

Eating disorders in men: a review of the literature

Eating disorders have long been perceived to occur primarily in women; few disorders in general medicine or psychiatry exhibit such a skew in gender distribution. Men and women with eating disorders share common risk factors and exhibit some overlap in clinical presentation but important differences do exist. Determining which factors best explain these differences remain uncertain. Furthermore, despite a marked increase in the incidence of anorexia nervosa and bulimia nervosa in women over the last 50 years, the awareness of eating disorders in men remains low. This is in spite of the fact that men represent 10–20% of cases of anorexia nervosa and bulimia nervosa and up to 40% of cases of binge eating disorder. Similarly, recent research has focused on the assumption and stereotype that eating disorders in men are associated with homosexuality, when male body image objectification and body dissatisfaction are also widespread in younger straight men who are being increasingly confronted with the same impossible body image ideals that already challenge women and gay men. The stigma of being a man with an eating disorder continues, and we persist in attempting to fit men with eating disorders into a theoretical and clinical framework largely focused on the physical, psychological, and emotional development of women. This article reviews the literature on eating disorders in men and explores the factors that may explain this gender discrepancy.

Eating disorders have long been perceived to occur primarily in women and few disorders in general medicine or psychiatry exhibit such a skew in gender distribution. However, the first description of eating disorders in the English language (Morton, 1694) and the first modern case series (Gull, 1874) both included descriptions of men. Men with eating disorders have thereafter consistently appeared within historical descriptions. The diaries of Lord Byron and Franz Kafka suggest that they both suffered from disorders resembling anorexia nervosa. Throughout the late 19th and early 20th centuries, men with eating disorders were mostly theorised out of existence. They did not meet the traditional psychodynamic hypothesis of fear of oral impregnation and were excluded because of statistical inconvenience (series generally included females only) or were merely overlooked by popular stereotype. The existence of eating disorders in men remained in doubt throughout most of the 20th century and despite a marked increase in the

incidence of anorexia nervosa and bulimia nervosa in women over the last 50 years, the awareness of eating disorders in men remains low (Garfinkel & Garner, 1982; Carlat *et al*, 1997).

More recently, studies have suggested that men represent 10–20% of cases of anorexia nervosa and bulimia nervosa and up to 40% of cases of binge eating disorder (Muisse *et al*, 2003). Similarly, both clinical case series (Andersen, 1992) and epidemiological studies (Rastam, 1989) support a gender ratio of approximately 1:10. However, this gender ratio may have been an underestimation, with recent data showing a ratio of 1:3 for both anorexia nervosa and bulimia nervosa (Hoek, 2003; Hudson 2007; Braun *et al*, 1999).

These findings are difficult to validate due to the existing bias in diagnosis. Current diagnostic criteria are aimed at the types of weight concern, shape concern and methods of weight control common to women (thinness, dieting), rather than men (low body fat, muscularity, strength, exercise) and DSM-IV has remained gender biased

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REVIEW

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in not stating analogous requirements in men and women for diagnosis of anorexia nervosa (American Psychiatric Association, 1994). Furthermore, it is stereotypically believed that in order to receive an eating disorder diagnosis, the individual 'should' either be a woman or a homosexual man (Anderson, 1999), despite evidence that widespread body image dissatisfaction exists among younger men, regardless of sexual orientation (Morgan & Arcelus, 2009). Some studies have suggested that men and women with eating disorders are essentially similar (Bramon-Bosch *et al*, 2000; Carlat *et al*, 1997), which supports a more biologically-based view of a discrete and relatively invariant disease entity (Pope & Hudson, 1988). In contrast, men have been found to be less likely to recognise their eating disorder, are more likely to be misdiagnosed with other mental health problems, are less likely to receive treatment and are less likely to be referred to specialist eating disorder services (Morgan, 2009).

