BRITISH JOURNAL OF
HOSPITAL
MEDICINE

REVIEW

Improving Understanding, Recognition and Treatment for Men With Anorexia Nervosa

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Abstract

Aims/Background Anorexia Nervosa (AN) in males is often overlooked due to the traditional perception of eating disorders as female concerns. Despite this, there has been an increased focus on male presentations. Research evidence, including concerns from people with lived experience, highlights specific risks and unmet clinical needs as a result of delayed help-seeking, inaccessible services, and treatment that does not account for men's needs.

Methods Published research and personal narrative from an author with lived experience are combined to assess (1) existing evidence and gaps in knowledge and treatment for males with AN, and (2) solutions which may address challenges across research, policy, and clinical practice.

Results There is an increased prevalence of AN amongst males, with most recent data from National Health Service (NHS) England showing a faster increase in hospitalisations amongst males compared with females. However, the quantity and quality of prevalence data and research into the drivers of this trend are severely lacking. The exclusion of males from clinical research has hindered efforts to assess the efficacy of current AN treatments, despite emerging evidence for males-specific symptoms and health impacts across biopsychosocial domains. These include more frequent use of excessive exercise, feelings of emasculation, neurodivergence, and specific physiological risks occurring at higher weights than females. These factors combine with under-resourced treatment provision which often feels exclusionary to males to create an increased risk of death and significant barriers to recovery.

Conclusion Evidenced solutions for providing more timely recognition and effective treatment for males with AN are limited, emphasising the importance of further research. Present-day clinical practice needs to ensure the safe medical management of males with AN, taking an integrated approach to treatment that accounts for co-occurring conditions and minority status identities. Being more responsive to the needs of males with AN and removing the barriers to effective care can be aided by projects that collaborate with men with lived experience.

Key words: Anorexia Nervosa; gastroparesis; eating disorders; Avoidant Restrictive Food Intake Disorder (ARFID); male

Submitted: 12 September 2024 Revised: 3 December 2024 Accepted: 17 December 2024

How to cite this article:
Downs J, Kelly C. Improving Understanding, Recognition and Treatment for Men With Anorexia Nervosa. Br J Hosp Med. 2025. https://doi.org/10.12968/hmed.2024.0643

Anorexia in Males Is an Increasing Concern

Anorexia Nervosa (AN), literally meaning "without appetite for nervous reasons", is an eating disorder (ED) of significant malnutrition and reduction in body mass. This is typically defined as a body mass index (BMI) below 18.5, or a rapid loss of weight over a short period of time. Conceptualisations of AN have been dominated by a focus on psychological features, such as fear of weight gain and distorted self-image, which drive the pursuit of thinness (Jones et al, 2020; National Institute for Health and Care Excellence, 2018; Hay, 2020). AN is stereotypically conceived as almost exclusively affecting women. Indeed, the lifetime prevalence of AN in the United States of America (USA) was measured as 0.6% in 2010, with females much more likely to develop the condition (Merikangas et al, 2010). This gender divide is illustrated further in a large review in 2011 which did not capture a single study specifically addressing AN in males (Arcelus et al, 2011). Overall, lifetime prevalence of AN across genders has risen steadily and is now recorded at between 2–4%, with incidence rates of around 6 per 100,000 population, and the highest incidence occurring among older teenagers (Galmiche et al, 2019; Silén and Keski-Rahkonen, 2022).

Although prevalence rates suggest that EDs primarily affect women, rates of diagnosis internationally have increased faster in males than in females (Gorrell and Murray, 2019), and one third of people with an eating disorder are now male (Mitchison et al, 2020). This is reflected in data from the National Health Service in England showing a rise in hospital admissions for EDs of 90% amongst children and young people over the 5 years from 2015/16 to 2020/21. For boys and young men, the increase was 128% (NHS England Digital, 2021). The risks of AN in males are significant—mortality among men with AN is increased 8-fold compared with females (Quadflieg et al, 2019).

