Mental Health and **Obesity**

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Introduction

- **Relationship** between **mental health** and **obesity**

  - **Mental illness** increase the risk for **obesity**

    Depression

    Anxiety

    Binge eating disorder

    Bipolar disorder

    Chronic psychotic disorder

    ADHD

Curr Obes Rep. 2015;4(3):303-310.

Bipolar Disord. 2013;15(3):284-293.

Can J Psychiatry. 2012;57(1):5-12.

Biological psychiatry 2013;73:903-14.

Introduction

- **Relationship** between **mental health** and **obesity**

  - **Mental illness** increase the risk for **obesity**

    - 30–70% with schizophrenia, 25–60% with bipolar disorder, 20–50% with depression are **overweight or obese**
    - 3–6 times **higher risk of obesity** in **binge eating disorder**
    - 2–3 times **higher risk of obesity** in **severe mental illness**

Curr Obes Rep. 2015;4(3):303-310.

Bipolar Disord. 2013;15(3):284-293.

Can J Psychiatry. 2012;57(1):5-12.

Biological psychiatry 2013;73:903-14.

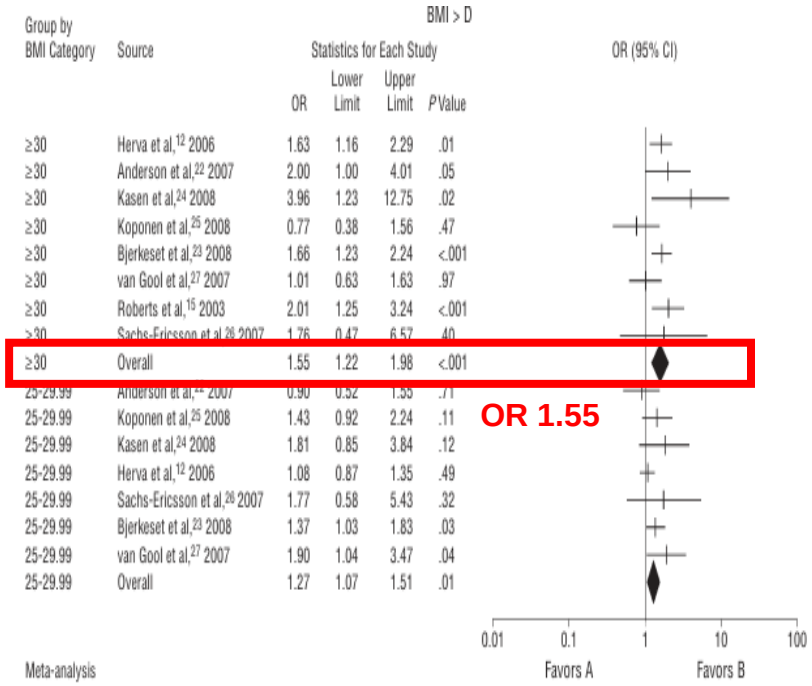
Introduction

- **Relationship** between **mental health** and **obesity**
  - **Obesity increases risk** for a large spectrum of **psychiatric disorders**
  - **Obesity** can be seen as a **pleiotropic risk state** for **mental health**

