



Hidden Complexity in Diabetes and Obesity: Disordered Eating, Substance Misuse and GLP-1 Therapy

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PART 1



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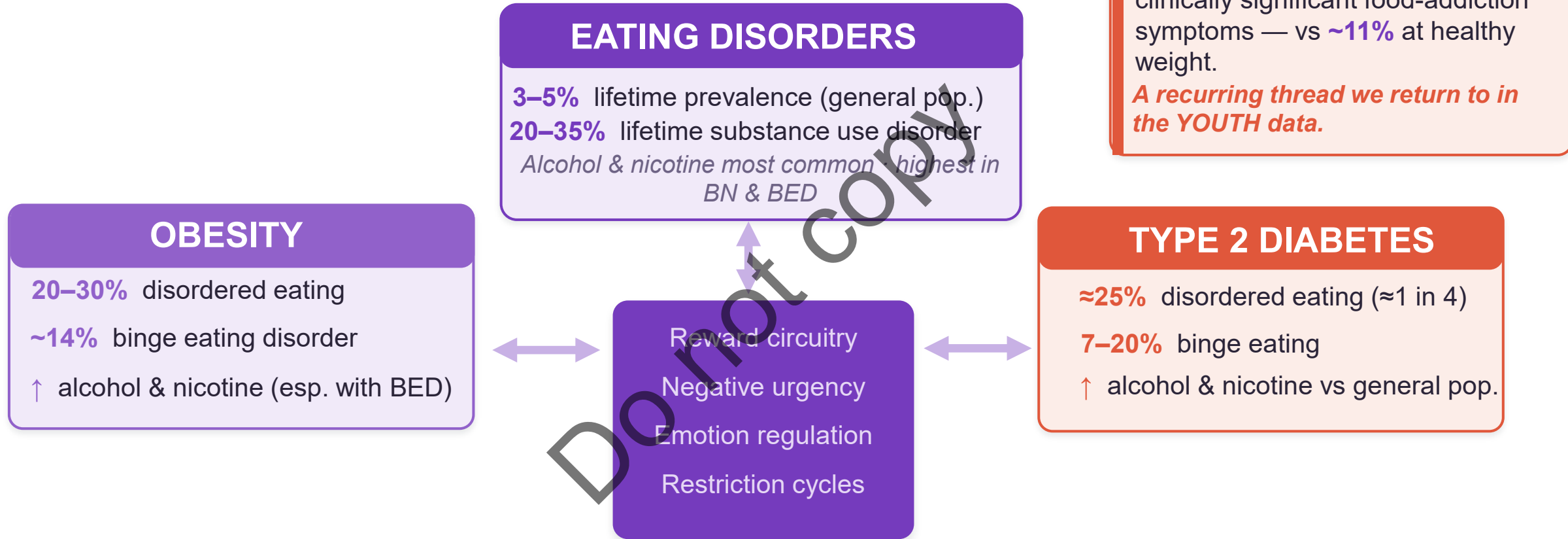
Why these conditions Cluster: Eating Disorders, Substance Misuse and Metabolic Disease

Eating disorders rarely occur in isolation. They share biology and behaviour with substance misuse and sit in a bi-directional relationship with obesity and diabetes.



The scale of the overlap

Common conditions · shared mechanisms · common co-occurrence



FOOD ADDICTION

~50% of people with BED report clinically significant food-addiction symptoms — vs ~11% at healthy weight.

A recurring thread we return to in the YOUTH data.

BED is the most common ED — more than anorexia + bulimia combined

The link is bidirectional — each raises risk of the other over time

Co-occurring obesity + ED → often offered weight-loss, not ED, care

Clinical Implications: the overlap is common enough that screening for eating disorders, disordered eating and substance use should be routine, not exceptional.



PART 1 · SHARED MECHANISMS

Why these conditions cluster together



Shared reward circuitry

Food, drugs and binge behaviour converge on overlapping mesolimbic dopamine and hypothalamic appetite pathways; dysregulated reward and control systems are seen across BED, obesity and substance use.



Affect & impulse regulation

Bingeing, purging, restriction and substance use can all function as maladaptive emotion-regulation strategies, raising risk in both directions.



