

PS04/20

**Improving core skills and
competence in risk
assessment and management
of people with eating disorders:
What all doctors need to know**

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POSITION STATEMENT

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Purpose of this Position Statement

This position paper calls for improvements in training for all doctors involved in the recognition, management and coordination of care of patients with eating disorders, as outlined in recommendations of the Parliamentary and Health Service Ombudsman (PHSO) report, *Ignoring the Alarms: How NHS Eating Disorder Services Are Failing Patients* (PHSO, 2017).

Summary of key messages and advice

- 1 There is an imperative to improve training in eating disorders for all undergraduate doctors in the interface between physical and mental health, alongside a greater emphasis on mental health in undergraduate training.
- 2 Postgraduate training in all specialties should include nutritional and psychological aspects of eating disorders, including recognition of severe malnutrition as a medical emergency regardless of aetiology. The current review of the postgraduate curricula provides an opportunity to improve training for all future psychiatrists and the Academy of Medical Royal Colleges (AOMRC).
- 3 Leadership competencies should emphasise the need for all doctors to create and manage safe patient pathways across complex systems.
- 4 There is a complex relationship between the global obesity crisis, responses to it and the prevalence and nature of eating disorders. All doctors need an understanding of the stigma, sensitivities and motivations associated with eating behaviour and weight if the trend for rising rates of eating disorders and obesity is to be reversed.

Issue

In December 2017 the PHSO published the report *Ignoring the Alarms: How NHS Eating Disorder Services Are Failing Patients* following the investigation of three avoidable deaths (PHSO, 2017). The investigation revealed that insufficient knowledge among doctors and healthcare staff concerning the management of severe eating disorders was a significant contributor to these deaths. This observation was consistent with the existing literature, both in the UK (Currin et al, 2009; Jones et al, 2013; Hudson et al, 2013) and elsewhere (Rodino et al, 2017; Anderson et al, 2017). This lack of knowledge should not be surprising, as doctors receive minimal training on this topic. A survey and a review of undergraduate and postgraduate training in 2017 found that the majority of UK doctors receive less than two hours of training about eating disorders during their entire 10–16 years of medical training and approximately 20% do not receive any training at all (Ayton and Ibrahim, 2018).

The PHSO's first two recommendations were:

- 1 The General Medical Council (GMC) should conduct a review of training for all junior doctors on eating disorders to improve understanding of these complex mental health conditions.
- 2 Health Education England (HEE) should review how its current education and training can address the gaps in provision of eating disorder specialists.

In June 2019, a review in the House of Commons found little progress on these recommendations and stated: “We found there is a serious lack of training for doctors about eating disorders and recommend that the General Medical Council use its influence to ensure medical schools improve outcomes in relation to eating disorders.” (House of Commons Public Administration and Constitutional Affairs Committee, 2019)

The need for improved training was also reinforced by the UK Government's response in August 2019:

“We conclude that there is a serious lack of training for doctors about eating disorders and the treatment of eating disorder patients, as evidenced, for example, by GPs relying on BMI as a sole indicator of whether people can access treatment for eating disorders, contrary to published guidance... While the number of hours spent in training does not on its own determine the competence of clinicians, two hours of training on such a complicated topic is insufficient”.

– Department of Health and Social Care, 2019

Furthermore, it was recommended that there must be wider take up of the Management of Really Sick Patients with Anorexia Nervosa (MARSIPAN) guidelines, to ensure that life-threatening emergencies are recognised and managed safely.

Despite these recommendations, progress regarding improving undergraduate and postgraduate medical education has been very limited over the last two years. The GMC has completed a survey of eating disorder teaching in medical schools, which has

replicated the 2017 findings (shared at GMC roundtable discussion). Two roundtable events took place to bring together relevant stakeholders: one organised by Baroness Parminter at the House of Lords in April 2019, the second by the GMC in November 2019. These events have been helpful in raising awareness of the need for improvements and joint working among institutions responsible for medical education.