Despite the presence of concerning trends and risks, research to verify and understand the disease burden of AN in males is limited, often doing little more than hypothesising the causes of increased prevalence and hospital admissions. This reflects broader concerns regarding the current knowledge and treatment gap for males with EDs and how insufficient research arises from factors including historical biases, stigmatising discourse, and a general lack of research into EDs overall (Halbeisen et al, 2022; Brown and Keel, 2023). The systemic factors limiting progress are illustrated in Fig. 1, below:

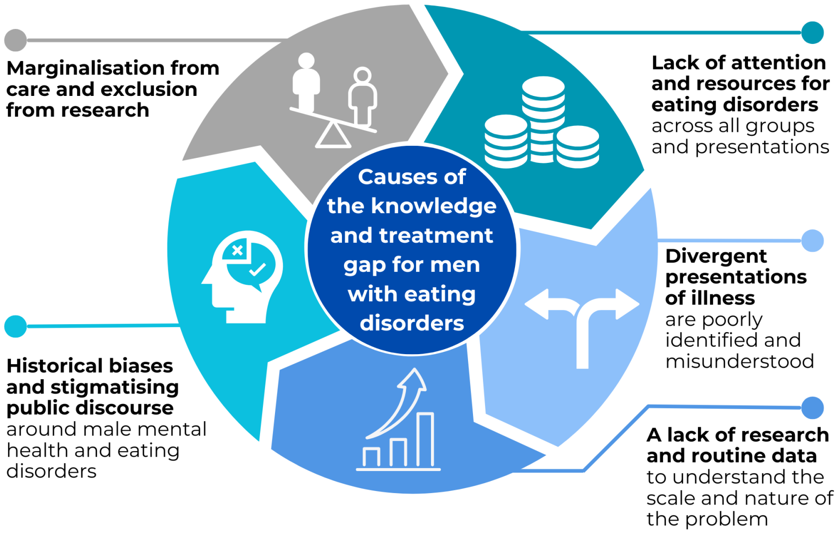

Fig. 1. Causes of the knowledge and treatment gap for men with eating disorders. The drawings were created using Canva, version 3.0 (Canva Pty Ltd., Sydney, NSW, Australia).

A lack of data is seen in relation to treatment outcomes, too. A clinical study to determine the most effective treatments for AN often excludes males altogether, with a recent estimate of the number of male participants in research trials amounting to 5% (Halbeisen et al, 2022). Furthermore, a review conducted in 2023 identified no studies reporting treatment outcomes for males with ED from 2000 onwards (Brown and Keel, 2023), and another, whilst reporting similar outcomes for males as females, found this data was based on 87.7–97.9% female samples with generally small sample sizes (Halbeisen et al, 2024). The exclusion of males from such research makes it difficult to generalise their findings about the most effective treatments when males with AN may experience unique symptoms and be subject to differential risk factors compared with females.

The subsequent sections of this paper examine evidence relating to the specific presentations of illness and treatment options for males with AN. Seeking to understand this under-researched and historically marginalised group also requires an appreciation of how AN is experienced by males on a subjective, phenomenological level. As such, author JD shares some pertinent examples from his lived experience, demonstrating the potential for collaboration between clinical and patient perspectives to create greater knowledge and understanding.

Author JD illustrates the importance of closing gaps in knowledge and treatment for males with AN like him:

"As a teenage male with anorexia, I often felt as though I was living in a vacuum where there was simply no knowledge or understanding of my condition from the people around me - including healthcare professionals. This meant that the risks, signs and symptoms of my illness were missed, and as a result, opportunities to prevent and treat my eating disorder were also missed for many years. It doesn't have to be like this: more training for clinicians on the specific needs of men like me can save and improve lives."

