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Eating disorders in males. An update

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SUMMARY

Objective

Despite the ever-increasing number of cases of Eating Disorders (EDs) detected in the male gender, almost all the literature review is focused on the female population. Therefore, the main aim of this research is to offer a valuable and updated contribution to the literature about the contemporary overview of EDs in male subjects, in order to activate more focused clinical reflections on specific differences with the female gender so as to provide guidance to professionals toward a better diagnostic and therapeutic understanding.

Methodology

In order to achieve the objective of the present study, an investigation of the computerized scientific literature has been conducted through the analysis of some major databases, among which PubMed, PsycINFO, and ResearchGate. A set of key words has thus been identified: "males," "eating disorder," "anorexia nervosa," "bulimia nervosa," "binge eating disorder," and "muscle dysmorphia". Studies showing similarities and differences with the female gender in terms of epidemiology, clinical specifications, diagnostic, and therapeutic features have been extrapolated with the aim of providing a theoretical-clinical update on the topic examined.

Results

From an epidemiological point of view, ED cases in males, although showing a lower incidence than in females, have been steadily increasing in recent years. Although they share some clinical aspects, ED in males differ from those found in females with respect to some concepts like the body ideal, the use of compensatory methods, and, more generally, severity and comorbidity with other psychiatric disorders. Several studies have also found that homosexual and bisexual males tend to develop ED more easily than both heterosexual males and the female population as a whole. Some studies, moreover, have also recorded the presence of ED in males in non-Western populations, highlighting how the prevalence affects more and more geographical areas. With regard to treatment, the few studies realized agree in highlighting the overlap of therapeutic strategies for both sexes, both quantitatively and qualitatively. Indeed, the guidelines suggest for both males and females a multidisciplinary approach consisting of psychotherapeutic, nutritional, medical, and pharmacotherapeutic interventions. There also does not seem to be significant differences in the course of the disorder, except for a slightly more favorable trend in the male subject.

Conclusions

Despite the fact that literature review on ED in males has considerably grown in recent years, it is of utmost importance to continue to investigate it, since several aspects still remain to be deepened by future research. Among them, in addition to specific diagnostic indications, some areas related to gender differences at the level of phenomenology, of onset, of symptom manifestations, of comorbidity, and of outcome are still under-investigated. In addition, specific psychodiagnostic tools exclusively designed for the male population are still lacking. Similarly, it might also be appropriate to think about specific ED males-calibrated treatments. Finally, most studies on eating disorders in males have focused almost exclusively on the Western population, and far fewer have considered other ethnicities, although some research has found high rates of ED among other foreign populations.

Key word: eating disorder, males, muscle dysmorphia, review, update

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Introduction

Eating Disorders (ED) represent a heterogeneous set of clinical pictures with multifactorial etiology having in common intense preoccupation with food consumption, weight, and body shape [1]. From a diagnostic perspective, the DSM-5 describes six main forms of ED: Pica, Rumination Disorder, Avoidant/Restrictive Food Intake Disorder, Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Binge Eating Disorder (BED). The first three forms cited tend to occur more frequently in the developmental age, while the other three tend to onset more often in adolescence [2]; evidence that is changing in recent years since we are observing an increasingly lowering of the threshold age of onset even in cases of AN and BN [3,4]. Among the major changes from the previous edition, both the amenorrhea criterion for AN and the diagnostic category of "Disorders Not Otherwise Specified" were eliminated in DSM-5. These changes have resulted, at least partially, in a less only-female-centered population framing, in a lower frequency of residual diagnoses, and, overall, also in a more accurate estimation of ED cases [5,6]. With specific regard to the prevalence of gender, while in the past it stood at a male-to-female ratio of 1:11 [7], more recent data indicate a ratio of 1:4 [8]. Moreover, in the case of BED, the range further narrows to a male-to-female ratio of 3:4 [9]. These data therefore suggest a growth of ED in the male population as well, although according to some researchers, these data would still be underestimated [10]. This, at least in part, could be due to the absence of specific parameters for male cases, which in turn leads to a major difficulty in making diagnoses, so that symptoms are often considered sub-threshold, or are not sufficiently understood or often even overlooked unless they become particularly severe [11,12]. An example of this is given by individuals who are consistent with the diagnosis of muscle dysmorphia, which is not properly estimated as ED case because this condition has not yet been appropriately classified as a clinical manifestation of the ED spectrum [13], but rather as a body dysmorphic disorder. Another hypothesis for the underestimation could depend on the fact that, since it has always been considered as a purely female condition, males themselves are often reluctant to admit that they suffer from ED, so several years pass between the onset of symptoms and the actual taking in charge [5]. Therefore, proper diagnostic assessment is particularly important as it allows the appropriate estimation and classification of male EDs.