Evidence

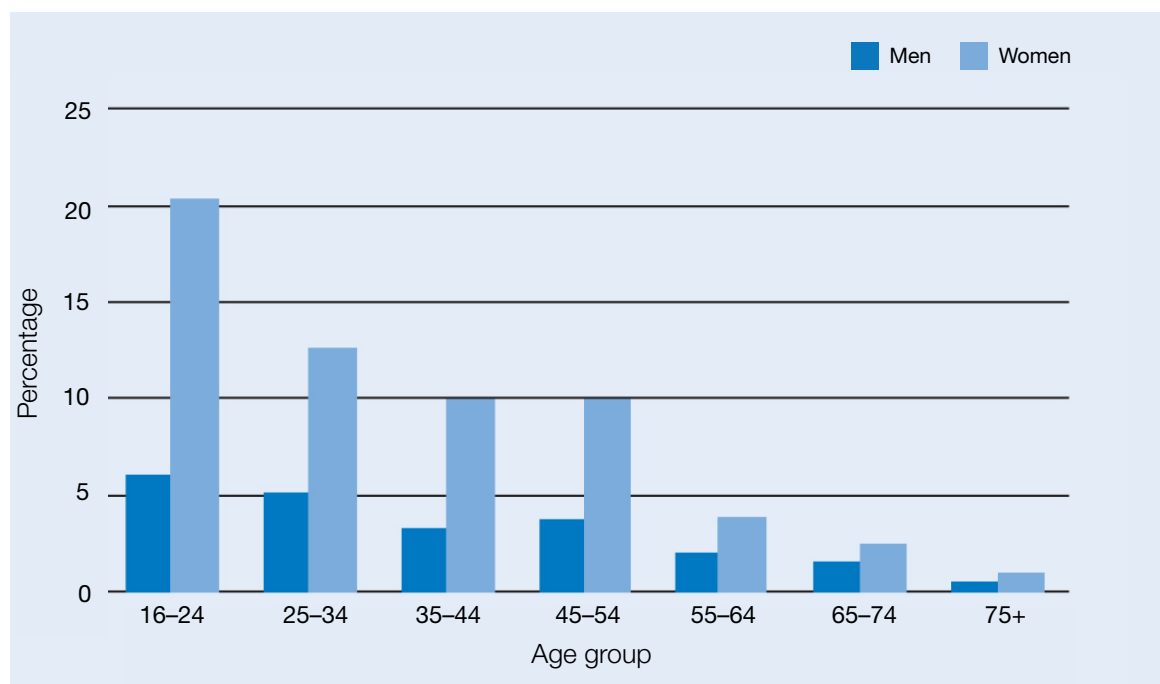
Epidemiology

Eating disorders affect people of all ages, genders and BMI ranges (Schaumberg et al, 2017). The most common presentations include anorexia nervosa, bulimia nervosa, binge eating disorders and their variants. International epidemiological studies show that the lifetime prevalence of anorexia nervosa is 0.5%, bulimia nervosa is 1–2% and binge eating disorder is 2–3% (Keski-Rahkonen and Mustelin, 2016; Udo and Grilo, 2018; Duncan et al, 2017a; da Luz et al, 2017) and there is an observation of increasing trends in parallel with obesity (Mohler-Kuo et al, 2016; da Luz et al, 2017). There has been no population-based study to estimate UK prevalence rates, as noted in the Public Administration and Constitutional Affairs Committee (PACAC) report:

“We also find the lack of precise information about the prevalence of eating disorders to be shocking, given claims up to 1.25 million may have eating disorders. As a matter of urgency NHS England should commission a national population-based study to properly assess how many people have an eating disorder.” (House of Commons Public Administration and Constitutional Affairs Committee, 2019).

Using the SCOFF questionnaire, the [2007 adult psychiatric morbidity survey in England](#) found that 6.4% of adults screened positive for an eating disorder (Figure 1 on the next page). Women were more likely (9.2%) than men (3.5%) to screen positive for an eating disorder. Although the prevalence rates decline with age, the overall number of people affected by a possible eating disorder is highest among adults. Only 19% of adults were receiving treatment for a mental or emotional problem at the time of interview. The government has made a commitment to follow this up in the next survey in 2020 (Department of Health and Social Care, 2019). However, given the methodological concerns with the SCOFF questionnaire (Kutz et al, 2019), it would be helpful to carry out a two-stage study following up people who screen positively.

Figure 1: Eating disorders in the 2007 adult psychiatric morbidity survey in England: Percentage screening positive for eating disorder in the past year (2007) by age and sex (Base all adults)



Multimorbidity and mortality in eating disorders

Eating disorders affect all systems, not just the mind. All eating disorders have an increased rate of mortality, with anorexia nervosa having the highest rate among psychiatric disorders (Kask et al, 2016; Hoang et al, 2014; Arcelus et al, 2011) (Table 1). It needs to be emphasised that a significant proportion of these deaths are avoidable with prompt and appropriate management of acute malnutrition; indeed some countries have reported reduced mortality rates with improved access to treatment (Winkler, 2017).