Anorexia Has Profound Psychosocial Impacts, With Specific Concerns for Males

Anorexia Nervosa (AN) exerts profound psychological and social consequences, often driven by severe malnutrition and behavioural changes central to the disorder. These include avoiding meals, secretive eating habits, and adherence to highly selective diets, behaviours that can lead to significant isolation and impaired quality of life (Hay, 2020). Compensatory behaviours, such as purging or excessive exercise, are common. Notably, males with AN are more likely to engage in vomiting compared to females, with these behaviours often entrenching a cycle of withdrawal and secrecy (Van Eeden et al, 2021). These patterns can amplify the feelings of anxiety, low self-esteem, and paranoia induced by the illness, all of which are further compounded by social withdrawal, loss of occupational roles, and financial strain (Zipfel et al, 2015). Importantly, even individuals without significant weight loss experience these severe psychological consequences, regardless of gender (Golden and Walsh, 2024).

For males, the psychosocial effects of AN are shaped by unique gendered experiences. A qualitative study has highlighted feelings of emasculation due to physical weakness or sexual dysfunction, both of which are common complications of AN but are perceived as particularly damaging to male identity (Treasure et al, 2020). The drive for muscularity—exacerbated by societal ideals of masculinity—leads some men to adopt risky behaviours such as excessive exercise or steroid misuse. These behaviours are more prevalent among Black males, highlighting racial disparities in how AN manifests and is experienced (Yu and Perez, 2021). For nonbinary and transgender individuals, greater dissatisfaction with body image contributes to heightened distress, underlining the intersectional vulnerabilities of diverse male populations (Nagata et al, 2024; Cao et al, 2023).

These intersecting challenges often compound the isolating nature of AN, as reflected in JD's lived experience:

"Being so unwell cut me off from the people around me, but the fact that I didn't relate to stereotypical representations of anorexia made me feel even more lonely. As my body weight diminished, so did my social circle, and my motivation to do things I used to enjoy. Severe electrolyte imbalances left me feeling suicidal and irrational. Only when I started to get better did I realise just how mentally unwell I became when I was malnourished - it was like seeing the world in colour again."

The Risks of AN Are Significant, With Specific Physical Symptoms in Males

Much is made of the fact that AN carries the highest mortality rate among all mental health disorders, with a weighted crude mortality rate of 5.1 deaths per 1000 person-years (Keski-Rahkonen and Mustelin, 2016). Alarmingly, up to 20% of all fatalities among individuals suffering from AN result from suicide, with the risk of suicide elevated fivefold in this population (Udo and Grilo, 2019). Fewer than half of all patients achieve complete recovery, while 20% remain chronically ill across their lifespan. The remaining patients often experience residual features of their eating disorder, coupled with a substantial risk of relapse (Steinhausen, 2009; Berends et al, 2018). Particularly adverse prognostic factors include engaging in purging behaviours, maintaining a very low body mass index (BMI), and the presence of psychosocial issues (Khalsa et al, 2017).

Physical signs associated with AN can be diverse and may present differently amongst males, who often experience them at higher body weights than their female counterparts. These include syncope (fainting) and fatigue, bradycardia (slowed heart rate), hypotension (low blood pressure), hypothermia (lowered body temperature), sarcopenia (loss of muscle mass), peripheral oedema (swelling in the extremities), fine lanugo hair, parotid hypertrophy (swelling of the salivary glands), goitre (enlarged thyroid), and dry skin (Murray et al, 2018). Recurrent induced vomiting can lead to significant dental damage, including enamel erosion and cavities. Furthermore, gastroparesis, which is a condition characterised by delayed gastric emptying, has been identified as a frequent complication associated with Avoidant Restrictive Food Intake Disorder (ARFID) (Hollis et al, 2024). A recent study showed equal rates of ARFID in males and females, and a strong association with autistic spectrum conditions (ASC) (Archibald and Bryant-Waugh, 2023).

