GLP1-RAs in Severe Mental Illness – Opportunities and Challenges

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Disclosures

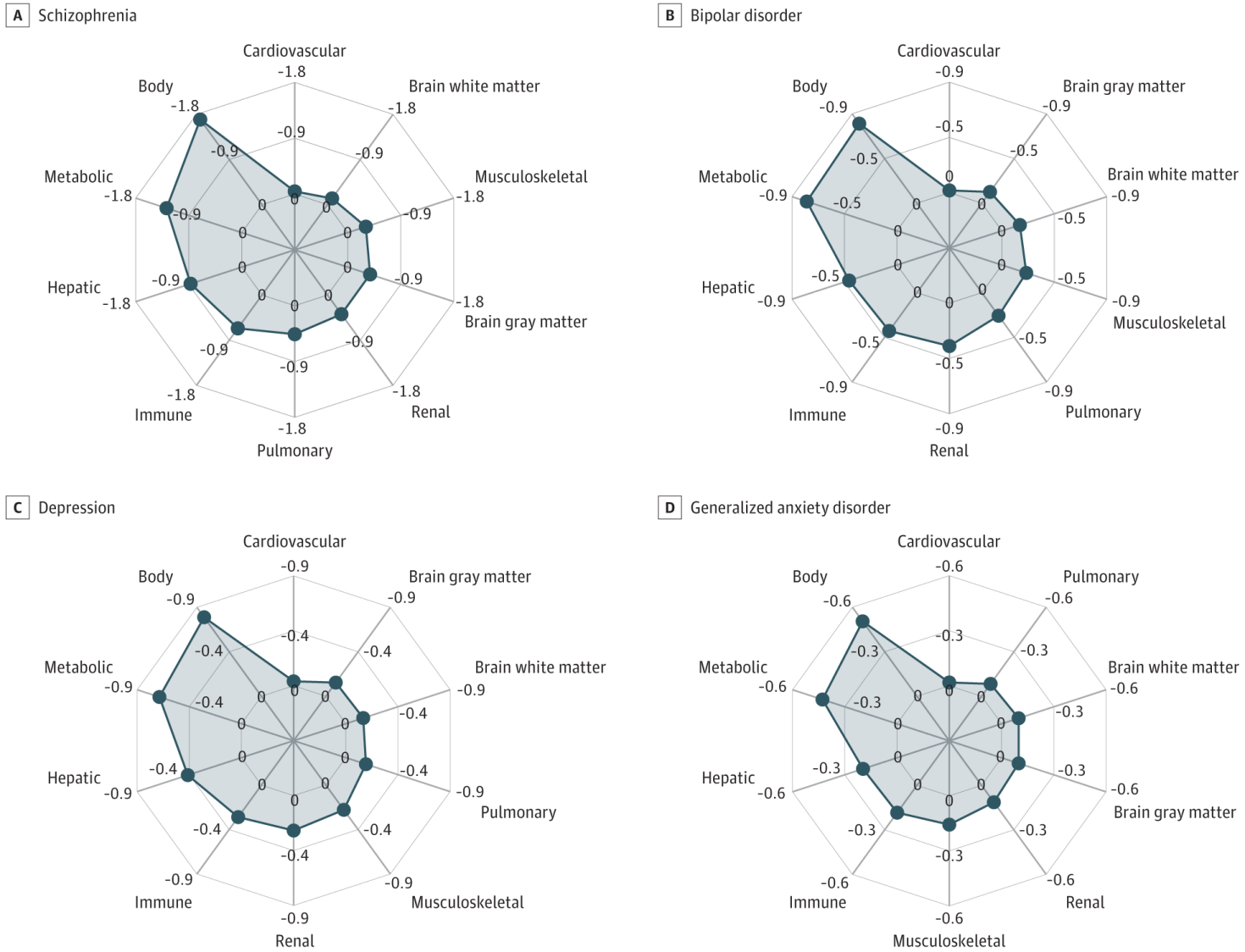
- HLS therapeutics
- Boehringer Ingelheim, Canada

Objectives

1. To review unmet needs in severe mental illness: metabolic and cognitive dysfunction

2. To review the opportunities and challenges presented by GLP-1RAs

Brain and body health scores in mental illness



Tian et al., JAMA Psychiatry 2023

Implications beyond cardiovascular morbidity & mortality

Medication Compliance

Self-Esteem

Hospitalization Rates

Quality of Life

Social Retreat

Social Care Costs

De Hert et al., World Psychiatry 2009; Simon et al., European Neuropsychopharmacology 2023; Stogios et al., Current Psychiatry Reports 2023; De et al., Acta Psychiatrica Scandinavica 2025

Metabolic abnormalities and cognition in schizophrenia

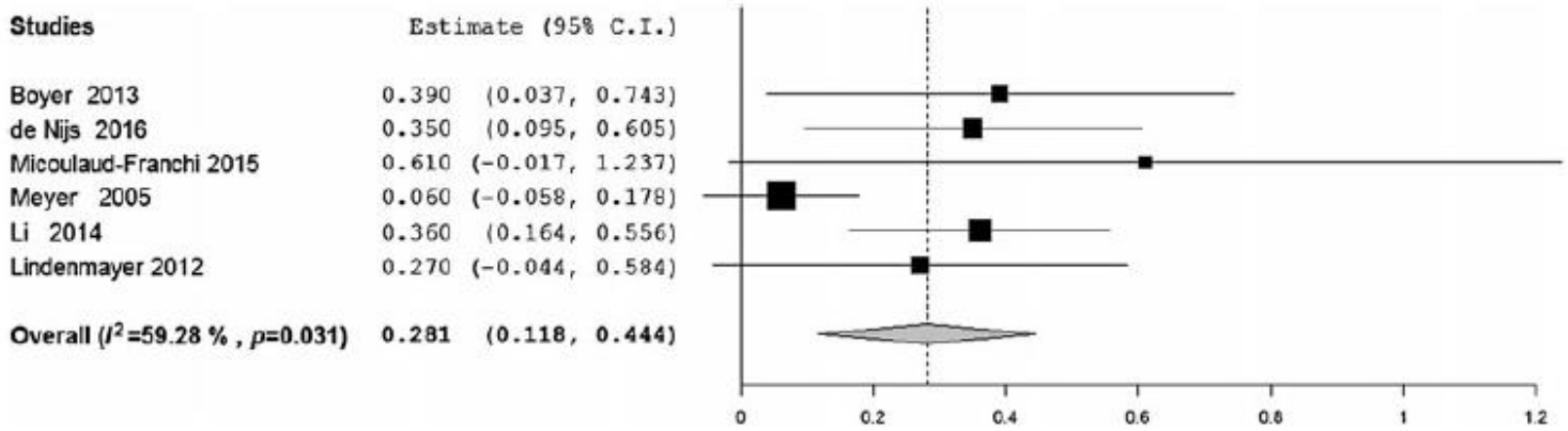


Fig. 2. Forest plot of cognitive differences between schizophrenia patients with and without metabolic syndrome.