The restriction cycle

Dietary restraint and rigid weight-loss rules can precipitate loss-of-control eating and disordered behaviour, a key risk in metabolic care.



Common vulnerabilities

Genetic, temperamental and psychosocial risk factors (depression, anxiety, trauma, weight stigma) are shared across the cluster.

Yohn et al., (2019); Sloan et al. (2017); Stice (2001); Barakat et al., (2023)

PART 1 · OUR RESEARCH



The YOUTH study: disordered eating across the weight spectrum

33.5%

above the EDE-Q
clinical range (global
≥3) for disordered
eating

9.9%

met criteria for
addictive eating
(mYFAS 2.0)

20.9%

in the severe-anxiety
range (GAD-7)

The study at a glance



UK & Australia young adults, 18–35 yrs; n=507 at baseline
(73% / 66% retained at 6 / 12 mo)



Weight-diverse (BMI ≥20) and sex-balanced by design —
extends a literature dominated by women



Validated tools: EDE-Q, mYFAS 2.0, PNEES, PSS-4, CES-D-
10, GAD-7, EQ-5D



Addictive, emotional & disordered eating all significantly higher
in overweight/obesity vs BMI 20–24.9

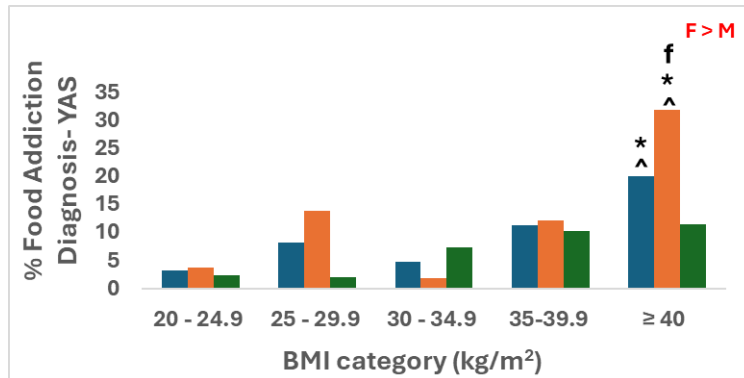
33.5% is a whole-cohort figure (BMI ≥20), not obesity-only — but the burden concentrates at higher BMI

Whatnall, Fozard, Kolokotroni, Evans, Marwood, Colyvas, Ells & Burrows. *International Journal of Obesity*. 2026;50:1258–1266. doi:10.1038/s41366-026-02058-7.