Epidemiology

From an epidemiological point of view, according to recent studies, the prevalence of ED male cases reaches about 25% of the general population [14]. However, in the clinical population, the prevalence rates range from 5 to 11% [15]. In addition, if only adolescence age is considered, the rate is 1.2% of cases at age 14, 2.6% at age 17, and 2.9% of cases at age 20 [16]. From a diagnostic point of view, 0.16-0.3% of male cases meet the criteria for a diagnosis of AN [8-17], 0.1-0.5% for a diagnosis of BN 7, and 1.1-3.1% for a diagnosis of BED [18]. In addition, when also considering preadolescents who require treatment for ED, studies show that about 14% of cases are diagnosed with "Avoidant/Restrictive Food Intake Disorder", among them, up to 35% are males [19]. Regarding the age of the disorder onset, gender comparison studies show a later onset in male cases than females. Specifically, in AN and BN cases, the age of onset in females is between 14-15 years, and in males between 19-20 years [20,21]. Moreover, in BED the onset is even later and majorly affects young adults [22].

Diagnostic and general features and genders differences

From a diagnostic point of view, despite the changes made by the DSM-5, as mentioned earlier, nosographic criteria are still primarily focused on eating disorders in the female population, without valuable corresponding alternatives for the male gender. One example is the BMI (body mass index) indices, whose parameters, being calibrated for the female population, are not always appropriate for male subjects [23]. Indeed, while in females weight loss reflects the severity of dysfunctional eating behaviors, in males even a normal weight condition may underlie an eating disorder, as in the case of muscle dysmorphia, in which the body ideal is aimed at increasing muscle and not at the pursuit of thinness [24]. For this reason, some researchers propose using other anthropometric indices besides BMI [25]. There are also differences in clinical characteristics between ED cases in males and females, such as compensation methods used to lose weight. Specifically, it appears that only 12.5-26% of adolescent males use restrictive diets compared to 38-50% of females [26,27]. In addition, while females tend to use more diet pills (0.7-17% females ***vs*** 0.1-4% males), laxatives (1.4-2% females *vs* 0.3-1.6% males) and self-induced vomiting (1-8.3% females *vs* 0.4-1.7% males), males tend to favor physical activity or fasting as compensatory behaviors [26]. Some differences also emerge from the perspective of psychiatric comorbidity. Especially in homosexual or bisexual males with BN and BED, anxiety or substance abuse disorders seem to be more frequent, while mood disorders would prevail in female subjects [28]. As for AN, however, in females it seems to be connected to anxiety disorders, personality disorders and adjustment disorders, while in males there would be a greater comorbidity with psychotic spectrum disorders [29,30]. However, in the study

carried out by Fichter [31], the association with personality disorders, particularly borderline and obsessive-compulsive personality disorders, also emerged in males with ED. In addition, in both males and females with ED, the use of self-injurious conduct emerged, although in males in a significantly lower percentage [32]. Moreover, several studies have shown that a history of childhood sexual abuse is also present in males with ED, although with a less strong correlation than in females [33,34]. However, it has been found that males with ED, compared to those who don't suffer from ED, report a higher incidence of physical violence, neglect, and childhood sexual abuse [35,36]. A further distinction concerns the presence of a past history of obesity as a trigger for the onset of ED. In fact, although evidently present in both sexes, a history of overweight seems to be more frequent in males diagnosed with both AN and BN (45% males *vs* 15% females) and BED [20-22]. Instead, a common feature in the etiology of ED in both males and females is the presence of perfectionism as a personality trait. Indeed, marked levels of perfectionism associated with insecurity, difficulty in interpersonal relationships, and a modest tendency to control, which have always been attributed to female patients, have also been found in males, especially with AN [37]. However, in males, perfectionism appears to be significantly correlated with fasting, while in females also with purgative behaviors [38]. Furthermore, the tendency toward perfectionism appears to moderate the relationship between body dissatisfaction and two critical components of male ED symptomatology: drive for muscularity and bulimic behaviors [39]. From this perspective, perfectionism seems to be a determinant variable in pushing patients toward the use of behaviors aimed at modifying their physical appearance in an attempt to achieve a specific bodily ideal in which the body, recalling the concept of the post-modern body [40], seems to act as an envelope of social models that are no longer ethical but aesthetic and also seems to take on a dimension in which it tends to nourish itself more on enjoyment than pleasure.