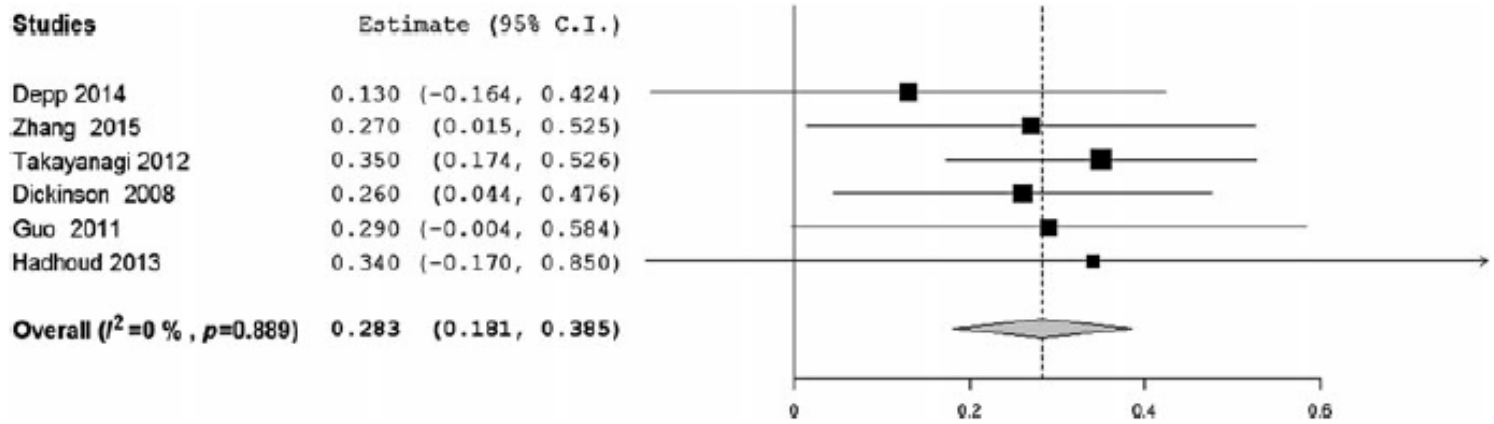
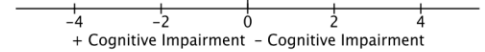


Fig. 3. Forest plot of cognitive differences between schizophrenia patients with and without diabetes mellitus.

Bora et al., Psychological Medicine 2017

Metabolic abnormalities and cognition in mood disorders

Study or Subgroup	Std. Mean Difference	SE	Weight	Std. Mean Difference IV, Random, 95% CI
1.1.1 Bipolar Disorder				
Bai 2016	−0.6	0.1888	2.7%	−0.60 [−0.97, −0.23]
Chang 2022	−0.09	0.2398	2.2%	−0.09 [−0.56, 0.38]
Dalkner 2021 (MetS)	−0.09	0.0816	4.0%	−0.09 [−0.25, 0.07]
Depp 2014 (BMI 25–29.9)	−0.16	0.1327	3.4%	−0.16 [−0.42, 0.10]
Depp 2014 (BMI 30+)	−0.44	0.1327	3.4%	−0.44 [−0.70, −0.18]
Hubenak 2015 (MetS)	−0.87	0.3418	1.4%	−0.87 [−1.54, −0.20]
Mora 2017	−0.58	0.0714	4.1%	−0.58 [−0.72, −0.44]
Ringin 2022	−0.17	0.0816	4.0%	−0.17 [−0.33, −0.01]
Salvi 2020	−0.45	0.1071	3.7%	−0.45 [−0.66, −0.24]
Silveira 2014	−0.05	0.102	3.8%	−0.05 [−0.25, 0.15]
Tsai 2007	−0.54	0.2143	2.4%	−0.54 [−0.96, −0.12]
Yim 2012	−0.22	0.0867	3.9%	−0.22 [−0.39, −0.05]
Subtotal (95% CI)			**39.0%**	**−0.32 [−0.45, −0.18]**
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 42.91$, df = 11 ($P < 0.0001$); $I^2 = 74\%$				
Test for overall effect: $Z = 4.64$ ($P < 0.00001$)				
1.1.2 Major Depressive Disorder				
Fourrier 2020 (BMI 25–29.9)	−0.65	0.0918	3.9%	−0.65 [−0.83, −0.47]
Fourrier 2020 (BMI 30–34.9)	−0.42	0.1173	3.6%	−0.42 [−0.65, −0.19]
Fourrier 2020 (BMI≥35)	−0.47	0.1173	3.6%	−0.47 [−0.70, −0.24]
Geraets 2022	−0.49	0.0714	4.1%	−0.49 [−0.63, −0.35]
Guan 2021 (Females)	−0.8	0.2041	2.5%	−0.80 [−1.20, −0.40]
Guan 2021 (Males)	0.03	0.2245	2.3%	0.03 [−0.41, 0.47]
Hidese 2018 (25≤BMI<30)	−0.08	0.0969	3.8%	−0.08 [−0.27, 0.11]
Hidese 2018 (BMI≥30)	−0.51	0.199	2.6%	−0.51 [−0.90, −0.12]
Kloiber 2006	−0.03	0.1071	3.7%	−0.03 [−0.24, 0.18]
Lan 2022	−0.29	0.1888	2.7%	−0.29 [−0.66, 0.08]
Marijnissen 2017	0.04	0.1173	3.6%	0.04 [−0.19, 0.27]
Zhang 2021	−0.6	0.1173	3.6%	−0.60 [−0.83, −0.37]
Subtotal (95% CI)			**40.0%**	**−0.36 [−0.51, −0.20]**
Heterogeneity: $Tau^2 = 0.06$; $Chi^2 = 56.41$, df = 11 ($P < 0.00001$); $I^2 = 81\%$				
Test for overall effect: $Z = 4.45$ ($P < 0.00001$)				
1.1.3 Depressive Symptoms/ Self-Reported Depression/ Other Depressive Disorders				
Borhaninejad 2022	−0.32	0.25	2.1%	−0.32 [−0.81, 0.17]
Downer 2016	−0.12	0.0867	3.9%	−0.12 [−0.29, 0.05]
Ferri 2021	−0.05	0.0561	4.2%	−0.05 [−0.16, 0.06]
Janocha 2010 (Moderate Depressive Episodes)	−1.26	0.2908	1.8%	−1.26 [−1.83, −0.69]
Janocha 2010 (Recurrrent Depressive Episodes; MDD)	−3.46	0.6837	0.5%	−3.46 [−4.80, −2.12]
Kontari 2019	−0.23	0.0816	4.0%	−0.23 [−0.39, −0.07]
Ng 2009 (Females)	−0.21	0.2041	2.5%	−0.21 [−0.61, 0.19]
Ng 2009 (Males)	−0.67	0.2704	1.9%	−0.67 [−1.20, −0.14]
Subtotal (95% CI)			**20.9%**	**−0.42 [−0.68, −0.17]**
Heterogeneity: $Tau^2 = 0.09$; $Chi^2 = 46.42$, df = 7 ($P < 0.00001$); $I^2 = 85\%$				
Test for overall effect: $Z = 3.32$ ($P = 0.0009$)				
Total (95% CI)			**100.0%**	**−0.35 [−0.44, −0.25]**
Heterogeneity: $Tau^2 = 0.05$; $Chi^2 = 162.17$, df = 31 ($P < 0.00001$); $I^2 = 81\%$				
Test for overall effect: $Z = 7.03$ ($P < 0.00001$)				
Test for subgroup differences: $Chi^2 = 0.59$, df = 2 ($P = 0.74$), $I^2 = 0\%$				