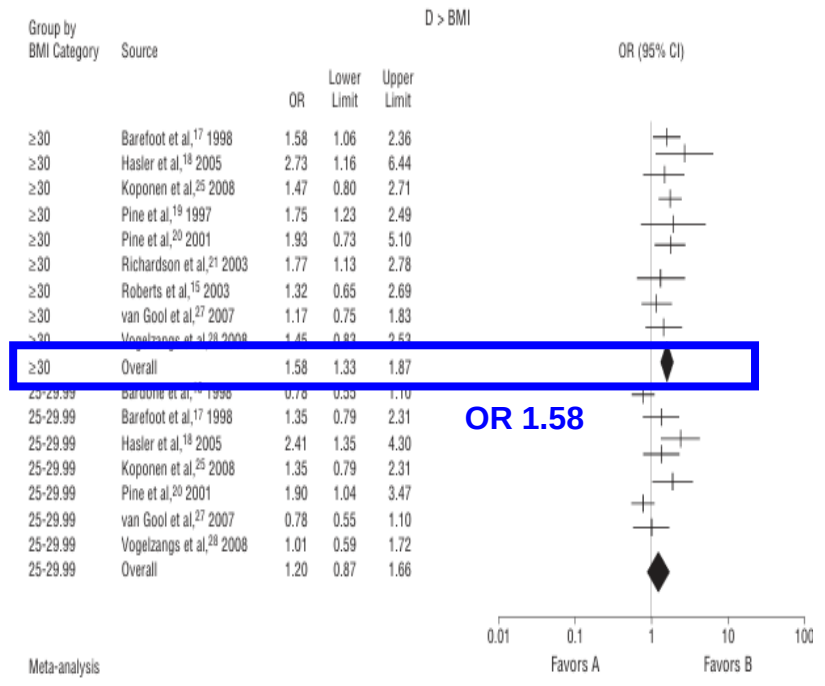
Translational Psychiatry (2023) 13:175.
Pak J Med Sci. 2015 Jan-Feb; 31(1): 239–242.

Introduction

- **Longitudinal bidirectional relationship** between **Depression** and **Obesity**



Obesity increased the risk of onset of **depression**



Depression increased the odds for developing **obesity**

Arch Gen Psychiatry 2010;67:220-9.

Evaluation of **Obesity** in patients with **Mental illness**

Screening for Obesity

- Need to increase efforts to **prevent** obesity

- The ADA/APA consensus recommends **screening for obesity** at **antipsychotic initiation**

  4, 8, 12 weeks after **initiation of a new antipsychotic** medication, and **four times per year** thereafter

- **Treatment effects** and **lifestyle factors** → Ongoing **monitoring for obesity**

BMC Psychiatry (2015) 15:55.

JAMA. 2014;312(9):943-952.

Am J Prev Med 2009;36(4):341–350.

Initial evaluation

- Assess the patient's **attitudes toward weight and shape**
- Is the **obesity a source of shame**?
- Has the patient experienced **discrimination** in social settings?
- Ascertain whether the **patient is receiving adequate medical care**

Am J Psychiatry. 157:6

Recommendations

Patient with Mental illness

		DATE	Baseline	3 Months	6 Months	9 Months	12 Months	15 Months	18 Months	21 Months	24 Months
MEDICATION		BP (mmHg)	/	/	/	/	/	/	/	/	/
		f BSL (mmol/L)									
		Glucose Tolerance Test									
		LFT									
		Vitamin D									
		U & E's									
		ECG									
LIFESTYLE	Cholesterol:	TC									
		TG									
		HDL-C									
		LDL-C									
	Exercise:	Weight (kg)									
		BMI (kg/m²)									
		Abdo. Girth (cm)									
		Activity Level									
	Diet:	Nutritionist									
		Eating Guide									
	Smoking:	Yes/No									
	Dental:	Last Appointment									
	Contraception:										
PHYSICAL DISORDERS & ALLERGIES											
		HIV / STI's									
		Hepatitis C / B									
		Pregnancy Test									
ALCOHOL & ILLICIT DRUG USE	Alcohol:	AUDIT									
		SADQ-C									
	Other Drugs:	DAST-10									
		SDS									
PSYCHOSOCIAL		Familial Support									
		Social Support									
		SES & Employment									
		Culture									

Australian Journal of Primary Health, 2012, 18, 258–264.

Weight gain liability of psychotropic agents

Drug class	Weight loss	Weight neutral	Weight gain
Antidepressants	Bupropion Fluoxetine	Citalopram Escitalopram Sertraline Nefazodone Duloxetine Venlafaxine	**Amitriptyline ++** **Mirtazapine ++** Paroxetine + Imipramine + Nortriptyline +
Anticonvulsants/ Mood stabilizers	Topiramate Zonisamide	Lamotrigine Oxacarbazepine	**Lithium ++** **Valproate ++** Carbamazepine + Gabapentin +
Antipsychotics		Amisulpride Aripiprazole Fluphenazine Perphenazine Haloperidol Lurasidone Ziprasidone	**Clozapine ++** **Olanzapine ++** Chlorpromazine ++ Quetiapine + Risperidone + Thioridazine +

++ substantial
+ intermediate

World Psychiatry 2011;10:52-77.