Muscle dysmorphia and male body ideal

As mentioned earlier, another important difference between ED in males and females concerns the concept of the body ideal itself. In fact, despite sharing the same body dissatisfaction, females seem to be more centered in wanting to achieve a lean body ("drive for thinness") while males, on the other hand, are more centered in achieving a muscular body ("drive for muscularity") [24-41]. More specifically, males would tend to follow strict diets associated with excessive exercise with the goal of achieving a hypertrophic body in terms of musculature [42]. This behavior, referred to as "bulkig and cutting" [43], typically presents a dual focus on both the side of pushing for thinness and the pursuit of muscle gain. During the phase defined as "bulking," or the phase of muscle gain, nutrition is focused on excessive protein consumption and extremely rigid nutritional plans [44,45] to the point that deviation from these causes severe distress [46]. The phase defined as "cutting," on the other hand, involves an extreme reduction in caloric intake with the goal of decreasing fat mass and increasing muscle definition [44,45]. This dietary restriction, however, may limit muscle development and trigger further distress with respect to body image, which in turn may lead to a maladaptive cycle of alternating between muscle building and dietary restriction [47]. This clinical condition among males, moreover, had already been identified in the past years through a study conducted on bodybuilders and was named "muscle dysmorphia" or "reverse anorexia" [48] with reference to the fact that, as in anorexia, people despite being thin tend to perceive themselves as overweight. In muscle dysmorphia, on the contrary, subjects tend to see themselves as thin even when they have achieved an important muscular physique. From an epidemiological point of view, several studies point out that this condition has increased significantly in recent decades from 15 to 43% [49], especially among athletes [14] and particularly bodybuilders [50]. Similarly, studies conducted in in the United States have shown that up to 60% of teens report adopting these practices for the purpose of increasing muscle mass [51]. Regarding the age of onset, muscle dysmorphia seems to appear in late adolescence, data that is consistent and in line with other eating disorders [52]. From a diagnostic point of view, although muscle dysmorphia has been included in the DSM-5 as a body dysmorphism disorder, according to several researchers it should be more appropriately classified as a clinical manifestation of the ED spectrum [13].

Gender identity and sexual orientation

Over the years, some studies on gender identity have found that people with gender dysphoria would also be more likely to develop ED, as a result of trying to achieve levels of thinness that would suppress their biological sex characteristics or accentuate desired gender characteristics [53]. Similarly, a correlation between sexual orientation and ED has been shown in the male population [54,55]. In particular, it was found that homosexual males exhibit more pronounced levels of body dissatisfaction, negative self-image, and are more likely to develop ED than both heterosexual males [56,57] and the female population [58,59] as a whole. Similarly, bisexual males also tend to have more frequently ED diagnoses than heterosexuals [60]. Overall, homosexual and bisexual males, compared to heterosexuals, also show more symptomatology and more extended use of

compensation methods [61] such as restrictive diets (9% homosexual *vs* 6% heterosexual), self-induced vomiting (21% homosexual *vs* 4% heterosexual), diet pills (19% homosexual *vs* 4% heterosexual) but also more binge eating (25% homosexual *vs* 11% heterosexual) [54,62-64]. One of the possible hypotheses for the higher number of ED among homosexual and bisexual males might relate to the fact that, like the female population, they tend to center their self-esteem more on aesthetic standards and beauty ideals [65]. For the same reason, adopting more feminine roles and behaviors could also in itself lead to an increased risk of developing ED [62,64,66]. Finally, the increased pressure on physical appearance could be justified by the fact that, like females, they are the object of sexual attention from males [67], who, according to some studies, would prefer their partners from an aesthetic point of view, who tend to be thin and of well-groomed appearance [68]. Again, with regard to the sexual sphere, some studies have shown that in males with AN, compared to females, there is a higher rate of rejection of sexual activity [69]. Specifically, about 30% of the men did not report sexual urges, likely due to hormonal decrease due to underweight [70]. Similarly, another study also found that 75% of cases showed decreased libido [71]. In addition to this, they also showed sexual anxiety in front of both heterosexual and homosexual behaviors. 72% of the study subjects were 18 years old or even older, but despite having the age of majority, only 30% had been in a relationship with a girl. In addition, behaviors typical of the opposite sex during childhood and adolescence were reported in 65% of the patients, and 20% said they would have preferred to be female.