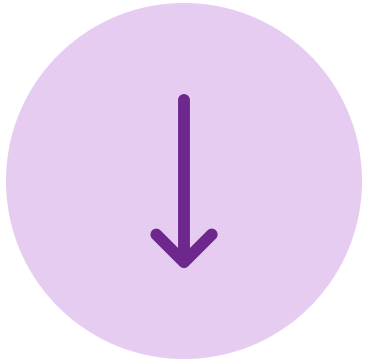
Maksyutynska et al., Psychological Medicine 2024

Objectives

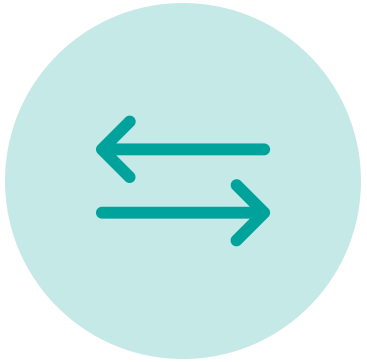
1. To review unmet needs in severe mental illness: metabolic and cognitive dysfunction

2. To review the opportunities and challenges presented by GLP-1RAs

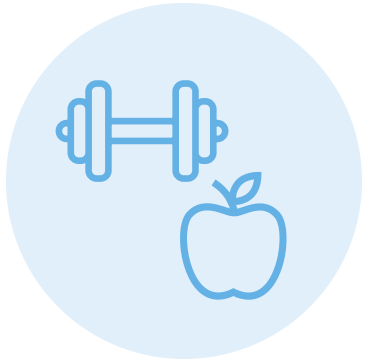
Treating metabolic problems in psychiatric disorders



Dose Reductions



Switching



Non-Pharmacological Interventions

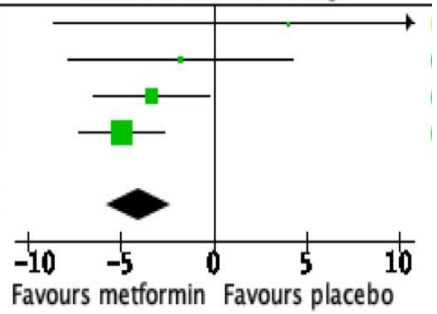
Pharmacological Interventions

Pharmacological interventions for metabolic problems

Metformin for **prevention** of weight gain in SMI

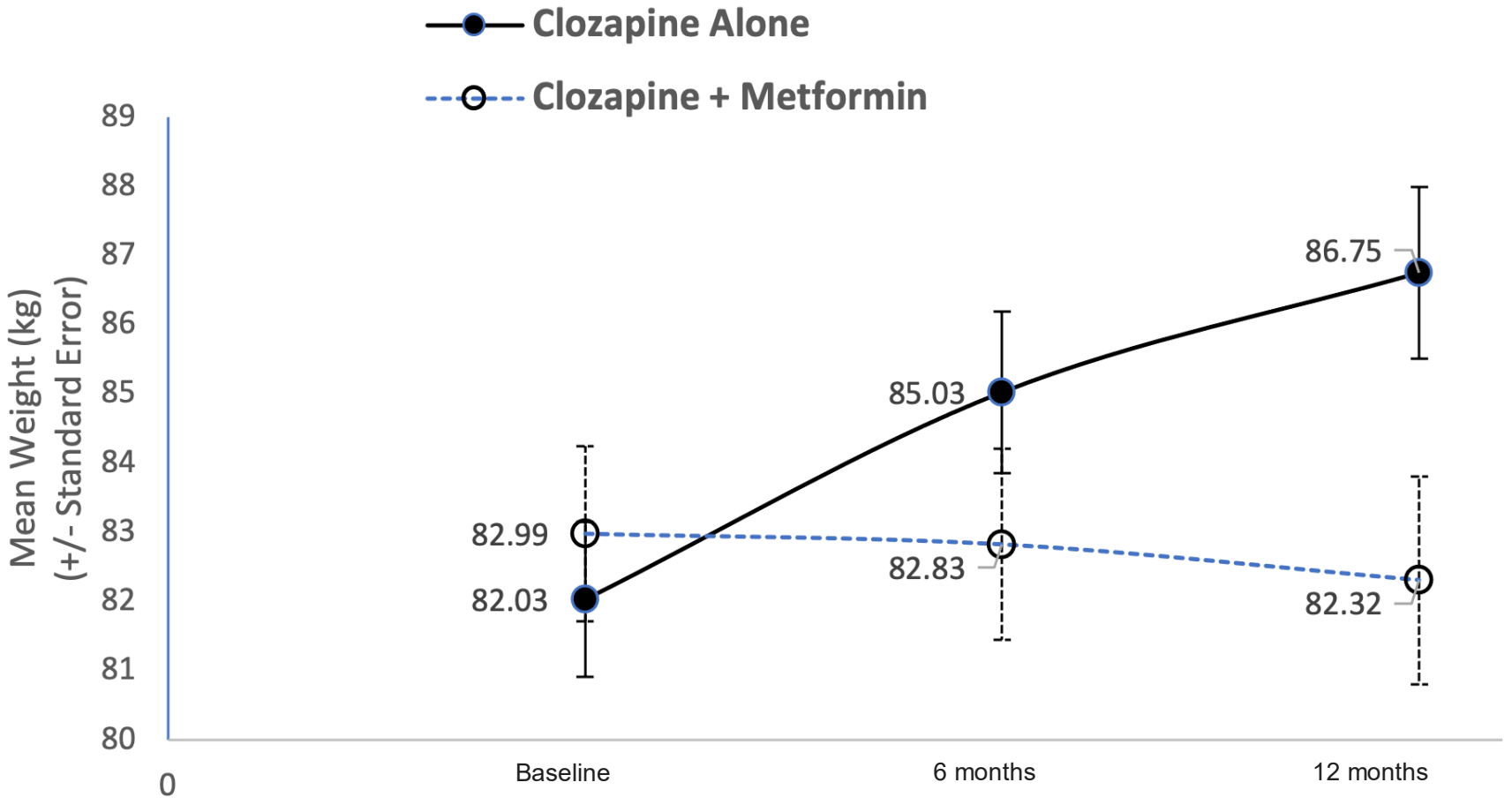
Study or Subgroup	Metformin Mean [kg]	Metformin SD [kg]	Metformin Total	Placebo Mean [kg]	Placebo SD [kg]	Placebo Total	Weight	Mean Difference IV, Random, 95% CI [kg]
Arman 2008a	36.03	12.81	16	32.03	22.45	16	1.9%	4.00 [-8.67, 16.67]
Baptista 2006	63.8	10.2	19	65.6	8.5	18	8.4%	-1.80 [-7.84, 4.24]
Rado 2016a	2.54	2.35	12	5.88	5.23	13	31.0%	-3.34 [-6.48, -0.20]
Wu 2008a	1.9	2.72	18	6.87	4.23	19	58.7%	-4.97 [-7.25, -2.69]
Total (95% CI)			65			66	100.0%	-4.03 [-5.78, -2.28]