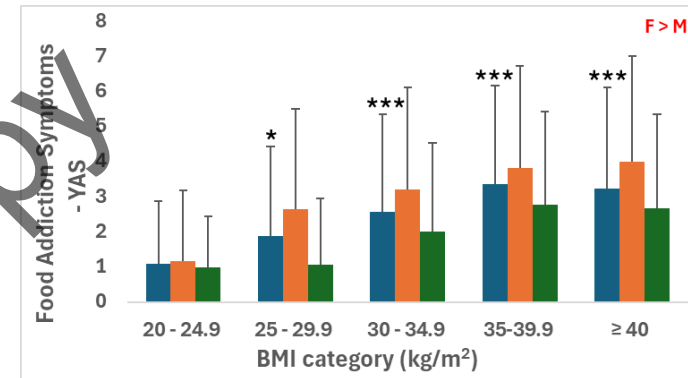


YOUTH: eating behaviours by BMI category

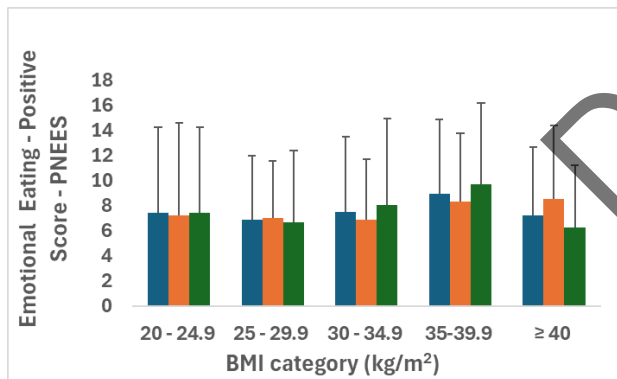
Overall sample Females Males



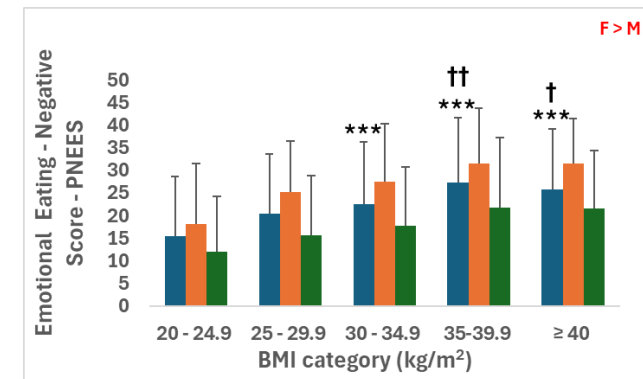
Addictive eating — symptoms (mYFAS)



Food addiction — % at clinical diagnosis



Emotional eating — positive (PNEES)



Emotional eating — negative (PNEES)

* $p < .05$ vs 20–24.9 · † $p < .05$ vs 25–29.9 · ^ $p < .05$ vs 30–34.9 · f $p < .05$ females vs males.