Although gastroparesis was not described as a complication in previous guidelines for eating disorders, it has attracted more attention recently, although there are few reliable epidemiological studies (Dilmaghani et al, 2023). However, in a recent large study of over 100 patients with gastroparesis, 77% had evidence of ARFID (Hollis et al, 2024). The mechanisms causing delayed gastric emptying in gastroparesis have been described (Huang et al, 2023) and recently reviewed (Shin, 2024). Guidelines for its management have now been published (Camilleri et al, 2022), and both medical (Hasler et al, 2024) and surgical (Mandarino et al, 2024) therapeutic strategies for gastroparesis have been developed and evaluated.

Physiological complications of AN can include growth impairment, incomplete secondary sexual characteristics, osteoporosis, and an increased risk of fractures. Additionally, renal impairment and the formation of kidney stones are common concerns (Norris et al, 2016). Investigative findings often reveal neutropenia, abnormal liver function tests, a ‘sick’ thyroid, and signs of dehydration accompanied by electrolyte and vitamin deficiencies (Mehler and Brown, 2015). The most severe complications associated with Anorexia Nervosa include hypokalaemia and/or hypomagnesaemia (Westmoreland et al, 2016), which can precipitate life-threatening issues such as cardiac arrhythmias, hypotension, cardiac arrest, and even sudden death (Sachs et al, 2016).

Refeeding syndrome poses another significant risk when reintroducing nutrition; therefore, careful and repeated monitoring of electrolytes and phosphate levels is essential during this process (Royal College of Psychiatrists, 2023). Morbidity from anorexia in men may also be increased in the long-term as AN is strongly associated with low levels of both vitamin D and testosterone, increasing the risk of osteoporosis and fractures in later life (National Institute of Clinical Excellence, 2020).

While most deaths due to AN arise from physical complications, approximately 20% of all deaths in individuals with AN occur as a result of suicide, for which males are already at elevated risk (Udo and Grilo, 2019). Higher rates of both AN and attempted suicide are reported among those who identify as LGBTQIA+ (an inclusive term for sexual and gender minorities) (Parker and Harriger, 2020), perhaps due to multiple stigmas and discrimination this group may experience (Lawrence et al, 2024), and the greatest risks for AN and serious self-harm occur in those who are nonbinary or transgender (Nagata et al, 2024). This highlights the need for a more intersectional approach.

Cooccurring Neurodivergence Is Common

A wide range of co-occurring conditions are frequently present alongside AN (Charrat et al, 2023). Amongst these, the prevalence of neurodivergent conditions including ASC is greatly increased in people with AN (Westwood and Tchanturia, 2017; Boltri and Sapuppo, 2021), and people diagnosed with AN are more likely to have ASC (Kerr-Gaffney et al, 2020). Considering male sex is a predictor of ASC, this is therefore an important consideration when treating male patients with AN (Napolitano et al, 2022). Similar cognitive profiles are described among those with AN and those with ASC (Oldershaw et al, 2011), with obsessive compulsive tendencies frequently present in both conditions (Cooper et al, 2017). Autistic people commonly experience rejection and social isolation, contributing to low self-esteem (Cooper et al, 2017), which may in turn elevate risk of EDs or exacerbate existing symptoms. A late diagnosis of ASC and low self-esteem are both strong risk factors for developing AN specifically (Colmsee et al, 2021).

ARFID is especially common in autistic people (Bourne et al, 2022) and can be difficult to differentiate from AN in cases where eating behaviours result in significant nutritional deficiencies and weight loss. There are also a wide range of gastrointestinal abnormalities described in ASC, although a large review of the subject in 2020 did not include gastroparesis among them (Madra et al, 2020). These differences may contribute to the variance in aetiology of AN between those with ASC and neurotypical people (Kelly and Davies, 2019). Heightened sensitivity to texture and taste is a frequent feature in ASC, and interoception is often also impaired, leading to a reduction in the desire to eat when hungry. This makes therapeutic intervention challenging, so it is not surprising that anorexic autistic patients have a worse prognosis than neurotypical patients with AN (Saure et al, 2020). Many of these challenges are heightened in autistic men and boys with AN, who present later and often fare worse than women and girls (Quadflieg et al, 2019; Bomben et al, 2022).