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 2.91$, df = 3 (P = 0.41); $I^2 = 0\%$
Test for overall effect: Z = 4.52 (P < 0.00001)



Agarwal et al., Cochrane Database of Systematic Reviews 2022; Agarwal et al., Schizophrenia Bulletin 2023

Metformin can prevent clozapine-induced weight gain

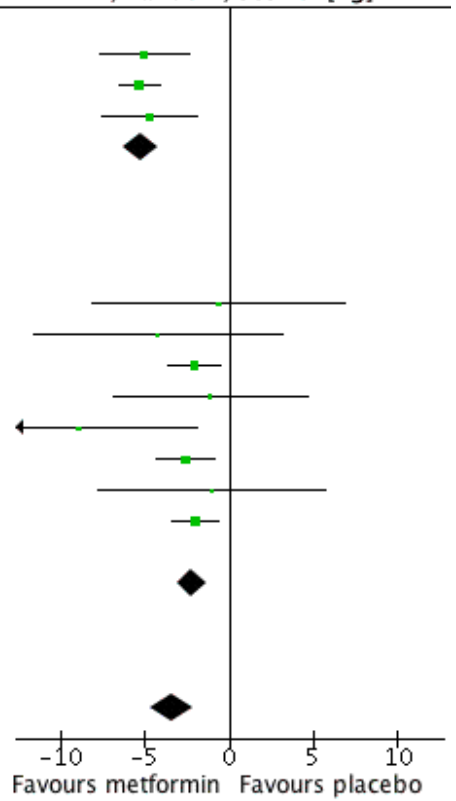


Stogios et al., Acta Psychiatrica Scandinavica 2022

Treating metabolic problems in psychiatric disorders

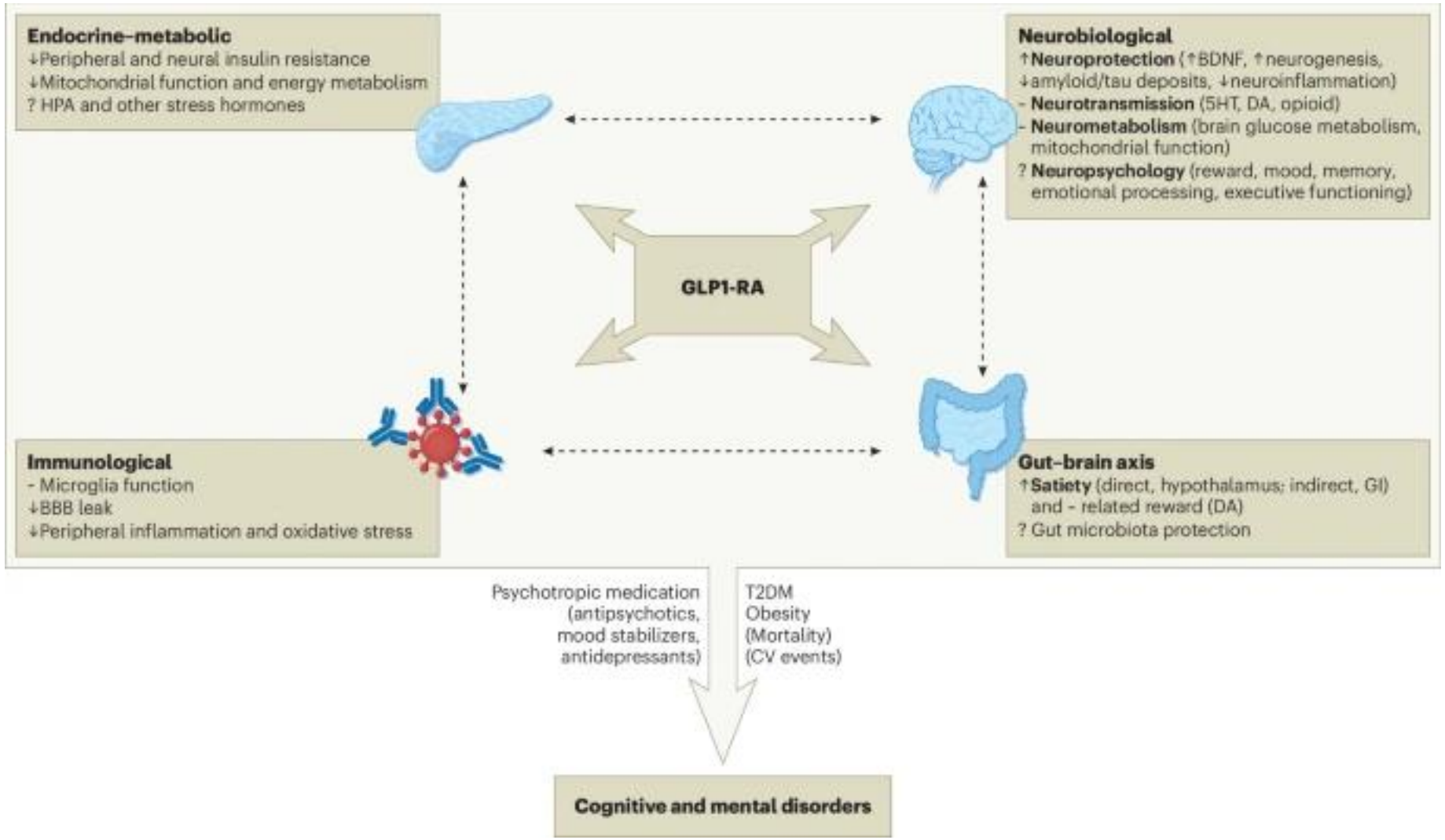
Metformin for **treatment** of **weight gain** in SMI