This paper reviews the existing literature on men with eating disorders and explores the factors that may explain this gender discrepancy. A literature search was executed using MEDLINE (1966–present day), EMBASE (1980–present day), PsycINFO (1967–present day) and CINAHL (1982–present day) as these were the most likely databases to cite the relevant journals. All databases were accessed through the website www.library.nhs.uk following the search terms 'eating disorders', 'anorexia nervosa', 'bulimia nervosa', 'binge-eating disorder', 'gender', 'men' and 'males' both as MeSH headings and text words. Advanced search strategies including truncation symbols and explode functions were used. All abstracts identified were combined and duplicates removed. Title and abstracts were individually assessed and reference lists of full text links were scanned for other relevant papers. The search was augmented by a search for articles by authors with significant publications on the subject and relevant chapters in major texts.

Age of onset

DSM-IV-TR indicates that the onset of anorexia nervosa is typically in 'mid to late adolescence' (14–18 years), while bulimia nervosa seems to be in 'late adolescence to adult life' (American Psychiatric Association, 2000). Adolescence is a critical time for both men and women and is characterised by a period of rapid weight gain, physical change and a heightened importance placed on body image (Garfinkel & Garner, 1982). It is unclear whether men and women differ with regards to age of onset of eating disorders. Sharp *et al* (1994) found that

men seem to develop eating disorders about one year later than women (18.6 years) but these results were not statistically significant. Anderson (1999) found a mean age of onset of 19.3 years in men similar to that of women. However, Olivardia *et al* (1995) reported a much earlier age of onset among men, of 14.7 years.

Although there is uncertainty regarding the existence of disparity of the age of onset, various research studies show a clear difference in the age of presentation for treatment. Carlat *et al* (1997) found that men with anorexia nervosa present for treatment far earlier than women, while men with bulimia nervosa present at a later stage than women with bulimia nervosa. This has been attributed to the fact that men with anorexia nervosa attract attention from family members earlier than women because of their low weight, while men with bulimia nervosa feel ashamed of having a stereotypically 'female' disorder leading to an atypically long treatment delay.

Body dissatisfaction

The term 'body dissatisfaction' necessitates an understanding of body image. Body image refers to an individual's thoughts and feelings about their body and physical appearance. It can be considered along two main dimensions: body image investment and body image evaluation (Cash & Pruzinsky, 2002). Body image investment reflects the degree of cognitive and behavioural importance that people assign to their body and appearance. Body image evaluation refers to people's degree of satisfaction or dissatisfaction with their body and appearance. Body image concern has been found to have a negative effect on self-esteem and social adjustment and is a well-documented risk factor for developing an eating disorder.

Reliable gender differences have been found on both dimensions of body image. On average, women report lower levels of satisfaction with their body than men (Feingold & Mazzella, 1998; Field *et al*, 1997; Muth & Cash, 1997). However, body image disparagement is increasing among men (Lee *et al*, 2002). Perhaps the most striking difference between male and female body image is in the body parts that elicit the most discontent (Cafri & Thompson, 2004). Men are more likely to report dissatisfaction with their muscle size and shape and wish to be more muscular, particularly in the upper torso (Garner, 1997). This contrasts with women's dissatisfaction with weight and wish to be thinner. This gender difference of 'thinness versus muscularity' in the domain of discontent mirrors the differences in

societal beauty ideals for women and men. The ideal body for women is tall and slender, and thus many women feel overweight, whereas the ideal body for men is lean and muscular, and thus many men feel small and weak (Stanford & McCabe, 2002). As a result, body image interventions have had to be adapted to male patients (Morgan, 2008).

Methods of weight control

Methods of weight control include dietary behaviour, purging and physical activity. Anderson (1999) found that men seem to have reasons for dieting that are less common in women. These include avoidance of teasing relating to obesity, improvement of sports performance, avoidance of weight-related medical complications and improvement of gay relationships. Men tend to diet as a means to an end, while women usually diet as an unquestioned social practice and view weight loss as the goal in itself (Anderson & Holman, 1997). Other methods of weight control such as bingeing and over-exercising have been found to be more prominent in men while laxative use is more common in women (Sharp *et al*, 1994). This may be because bingeing and over-exercising are more socially accepted as a means of weight control in the male population. However, one study (Olivardia *et al*, 1995) found that bulimic behaviours in men as a whole seem to occur at similar rates to women.