Treatment, course, and outcome

With regard to the treatment, the few studies realized agree in highlighting the overlapping therapeutic strategies for both sexes, both quantitatively and qualitatively [72]. Indeed, the guidelines suggest for both males and females a multidisciplinary approach consisting of psychotherapeutic, nutritional, medical, and pharmacotherapeutic interventions that is absolutely identical for both males and females. Even with regard to the course of the disorder, there also does not seem to be significant differences, except for a slightly more favorable trend in the male subjects. Specifically, in a follow-up study of 102 females and 36 males diagnosed with AN, both were found to be similar in both premorbid features and in the stage of overt disease, including prognosis [73]. In another study [69], however, a high percentage of male patients with AN showed during follow-up stage the achievement of a body weight > 85% of the average weight of the nonclinical population, similar to what was found in females. Despite the improvement in parameters, however, none achieved a normal weight, and in most cases concerns about weight and nutrition remained. It is notable, however, that males, compared with females, tended to have a better prognosis and faster recovery. More generally, several studies report symptom remission rates in males ranging from 1 to 11%, and improvement in itself from 20 to 33% [74,75]. These data are also consistent with another study [76] during which it was found that males, with respect to outcome, report higher rates of symptom remission following integrated treatment compared to females. A more ominous prognosis in both AN and BN cases, however, correlates with the duration of the disorder, with associated medical complications, with the presence of impulsive behaviors, and with the presence of self-induced vomiting as a compensatory mode [76]. With respect to mortality, research by Gueguen [77] found no differences between the sexes during hospitalization, but some male patients instead died earlier than females after discharge. The deceased patients included criteria such as higher age, lower BMI and a diagnosis of AN of the restricted subtype. More generally, the same study found a standardized mortality ratio in males with AN of 8.1 (95% CI 1.6-23.6) and specifically 13.2 (95% CI 2.7-38.6) for the restricted subtype. Another study [78] showed, compared to the control population, a standardized mortality ratio in males of 3.6 (95% CI 1.4-9.4) in both AN and BN and BED cases. Again, there were no significant differences in deaths between males and females, however, as in the previous study, more males died during the follow-up. However, this finding, according to the authors, could depend on the overall higher mortality rate in the general male population than in the general female population.

Conclusions

The studies carried out in recent years on ED on the male population have allowed a better understanding of the phenomenon and greater clarity in terms of epidemiology, clinical and therapeutic features. Also the changes made by the DSM-5 to the category of dietary EDs have allowed a more accurate diagnosis for the male population [6]. However, although these changes have allowed an improvement in terms of diagnosis, it would have been appropriate to also include a specific indication that would take into consideration, in addition to the criterion of a body ideal oriented to thinness, also the one directed to musculature, which, as emerged from the numerous studies, seems to be more specific in male subjects. In fact, precisely in view of the specificity of muscle dysmorphia in males, it would have been more appropriate to include this clinical picture among ED so as to enable more appropriate interception of sufferers. In parallel, in light of gender differences with respect to

body ideal, symptomatology, and comorbidity, it might be useful to produce further studies with the aim of understanding the phenomenology of ED in males even better. Furthermore, almost all psychodiagnostic instruments have been calibrated for the female population; therefore, a future goal could be to produce tests and assessment tools specifically designed for males. Similarly, although the guidelines have not yet considered different treatments based on gender, it might also be appropriate to consider specific therapies designed for the male population given that, despite sharing some clinical elements, there are specific differences with ED in females. At the same time, even with respect to outcome studies, almost all have focused only on AN, whereas other EDs should be appropriately investigated as well. Again, in view of the increased risk of developing ED especially among homosexual and bisexual males, research could be expanded to include those who fit the criteria of gender dysphoria and thus identify as transgender or gender fluid. Likewise, in view of the few studies present, it might be appropriate to thoroughly investigate the correlation between childhood trauma and ED even in males as a possible readout of a post-traumatic syndrome. Finally, most studies on ED in males have almost entirely examined subjects belonging to the Western population, and far fewer have considered other ethnicities, although some research has shown high rates of ED, for example, even among Latino and African American boys [79-81]. Similarly, it would be important to assess the presence and impact of ED in migrant people as well, since, taking into account the specific cultural meanings of body and nutrition for them, there are increasingly frequent cases that report an overt and established diagnosis of AN or BN [40]. Therefore, given the constant increase of the number of cases detected, it would be desirable for research to extend to other ethnic groups, so as to intercept dietary ED in other geographical areas as well.

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Conflict of interest statement

The Authors declare no conflict of interest

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Author contributions

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Ethical consideration

The articles that contributed to this review were reviewed by considering international ethical standards.