Study or Subgroup	Metformin Mean [kg]	Metformin SD [kg]	Metformin Total	Placebo Mean [kg]	Placebo SD [kg]	Placebo Total	Weight	Mean Difference IV, Random, 95% CI [kg]
1.1.1 First episode psychosis (FEP)								
Wang 2012	61.9	6	32	66.9	5.1	34	10.6%	-5.00 [-7.69, -2.31]
Wu 2008b	61.9	2.4963	32	67.2	2.4963	32	17.6%	-5.30 [-6.52, -4.08]
Wu 2012	54.23	7.46	42	58.95	5.79	42	9.9%	-4.72 [-7.58, -1.86]
Subtotal (95% CI)			**106**			**108**	**38.1%**	**-5.18 [-6.22, -4.14]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.15$, df = 2 (P = 0.93); $I^2 = 0\%$								
Test for overall effect: Z = 9.78 (P < 0.00001)								
1.1.2 Non-FEP								
Baptista 2007a	64.8	14.6	36	65.4	17.7	36	2.4%	-0.60 [-8.10, 6.90]
Baptista 2008	61	9.5	13	65.2	10.5	15	2.5%	-4.20 [-11.61, 3.21]
Carrizo 2009	-1.87	2.9	24	0.16	2.9	30	15.9%	-2.03 [-3.59, -0.47]
Chen 2013	65.9	12.6	28	67	8.7	27	3.8%	-1.10 [-6.81, 4.61]
Chiu 2016	62.1	10.7	18	71	10.8	18	2.7%	-8.90 [-15.92, -1.88]
de Silva 2015	-1.555	4.3134	34	1	2.6904	32	15.0%	-2.55 [-4.28, -0.83]
Hu 2013	57	12	24	58	12	25	2.9%	-1.00 [-7.72, 5.72]
Jarskog 2013	-3	4.3463	75	-1	4.2248	71	16.7%	-2.00 [-3.39, -0.61]
Peng 2016	71.8	12.2	11	0	0	0		Not estimable
Subtotal (95% CI)			**263**			**254**	**61.9%**	**-2.22 [-3.07, -1.37]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 4.50$, df = 7 (P = 0.72); $I^2 = 0\%$								
Test for overall effect: Z = 5.11 (P < 0.00001)								
Total (95% CI)			**369**			**362**	**100.0%**	**-3.40 [-4.63, -2.16]**
Heterogeneity: $Tau^2 = 1.86$; $Chi^2 = 23.29$, df = 10 (P = 0.010); $I^2 = 57\%$								
Test for overall effect: Z = 5.40 (P < 0.00001)								
Test for subgroup differences: $Chi^2 = 18.63$, df = 1 (P < 0.0001), $I^2 = 94.6\%$								