Guideline

11. 정신과질환이 동반된 환자에서의 비만

지침

1. 체중증가와 관련된 정신과 약물을 복용 중인 중증정신질환자의 대사질환 예방과 관리를 위해 비만 및 대사질환 선별검사를 권고한다. (B, Class I)

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Guideline

- **Severe mental illness**, taking **psychiatric medications** associated with **weight gain**

  Higher risk of developing obesity

- **Schizophrenia spectrum disorders** taking **second-generation antipsychotics**

  Early screening for metabolic disease risk factors, including weight, has been recommended

- **Prevention and management of obesity**

  Evident benefits of screening

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Guideline

Canadian Adult Obesity Clinical Practice GUIDELINES

obesity canada | obésité canada

L'ASSOCIATION CANADIENNE des MEDECINS et CHIRURGIENS BARIATRIQUE
The CANADIAN ASSOCIATION of BARIATRIC PHYSICIANS and SURGEONS

The Role of Mental Health in Obesity Management

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Update History

Version 1, August 4, 2020. Adult Obesity Clinical Practice Guidelines are a living document, with only the latest chapters posted at obesitycanada.ca/guidelines.

Canadian Adult Obesity Clinical Practice Guidelines 2020

Guideline

- **Regular monitoring** of **weight**, **glucose** and **lipid profile**
- Consider both **efficacy** and **effects on body weight** when choosing psychiatric medications
- **Metformin** and **psychological treatment** for **prevention** of **weight gain**
- Consider **lisdexamfetamine** and **topiramate** as an **adjunct to psychological treatment** in **obesity** and **binge eating disorder**

Canadian Adult Obesity Clinical Practice Guidelines 2020

Evaluation of Patients with **Obesity**

Screening for Mental health

- **Intensive** and **multicomponent behavioral intervention**
- **Assess** for comorbid psychosocial distress
- **Screen** for **mental health problems**

Translational Psychiatry (2023) 13:175.
BMC Psychiatry (2015) 15:55.
JAMA. 2014;312(9):943-952.
Am J Prev Med 2009;36(4):341–350.

Initial evaluation

- **K10** (The Kessler Psychological Distress Scale) **screening tool**

- **PHQ-9**

Diabetes Obes Metab. 2021;23(Suppl.1):36–49.

Initial evaluation

- **K10**

		None of the time	A little of the time	Some of the time	Most of the time	All of the time
1.	During the last 30 days, about how often did you feel tired out for no good reason?	1	2	3	4	5
2.	During the last 30 days, about how often did you feel nervous?	1	2	3	4	5
3.	During the last 30 days, about how often did you feel so nervous that nothing could calm you down?	1	2	3	4	5
4.	During the last 30 days, about how often did you feel hopeless?	1	2	3	4	5
5.	During the last 30 days, about how often did you feel restless or fidgety?	1	2	3	4	5
6.	During the last 30 days, about how often did you feel so restless you could not sit still?	1	2	3	4	5
7.	During the last 30 days, about how often did you feel depressed?	1	2	3	4	5
8.	During the last 30 days, about how often did you feel that everything was an effort?	1	2	3	4	5
9.	During the last 30 days, about how often did you feel so sad that nothing could cheer you up?	1	2	3	4	5
10.	During the last 30 days, about how often did you feel worthless?	1	2	3	4	5

https://greenspacehealth.com/en-us/distress-kessler-10/

Initial evaluation

- **PHQ-9**

Over the last 2 weeks, how often have you been bothered by the following problems?		Not at all	Several Days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed, or hopeless	0	1	2	3
3	Trouble falling asleep or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself- or that you are a failure or have let yourself or family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed. Or the opposite-being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3
	TOTAL SCORE (add the marked numbers):				

https://www.socialworkportal.com/phq-9-questionnaire/

Initial evaluation

- **Address** any **associated psychological illness**
- **Identify** patients **at risk** for **eating disorders**
- **Serious mental health issue**

  Refer to a clinical psychologist

Diabetes Obes Metab. 2021;23(Suppl. 1):36–49.