References

1 Fairburn CG, Harrison PJ. Eating disorders. Lancet 2003;361:407-416. http://dx.doi.org/10.1016/S0140-6736(03)12378-1

2 Weaver L, Liebman R. Assessment of anorexia nervosa in children and adolescents. Curr Psychiatry Rep 2011;13:93-98. https://doi.org/10.1007/s11920-010-0174-y

3 Lask B, Bryant-Waugh R. Early-onset anorexia nervosa and related eating disorders. Child Psychology & Psychiatry & Allied Disciplines 1992;33:281-300. https://doi.org/10.1111/j.1469-7610.1992.tb00864.x

4 Lewinsohn PM, Striegel-Moore RH, Seeley JR. Epidemiology and natural course of eating disorders in young women from adolescence to young adulthood. Journal of the American Academy of Child and Adolescent Psychiatry 2000;39:1284-1292. https://doi.org/10.1097/00004583-200010000-00016

5 Raevuori A, Keski-Rahkonen A, Hoek HW, et al. Lifetime anorexia nervosa in young men in the community: five cases and their co-twins. Int J Eat Disord 2008;41:458-463. https://doi.org/10.1002/eat.20525

6 Raevuori A, Keski-Rahkonen A, Hoek HW. A review of eating disorders in males. Curr Opin Psychiatry 2014;27:426-430. https://doi.org/10.1097/YCO.0000000000000113

7 Hudson JI, Hiripi E, Pope HG, et al. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. Biol Psychiatry 2007;61:348-358. https://doi.org/10.1016/j.biopsych.2006.03.040

8 Mangweth-Matzek B, Rupp CI, Hausmann A, et al. Eating disorders in men: current features and childhood factors. Eat Weight Disord 2010;15:15-22. https://doi.org/10.1007/BF03325276

9 Hoek HW, van Hoeken D. Review of the prevalence and incidence of eating disorders. Int J Eating Disord 2003;34:383-396. https://doi.org/10.1002/eat.10222

10 Morgan JF. The invisible man: a self-help guide for men with eating disorders, compulsive exercise and bigorexia. Londra, UK: Routledge 2008.

11 Strother E, Lemberg R, Stanford SC, et al. Eating disorders in men: underdiagnosed, undertreated, and misunderstood. Eat Disord 2012;20:346-355 https://doi.org/10.1080/10640266.2012.715512

12 Räisänen U, Hunt K. The role of gendered constructions of eating disorders in delayed help-seeking in men: a qualitative interview study. BMJ Open 2014;4. http://dx.doi.org/10.1136/bmjopen-2013-004342

13 Murray SB, Rieger E, Touyz SW, et al. Muscle dysmorphia and the DSM-V conundrum: where does it belong? A review paper. Int J Eat Disord 2010;43:483-491. https://doi.org/10.1002/eat.20828

14 Eichstadt M, Luzier J, Cho D, et al. Eating disorders in male athletes. Sports Health 2020;12:327-333. https://doi.org/10.1177/1941738120928991

15 Mitchison D, Mond J. Epidemiology of eating disorders, eating disordered behaviour, and body image disturbance in males: a narrative review. J Eat Disord 2015;3:20. https://doi.org/10.1186/s40337-015-0058-y

16 Allen KL, Byrne SM, Oddy WH, et al. DSM-IV-TR and DSM-5 eating disorders in adolescents: prevalence, stability, and psychosocial correlates in a population-based sample of male and female adolescents. J Abnorm Psychol 2013;122:720-732. https://doi.org/10.1037/a0034004

17 Bulik CM, Sullivan PF, Tozzi F, et al. Prevalence, heritability, and prospective risk factors for anorexia nervosa. Arch Gen

Psychiatry 2006;63:305-312. https://doi:10.1001/archpsyc.63.3.305

18 Striegel-Moore RH, Franko DL. Epidemiology of binge eating disorder. Int J Eat Disord 2003;34:19-29. https://doi.org/10.1002/eat.10202

19 Cooney M, Lieberman M, Guimond T, et al. Clinical and psychological features of children and adolescents diagnosed with avoidant/restrictive food intake disorder in a tertiary care eating disorder program: a descriptive study. J Eat Disord 2018;6:7. https://doi.org/10.1186/s40337-018-0193-3

20 Forman-Hoffman VL, Watson TL, Andersen AE. Eating disorder age of onset in males: distribution and associated characteristics. Eat Weight Disord 2008;13:28-31.