Treatment for Anorexia Is Poorly Resourced and Often Excludes Males

The generally poor treatment outcomes for AN are in part a reflection of systemic challenges in healthcare provision for EDs, where specialist services are overstretched and under-resourced (Ayton et al, 2022) and medical professionals lack standardised, comprehensive ED training (Ayton and Ibrahim, 2018). This is despite the social and economic costs of EDs being increasingly significant in the Western world (Deloitte Access Economics, 2020).

Existing treatment delivery may be particularly suboptimal for males with AN. This starts from assessment and diagnosis, where gender bias in diagnostic measures (e.g., in excluding muscularity-oriented concerns) is widely acknowledged (Valente et al, 2017; Bryant et al, 2022), though there is little consensus about alternative measures or the efficacy of adapting current tools such as the Eating Disorders Examination Questionnaire (EDE-Q) (Jennings and Phillips, 2017; Limburg et al, 2018). Clinical services and interventions have similarly not kept pace with the evolving understanding of male-specific presentations and experiences of AN (Downs and Mycock, 2022).

The persistence of gender and cultural biases within treatment settings may lead to the exclusion of individuals with symptoms and identities that diverge from traditional expectations, with men and boys often feeling out of place in specialist ED services that have been predominantly developed, staffed, and used by women

(Bomben et al, 2022). Furthermore, most available literature and educational resources for people with AN are tailored to women and girls, perpetuating the false notion that this disorder predominantly affects females and effeminate males (Räisänen and Hunt, 2014).

JD highlights the exclusionary nature of gender biases in his care:

"So much of my treatment as a man with anorexia overlooked my individually specific needs. Treatment settings are often overly feminised, surrounding me with narratives of what this illness is like for women. People like me are often invisible, whilst standing out as somehow different. This has been a lonely journey."

Comprehensive and Integrated Treatment Improves Outcomes

Treatment for AN must integrate psychosocial components with an essential focus on nutritional rehabilitation. Cautious refeeding strategies, accompanied by nutritional support and specialised dietary input prevent refeeding syndrome and potential cardiovascular complications (Norris et al, 2016; Sachs et al, 2016). Ensuring medical stability is paramount to avoiding preventable deaths, and guidance on the recognition and treatment of eating disorders has recently been issued by each of the Royal College of Psychiatrists (2023), the National Institute of Clinical Excellence (National Institute for Health and Care Excellence, 2018) and in the BMJ Best Practice (2024; 2023). The Royal College of Psychiatrists' "*Medical Emergencies in Eating Disorders: Guidance on Recognition and Management*" (Royal College of Psychiatrists, 2023) highlights the vital importance of providing psychological support during treatment in the acute phase of illness as suicidality and considerable emotional distress can be present, and how working collaboratively with carers and supporters can facilitate more supportive care.

Beyond medical stabilisation, evidence from a 2022 study shows that far higher rates of remission can be achieved where treatment models for severe illness are developed to deliver enhanced and integrated care which addresses the multifaceted components of AN discussed here (Ibrahim et al, 2022). Notably within this cohort, patients discharged at higher BMIs than is often the case in routine treatment achieved and maintained the best outcomes, and duration and severity of illness did not predict treatment success.

An increasing number of promising treatment options for AN were noted in a recent review which identified therapies targeting emotional regulation amongst others (Gorder et al, 2024). Furthermore, neurobiology may offer new pharmacological and biological therapeutic options in the future (Scharner, 2024). This shows the therapeutic optimism afforded by an individualised, multi-faceted approach to treating AN within a multidisciplinary context.