2. 비만 치료 전 평가

지침

1. 비만 치료를 시작하기 전에 이차성 비만의 원인이 될 수 있는 유전질환, 내분비질환, 약제에 대한 문진과 선별 검사의 실시를 고려한다. (B, Class IIa)

2. 비만은 고혈압, 2형당뇨병, 이상지질혈증, 통풍, 관절염, 심혈관계질환 및 암 발생의 위험을 높이고 사망률을 상승시키므로 비만환자를 진료할 때 이에 대한 문진과 선별 검사를 권고한다. (A, Class I)

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Guideline

- **Secondary obesity** caused by **psychiatric disorders**
- **Before** starting obesity treatment, **medical history** and **screening tests** for disease and medication
- **Psychiatric causes** of **secondary obesity**

  Affective disorder : MDD, bipolar disorder

  Anxiety disorder : Panic disorder

  Binge-eating disorder

  Seasonal affective disorder

  ADHD (attention deficit hyperactivity disorder)

  Alcohol dependence

Am J Psychiatry. 157:6

Guideline

- **Assess comorbidities** of **obesity**

  Depression, anxiety, low self-esteem, eating disorders, reduced work performance, decreased quality of life, and **body dissatisfaction**

Am J Psychiatry. 157:6

Treatment of **Psychiatrically ill Obese** Patients

Major contributors of obesity in mental illness

- **Medication effects**, **poor dietary habits**, and **lower levels of physical activity** appear to be major contributors of **obesity** in **people with mental illness**

Australian Journal of Primary Health, 2012, 18, 258–264.

Patients receiving psychotropic agents

- **Open discussion** for **possibility of weight gain**
- **Pros and cons** of continued treatment
- **Management** is crucial

  - **Dose adjustment** or **switch to alternative medication** in same class **less associated with weight gain**

- **Stepped-care approach**

Am J Psychiatry. 157:6

Patients receiving psychotropic agents

- **Patient's ability** to adhere to **recommendations**
- **Education** is **simple** and **helpful intervention**
- For **antidepressant-induced weight gain**, **success** with **adding SSRIs, bupropion,** or **psychostimulants**

Am J Psychiatry. 157:6

Guideline

11. 정신과질환이 동반된 환자에서의 비만

2. 중증정신질환을 동반한 비만환자의 체중 감량을 위해 포괄적 생활습관 중재를 권고한다. (A, Class I)

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Guideline

- For **obese** patients with **severe mental illness**, comprehensive lifestyle interventions are recommended for weight loss
- **Comprehensive lifestyle interventions**, including **lifestyle modification, dietary** and **exercise**

  Significant **reductions** in weight and waist circumference

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Lifestyle modification

RCT

- 291 overweight or obese people with mental illness

schizophrenia or schizoaffective disorder/ bipolar disorder/ major depression

Goals and recommendations	
Weight Loss Goal	-4.5kg weight loss, individually tailored
Behavioral Recommendations	-Exercise 30 minutes a day -Drink water, no “sugar” drinks -Eat 5 Fruits and Vegetables a Day -Eat “Smart” portions -Don’t eat junk food -Choose Smart Snacks
Physical Activity Goals	-Exercise on-site 3 times per week building up to 50 min of moderate intensity physical activity per session -Exercise on other days at least 30 min on your own
Recommended frequency of monitoring	- Eating, Physical activity behavior: Daily - Weighing: weekly (intensive phase) → bi- weekly (maintenance phase)