21 Raevuori A, Hoek HW, Susser E, et al. Epidemiology of anorexia nervosa in men: a nationwide study of Finnish twins. PLoS One 2009;4:4402. https://doi.org/10.1371/journal.pone.0004402

22 Preti A, de Girolamo G, Vilagut G, et al. The epidemiology of eating disorders in six European countries: results of the ESEMeD-WMH project. J Psychiatr Res 2009;43:1125-1132. https://doi.org/10.1016/j.jpsychires.2009.04.003

23 Mancini G, Biolcati R, Pupi V, et al. Eating disorders in males: an overview of research over the period 2007-2017. Riv Psich 2018;53:177-191. https://doi.org/10.1708/2954.29694

24 Hoffmann S, Warschburger P. Weight, shape, and muscularity concerns in male and female adolescents: predictors of change and influences. Int J Eat Disord 2017;50:139-147. https://doi.org/10.1002/eat.22635

25 Grammas DL, Schwartz JP. Internalization of messages from society and perfectionism as predictors of male body image. Body Image 2009;6:31-36. https://doi.org/10.1016/j.bodyim.2008.10.002

26 Serdula MK, Collins ME, Williamson DF, et al. Weight control practices of U.S. adolescents and adults. Ann Int Med 1993;119:667-671. https://doi.org/10.7326/0003-4819-119-7_Part_2-199310011-00008

27 Ross HE, Ivis F. Binge eating and substance use among ma le and female adolescents. Int J Eat Disord 1999;26:245-260. https://doi.org/10.1002/(sici)1098-108x(199911)26:3<245::aid-eat2>3.0.co;2-r

28 Feldman MB, Meyer IH. Comorbidity and age of onset of eating disorders in gay men, lesbians, and bisexuals. Psychiatry Res 2010;180:126-131. https://doi.org/10.1016/j.psychres.2009.10.013

29 Striegel-Moore RH, Garvin V, Dohm FA, et al. Psychiatric comorbidity of eating disorders in men: a national study oh hospitalized veterans. Int J Eat Disord 1999;25:399-404. https://doi.org/10.1002/(sici)1098-108x(199905)25:4<399::aid-eat4>3.0.co;2-0

30 Striegel-Moore RH, Garvin V, Dohm FA, et al. Eating disorders in a national sample of hospitalized female and male veterans: detection rates and psychiatric comorbidity. Int J Eat Disord 1999;25:405-414. https://doi.org/10.1002/(sici)1098-108x(199905)25:4<405::aid-eat5>3.0.co;2-f

31 Fichter MM, Quadflieg N, Hedlund S. Long-term course of binge eating disorder and bulimia nervosa: relevance for nosology and diagnostic criteria. Int J Eat Disord 2008;41:577-586. https://doi.org/10.1002/eat.20539

32 D'Agostino A, Boni M, Aportone A, et al. Direct and indirect self-injury: is it really all the same? Mediterranean J Clin Psychol 2020;8:1-18. https://doi.org/10.6092/2282-1619/mjcp-2434

33 Smolak L. Risk factors in the development of body image, eating problems, and obesity. In: Smolak L, Thompson JK, Eds. Body image, eating disorders, and obesity in youth: assessment, prevention, and treatment. American Psychological Association 2009, pp. 135-155. https://doi.org/10.1037/11860-007

34 Neumark-Sztainer D, Falkner N, Story M, et al. Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. Int J Obes 2002;26:123-131. https://doi.org/10.1038/sj.ijo.0801853

35 Olivardia R, Pope HG Jr, Mangweth B, et al. Eating disorders in college men. Am J Psychiatry 1995;152:1279-1285. https://doi.org/10.1176/ajp.152.9.1279

36 Mitchell KS, Mazzeo, SE. Mediators of the association between abuse and disordered eating in undergraduate men. Eat Behav 2005;6:318-327. https://doi.org/10.1016/j.eatbeh.2005.03.004

37 Holland LA, Bodell LP, Keel PK. Psychological factors predict eating disorder onset and maintenance at 10-year follow-up. Eur Eat Disord Rev 2013;21:405-410. https://doi.org/10.1002/erv.2241

38 Forbush K, Heatherton TF, Keel PK. Relationships between perfectionism and specific disordered eating behaviors. Int J Eat Disord 2007;40:37-41. https://doi.org/10.1002/eat.20310

39 Dakanalis A, Zanetti AM, Riva G, et al. Male body dissatisfaction and eating disorder symptomatology: moderating variables among men. J Health Psychol 2015;20:80-90. https://doi.org/10.1177/1359105313499198

40 Ciavatta M, Montecchi L, Ugolini P. Corpo post-moderno e disturbi alimentari. Sestante 2009;32:1-31. https://doi.org/file:///C:/Users/MB/Downloads/sestante32.pdf

41 Bratland-Sanda S, Sundgot-Borgen J. Symptoms of eating disorders, drive for muscularity and physical activity among Norwegian adolescents. Eur Eat Disord Rev 2012;20:287-293. https://doi.org/10.1002/erv.1156