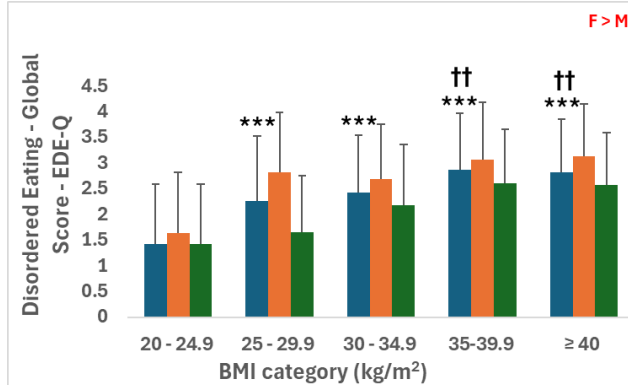


YOUTH: disordered eating (EDE-Q) by BMI category

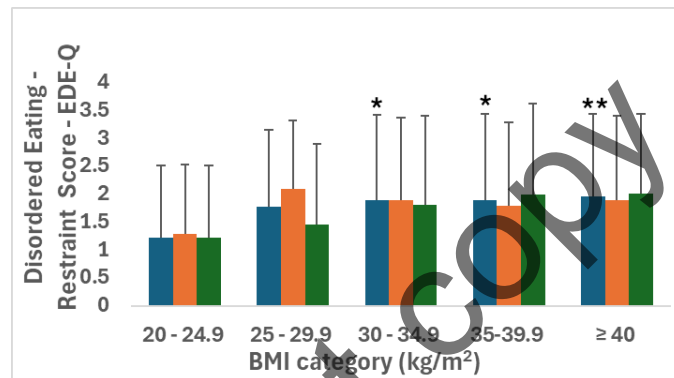
Overall sample

Females

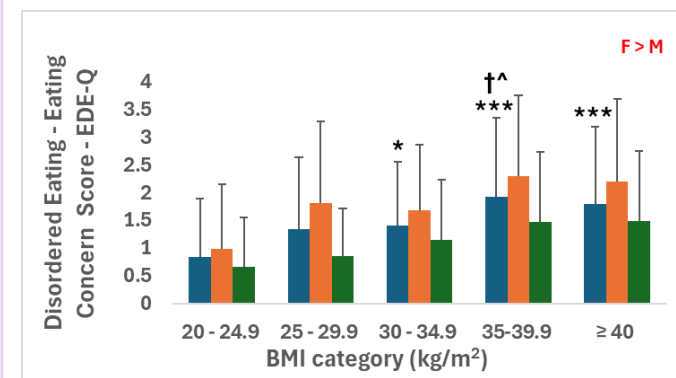
Males



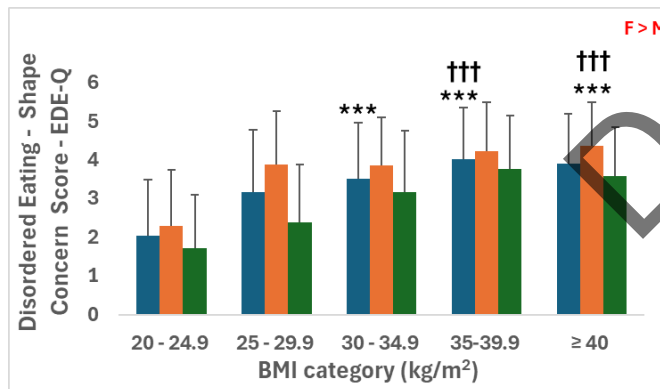
Global score



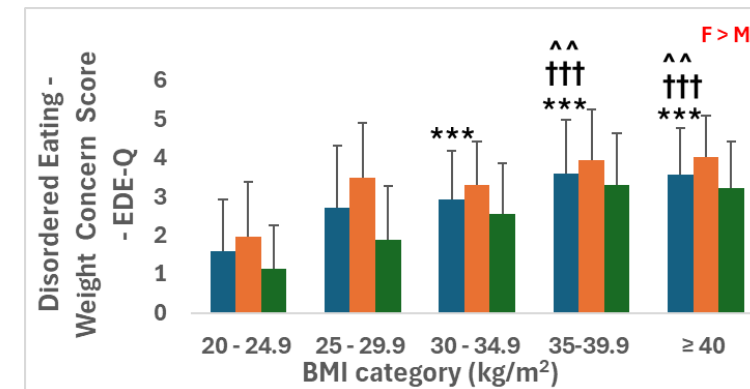
Restraint



Eating concern



Shape concern



Weight concern

* $p < .05$ vs 20–24.9 · † $p < .05$ vs 25–29.9 · ^ $p < .05$ vs 30–34.9 · f $p < .05$ females vs males.



YOUTH over time: weight, eating & mental health

ARTICLE

OPEN

Check for updates

Behavior, Psychology and Sociology

The relationship between weight, eating behaviours and mental health over time in the YOUTH longitudinal cohort study

Megan Whatnall^{1,2}, Therese Fozard³, Katerina Z. Kolokotroni³, Tamla Evans⁴, Jordan Marwood⁵, Kim Colyvas¹, Louisa Ellis^{5,6} and Tracy Burrows^{1,2,6}

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Table 3 — RI-CLPM across baseline, 6 & 12 months

Mental Health/Eating Behaviour at Baseline	Relationship with weight 6 months	Relationship with weight 12 months	Significance
Disordered Eating - Shape Concern (EDEQ)	-	Positive	p = .005*
Weight at Baseline	Relationship with Mental Health/Eating Behaviour 6 months	Relationship with Mental Health/Eating Behaviour 12 months	Significance
Disordered Eating- Global Score (EDEQ)	Positive	-	p = .005
Disordered Eating - Shape Concern (EDEQ)	Positive	Positive	all p ≤ .001
Emotional Eating -Positive (PNEES)	Negative	-	p = .011
Health Related Quality of Life (EQ-5D)	-	Negative	p = .034*



Significant over time

- Higher baseline weight → more disordered eating at 6 & 12 mo, especially shape concern (EDE-Q)
- Higher baseline shape concern → higher weight at 12 mo (weaker: p-value only)
- Higher weight → less positive emotional eating at 6 mo; → lower quality of life at 12 mo



Just as important

- No role for addictive eating in the longitudinal weight relationship
- No gender differences — relationships held equally in men and women

Clinical Implications: The need for integrated health services addressing both psychological and behavioural elements of weight in young adults



Type 2 diabetes & disordered eating: a neglected question

1 in 4

of people with T2DM show disordered eating: binge, restrictive, emotional & night eating

7–20%

binge eating; night-eating syndrome also common; restriction least common but high-risk

Bi-directional

diabetes management itself: restriction, weight focus, monitoring, can drive a vicious cycle



Disordered eating ≠ an eating disorder: sub-threshold patterns that still harm glycaemic control and wellbeing.



How do patients actually experience this? — the focus of our recent work.



Research Gap

- > Recognition & response to disordered eating in T2DM is inconsistent and under-researched
- > Evidence skews to type 1 and to women, despite rising binge eating in men, and higher T2DM risk in Black African, African Caribbean & Asian communities
- > It starts young: binge eating is already present in adolescents with type 2 diabetes (TODAY study)
- > Clinicians report knowledge gaps & low time, training and MDT support, yet rate knowledge of dietary advice highly



Future Directions

Future work will map how disordered eating is recognised and managed across the T2DM care pathway: generating co-produced principles, better identification and support.