Furthermore, occupations that place great importance on weight and encourage excessive over-exercising are believed to be strongly associated with the development of disordered eating patterns (Blouin *et al*, 1995). Sports such as gymnastics, running, riding, wrestling, boxing, body building, dancing and swimming all encourage the maintenance of body weight and male athletes who participate in these sports are vulnerable to the development of eating disorders.

Sexual orientation

Recent research has focused on the assumption and stereotype that eating disorders in men are associated with homosexuality. Feldman and Meyer (2007) demonstrated a much higher prevalence for eating disorders among gay and bisexual men than their heterosexual counterparts, with more than 15% of gay or bisexual men suffering from anorexia nervosa, bulimia nervosa or 'eating disorder not otherwise specified' (EDNOS). Carlat *et al* (1997) found that 41% of their sample of men with eating disorders were heterosexual, 27% homosexual or bisexual and 32% were asexual. They also found that bulimia nervosa was more closely associated

with homosexuality and bisexuality, whereas asexuality was more likely to occur with diagnoses of anorexia nervosa and EDNOS. It was suggested that this was due to a lowering of testosterone levels due to calorific malnutrition as well as an active repression of sexual desire. Other studies have found less significant results, including an absence of normal premorbid sexual interests, as well as indications that of the subjects seen, only 4% were homosexual and 8% were bisexual (Sharp *et al*, 1994; Olivardia *et al*, 1995).

In assessing the importance of these results, it is important to consider estimates of the prevalence of homosexuality in both healthy men and women with eating disorders. Although robust statistics are unavailable and also depend on definitions, data on sexuality in the general population indicate a 1–6% prevalence of homosexuality in healthy men (Seldman & Rieder, 1994) and a 2% prevalence of homosexuality in women with eating disorders (Woodside *et al*, 1990), both far below the prevalence reported by men with eating disorders in most studies. Any interpretation of these findings, however, should take into account that the concept of homosexuality has been simplified, with sexual orientation being far more complex than simple categorisations allow.

A number of explanations have been offered to explain the association of eating disorders with male sexuality. It has been suggested that gay men may be under more pressure to conform to being thin, are more dissatisfied with their bodies and tend to diet more (Carlat *et al*, 1997; Anderson, 1999). This may be related to the fact that values and norms place a heightened focus on physical appearance to which men may feel pressured to conform, which can influence self-esteem and body image satisfaction (Yager, 2000). A heightened concern for physical attractiveness may be related to sexual objectification of partners (Siever, 1994). Thus, gay men may become overly concerned with their appearance in order to please and attract a potential partner. Interestingly, homosexual women and heterosexual men do not show this pattern. Homosexuality may, however, simply aggravate the course of an eating disorder, leading to over-representation in treatment centres and therefore misrepresent the sexual orientation of men with eating disorders (Carlat *et al*, 1997). It has been hypothesised that homosexual men are more willing to seek treatment than heterosexual men (Olivardia *et al*, 1995). Furthermore, homosexual men may be more likely to display higher levels of depression, low self-esteem and discomfort with their sexual

orientation, which suggests a greater propensity for this population to be exposed to mental health services (Russell & Keel, 2002).

Eating disorders and male body image objectification are also rising in younger straight men who are being increasingly confronted with the same impossible body image ideals that already challenge women and gay men (Cash *et al*, 1986). In a recent study examining body image and related eating behaviours in younger gay and straight men, Morgan and Arcelus (2009) found widespread body image dissatisfaction among younger men, regardless of sexual orientation. Media and peer group influences appeared particularly relevant among gay men but there were more similarities than differences between gay and straight men, with both groups exposed to pressures to manipulate body shape and both aware of such pressures sufficient to resist them. Male beauty ideals differed to that of women in that they appeared compatible and consistent with healthy physiology, and health appeared less divorced from the aesthetic ideal for men than women.