It is important to note that medical complications in eating disorders occur across the weight spectrum, with purging having a particularly high mortality (Koch et al, 2014; Olguin et al, 2017). Physical or psychiatric comorbidities are common and they increase the risk (Kask et al, 2016). This is in stark contrast to the common misperception that eating disorders are trivial and self-imposed problems (Reas et al, 2017).

The physical complications of eating disorders are partially due to malnutrition, including acute metabolic or electrolyte disturbances, gastrointestinal or cardiac complications (Mehler et al, 2018; Sachs et al, 2016), fertility and perinatal complications (Watson et al, 2017), bone metabolic (Misra et al, 2016) or endocrine (Schorr and Miller, 2017) problems and growth and developmental delay in children.

Comorbid type 1 diabetes poses a significantly increased risk of microvascular complications and mortality due to mismanagement of insulin (Nielsen et al, 2002; Peveler et al, 2005). The relationship with type 2 diabetes and eating disorders is bidirectional. People with bulimia nervosa and binge eating disorder have a higher risk of type 2 diabetes during their lifetime: this may be related to hyperinsulinemia, which often exists decades before the diagnosis (Raevuori et al, 2015; Landry et al, 2019). There is a similar bidirectional relationship between binge eating disorder and obesity and metabolic disorders (Ilyas et al, 2019).

Furthermore, approximately 40–70% of patients with eating disorders have psychiatric comorbidities, with increased risk of self-harm and suicide (Keski-Rahkonen and Mustelin, 2016; Kask et al, 2016; Cucchi et al, 2016). Patients with comorbid alcohol use are at particularly high risk of death (Kask et al, 2017; Kask et al, 2016; Franko et al, 2013).

The management of severe malnutrition or electrolyte disturbances can be challenging in acute settings; while the treating professionals may conclude that weight gain or cessation of binge eating or purging is essential for the patient’s survival, the patient’s actions may be overwhelmed by the eating disorder psychopathology, consequently going to great lengths to avoid the efforts of professionals and of friends and family to support them. Because of this ambivalence, it is essential, if deaths are to be avoided, to make sure that every involved clinician is knowledgeable about eating disorders and communicates effectively with clinicians in other services. In particular, it is important for clinicians to be aware of the deep shame and high level of emotional distress that often contributes to eating disorders. A compassionate and empathetic attitude is essential in helping the patients engage in treatment.

Table 1. Summary of common comorbidities and standardised mortality ratios (SMR) of eating disorders

	Physical comorbidities % of cases	SMR	Psychiatric comorbidities % of cases	SMR
Anorexia nervosa and atypical presentations	Malnutrition: acute and chronic 98% Amenorrhoea: 80–90% Fertility problems: 100% Reduced bone density: 92% Cardiovascular: Electrolyte abnormalities:20–30% Endocrine Delayed development Gastrointestinal Type 1 diabetes	5–6	Depression: 40–70% Bipolar: 20% Anxiety: 50–70% OCD: 30% Personality disorder: 20–30% ASD: 15% Alcohol and substance misuse: 10–20% Suicide attempt/suicide	12
		14.5		11– 35
Bulimia nervosa	Overweight and obese: 68% Fertility problems Cardiovascular Electrolyte abnormalities: 30–40% Endocrine Gastrointestinal Reduced bone density: 92% Type 1–2 diabetes	2–3	Depression: 70–80% Bipolar: 20–30% Anxiety PTSD: 26% Personality disorder: 20–30% Alcohol and substance misuse: 10–20% Suicide attempt	3.4
				4 3–7
Binge eating disorder	Obesity: 74–87% Respiratory disorders: 30% Musculoskeletal: 21% Gastrointestinal disorder: 14% Type 2 diabetes, endocrine: 15% Metabolic disorder Fatty liver Cardiovascular: 5%	1.5–2	Depression: 24% Bipolar: 5% Anxiety: 18% PTSD: 9–10% Alcohol and substance misuse: 4% Suicide attempt: 15–47%	

Workforce

According to the [2019 RCPsych census](#), the number of specialist adult eating disorder psychiatrists is approximately 60. Half of them work in part-time posts with 15% vacancy rates. The number of psychiatrists working in Child and Adolescent Mental Health Services (CAMHS) eating disorder services is similar.