In their own words: living with T2D & problematic eating

Adults living with Type 2 diabetes (n=21)

1 FOOD AS EMOTIONAL REGULATION, COMPULSION & SHAME

Eating was described as emotional, habitual, shame-laden and sometimes harmful rather than comforting.

SELF-HARM, COMFORT & DISTRESS

"I have often wondered if the eating binges I sometimes have are a form of self harm. I eat when I am sad or stressed but it certainly does not bring me comfort."

FOOD IN EVERY EMOTION

"I eat through boredom, excitement, sadness, any emotion really. I overeat, undereat and think about food all the time."

2 IMPACT ON DIABETES MANAGEMENT

Diabetes management could intensify surveillance and anxiety, but participants also linked eating distress to treatment escalation.

SURVEILLANCE & ANXIETY

"I worry a lot about eating something that could raise my blood sugar levels... it can also make me more anxious about food."

PERCEIVED ESCALATION OF CARE

"I believe I would not have ended up on insulin if my eating behaviours had been addressed."

3 ASKED WHAT, NEVER WHY

Care often focused on diet, weight or HbA1c, while the drivers of eating distress remained hidden.

ASKED WHAT, NEVER WHY

"The diabetic nurse has not asked about what drives my eating behaviours — only to eat less, move more etc."

SHAME & DISCLOSURE

"I am too ashamed to admit to this... my care has been done in the dark because they don't know about this."

In their own words: the need for care that recognises eating distress

Adults living with Type 2 diabetes (n=21)

4

WANTED: NON-JUDGEMENTAL, PRACTICAL & PSYCHOLOGICALLY INFORMED SUPPORT

Participants wanted care that addressed emotional drivers and real-life constraints, not just repeated dietary instruction.

PSYCHOLOGICAL UNDERSTANDING

“Staff need to be aware of the psychological make-up of someone who over-eats. It's not always a case of unhealthy food and lack of exercise.”

PEER SUPPORT

“Support groups with other people who also struggle with their eating behaviours would be amazing.”

PRACTICAL CONSTRAINTS

“Support and advice on how to eat healthily when you're restricted by both physical disability and low income would be really useful.”

EMERGENT • GLP-1 & “FOOD NOISE”

Unprompted — participants connected GLP-1s with appetite, control, shame and identity, not only weight.

FOOD NOISE

“Constant food noise... there's only so much you can ignore until you cave in.”

CHEMICAL TRIGGERS, NOT GREED

“A chemical can stop my brain thinking about food... my eating habits were chemical triggers, not greed.”



PART 2



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GLP-1 receptor agonists in the context of eating disorders

Promise and precaution.

Do not copy



GLP-1 agonists & the NHS landscape



How they work

GLP-1 receptor agonists mimic gut incretin hormones: they enhance glucose-dependent insulin secretion, slow gastric emptying and act on hypothalamic and reward pathways to increase satiety and reduce food intake — **the same circuits implicated in binge-type eating.**

Nov 2023

MHRA licensed tirzepatide for weight management

NICE TA1026

recommends tirzepatide for obesity with BMI ≥ 35 + a weight-related comorbidity, alongside diet and activity

~3.4 million

people in England estimated eligible — a phased rollout from specialist services into primary care



Therapeutic potential, clinical caution.....

The same appetite- and reward-modulating action can help or harm, depending on the person. Current expert consensus is that GLP-1 agonists may improve, maintain, or worsen eating-disorder symptoms.