An Inclusive Approach Is Needed

For males with AN, there is a clear need for more inclusive care which removes barriers to access and makes treatment more acceptable and individualised to their diverse needs. This is supported by a qualitative study of men's experience of ED treatment which highlights the desire for adaptations which accommodate male-specific concerns and how providers need to recognise males as stakeholders in service design and delivery (Richardson and Paslakis, 2021). A small qualitative study found agreement amongst clinicians within a specialist ED service regarding the existence of male-specific treatment needs, accompanied by a lack of guidance and training, calling for existing frameworks to be adapted to become more inclusive. They noted how treatment is more likely to help when focussed on difficulties faced by men such as an increased drive for muscularity and inhibited emotional expression, with some males being more responsive to a goals-focussed approach (Kinnaird et al, 2018).

Therapeutic outcomes achieved by conventional treatment approaches for AN and ARFID are generally less successful and durable amongst autistic people, meaning treatment needs to be tailored to accommodate each person's unique needs (Babb et al, 2021; Kelly and Kelly, 2021). Autistic males with AN may therefore benefit from recent developments in 'neuro-affirmative' approaches to treatment, such as the 'Pathway for Education and Autism Clinical Excellent' (PEACE). The PEACE pathway adjusts traditional treatment specifically for autistic people, for example by permitting patients to have preferred food textures and adapted psychoeducation materials to account for sensory and communication differences, adjustments which have demonstrated improved acceptability and outcomes of treatment (Tchanturia et al, 2020).

Another novel approach is Radically Open Dialectical Behaviour Therapy (RO-DBT) which aims to help patients with AN and ASC by addressing features of "overcontrol" and/or preference for sameness seen in both conditions. Incorporating the graduated introduction of novel experiences and social connection, RO-DBT has been shown to reduce isolation and loneliness as well as improve emotional regulation (Cornwall et al, 2021).

Males with lived experience have described their care for AN as operating in silos, with treatment for the physical and mental health related components of what is a multi-system condition often lacking a joined-up integrated approach (Downs, 2024; Huckins et al, 2024). Similarly, the role of diagnostic overshadowing has been noted, where co-occurring conditions may be undetected or misattributed in the presence of an ED (Downs, 2021).

Author JD illustrates this from his own experience:

"Being diagnosed with autism, ADHD and Ehlers Danlos Syndrome (a genetic condition impacting connective tissues) helped me to understand why I was more likely to develop anorexia and identify the components that maintained my eating disorder. My sensory differences, ways of learning, and communication style were often not accommodated in treatment, but when they have been I have felt more understood and interventions have been more acceptable to me.

I struggle with gastroparesis, but I was always told that my symptoms were part of the eating disorder. I only regained medical stability with treatment that took an integrated approach. With prokinetic medications and dietary changes, such as a liquid diet, my recurrent hospital admissions stopped and I was able to improve my *nutrition. This wasn't what I was told recovery would look like, but it was the only thing that worked for me."*

Co-Producing Change

The substantial gaps that have been highlighted in this paper provide ripe opportunities for harnessing co-production methodologies. Collaboration with those with lived experience is an increasingly widespread, often-mandated part of research and healthcare provision for the benefits it can bring in reducing health inequalities and dismantling stigma. In relation to training for example, research into healthcare providers' attitudes towards men with EDs highlights a common reluctance to talk about what is thought of as a 'touchy subject' (Foye et al, 2024). Such initiatives remain underdeveloped, with few examples in published literature, one of which is the use of arts based narrative approaches such as animations co-created by men which have received positive feedback (Brandt et al, 2025). It would be beneficial to expand these efforts. Fig. 2, below, illustrates the many dimensions across which collaboration with males with lived experience of AN can help address barriers to effective treatment provision.