Social learning and muscle dysmorphia

Many, if not most, psychological theories about the causes of eating disorders are not gender neutral, emphasising the socio-cultural pressures on women related to body shape and weight, feminist theories about existing male control over women's bodies and reactions to pubertal change specific to girls' bodies (onset of menses, breast development, increased body fat composition) (Thompson *et al*, 1999; Anderson-Fye & Becker, 2004). There is good evidence that differences in social learning may better explain the skewed gender distribution in eating disorders. During early school years, the internalisation of cultural norms for thinness leads to dissatisfaction with body shape. This process takes place primarily in girls leading to dieting in twice as many girls as boys (Maloney *et al*, 1989), despite higher rates of objective obesity in boys (17.1%) than girls (13.2%) among children aged 2–10 years old (Health Survey for England, 2008). Throughout adolescence, friendships become increasingly important for both genders and peer acceptance is central to the development of a self-concept for both young men and women (Freeman, 2005). Research indicates that 42% of adolescent boys are dissatisfied with their weight and 33% are dissatisfied by their body shape. It has also been reported that feeling good about one's appearance is more important for adolescent boys than scholastic and athletic competence (Pope *et al*, 2000).

Certain body shapes have been glamorised and commercialised in certain cultures through the media. Analysis of magazines read by young women (age 18–24) compared with those read by men of the same age shows that young women are exposed to 10 times as many advertisements and articles extolling thinness (Andersen & DiDomenico, 1992). This difference in media exposure corresponds almost exactly to the traditional skewed gender case ratio of eating disorders. However, data from magazines also document increased social pressures on men to have low body fat and high muscularity and provide evidence that boys' action figures set an even more unrealistic body ideal for boys than Barbie does for girls (Leit *et al*, 2001; Pope *et al*, 1999; Pope *et al*, 1997). While the media has been blamed for the culture of thinness, they more likely mirror society and participate, in a complex circular fashion, in setting social and cultural norms (Anderson & Holman, 1997).

The glamorisation of the male body has occurred simultaneously with the changing role of men in society. As women have gained equal rights to men over the years, men have been left with their bodies as the sole source of masculinity and individual expression (Pope *et al*, 2000). It has been postulated that because women can never match the male physical form, so the importance of the body has increased for men and has been used as a unique feature of masculinity. This increase in the need for muscularity has been linked to the condition 'muscle dysmorphia', also known as 'bigorexia' or 'reverse anorexia'. Muscle dysmorphia is characterised by a preoccupation with overall muscularity and a drive to gain weight without gaining fat. Men with muscle dysmorphia show abnormalities on every biopsychosocial variable including cognitive distortions of body image, abnormal eating attitudes and obsessive thoughts about muscularity, behavioural manifestations in the form of anabolic steroid misuse and excessive exercise, and marked functional deficits in terms of social avoidance and occupational functioning. However, there is some uncertainty about where muscle dysmorphia best fits with regards to psychiatric classification. In Pope and colleagues' (1993) original description of the condition, they classified muscle dysmorphia as a subtype of body dysmorphic disorder, defined as a preoccupation with an imagined or exaggerated deficit in appearance that has the characteristic of an overvalued idea, is not amenable to reassurance and leads to significant distress plus impairment of functioning. Furthermore, ICD-10 (World Health Organization, 1992) classifies body dysmorphic

disorder as a hypochondriacal disorder that groups muscle dysmorphia within a diverse range of presentations known as 'somatoform'. However, more recent reports suggest that muscle dysmorphia would be better classified within the eating disorders (Morgan, 2000; Mosley, 2009). Maida and Armstrong (2005) used validated questionnaires to assess committed male weightlifters on measures of muscle dysmorphia, tendency to somatise, features of obsessive-compulsive disorder and characteristics of disordered eating. They found that symptoms of muscle dysmorphia were strongly related to certain measures of eating disorder (body dissatisfaction and perfectionism) and obsessive-compulsive disorder, but that symptoms of muscle dysmorphia were not at all related to somatisation. Similarly, Blouin and Goldfield (1995) found that men with muscle dysmorphia exhibit similar rates of perfectionism, feelings of ineffectiveness, low interoceptive awareness and low self-esteem to those that characterise the eating disorder populations. The core features of body-image disturbance and body-manipulation intuitively wed muscle dysmorphia to the eating disorders and parallel the phenomenology of the man with an eating disorder in his pursuit of thinness. Further epidemiological research based on operationally defined diagnostic criteria is needed to clarify this nosological debate.