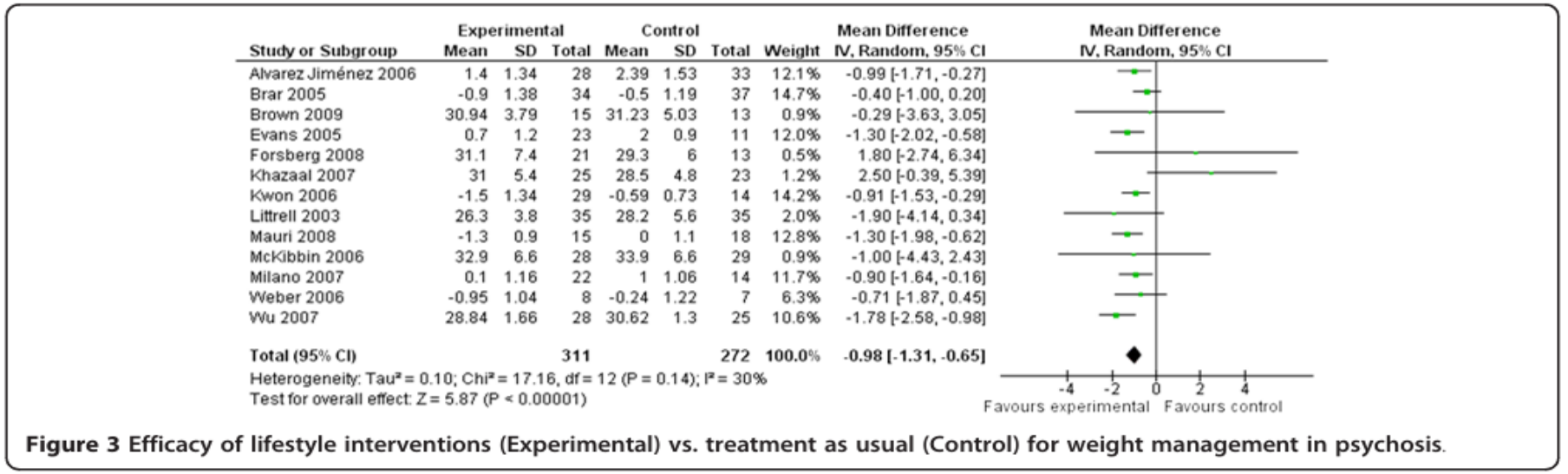
→ At **18 months**, the mean **between-group difference** in **weight** was **−3.2 kg**

N Engl J Med. 2013 Apr 25;368(17):1594-602.

Lifestyle modification

Meta-analysis

- **Psychoeducational** and/or **cognitive-behavioral interventions** in patients with **psychosis**



Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Alvarez Jiménez 2006	1.4	1.34	28	2.39	1.53	33	12.1%	-0.99 [-1.71, -0.27]
Brar 2005	-0.9	1.38	34	-0.5	1.19	37	14.7%	-0.40 [-1.00, 0.20]
Brown 2009	30.94	3.79	15	31.23	5.03	13	0.9%	-0.29 [-3.63, 3.05]
Evans 2005	0.7	1.2	23	2	0.9	11	12.0%	-1.30 [-2.02, -0.58]
Forsberg 2008	31.1	7.4	21	29.3	6	13	0.5%	1.80 [-2.74, 6.34]
Khazaal 2007	31	5.4	25	28.5	4.8	23	1.2%	2.50 [-0.39, 5.39]
Kwon 2006	-1.5	1.34	29	-0.59	0.73	14	14.2%	-0.91 [-1.53, -0.29]
Littrell 2003	26.3	3.8	35	28.2	5.6	35	2.0%	-1.90 [-4.14, 0.34]
Mauri 2008	-1.3	0.9	15	0	1.1	18	12.8%	-1.30 [-1.98, -0.62]
McKibbin 2006	32.9	6.6	28	33.9	6.6	29	0.9%	-1.00 [-4.43, 2.43]
Milano 2007	0.1	1.16	22	1	1.06	14	11.7%	-0.90 [-1.64, -0.16]
Weber 2006	-0.95	1.04	8	-0.24	1.22	7	6.3%	-0.71 [-1.87, 0.45]
Wu 2007	28.84	1.66	28	30.62	1.3	25	10.6%	-1.78 [-2.58, -0.98]
Total (95% CI)			**311**			**272**	**100.0%**	**-0.98 [-1.31, -0.65]**

Heterogeneity: Tau² = 0.10; Chi² = 17.16, df = 12 (P = 0.14); I² = 30%
Test for overall effect: Z = 5.87 (P < 0.00001)

Figure 3 Efficacy of lifestyle interventions (Experimental) vs. treatment as usual (Control) for weight management in psychosis.