As eating disorder psychiatry is not a GMC-recognised subspecialty, there is no clear training pathway for psychiatrists intending to specialise in this area and there are significant variations in practices. The Faculty of Eating Disorders has identified 17 core and 17 higher specialist eating disorder training posts in the UK (as rotational placements). Many of these are unfilled, causing significant challenges in succession and recruitment. There are no such training posts in Wales or Northern Ireland.

The number of eating disorder consultants is clearly insufficient to meet the needs of the patient population. The GMC view is that, rather than training more specialists, eating disorders should be included in the training of all doctors, included among generic capabilities.

The first contact is either the GP or the emergency department. According to [research by Beat](#), on average it takes at least a year for patients to seek help and there is a significant delay to specialist services by primary care^f. This is partially due to lack of early recognition and also long waiting times in adult specialist services.

When patients are referred to secondary services they are often seen by psychiatrists in other specialties, such as general adult psychiatry, liaison psychiatry, substance misuse psychiatry etc, – either because of service organisation, comorbidities or out of hours in an emergency. It is essential that all psychiatrists are trained to recognise and manage emergencies relating to eating disorders, including using the relevant legislation.

Training in eating disorders for non-specialists

Medical schools

Following the PHSO report, the GMC wrote to all medical schools regarding their plans to improve eating disorder training and this has been helpful in raising awareness. However, further progress is needed to integrate eating disorders into the undergraduate curricula, to ensure that future doctors have the knowledge of presentations, risks, comorbidities and complications, and have sufficient skills to explore disordered eating in patients regardless of their BMI, age, gender or ethnicity.

Foundation training

The UK Foundation Curriculum includes important competencies relevant to eating disorders:

- Routinely assesses patients' basic nutritional requirements.
- Performs basic nutritional screen including assessing growth in children.

- Works with other healthcare professionals to address nutritional needs and communicate these during care planning.
- Recognises eating disorders, seeks senior input and refers to local specialist service.
- Formulates a plan for investigation and management of weight loss or weight gain.

The delivery of foundation training is arranged by deaneries and local education and training boards (LETB). There is no systematic information available on how many offer eating disorder teaching or clinical experience for foundation doctors. There is no requirement to demonstrate clinical competencies in workplace-based assessment (WPBA) as part of the annual review of competency progression (ARCP). There are only a few eating disorder placements for foundation doctors in the UK.

Core and higher specialist training

- Core and specialist training in different specialties include either nutrition or eating disorders as individual subject areas within their curricula in relevant specialties, reflecting the historical divide between physical and mental health. This divide is unhelpful for patients who often present with both physical and psychiatric risks and comorbidities. Clearly, safe management must address both.
- Even in those specialties that include both, the detail regarding eating disorders is minimal. For example, no postgraduate curriculum mentions binge eating disorder, although this is the most common presentation and is associated with a range of physical and mental health complications, such as diabetes, obesity, depression and suicide (Duncan et al, 2017a; Thornton et al, 2017).
- Many of the training materials on malnutrition, including the Royal College of General Practitioners position statement on obesity and malnutrition (2015) and the widely disseminated British Specialist Nutrition Association infographic on malnutrition (2018), make no mention of eating disorders.

Psychiatry training

The Royal College of Psychiatrists is undertaking a review of its training curricula in line with the GMC new guidance which emphasises the need for general competencies and flexibility of training for the next generation of psychiatrists (General Medical Council, 2017b; General Medical Council, 2017a). This provides an opportunity to improve attitudes, knowledge and skills for all future psychiatrists during postgraduate training. The existing core curriculum is limited in its reference to eating disorders. The DSM-5 categories, which were introduced in 2013, are not included; only anorexia nervosa and bulimia nervosa are specified in the core curriculum. There are between two and five questions in the MRCPsych written paper. There is one potential Clinical Assessment of Skills and Competencies (CASC) case.