Stogios and Agarwal et al., under review

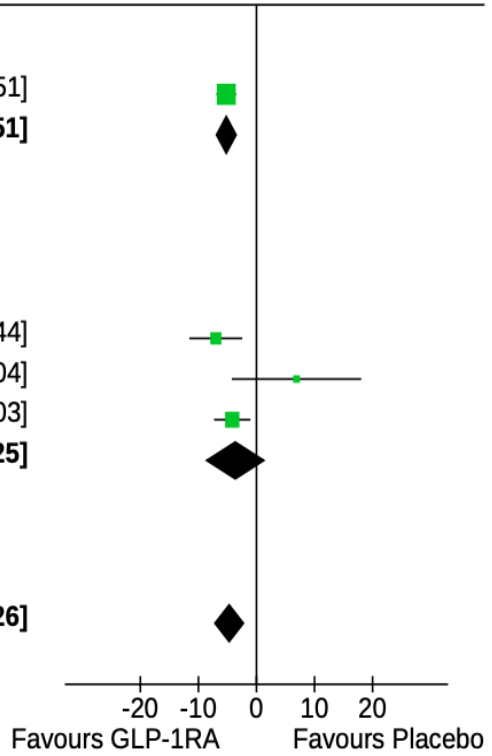
GLP-1 RAs: The hot new thing



De Giorgi et al., Nature Mental Health 2025

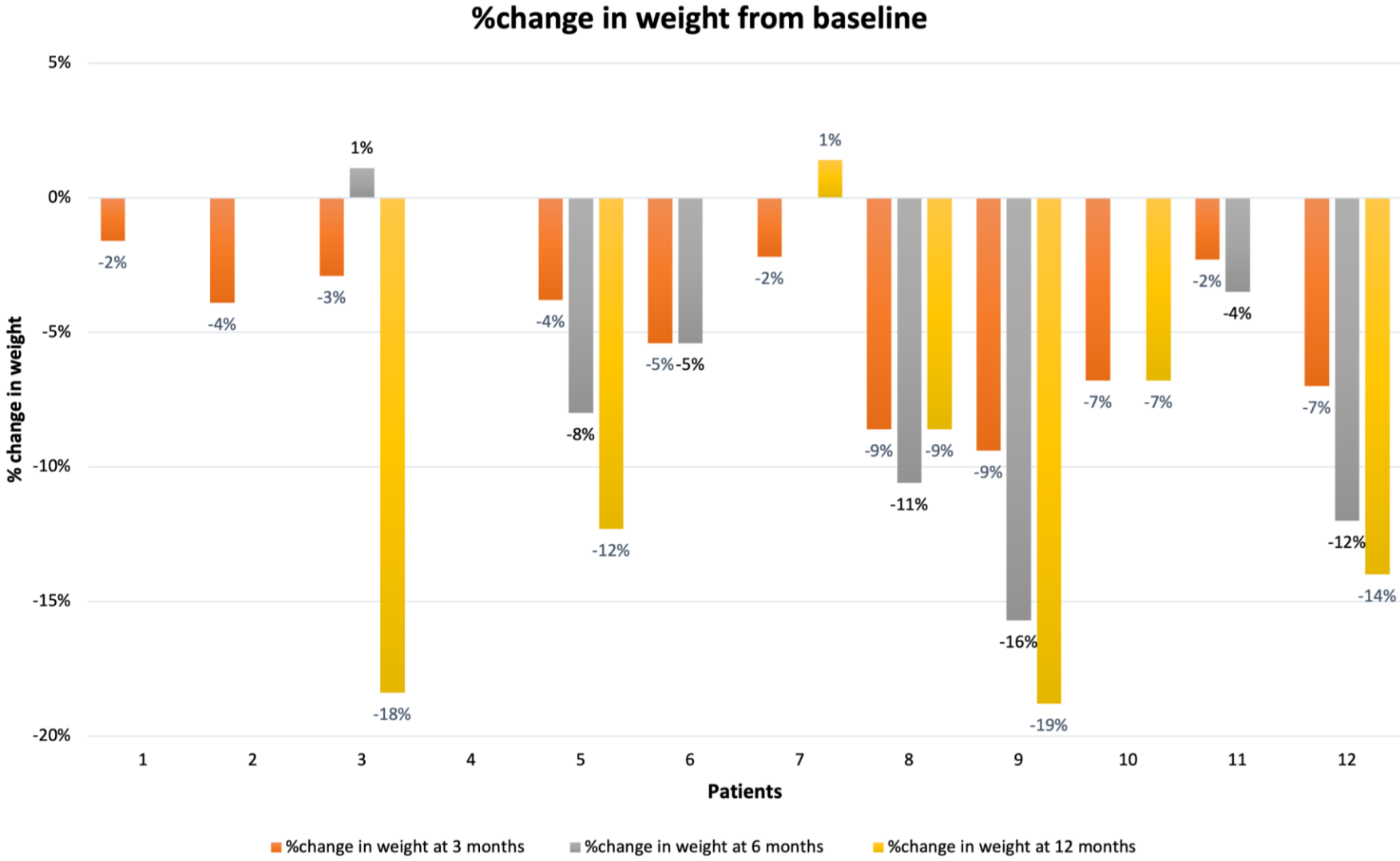
GLP-1 RAs for Treatment of Weight Gain in SMI

Study or Subgroup	GLP-1RA Mean [kg]	GLP-1RA SD [kg]	GLP-1RA Total	Placebo Mean [kg]	Placebo SD [kg]	Placebo Total	Weight	Mean Difference IV, Random, 95% CI [kg]
3.1.1 Liraglutide								
Larsen 2017	-4.7	3.4278	47	0.5	4.9497	50	46.2%	-5.20 [-6.89 , -3.51]
Subtotal (95% CI)			**47**			**50**	**46.2%**	**-5.20 [-6.89 , -3.51]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 6.04 (P < 0.00001)								
3.1.2 Exenatide								
Delbello 2018	-1.1	6.2	22	5.9	10.3	29	19.4%	-7.00 [-11.56 , -2.44]
Ishoy 2017	116	16.9	20	109.1	19	20	4.4%	6.90 [-4.24 , 18.04]
Siskind 2017	-5.29	4.92	14	-1.12	3.41	14	30.0%	-4.17 [-7.31 , -1.03]
Subtotal (95% CI)			**56**			**63**	**53.8%**	**-3.65 [-8.56 , 1.25]**
Heterogeneity: Tau² = 10.83; Chi² = 5.22, df = 2 (P = 0.07); I² = 62%								
Test for overall effect: Z = 1.46 (P = 0.14)								
Total (95% CI)			**103**			**113**	**100.0%**	**-4.70 [-7.15 , -2.26]**
Heterogeneity: Tau² = 2.63; Chi² = 5.44, df = 3 (P = 0.14); I² = 45%								
Test for overall effect: Z = 3.77 (P = 0.0002)								
Test for subgroup differences: Chi² = 0.34, df = 1 (P = 0.56), I² = 0%								



Stogios and Agarwal et al., under review

Semaglutide: Early evidence of efficacy in metformin non responders



Prasad et al., Therapeutic Advances in Psychopharmacology 2023

Semaglutide for metformin-non responders study

16-week run-in phase
Lifestyle changes and open-label metformin (Metabolic clinic ICP)

24-week continuation phase for responders (~20%)
Lifestyle changes and open-label metformin (Metabolic clinic ICP)

24-week DB-RCT for non responders (~80%)
Randomized 1:1 to add-on semaglutide or placebo

Baseline Assessments (only RCT participants)
Anthropometry
Clinical scales
Fasting blood work
OGTT
MRI
MCCB

End point Assessments (only RCT participants)
Anthropometry
Clinical scales
Fasting blood work
OGTT
MRI
MCCB

ICP: Integrated Clinical Pathway; BCATS: Brief Cognitive Assessment Tool for Schizophrenia, DB-RCT: Double blind randomized control trial; OGTT: Oral Glucose Tolerance Test, MCCB: MATRICS Consensus Cognitive Battery

CIHR IRSC
Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

PI: Hahn and Agarwal

Preliminary Data from the Metabolic Clinic at CAMH

Intervention	NNT ≥5% Weight Loss	NNT ≥7% Weight Loss
Lifestyle Only	3	4
Add-on Metformin	3	4
Add-on Topiramate	3	5
Add-on Semaglutide	2	2
Switch to add-on Metformin	4	7
Switch to add-on Topiramate	3	3
Switch to add-on Semaglutide	4	7
Metformin + Topiramate	5	5
Metformin + Semaglutide	2	3
Other	3	3
All Interventions (Overall Clinic Effect)	3	4

Stogios and Prasad et al., in preparation

GLP-1 RAs: Early evidence of improving cognition/brain morphology

› Eur Neuropsychopharmacol. 2017 Nov;27(11):1153-1162. doi: 10.1016/j.euroneuro.2017.08.433. Epub 2017 Sep 1.

Treatment with a GLP-1R agonist over four weeks promotes weight loss-moderated changes in frontal-striatal brain structures in individuals with mood disorders

Rodrigo B Mansur [1], Andre Zugman [2], Juhie Ahmed [3], Danielle S Cha [3], Mehala Subramaniapillai [3], Yena Lee [3], Julie Lovshin [4], Jung G Lee [5], Jae-Hon Lee [6], Vladislav Drobinin [7], Jason Newport [7], Elisa Brietzke [8], Eva Z Reininghaus [9], Kang Sim [10], Maj Vinberg [11], Natalie Rasgon [12], Tomas Hajek [7], Roger S McIntyre [3]

Randomized Controlled Trial › Acta Psychiatr Scand. 2017 Jul;136(1):52-62. doi: 10.1111/acps.12711. Epub 2017 Mar 5.