→ The mean **between-group difference** in **weight** was **−0.98 kg/m²**

BMC Psychiatry 2012;12:78.

Pharmacotherapy

- **Semaglutide**

In **RCT**, remarkable **weight loss** occurred **without** significant **psychiatric side effects**

- **Liraglutide**

In **RCT**, **weight loss** occurred **without** significant **psychiatric side effects**

- **Orlistat**

In **RCT**, significant **weight loss** effect was observed **only in men**, and **no** significant **side effects** were observed

- **Naltrexone-bupropion**

In **RCT**, **no** significant **weight loss effect** was observed

- **Metformin, Topiramate**

Multiple **meta-analyses** have reported **weight loss effects**, but the use is **restricted** as it has **not** been **approved** as an anti-obesity drug in Korea

Diabetes Obes Metab. 2024;26:911–923.

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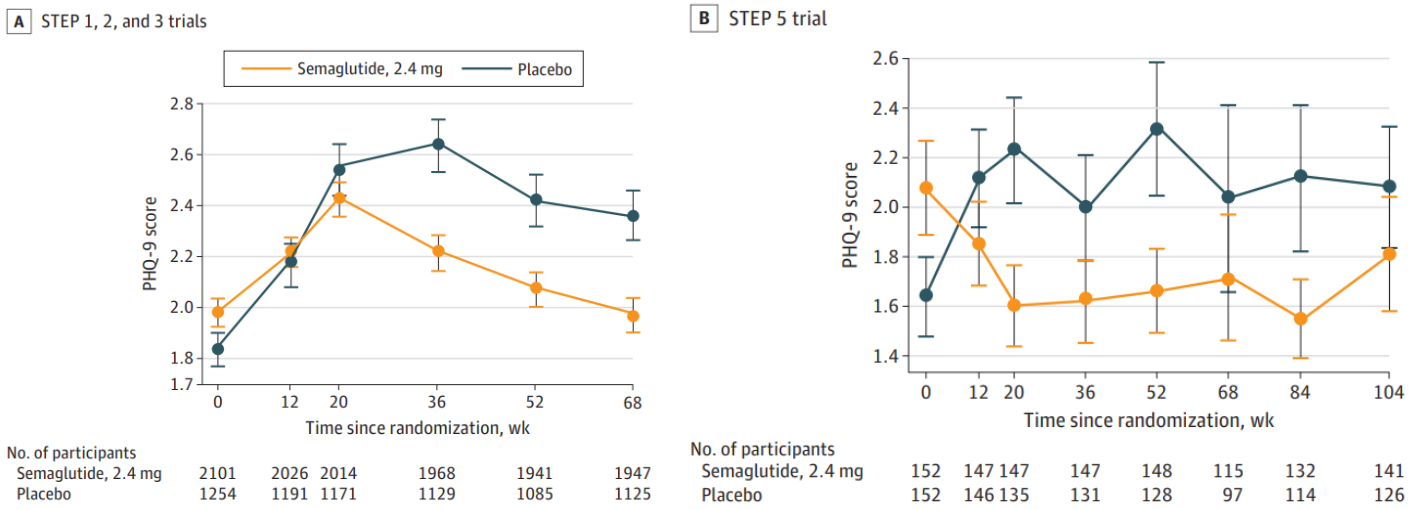
Semaglutide

- **Post hoc analysis** of **STEP 1, 2, 3,** and **5 trial**
- **Depressive symptoms, suicidal ideation/behavior, psychiatric and nervous system disorder adverse events** were assessed



PHQ-9 scores over time during STEP 1, 2, 3, and 5 Trials

- **Semaglutide 2.4 mg** did **not** increase the risk of developing **symptoms of depression** or **suicidal ideation/behavior** vs placebo