Several of the subspecialty curricula in psychiatry, such as substance misuse, medical psychotherapy or old age psychiatry do not include clinical competencies in eating disorders, even though the psychiatric comorbidities are high and eating disorders

affect people of all ages, as explained above (Sullivan et al, 2018; Micali et al, 2017; Schaumberg et al, 2017). Furthermore, there is emerging evidence for genetic and neurobiological overlap with other disorders (Pettersson et al, 2018; Duncan et al, 2017b; Watson et al, 2019). Given the limited opportunities for training and developing clinical experience with this patient population, it is not surprising that general adult psychiatrists do not feel confident managing these conditions (Jones et al, 2013) and this issue can be addressed in the new curricula.

All psychiatrists should be knowledgeable of all eating disorder diagnostic categories, comorbidities, prognosis and aware of National Institute for Health and Care Excellence (NICE) approved treatment options. They should have the clinical skill to conduct a sensitive assessment, an individual formulation and risk management plan for their patients regardless of age, gender, BMI or ethnic origins.

Faculty members have written a training resource, *New to Eating Disorders*, to provide structured training and supervision for core and specialist psychiatry training due to be published by Cambridge University Press in 2020. This resource can be adjusted both in core and higher specialist training.

Training of the multidisciplinary teams

The recommendation of the PHSO report is that the existing workforce should be properly educated in assessing and managing severe eating disorders. Whole system change is possible. Health Education England commissioned a National Whole Team Training for community eating disorders service (CEDS) for children and young people (CYP) across England to support delivery of the [Access and Waiting Times standards](#) published in 2015. This comprehensive year-long training has equipped 77 dedicated CYP EDS in every Clinical Commissioning Group (CCG) in England to assess and manage risk, providing a context for the delivery of evidence-based psychological interventions. Similar training is planned for all relevant health professionals in the UK dealing with adult patients. However, these initiatives need to be sustainable to meet the needs of teams with significant staff turnover and they only aim to improve the training of specialist teams, hence addressing the relevant undergraduate and postgraduate curricula is essential.

The College's position

The Royal College of Psychiatrists would like to see the recommendations of the PHSO report Ignoring the Alarms implemented as a matter of urgency.

The PHSO report suggests there should be equal access to specialist eating disorder services for all UK citizens. This has long been the policy of the Royal College of Psychiatrists which has highlighted geographical disparities in provision (Schmidt, 2012). Recent investment in CYP EDS in England has gone some way to address this for younger patients, although demand has been significantly higher than anticipated; the PHSO calls for parity across the age range and we endorse this call.

NHS England's (NHSE) new [guidance for commissioning adult eating disorders](#) is much welcome but, in contrast with CAMHS services, there is no ring-fenced funding and no specified access and waiting time directives and it is essential that this patient population is not overlooked in the implementation of the Long Term Plan.

The Welsh Government has also recently accepted all recommendations of the service review that it commissioned in 2018 and has commissioned a [review of its eating disorders service](#).

These investments are likely to take time and we recommend that local services audit against the [NICE quality standard](#) to drive service improvements.

The experience of Miss E, in the PHSO report, with no apparent access to specialist services, is not unusual. Solving this problem is not simply a matter of money, it also includes training the next generation of specialists. There is a shortage of specialist staff and many Trusts find it difficult to fill vacancies across the professions. CCGs need to ensure that local services are adequately resourced and of high quality.

In terms of medical education, we suggest that key points arising are:

- 1 In medical schools it is imperative to improve training regarding eating disorders in the interface between physical and mental health, alongside a greater emphasis on mental health in undergraduate training.
- 2 Postgraduate training in all specialties should integrate nutritional and psychological knowledge, including recognition and management of severe malnutrition as a medical emergency, regardless of aetiology, and being able to conduct a sensitive assessment of disordered eating in all patient groups, without any discrimination.
- 3 Leadership competencies for all doctors are essential to create and manage safe patient pathways across complex systems.
- 4 The current review of the postgraduate RCPsych curriculum, as outlined above, provides an opportunity to improve training for all future psychiatrists.

Recommendation for action

Developing services and workforce

We welcome the GMC's position that all doctors need more training in nutrition and eating disorders as part of their generic capabilities. There is a complex relationship between the global obesity crisis, responses to it and the prevalence and nature of eating disorders. All doctors need an understanding of the stigma, sensitivities and motivations associated with eating behaviour and weight if the trend for rising rates of eating disorders and obesity is to be reversed (Nicholls and Becker, 2020). However, there is a need for more specialists in eating disorders to support other specialists and primary care, and deliver expert treatment that these patients need and that without that expert input these complex and vulnerable patients will continue to die.