No cognitive-enhancing effect of GLP-1 receptor agonism in antipsychotic-treated, obese patients with schizophrenia

P L Ishøy [1 2], B Fagerlund [1 2], B V Broberg [1], N Bak [1], F K Knop [2 3 4], B Y Glenthøj [1 2], B H Ebdrup [1]

GLP-1 RAs: Risk of worsening mental health

> Expert Opin Drug Saf. 2024 Jan;23(1):47-55. doi: 10.1080/14740338.2023.2295397.
Epub 2023 Dec 19.

The association between glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and suicidality: reports to the Food and Drug Administration Adverse Event Reporting System (FAERS)

Roger S McIntyre [1 2 3], Rodrigo B Mansur [1 4], Joshua D Rosenblat [1 4], Angela T H Kwan [3 5]

Affiliations + expand

PMID: 38087976 DOI: 10.1080/14740338.2023.2295397

> Sci Rep. 2024 Oct 18;14(1):24433. doi: 10.1038/s41598-024-75965-2.

The risk of depression, anxiety, and suicidal behavior in patients with obesity on glucagon like peptide-1 receptor agonist therapy

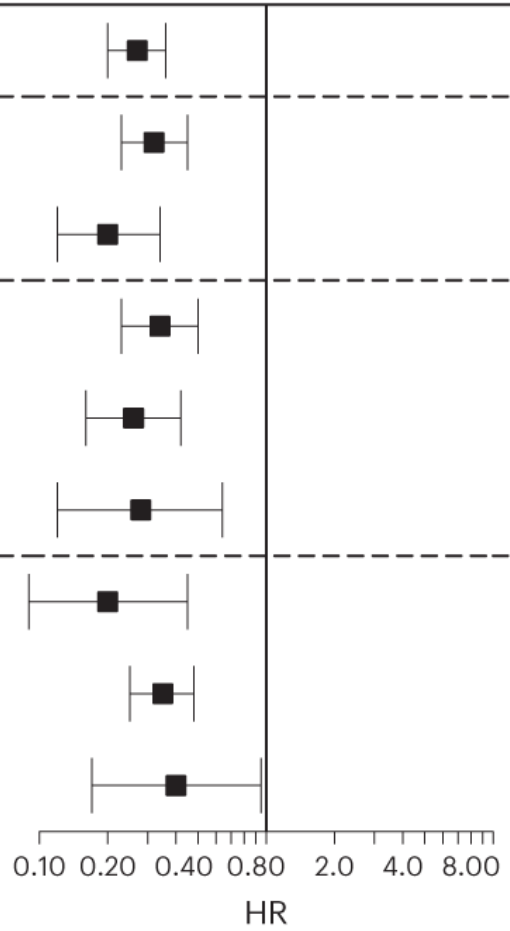
Edy Kornelius [1 2 3], Jing-Yang Huang [4], Shih-Chang Lo [2], Chien-Ning Huang [1 2 5], Yi-Sun Yang [6 7 8]

Affiliations + expand

PMID: 39424950 PMCID: PMC11489776 DOI: 10.1038/s41598-024-75965-2

GLP-1 RAs: Risk of worsening mental health

Population	Semaglutide group	Non-GLP1R agonist anti-obesity medication group	HR (95% CI)
Overall (*n* = 52,783 per group)	0.11% (60)	0.43% (226)	0.27 (0.20–0.36)
Females (*n* = 39,004 per group)	0.11% (43)	0.35% (136)	0.32 (0.23–0.45)
Males (*n* = 13,191 per group)	0.13% (17)	0.64% (85)	0.20 (0.12–0.34)
Age ≤45 years (*n* = 19,650 per group)	0.17% (33)	0.51% (100)	0.34 (0.23–0.50)
Age 46–64 years (*n* = 24,508 per group)	0.09% (22)	0.34% (84)	0.26 (0.16–0.42)
Age ≥65 years (*n* = 8,106 per group)	0.12% (10)	0.31% (25)	0.28 (0.12–0.64)
Black (*n* = 8,288 per group)	0.12% (10)	0.42% (35)	0.20 (0.09–0.45)
White (*n* = 37,133 per group)	0.14% (50)	0.39% (145)	0.35 (0.25–0.48)
Hispanic ethnicity (*n* = 3,666 per group)	0.27% (10)	0.49% (18)	0.40 (0.17–0.95)

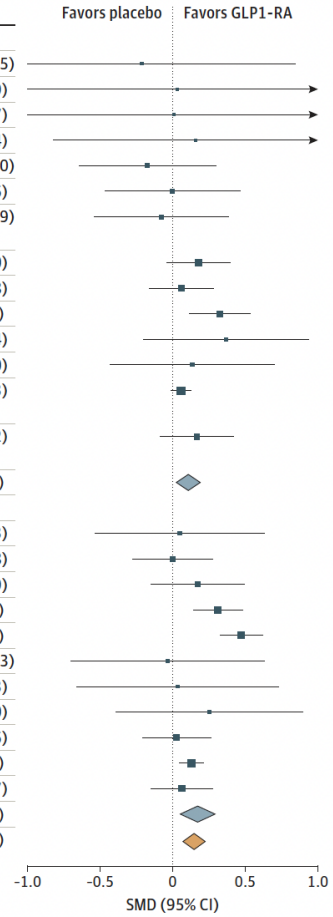


Wang et al., Nature Medicine 2024

GLP-1 RAs: Improvement in mental health-related QoL

Figure 4. Forest Plot of the Effect of Glucagon-Like Peptide 1 Receptor Agonists (GLP1-RAs) vs Placebo on Mental Health–Related Quality of Life (QOL)