42 Striegel-Moore RH, Rosselli F, Perrin N, et al. Gender difference in the prevalence of eating disorder symptoms. Int J Eat Disord 2009;42:471-474. https://doi.org/10.1002/eat.20625

43 Griffiths S, Murray SB, Touyz SW. Disordered eating and the muscular ideal. J Eat Disord 2013;1:15. https://doi.org/10.1186/2050-2974-1-15

44 Mosley PE. Bigorexia: bodybuilding and muscle dysmorphia. Eur Eat Disord Rev 2009;17:191-198. https://doi.org/10.1002/erv.897

45 Murray SB, Rieger E, Touyz SW. Muscle dysmorphia symptomatology during a period of religious fasting: a case report. Eur Eat Disord Rev 2011;19:162-168. https://doi.org/10.1002/erv.1016

46 Lavender JM, Brown TA, Murray SB. Men, muscles, and eating disorders: an overview of traditional and muscularity-oriented disordered eating. Cur Psychiatry Rep 2017;19:32. https://doi.org/10.1007/s11920-017-0787-5

47 Gorrell S, Murray SB. Eating disorders in males. Child Adolesc Psychiatr Clin N Am 2019;28:641-651. https://doi.org/10.1016/j.chc.2019.05.012

48 Pope HG, Katz DL, Hudson JL. Anorexia nervosa and "reverse anorexia" among 108 male body builders. Comprehensive Psychiatry 1993;34:406-409. https://doi.org/10.1016/0010-440X(93)90066-D

49 Farquhar JC, Wasylkiw L. Media images of men: trends and consequences of body conceptualization. Psychol Men Masc 2007;8:145-160. https://doi.org/10.1037/1524-9220.8.3.145

50 Petrie TA, McFarland MB. Men and muscles: the increasing objectification of the male body. In: Reel JJ, Beals KA, Eds. The hidden faces of eating disorders and body image. Reston, VA: AAHPERD 2009.

51 Eisenberg MA, Wall M, Nuemark-Sztainer D. Muscle-enhancing behaviors among adolescent girls and boys. Pediatrics 2012;130:1019-1026. https://doi.org/10.1542/peds.2012-0095

52 Olivardia R. Mirror, mirror on the wall, who's the largest of them all? The features and phenomenology of muscle dysmorphia. Harv Rev Psychiatry 2001;9:245-259. https://doi.org/10.1080/hrp.9.5.254.259

53 Algars M, Alanko K, Santtila P, et al. Disordered eating and gender identity disorder: a qualitative study. Eat Disord 2012;20:300-311. https://doi.org/10.1080/10640266.2012.668482

54 Beren SE, Hayden HA, Wilfley DE, et al. The influence of sexual orientation on body dissatisfaction in adult men and women. Int J Eat Disord 1996;20:135-141.https://doi.org/10.1002/(SICI)1098-108X(199609)20:2<135::AID-EAT3>3.0.CO;2-H

55 Russell CJ, Keel PK. Homosexuality as a specific risk factor for eating disorders in men. Int J Eat Disord 2002;31:300-306. https://doi.org/10.1002/eat.10036

56 Smith AR, Hawkeswood SE, Bodell LP, et al. Muscularity versus leanness: an examination of body ideals and predictors of disordered eating in heterosexual and gay college students. Body Image 2011;8:232-236. https://doi.org/10.1016/j.bodyim.2011.03.005

57 Dakanalis A, Di Mattei VE, Bagliacca EP, et al. Disordered eating behaviors among Italian men: objectifying media and sexual orientation differences. Eat Disord 2012;20: 356-367. https://doi.org/10.1080/10640266.2012.715514

58 Nelson DL, Castonguay LG, Locke BD. Challenging stereotypes of eating and body image concerns among college students: implications for diagnosis and treatment of diverse populations. J College Couns 2011;14:158-172. https://doi.org/10.1002/j.2161-1882.2011.tb00270.x

59 Yean C, Benau E, Dakanalis A, et al. The relationship of sex and sexual orientation to self-esteem, body shape satisfaction, and eating disorder symptomatology. Front Psychol 2013;4:887. https://doi.org/10.3389/fpsyg.2013.00887

60 Feldman MB, Meyer IH. Eating disorders in diverse lesbian, gay,and bisexual populations. Int J Eat Disord 2007;40:218-226. https://doi.org/10.1002/eat.20360

61 Watson RJ, Adjei J, Saewyc E, et al. Trends and disparities in disordered eating among heterosexual and sexual minority adolescents. Int J Eat Disord 2017;50:22-31. https://doi.org/10.1002/eat.22576