Improving medical education

Medical education is iterative: Basic concepts are introduced in undergraduate training and knowledge and skills are developed through postgraduate training. It is essential to include eating disorders in this framework. Cross-college work in this area is needed, alongside system support for the involvement of GPs and other medical professionals in the care of people with eating disorders, through local pathways emphasising integrated physical and mental health. Lack of confidence in assessment and interpretation of physical health in the context of eating disorders needs to be addressed, but so too are responsibility for risk and incentivisation, to improve care. Our recommendations are as follows:

Medical schools

- Need to introduce basic concepts, such as DSM-5/ ICD11 diagnostic categories of eating disorders, aetiology, assessment, differential diagnosis, outcomes, recognition and management of emergencies.
- As eating disorders affect all systems, it is essential that eating disorders are mentioned among physical conditions which are relevant to differential diagnosis or joint management, for example, among endocrine, bone, metabolic and nutritional disorders.
- To help future doctors to learn sensitive interviewing skills about the patient's dietary intake, eating behaviours and weight and shape concerns, as part of clinical history taking and risk assessment.

Foundations training

- There is a need to improve clinical exposure and ensure that specific training is delivered by Foundation Schools.

Core and higher training

- More in-depth learning is needed, both clinical skills and theoretical, relevant to individual specialty.
- The divide between mental and physical disorders during training should be reduced. Without appropriate training, stigma against psychiatric patients, including eating disorders, is unlikely to be reduced.
- Nutrition is a key factor at play in the interface between physical and mental health. Poor nutrition (alongside smoking and alcohol) is a key driver in the mortality gap of 15–20 years for people with serious mental illness. ‘Over-’ (obesity) and under-nutrition are both forms of nutritional disease, which carry a high morbidity and mortality for people living with these conditions.
- We support the GMC’s call for joint curriculum development between medical Royal Colleges, which can be organised through the AOMRC.
- Eating disorders are treatable illnesses and better recognition of these – including binge eating disorder – will reduce the morbidity and mortality burden.

Credentialing

The College recommends that we need to ensure that all specialist psychiatrists are competent and sufficiently trained for the field in which they work. Eating disorder psychiatry credentialing would provide an additional training structure, post-CCT level, would standardise requirements for psychiatrists choosing this specialty and would improve patient safety and quality of care for this vulnerable group.