Studies reporting mental health-related QOL outcomes (clinically relevant dose of GLP1-RA vs placebo)	SMD (95% CI)
Diabetes studies (8 studies, total No. = 4979)	
Miras et al,[51] 2019 (liraglutide, 1.8 mg/d; SF-36 social role functioning)	-0.21 (-1.27 to 0.85)
Miras et al,[51] 2019 (liraglutide, 1.8 mg/d; SF-36 emotional well-being)	0.03 (-1.03 to 1.09)
Miras et al,[51] 2019 (liraglutide, 1.8 mg/d; SF-36 vitality)	0.01 (-1.05 to 1.07)
Miras et al,[51] 2019 (liraglutide, 1.8 mg/d; SF-36 emotional role functioning)	0.16 (-0.82 to 1.14)
Davies et al,[52] 2017 (semaglutide, 40 mg/d, oral [2-wk escalation]; SF-36 overall mental score)	-0.17 (-0.65 to 0.30)
Davies et al,[52] 2017 (semaglutide, 40 mg/d, oral [8-wk escalation]; SF-36 overall mental score)	0.00 (-0.46 to 0.46)
Davies et al,[52] 2017 (semaglutide, 40 mg/d, oral [standard 4-wk escalation]; SF-36 overall mental score)	-0.08 (-0.54 to 0.39)
Aroda et al,[53] 2019 (semaglutide, 14 mg/d, oral; SF-36 version 2 mental component summary)	0.18 (-0.04 to 0.40)
Mosenzon et al,[29] 2019 (semaglutide, 14 mg/d, oral; SF-36 version 2 mental component summary)	0.06 (-0.16 to 0.28)
Zinman et al,[31] 2019 (PIONEER 8) (semaglutide, 14 mg/d, oral; SF-36 mental component summary)	0.33 (0.12 to 0.54)
Yamada et al,[54] 2020 (liraglutide, 0.9 mg/d; SF-36 version 2 mental component summary)	0.37 (-0.20 to 0.94)
Yamada et al,[54] 2020 (semaglutide, 14 mg/d, oral; SF-36 version 2 mental component summary)	0.14 (-0.43 to 0.70)
Jódar et al,[55] 2019 (semaglutide, 0.5 mg and 1.0 mg/wk [pooled]; SF-36 version 2 mental component summary)	0.06 (-0.01 to 0.13)
Zinman et al,[56] 2019 (SUSTAIN 9) (semaglutide, 1.0 mg/wk; SF-36 version 2 mental component summary)	0.17 (-0.09 to 0.42)
RE model for diabetes studies: $I^2 = 13\%$; $P = .01$	0.11 (0.03 to 0.19)
Obesity studies (9 studies, total No. = 5051)	
Armstrong et al,[57] 2016 (liraglutide, 1.8 mg/d; SF-36 version 2 mental component)	0.05 (-0.54 to 0.63)
Lau et al,[49] 2021 (liraglutide, 3.0 mg/d; SF-36 version 2 mental component summary)	0.00 (-0.28 to 0.28)
Newsome et al,[58] 2021 (semaglutide, 0.4 mg/d; SF-36 mental component summary)	0.17 (-0.15 to 0.49)
Wadden et al,[43] 2021 (semaglutide, 2.4 mg/wk; SF-36 version 2 mental component summary)	0.31 (0.14 to 0.48)
Rubino et al,[59] 2021 (semaglutide, 2.4 mg/wk; SF-36 version 2 mental component summary)	0.47 (0.33 to 0.62)
O'Neil et al,[60] 2018 (liraglutide, 3.0 mg/d; SF-36 mental component summary)	-0.03 (-0.70 to 0.63)
O'Neil et al,[60] 2018 (semaglutide, 0.4 mg/d [fast escalation]; SF-36 mental component summary)	0.03 (-0.66 to 0.73)
O'Neil et al,[60] 2018 (semaglutide, 0.4 mg/d; SF-36 mental component summary)	0.25 (-0.39 to 0.90)
Wadden et al,[61] 2020 (liraglutide + IBT, 3.0 mg/d; SF-36 overall mental)	0.03 (-0.20 to 0.26)
Kolotkin et al,[62] 2016 (liraglutide, 3.0 mg/d; SF-36 version 2 mental component summary)	0.13 (0.04 to 0.21)
Blackman et al,[46] 2016 (liraglutide, 3.0 mg/d; SF-36 overall mental)	0.06 (-0.15 to 0.27)
RE model for obesity studies: $I^2 = 61\%$; $P = .005$	0.17 (0.05 to 0.29)
RE model for all studies: $I^2 = 49\%$; $P < .001$	0.15 (0.07 to 0.22)



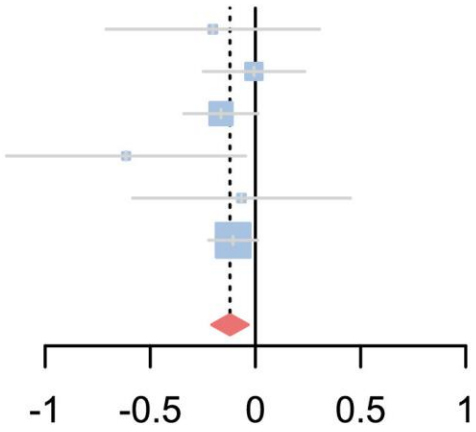
A total of 17 studies were included (GLP1-RA, n = 5818, vs placebo, n = 4212). The summary effect size indicates that GLP1-RAs are associated with improved mental health-related QOL relative to placebo, with Hedges *g* of 0.15 ($P < .001$). RE indicates random effects; SMD, standardized mean difference.

Pierret et al., JAMA Psychiatry 2025

GLP-1 RAs: Early evidence of improving symptoms of depression

Study	GLP-1RA Total	GLP-1RA Mean	GLP-1RA SD	Control Total	Control Mean	Control SD	SMD	95%-CI	Weight
Athauda et al (2017)	31	-1.60	3.14	29	-0.90	3.68	-0.20	[-0.71; 0.31]	2.9%
Best et al (2011)	133	-3.84	15.34	130	-3.73	15.51	-0.01	[-0.25; 0.23]	12.8%
Bode et al (2010)	247	-11.10	41.39	248	-4.30	41.47	-0.16	[-0.34; 0.01]	24.1%
De Wit et al (2014)	26	-1.00	2.00	24	0.00	1.00	-0.61	[-1.18; -0.05]	2.3%
Miras et al (2019)	45	1.00	3.10	21	1.20	2.70	-0.07	[-0.58; 0.45]	2.8%
Reaney et al (2013)	605	-0.52	2.61	532	-0.23	2.86	-0.11	[-0.22; 0.01]	55.1%
Random effects model	1087			984			-0.12	[-0.21; -0.03]	100.0%

Heterogeneity: I^2 = 0%, τ^2 < 0.0001, p = 0.52
Test for overall effect: z = -2.74 (p < 0.01)



Chen et al., American Journal of Geriatric Psychiatry 2024

GLP-1 RAs: Opportunities and challenges

- Weight effects
- May improve CV health
- May not worsen mental health
- May have cognitive benefits
- May improve quality of life
- Very little data in SMI
- Gastric effects
- Interaction with ECTs
- Accessibility
- Length of use, weight regain

Agarwal and Hahn, JAMA Psychiatry 2024

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