JAMA Intern Med. Published online September 3, 2024. doi:10.1001/jamainternmed.2024.4346

Liraglutide

- **Liraglutide 1.8 mg** for 16 weeks **RCT**
- Those having **obesity** in **Clozapine-** or **Olanzapine-** treated **patients**

Table 2. Change in End Points From Baseline to Week 16[a]

Characteristic	Liraglutide Treatment Group (n = 47)	Placebo Treatment Group (n = 50)	Estimated Treatment Difference, Liraglutide vs Placebo (95% CI)[b]	*P* Value[c]
Clinical, mean (SE)				
Body weight, kg	−4.7 (0.5)	0.5 (0.7)	−5.3 (−7.0 to −3.7)	<.001[d]
Waist circumference, cm	−4.0 (0.6)	0.5 (0.7)	−4.1 (−6.0 to −2.3)	<.001[d]
BMI	−1.6 (1.2)	0.08 (0.2)	−1.8 (−2.4 to −1.3)	<.001[d]
Systolic blood pressure, mm Hg	−1.4 (2.0)	1.1 (1.8)	−4.9 (−9.5 to −0.3)	.04
Diastolic blood pressure, mm Hg	0.5 (1.5)	2.4 (1.1)	−3.0 (−6.8 to 0.9)	.13
Prediabetes status, No. (%)[e]	−30 (63.8)	−8 (16.0)	9.2 (2.6 to 32.7)	<.001[d]
Elevated fasting plasma glucose level	−13 (85.7)	−6 (40.0)	2.1 (0.9 to 3.3)	<.001[d]
Elevated glycated hemoglobin level	−5 (83.3)	0 (0.0)	NA (too few events)	NA (too few events)
Impaired glucose tolerance	−28 (37.8)	−6 (12.5)	2.1 (0.8 to 3.5)	.002[d]

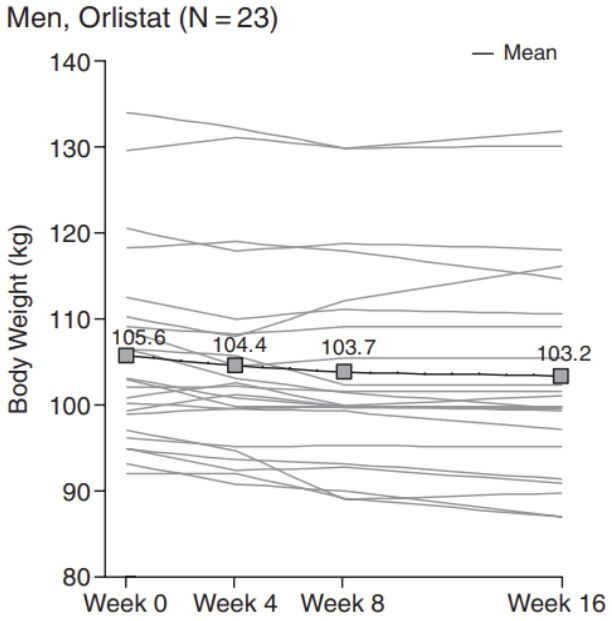
- **Neuropsychiatric safety**

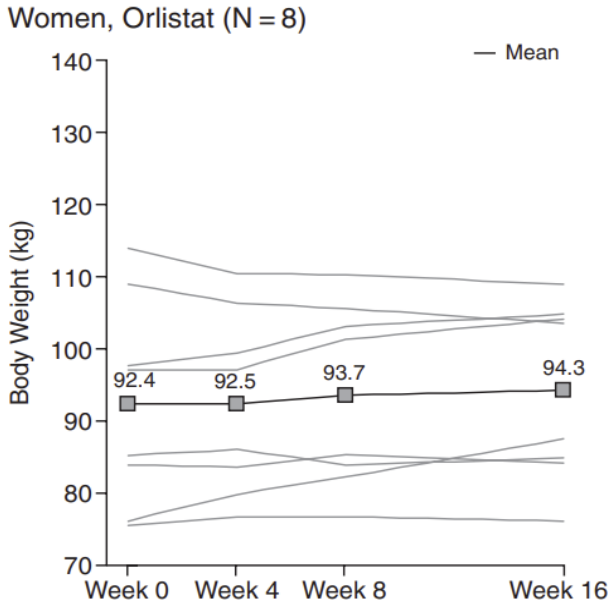
  Fewer psychiatric SAE (admission to hospital for worsening of schizophrenia) in **treatment group** (6.0%) compared to control group (17.7%)

JAMA Psychiatry. 2017 Jul 1;74(7):719-728.