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References

- Anderson K, Accurso EC, Kinasz KR and Le Grange D (2017) Residents' and Fellows' Knowledge and Attitudes About Eating Disorders at an Academic Medical Center. *Acad Psychiatry*, **41**: 381–84.
- Arcelus, J, Mitchell, AJ, Wales, J & Nielsen, S (2011) Mortality rates in patients with anorexia nervosa and other eating disorders. A meta-analysis of 36 studies. *Arch Gen Psychiatry*, **68**: 724–31.
- Ayton, A & Ibrahim, A (2018). Does UK medical education provide doctors with sufficient skills and knowledge to manage patients with eating disorders safely? *Postgrad Med J*, **94**: 374–80.
- British Specialist Nutrition Association (2018) <https://bsna.co.uk/uploads/knowledge-hub/FINAL-Malnutrition-Infographic-February-2018.pdf> In: LTD, B. S. N. A. (ed.).
- Cucchi, A, Ryan, D, Konstantakopoulos, G, Stroumpa, S, Kacar, AS, et al (2016). Lifetime prevalence of non-suicidal self-injury in patients with eating disorders: a systematic review and meta-analysis. *Psychol Med*, **46**:1345–58.
- Currin L, Waller G and Schmidt U (2009) Primary care physicians' knowledge of and attitudes toward the eating disorders: do they affect clinical actions? *Int J Eat Disord*, **42**: 453–8.
- da Luz, FQ, Sainsbury, A, Mannan, H, Touyz, S, Mitchison, D, et al (2017). Prevalence of obesity and comorbid eating disorder behaviors in South Australia from 1995 to 2015. *Int J Obes (Lond)*, **41**:1148–53.
- Department of Health and Social Care (2019) Government response to the recommendations of the Public Administration and Constitutional Affairs Committee's Seventeenth Report of Session 2017–19: *Ignoring the alarms follow-up: Too many avoidable deaths from eating disorders*. London.
- Duncan AE, Ziobrowski HN and Nicol G (2017a). The Prevalence of Past 12-Month and Lifetime DSM-IV Eating Disorders by BMI Category in US Men and Women. *Eur Eat Disord Rev*, **25**:165–171.
- Duncan L, Yilmaz Z, Gaspar H, Walters R, Goldstein J, et al (2017b) Significant Locus and Metabolic Genetic Correlations Revealed in Genome-Wide Association Study of Anorexia Nervosa. *Am J Psychiatry*, **174**: 850–58.
- Franko DL, Keshaviah A, Eddy KT, Krishna M, Davis MC et al (2013) A longitudinal investigation of mortality in anorexia nervosa and bulimia nervosa. *Am J Psychiatry*, **170**: 917–25.
- General Medical Council (2017a) *Adapting for the future: a plan for improving the flexibility of UK postgraduate medical training*. London: GMC.
- General Medical Council (2017b) *Excellence by design: standards for postgraduate curricula*. London: GMC.
- Hoang, U, Goldacre, M & James, A (2014) Mortality following hospital discharge with a diagnosis of eating disorder: national record linkage study, England, 2001–2009. *Int J Eat Disord*, **47**: 507–15.
- House of Commons Public Administration and Constitutional Affairs Committee (2019) *Ignoring the alarms follow-up: Too many avoidable deaths from eating disorders*. London: Parliamentary Copyright House of Commons.
- Hudson LD, Cumby C, Klaber RE, Nicholls DE, Winyard PJ et al (2013) Low levels of knowledge on the assessment of underweight in children and adolescents among middle-grade doctors in England and Wales. *Arch Dis Child*, **98**: 309–11.
- Ilyas A, Hubel C, Stahl D, Stadler M, Ismail K et al (2019) The metabolic underpinning of eating disorders: A systematic review and meta-analysis of insulin sensitivity. *Mol Cell Endocrinol*, **497**: 110–307.
- Jones, WR, Saeidi, S & Morgan, JF (2013). *Knowledge and attitudes of psychiatrists towards eating disorders*. *Eur Eat Disord Rev*, **21**:84–8.
- Kask, J, Ekselius, L, Brandt, L, Kollia, N, Ekblom, A, et al (2016). *Mortality in Women With Anorexia Nervosa: The Role of Comorbid Psychiatric Disorders*. *Psychosom Med*, **78**:910–919.
- Kask, J, Ramklint, M, Kolia, N, Panagiotakos, D, Ekblom, A, et al (2017) Anorexia nervosa in males: excess mortality and psychiatric co-morbidity in 609 Swedish in-patients. *Psychol Med* 1–11.
- Keski-Rahkonen, A and Mustelin L (2016) Epidemiology of eating disorders in Europe: prevalence, incidence, comorbidity, course, consequences, and risk factors. *Curr Opin Psychiatry*, **29**: 340–5.
- Koch S, Quadflieg N & Fichter M (2014) Purging disorder: a pathway to death? A review of 11 cases. *Eat Weight Disord*, **19**: 21–9.
- Kutz, AM, Marsh, AG, Gunderson, CG, Maguen, S & Masheb, RM (2019). *Eating Disorder Screening: a Systematic Review and Meta-analysis of Diagnostic Test Characteristics of the SCOFF*. *J Gen Intern Med*.
- Landry MJ, Asigbee FM, Vandyousefi S, Khazaei E, Ghaddar R, et al (2019) Diet Quality Is an Indicator of Disease Risk Factors in Hispanic College Freshmen. *J Acad Nutr Diet*.