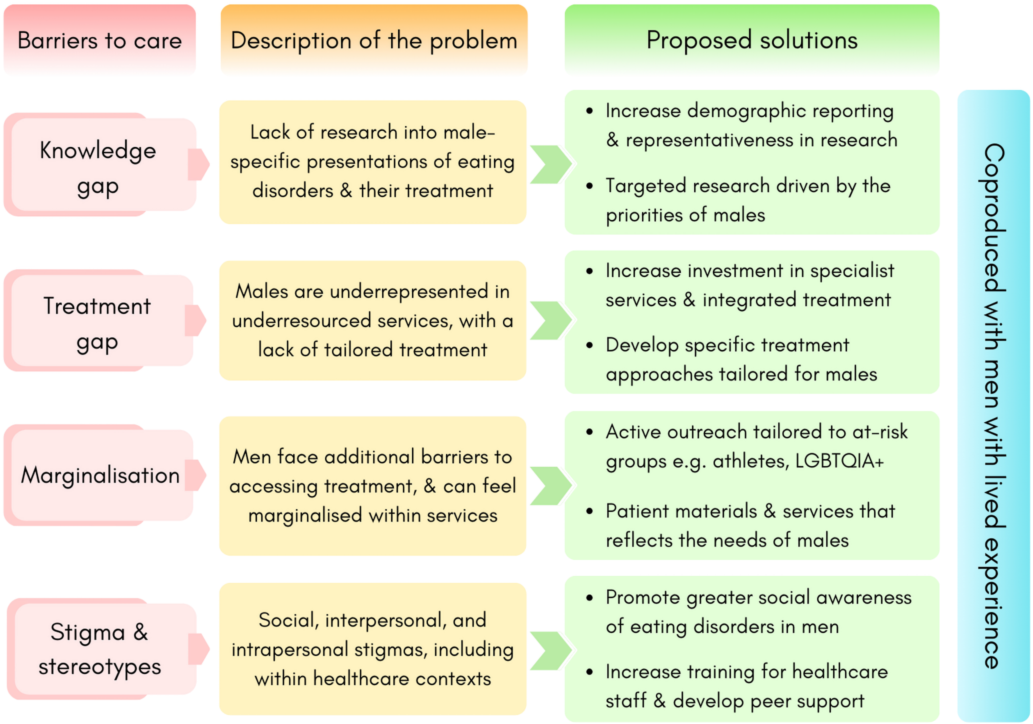

Fig. 2. Identifying and addressing the challenges of providing effective and inclusive care for males with Anorexia Nervosa (AN). The drawings were created using Canva, version 3.0 (Canva Pty Ltd., Sydney, NSW, Australia). LGBTQIA+, an inclusive term for sexual and gender minorities.

Conclusion

Males with AN represent a growing cohort of patients whose needs are underappreciated and poorly responded to within healthcare. A more comprehensive and integrated approach to treating males must be rooted in evidence, which—as demonstrated—is currently lacking in clinical research. Closing this knowledge gap will enable the provision of treatment which responds more directly and effectively to the needs of men—integrating physiological rehabilitation, psychological support, social rehabilitation, any co-occurring conditions, and an appreciation of individually specific preferences and needs. These are all principles of care which need to be prioritised in the here and now. Future investment in research and treatment for males with AN will ultimately reduce the morbidity and mortality associated with this treatable disorder.

Key Points

- The available data indicates a growing number of males with Anorexia Nervosa.
- There are specific symptoms and risks for males with anorexia which require timely identification and intervention.
- Co-occurring conditions are the norm in eating disorders and need to be integrated into assessment and treatment.
- Males face barriers to accessing treatment which may be experienced as exclusionary.
- There is a significant gap in research literature regarding male eating disorders which needs to be addressed to close the treatment gap.
- Coproducing knowledge, policy, treatment provision and patient materials can reduce stigma and create more acceptable, targeted, and effective treatment.

Availability of Data and Materials

All the data of this study are included in this article.

Author Contributions

CK wrote the first draft. CK and JD both made substantial contributions to conception and design, with CK conceiving the original review and JD revising and modifying this. CK and JD agreed the content, figures and references. JD provided lived experiences and created illustrative figures. Both authors contributed to revising the manuscript critically for important intellectual content. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

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