Potential to help



Satiety regulation: reducing physiological hunger and meal size



Modulation of reward pathways: not just appetite, reduced food craving and hedonic drive



Improve impulsivity and inhibitory control: improving resistance to reward-driven and compulsive eating behaviours



Potential to harm



May reactivate or entrench restrictive pathology in those with an anorexia / ARFID history



Profound appetite suppression and rapid weight loss can be reinforcing and misused



GI effects may mask, mimic or enable purging; abrupt stop risks rebound bingeing & weight regain

Bartel et al., (2024), Kalas et al., (2025)



GLP-1 agonists: emerging evidence in BED

RCT · HIGHEST CERTAINTY

Allison et al. 2023 — liraglutide RCT

- ↓ binge-eating severity & emotional eating
- ↓ weight (~4.7 kg vs 0.9 kg placebo)
- ! No clear binge-remission benefit

REAL-WORLD DATA

Richards et al. 2023 — semaglutide cohort

- ↓ Binge Eating Scale scores
- Greater reduction vs other pharmacotherapies

SYSTEMATIC REVIEW

Aoun et al. 2024

- ↓ binge frequency; ↓ cravings / emotional eating
- Consistent direction across studies

META-ANALYSES · POOLED

Radkhah et al. (n=182) Jebeile et al. (25 studies)

- ↓ binge-eating scores; ↓ BMI & waist (−3.81 kg)
- Consistent ↓ binge behaviours, liraglutide + semaglutide
- ⚠ Heterogeneous data

Overall signal: ✓ ↓ binge eating ✓ ↓ cravings / 'food noise' / emotional eating ✓ modest weight loss ✗ no evidence of remission ✗ no long-term outcome data

Take-home: convergent early efficacy signal in BED — but not yet an evidence-based treatment for eating-disorder recovery.

Allison et al., (2023); Richards et al., (2023); Aoun et al., (2024); Radkhah et al., (2025); Jebeile et al., (2025); Kalas et al., (2025).



Signals of risk and misuse



Reactivation of restrictive pathology - Guerdjikova et al., 2024; 2025

Case reports of semaglutide misuse in atypical anorexia & relapse of restrictive behaviours after recovery.



Misuse & non-prescribed use – Chiappini et al., 2023; 2025

FAERS pharmacovigilance shows intentional overuse & use without prescription; higher misuse is indicated for semaglutide vs other agents.



Regulatory safety review

EMA assessments investigated suicidal ideation & self-harm reports — no causal link established, but ongoing monitoring recommended.



Clinical reinforcement & GI effects

Rapid weight loss & appetite suppression may reinforce restrictive cognitions; GI side-effects can mimic or mask purging, complicating assessment.



Social media & adolescents

Promotion for aesthetic weight loss raises exposure in vulnerable groups; early reports of adolescent use, concerning given peak ED onset in this age range.



A reassuring cohort study - Maynard et al., 2025

In class 3 obesity (BMI ≥ 40), starting a GLP-1 agonist, validated eating-disorder & distress scores showed no significant change over 12 months despite significant weight loss — and none stopped treatment due to ED symptoms or psychological distress.

Take home.....

- Population data largely reassuring; serious harms cluster in identifiable at-risk people
- Risk is individual — screening is essential, not blanket avoidance
- Absence of evidence $\neq$ safety: long-term & ED-specific data still limited

Key takeaways: implications for clinical practice and future research

Metabolic health and eating behaviour cannot be considered in isolation.

- 1 Eating behaviour should be central to metabolic care** Obesity, type 2 diabetes, eating disorders and mental health share biological and psychological pathways and frequently coexist.
- 2 Assess eating behaviour routinely** When considering GLP-1 therapy, assess binge eating, restrictive eating, compensatory behaviours, eating disorder history and, where relevant, substance use — before, during and after treatment.
- 3 Think beyond weight and HbA1c** Explore the why behind eating behaviours and monitor psychological wellbeing alongside metabolic outcomes.
- 4 Work across services** Integrated diabetes, obesity, dietetic and psychological care is essential for patients with complex eating behaviours.
- 5 Prescribe GLP-1s according to phenotype** GLP-1 receptor agonists may benefit binge-type pathology but require caution in restrictive eating disorders. They are one component of care, not a treatment for eating disorders.

Effective metabolic care is not just about prescribing the right medication; it is about understanding the person behind the condition and the drivers of eating behaviour.