Orlistat

- **16 weeks RCT** in **patients** receiving **stable clozapine** or **olanzapine medication**
- **Male** (but **not female**) patients had **weight loss effect** from treatment with **orlistat** (**-2.36 kg** vs. 0.62 kg on placebo, p = .011)





J Clin Psychiatry 2008;9:706-711.

Naltrexone-bupropion

- **Obese male smokers** with **schizophrenia**

  No differences in **weight change** between treatment with **naltrexone-bupropion** and placebo

- In a 12-week **RCT,** patients with **schizophrenia** taking olanzapine

  No differences in **BMI** between treatment with **naltrexone alone** and placebo

Front Pharmacol. 2018;9:181.

J Psychopharmacol. 2014;28(4):395-400.

Metformin

- The literature **supports** the use of **concomitant metformin** as **first choice** to counteract **antipsychotic induced weight gain**

- **Metformin** was **effective and safe** intervention for **schizophrenia spectrum disorders**

  There was modest **weight loss (-3.5 kg)** vs. placebo with improvements in lipid and insulin sensitivity parameters

Mizuno Y et al., Schizophr Bull. 2014;40(6):1385-1403.

Zheng W et al., 2015; Maayan L et al., 2010; Choi YH et al., 2015.

Topiramate

- **Meta-analysis** of **RCTs** of topiramate use (50–400 mg/day for 6–24 weeks)

  Efficacy on **weight** (-3.76 kg) and **BMI** (-1.62 kg/m^2) **reduction** with **improvements in psychopathology**

- **Meta-analysis** in patients with **schizophrenia spectrum** or **bipolar disorder**

  Weight loss (-3.95 kg) vs. placebo and **no safety concerns**

- **Meta-analysis**, **Topiramate** showed efficacy in **reduc**ing **binge eating behavior** and **weight**

  However, topiramate group had **more adverse events** such as more frequent **paresthesia** and **confusion**

Goh KK et al., 2019

Fiedorowicz J et al., 2012.

CNS Spectrums 26(5), 459–467.

Pharmacotherapy

- **No** reports **risk of suicide increases** when **anti-obesity drugs** are administered to **obese patients** with **severe mental illness**
- However, taking **Bupropion** in patients with **depressive disorders** or **Topiramate** in patients with **epilepsy** increased the risk of **suicide** and **suicidal thoughts**

- Caution regarding suicide may be **necessary** when using **anti-obesity drugs** in **obese patients** with **severe mental illness**

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Bariatric surgery

- **SR** of **severely obese** patients with **bipolar disorder** or **schizophrenia**

  Excess weight loss of **30-70%** in bariatric surgery group, with **no** significant **worsening of psychiatric symptoms**

  However, **interpretation** of the results is **limited**

- **SR** for **obesity** in patients with **bipolar disorder**

  Significant **weight loss** in bariatric surgery group**, but some cases** of **mood symptom worsening**

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Conclusion

- Patients with **obesity**

Necessary to screen and monitor for **potential mental illnesses**

- Patients with **psychiatric disorders**

Necessary to screen and monitor for **obesity** and **metabolic diseases**

Conclusion

- Psychiatrically ill obese patients

- Comprehensive lifestyle interventions

- Pharmacotherapy

Side effects related to **weight** caused by **psychiatric drugs**

Psychiatric effects caused by **obesity drugs**

- Bariatric surgery

- Monitor for **mood change** and **suicidality** during obesity treatment

Thank you for your attention.

Do you have any questions?