Bias in diagnosis

Low prevalence rates may also be accounted for by gender bias in the diagnostic criteria and the fact that most assessment instruments were developed for and normed for women (Cooper *et al*, 1989; Wade *et al*, 2008). Diagnostic criteria are aimed at the types of weight concern, shape concern and methods of weight control common to women (thinness, dieting), rather than men (low body fat, muscularity, strength, exercise) and DSM-IV-TR indicates that a diagnosis of anorexia nervosa requires that post-menarcheal women present with amenorrhoea (American Psychiatric Association, 2000). Furthermore, DSM-IV-TR states that men should be excluded from this disorder and that a more accurate diagnosis of EDNOS should be made. This gender bias in diagnostic criteria exists despite findings that patients who otherwise meet the psychopathological criteria and weight loss required for diagnosis of anorexia nervosa appear to have equal severity of illness whether they are amenorrhoeic or have some menstrual functioning (Anderson & Holman, 1997). This is one of the reasons that the removal of the amenorrhoea criterion for anorexia nervosa is being considered

for DSM-V. Furthermore, Attia and Roberto (2009) suggest that amenorrhoea would be better described as a frequent occurrence among individuals with anorexia nervosa that may provide important information about clinical severity but should not be maintained as a core diagnostic feature.

Biological findings

In addition to psychosocial differences, significant biological differences exist between men and women with eating disorders. Hypotheses based on biological differences have been advanced to explain this gender discrepancy, including hypotheses demonstrating differences in brain serotonin metabolism (Anderson *et al*, 1990; Goodwin *et al*, 1987). The chromosome 23 distribution of XY in men versus XX in women determines, from conception onward, the prototypic differences in body habitus and sexual functioning, and perhaps contributes to differences between language and spatial development and social functioning. Similarly, brain imaging studies show clinically and statistically significant decreases in total brain volume and corresponding increases in ventricular volume in both male and female anorexia patients (Swayze *et al*, 1996). Improvement was noted in both genders after nutritional rehabilitation.

Gender differences have also been reported with regards to premorbid weight. Anderson and Holman (1997) found that the average maximum body mass index (BMI) for men who went on to develop eating disorders falls in the range of medical obesity, while the average maximum BMI for women was within normal range. The only point at which BMI did not differ statistically between genders was at the point of clinical contact. Similarly, some studies have found that men are more likely to report being overweight at some stage prior to onset (Sharp *et al*, 1994; Keel *et al*, 1998). In contrast, a more recent study reported no gender difference in BMI at any point during the course of illness (Bramon-Bosch *et al*, 2000).

Physical health studies in eating disorders, however, remain focused almost exclusively on women (Golden *et al*, 2003). One recent study documented bone loss in men with anorexia nervosa (Mehler *et al*, 2008) but cardiac pathology, brain changes, growth, and other health problems associated with malnutrition have almost all been conducted in women only (Katzman, 2005; Katzman *et al*, 2001; Katzman *et al*, 1997).

Psychiatric comorbidity

A high incidence of psychiatric comorbidity has been described in both men and women with eating

disorders, and special emphasis has been placed on the frequent occurrence of affective disorders and personality disorders (Anderson & Holman, 1997). Very few eating disorder diagnoses are solitary diagnoses and the majority are accompanied by 2–4 additional separate psychiatric diagnoses (Margolis *et al*, 1994). The incidence of alcohol and drug abuse as well as antisocial personality disorder may be higher in men but this could be accounted for by non-specific gender differences in the general population (Anderson & Holman, 1997). Bramon-Bosch *et al* (2000) found that men with eating disorders have a stronger psychiatric comorbidity and exhibit more frequent suicidal behaviour. This opposes previous reports from the general population where self-harm is more prevalent among women (Schmidtke *et al*, 1996) and may be an example of Berkson bias, with a tendency to only recognise eating disorders in men when there is additional morbidity.

Treatment comparisons

The broad principles for treatment of eating disorders are relatively similar in men and women. Patients with weight loss require safe, effective nutritional rehabilitation. Behavioural relearning leading to normalisation of disordered eating is essential so patients do not simply 'eat their way out of the hospital' (Bruch, 1974). Psychological treatment using cognitive-behavioural principles has proven effective for bulimia nervosa cases and appears, to be useful for anorexia nervosa as well. Both genders require similar treatment for medical and psychiatric comorbidity. A number of differences, however, exist between genders with respect to treatment needs.