- Mehler PS, Blalock DV, Walden K, Kaur S, McBride J, et al (2018) Medical findings in 1,026 consecutive adult inpatient-residential eating disordered patients. *Int J Eat Disord*.
- Micali N, Martini MG, Thomas JJ, Eddy, KT, Kothari R, et al (2017) Lifetime and 12-month prevalence of eating disorders amongst women in mid-life: a population-based study of diagnoses and risk factors. *BMC Med*, **15**:12.
- Misra M, Golden NH and Katzman DK (2016) State of the art systematic review of bone disease in anorexia nervosa. *Int J Eat Disord*, **49**: 276–92.
- Mohler-Kuo M, Schnyder U, Dermota P, Wei W and Milos G (2016) The prevalence, correlates, and help-seeking of eating disorders in Switzerland. *Psychol Med*, **46**: 2749–58.
- Nicholls D and Becker A (2020) Food for thought: bringing eating disorders out of the shadows. *Br J Psychiatry*, **216**: 67–68.
- Nielsen S, Emborg C & Molbak AG (2002) Mortality in concurrent type 1 diabetes and anorexia nervosa. *Diabetes Care*, **25**: 309–12.
- Olguin P, Fuentes M, Gabler G, Guerdjikova AI, Keck PE Jr et al (2017) Medical comorbidity of binge eating disorder. *Eat Weight Disord*, **22**: 13–26.
- Parliamentary and Health Service Ombudsman (2017) Ignoring the alarms: How NHS eating disorder services are failing patients. *London*.
- Pettersson E, Lichtenstein P, Larsson H, Song J, Attention Deficit/Hyperactivity Disorder Working Group of the Ipsych-Broad-Pgc Consortium A SDWGoti-B-PGCCBDWG et al (2018) Genetic influences on eight psychiatric disorders based on family data of 4 408 646 full and half-siblings, and genetic data of 333 748 cases and controls. *Psychol Med*, 1–8.
- Peveler, RC, Bryden, KS, Neil, HA, Fairburn, CG, Mayou, RA, et al (2005) The relationship of disordered eating habits and attitudes to clinical outcomes in young adult females with type 1 diabetes. *Diabetes Care*, **28**: 84–8.
- Raeuori, A, Suokas, J, Haukka, J, Gissler, M, Linna, M, et al (2015) Highly increased risk of type 2 diabetes in patients with binge eating disorder and bulimia nervosa. *Int J Eat Disord*, **48**: 555–62.
- Reas DL, Gulliksen KS, Levallius J and Isomaa R (2017) Letter to the editor: health professionals' attitudes toward individuals with eating disorders: who do we think they are? *J Eat Disord*, **5**:22.
- Rodino IS, Byrne SM and Sanders KA (2017) Eating disorders in the context of preconception care: fertility specialists' knowledge, attitudes, and clinical practices. *Fertil Steril*, **107**: 494–501.
- Royal College of General Practitioners (2015) Position Statement on Obesity and Malnutrition. <https://www.rcgp.org.uk/-/media/Files/CIRC/Nutrition/Nutrition-position-statement-Oct-2015.ashx?la=en>
- Sachs, KV, Harnke, B, Mehler, PS and Krantz, MJ (2016) Cardiovascular complications of anorexia nervosa: A systematic review. *Int J Eat Disord*, **49**: 238–48.
- Schaumberg, K, Welch, E, Breithaupt, L, Hubel, C, Baker, JH, et al (2017) The Science Behind the Academy for Eating Disorders' Nine Truths About Eating Disorders. *Eur Eat Disord Rev*, **25**: 432–50.
- Schmidt U (2012) Eating disorders in the UK: service distribution, service development and training. *College Report CR170*. *College Report*. London: Royal College of Psychiatrists.
- Schorr M and Miller KK (2017) The endocrine manifestations of anorexia nervosa: mechanisms and management. *Nat Rev Endocrinol*, **13**: 174–86.
- Sullivan PF, Agrawal, A, Bulik, CM, Andreassen, OA, Borglum AD et al (2018). *Psychiatric Genomics: An Update and an Agenda*. *Am J Psychiatry*, **175**: 15–27.
- Thornton LM, Watson HJ, Jangmo A, Welch E, Wiklund C et al (2017) Binge-eating disorder in the Swedish national registers: Somatic comorbidity. *Int J Eat Disord*, **50**: 58–65.
- Udo T and Grilo CM (2018) Prevalence and Correlates of DSM-5-Defined Eating Disorders in a Nationally Representative Sample of U.S. Adults. *Biol Psychiatry*.
- Watson HJ, Yilmaz Z, Thornton LM, Hübel C, Coleman JRI et al (2019) Genome-wide association study identifies eight risk loci and implicates metabo-psychiatric origins for anorexia nervosa. *Nature Genetics*.
- Watson HJ, Zerwas S, Torgersen L, Gustavson K, Diemer EW, et al (2017) Maternal eating disorders and perinatal outcomes: A three-generation study in the Norwegian Mother and Child Cohort Study. *J Abnorm Psychol*, **126**: 552–64.
- Winkler LA (2017) Funen Anorexia Nervosa Study – a follow-up study on outcome, mortality, quality of life and body composition. *Dan Med J*, **64**.