62 French SA, Story M, Remafedi G, et al. Sexual orientation and prevalence of body dissatisfaction and eating disordered behaviors: a population-based study of adolescents. Int J Eat Disord 1996;19:119-126. https://doi.org/10.1002/(SICI)1098-108X(199603)19:2<119::AID-EAT2>3.0.CO;2-Q

63 Lakkis J, Ricciardelli LA, Williams RJ. Role of sexual orientation and gender-related traits in disordered eating. Sex Roles 1999;41:1-16. https://doi.org/10.1023/A:1018829506907

64 Munno D, Sterpone SCM, Zullo G. Anorexia nervosa in males. A review. Journal of Psychopathology 2005;11:215-224.

65 Hutson DJ. Standing out/fitting in: identity, appearance, and authenticity in gay and lesbian communities. Symb Interact 2010; 33:213-233. https://doi.org/10.1525/si.2010.33.2.213

66 Meyer C, Blissett J, Oldfield C. Sexual orientation and eating psychopathology: the role of masculinity and femininity. Int J Eat Disord 2001;29:314-318. https://doi.org/10.1002/eat.1024

67 Siever MD. Sexual orientation and gender as factors in socioculturally acquired vulnerability to body dissatisfaction and eating disorders. J Consult Clinic Psychol 1994;62:252-260. https://doi.org/10.1037/0022-006X.62.2.252

68 Boroughs M, Thompson JK. Exercise status and sexual orientation as moderators of body image disturbance and eating disorders in males. Int J Eat Disord 2002;31:307-311. https://doi.org/10.1002/eat.10031

69 Burns T, Crisp AH. Outcome of anorexia nervosa in males. In: Andersen AE, Ed. Males with eating disorders. New York, NY: Brunner/Mazel 1990, pp. 163-185.

70 Yager J, Kurtzman F, Landsverk J, et al. Behaviors and attitudes related to eating disorders in homosexual male college students. Am J Psychiatry 1988;145:495-497. https://doi.org/10.1176/ajp.145.4.495

71 Fichter MM, Daser C, Postpischil F. Anorexic syndromes in the male. J Psychiat Res 1985;9:305-313. https://doi.org/10.1016/0022-3956(85)90033-0

72 Andersen AE, Holman JE. Males with eating disorders: challenges for treatment and research. Psychopharmacol Bull 1997;33:391-397.

73 Crisp AH, Palmer RL, Kalucy RS. How common is anorexia nervosa? A prevalence study. Br J Psychiatry 1976; 28:549-554. https://doi.org/10.1192/bjp.128.6.549

74 Strober M, Freeman R, Morrell W. The long-term course of severe anorexia nervosa in adolescents: survival analysis of recovery, relapse, and outcome predictors over 10-15 years in a prospective study. Int J Eat Disord 1997;22:339-360. https://doi.org/10.1002/(SICI)1098-108X(199712)22:4<339::AID-EAT1>3.0.CO;2-N

75 Kachele H, Kordy H, Richard M. Therapy amount and outcome of inpatient psychodynamic treatment of eating disorders in Germany: data from a multicenter study. Psychoth Res 2001;11:239-257. https://doi.org/10.1080/713663982

76 Støving RK, Andries A, Brixen K, et al. Gender differences in outcome of eating disorders: a retrospective cohort study. Psychiatry Res 2011;186:362-366. https://doi.org/10.1016/j.psychres.2010.08.005

77 Gueguen J, Godart N, Chambry J, et al. Severe anorexia nervosa in men: comparison with severe AN in women and analysis of mortality. Int J Eat Disord 2012;45:537-545. https://doi.org/10.1002/eat.20987

78 Suokas JT, Suvisaari JM, Gissler M, et al. Mortality in eating disorders: a follow-up study of adult eating disorder patients treated in tertiary care, 1995-2010. Psychiatry Res 2013;210:1101-1106. https://doi.org/10.1016/j.psychres.2013.07.042

79 Field AE, Colditz GA, Peterson KE. Racial/ethnic and gender differences in concern with weight and in bulimic behaviors among adolescents. Obes Res 1997;5:447-454. https://doi.org/10.1002/j.1550-8528.1997.tb00669.x

80 Nicdao EG, Hong S Takeuchi DT. Prevalence and correlates of eating disorders among Asian Americans: results from the National Latino and Asian American Study. Int J Eat Disord 2007;40:22-26. https://doi.org/10.1002/eat.20450

81 Austin SB, Nelson LA, Birkett MA, et al. Eating disorder symptoms and obesity at the intersections of gender, ethnicity, and sexual orientation in US high school students. Am J Public Health 2013;103:16-22. https://doi.org/10.2105/AJPH.2012.301150