Oestrogen deficiencies in women with eating disorders necessitate weight restoration at least until return of menses. Men require restoration of weight at least until testosterone levels (which is linearly decreased with weight loss in men) returns to normal (Andersen *et al*, 1982). Testosterone may also play a role in anabolism in men and may increase muscle definition, as well as increasing lean muscle mass rather than abdominal fat distribution during weight restoration, a source of distress for both genders.

Male response to psychological treatments for eating disorders is less clear, as most psychological studies that are available have included only a small number of men (Schmidt *et al*, 2007; Le Grange *et al*, 2007; Lock *et al*, 2005). It is possible that men may respond differently to treatments focused on addressing weight and shape concerns or family

dynamics, because men conceive of their weight concerns and family relationships differently from women. It has been suggested that men are best treated in separate programmes, using male providers, and including a focus on sexual identity (Andersen & Holman, 1997). Furthermore, some data suggest that boys respond to prevention strategies in the schoolage years, but prevention of eating disorders with onset during adolescence are currently designed primarily for young women (Neumark-Sztainer *et al*, 2006; O'Dea, 2004).

Similarly, despite robust confirmation in multiple studies that antidepressants are substantially effective in interrupting binge-purge behaviour (Fluoxetine Study Group, 1992; Walsh *et al*, 1991) their effectiveness in men with eating disorders has not been well studied compared to women.

Male gender does not appear to be an adverse factor in short-term or long-term treatment outcome. Burns and Crisp (1990) found comparable improvement for men and women at follow-up several years after treatment. Initial post-treatment results for both genders showed one-third with good to excellent outcome, one-third with intermediate outcome, and one-third with poor outcome. After four years, attainment of healthy body weight in treated men increased from 54% to 67%. Factors specifically associated in men with poor outcome at follow-up included long duration of illness, older age at presentation, low minimum weight, lack of interest in sports, disturbed relationship with father, poor social adjustment as a child, and absence of premorbid sexual activity (Burns & Crisp, 1990).

While patients appear to be very similar during the most severe phases of illness, gender discrepancy before illness and the anticipated gender differences in social functioning after improvement should be considered (Anderson & Holman, 1997). The ease and effectiveness of the return to appropriate gender-based social roles depend partly on the treatment methods employed during the illness itself. Men are especially sensitive to increased abdominal fat distribution and may revert to self-slimming after treatment to achieve what is primarily a shape goal rather than a weight goal. Moreover, attention to male sexual functioning, whether homosexual or heterosexual, is essential (Anderson & Holman, 1997). Return to a homosexual orientation requires the anticipation of a higher degree of social pressure for thinness and relapse may be more likely if aftercare is not intensive.

Conclusions

The existing literature regarding men with eating disorders reveals a number of contradictory findings which could be explained by several factors. Firstly, previous studies have largely recruited from unrepresentative populations of subjects making sampling bias likely. Secondly, previous studies have been limited to small sample sizes increasing the risk of type II error. Thirdly, the nosology of eating disorders is skewed against men and there is a lack of normative data with regards to valid measures of eating disorder psychopathology in men. Community-based, multi-centre prospective cohort studies may be helpful in overcoming some of these methodological difficulties.

Despite these contradictory findings, the gender discrepancy in eating disorders is clear. However, determining which factors best explain this discrepancy remains uncertain. Socio-cultural constructs of eating disorders have been illuminated by feminist theory, but the lack of equivalent discourse addressing male gender identity has left our knowledge of eating disorders in men aetiolated. The growing literature on eating disorders in men suggests that men and women share common risk factors and exhibit some overlap in clinical presentation, but important differences do exist. The stigma of being a man with an eating disorder continues and we persist in attempting to fit men with eating disorders into a theoretical and clinical framework largely focused on the physical, psychological, and emotional development of women. Diagnostic criteria should be refined to accommodate men and assessment instruments should be developed to capture male eating problems, examine moderating effects of gender on treatment for eating disorders, and develop more targeted awareness and prevention efforts for men with eating disorders.

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