	*"My eating disorder started as a way to stop [menstruation] and breast development, so access to binders, hormone blockers/HRT [hormone replacement therapy] and gender affirming [care] would have helped me more when I was younger than therapy surrounding body image." (Trans man)*
	"The background of that crazy weight loss was that my curves would disappear. They have always felt disgusting, for example my hips and my breasts." (Trans man)
	"I still feel like that sometimes, that I have to diet, because otherwise I'll start looking like a woman again." (Trans man)
	"Weight gain would have brought forth my feminine figure, which was disgusting to me. […] I wanted to keep my body's femininity at a minimum, so the fat wouldn't distribute to feminine places." (Trans man)
	"[After losing a lot of weight] I could buy pants at the men's department, and they fit in a certain way, the right way, as I see it. And also, I felt strong, which I perceived as masculine." (Trans man)
	"Recognize that being trans doesn't necessarily cause an eating disorder but does inform how that eating disorder is experienced." (Trans man)
	"Starving myself to reduce my breast size feels like a tempting alternative to the top surgery I can't afford. I feel like my curves invalidate my identity as transmasculine and knowing that I would be less curvy if I were thinner leads to distinctly unhealthy thought processes about my weight." (Non-binary participant)
	"Everyday people going about their lives had no way to know that when they used "she" to refer to me, I heard "you need to lose more weight." When they used "he" (or avoided pronouns in helpless confusion), the eating disorder whispered, "good job! You're on the right track! Just keep doing as I say and we'll get there." (Non-binary participant)
	"[….] the message on the recovery side is that your body is perfect the way it is and you need to accept it for what it is, and that is impossible for some- one who experiences dysphoria because your body just doesn't match who you know you are...Eating disorders are not the right way to go about eliminating your dysphoria but it does help honestly." (Non-binary participant)

Facing healthcare	*“I need current ED...health providers to understand transness...All of these programs advertise themselves to trans people as being trans competent...but then the programs are very not trans competent when you get there.” (Gender nonconforming participant)* *"One of the states I’ve worked in is not a very liberal state, and can be kind of dangerous, sending certain clients to certain providers...the state of Texas, living there and working with several trans clients, I wasn’t scared, but I just felt for them and wanted to make sure that I was sending them to doctors that were educated and appropriate with this population." (Mental health provider)* *“Without health insurance to secure professional help or a supportive community to encourage me, I was going at it alone. My eating disorder was a secret to the people around me, as were my gender and sexual identity. I continued to struggle for several years, cycling through periods of relative health and devastating relapse.” (Non-binary participant)*
Weight requirements for surgery	*“I’m pursuing bottom surgery (phalloplasty), and I’m required to lose weight for this...So this surgery that I’ve poured literally hundreds of hours into research and insurance appeals, money into traveling out of state...could literally be for nothing if I don’t lose 10–15 pounds. It’s a small amount of weight but coming from a disordered eating background, it’s so hard not to fall back on my former restrictive patterns” (Non-binary participant)*
Gender affirming hormone therapy (GAHT)	*“Until I received hormone therapy, I controlled what I ate. [. . .] Now it doesn’t matter if I gain weight, I suppose it accumulates in different places now. The fear of weight gain, or fear of femininity, is not an issue at all anymore, that’s all gone.” (Trans man)*
Social support	*“...I’ve had a lot of people say, it wasn’t until college, that they could even consider having access [to therapy], because the family didn’t want the shameful secret, or that their child was not masculine enough or not feminine enough from their perspective, or, you know, the family didn’t allow access to therapy with someone who would be gender affirming, and that was a bad thing, because it would only encourage this like delusion.” (Mental health provider)* *“...the family education piece...specifically with this population, is to make sure that the parents are educated on not only good recovery skills, but also, why it’s made more difficult or challenging in a situation where there are some identity things going on...so much of an eating disorder is about identity...we have to approach it as a whole person...we also have to make sure that your child feels comfortable being who they are in their skin...I think that helps parents have a little bit more buy in to the process.’” (Mental health provider)*

(Ålgars et al., 2012; Ferrucci et al., 2023; Hartman-Munick et al., 2021; Zamantakis et al., 2022)

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