Researchers

Obesity Voices

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Dr Tamla Evans

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Professor Trish Holch

Professor Tracy Burrows

Dr Megan Whatnall

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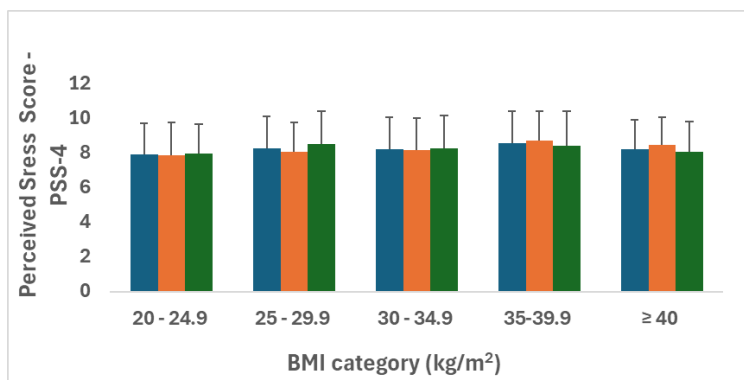


IMPROVING THE LIVES OF PEOPLE LIVING WITH, OR AT RISK OF OBESITY.

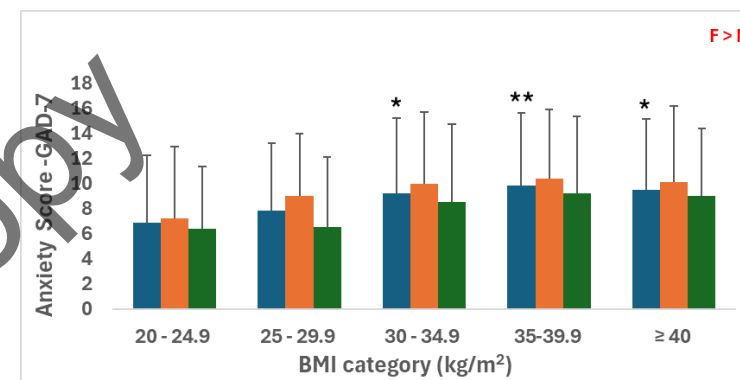


YOUTH: mental health & quality of life by BMI

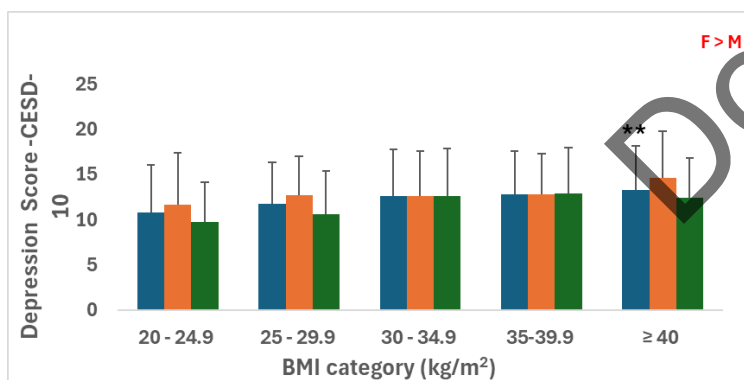
Overall sample Females Males



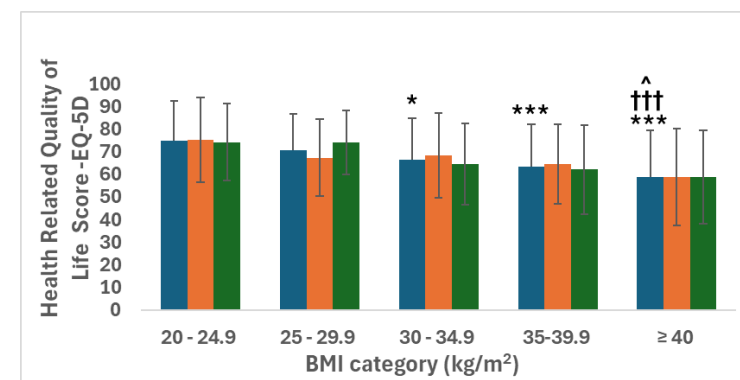
Perceived stress (PSS-4) — no BMI gradient



Anxiety (GAD-7)



Depression (CES-D)



Health-related quality of life (EQ-5D)

*p<0.05 vs 20-24.9; †p<0.05 vs 25-29.9; ††p<0.05 vs 30-34.9; †††females>males. Our research — Whitham et al., Int J Obes 2020;50:1258-1266. doi:10.1038/s41366-020-02058-7. YOUTH cohort (UK & Australia, n=607 baseline, n=520).