

Table 3

Meta-analyses on the association between depression and metabolic syndrome. RR=Relative risk. OR=Odds ratio. *Full references are shown in supplementary online material. **The most extensively controlled risk estimates are reported if meta-analyses provided risk estimates for uncontrolled and controlled models. ***The lowest and highest risk estimates are highlighted with bold font.

AUTHORS, YEAR*	STUDY POPULATION	DEFINITION OF DEPRESSION	OUTCOME	NUMBER OF STUDIES	NUMBER OF PARTICIPANTS	RISK ESTIMATE**,***
CROSS-SECTIONAL STUDIES						
Pan et al. (2012)	Non-institutionalized adults (≥18 years)	Diagnosed depression or depressive symptoms	All definitions of MetS (ATP-III), IDF, other organizations)	29	155,333	OR=1.42 (1.28-1.57)
Vancampfort et al. (2015)	Adults	Diagnosis of major depressive disorder according to DSM-IV or ICD-10	MetS diagnosis according to non-modified ATP-II, ATP-II-A, IUDF or WHO standards	19	5,267	RR=1.57 (1.38-1.79)
Gheshlagh et al. (2016)	General population	Not specified	Not specified	17	31,880	OR=1.52 (1.38-1.67)
Moradi et al. (2021)	General population	Diagnosed depression or depressive symptoms	All definitions of MetS (ATP-III), IDF, other organizations)	49	399,494	OR=1.48 (1.33-1.64)
LONGITUDINAL STUDIES: DEPRESSION AS A PREDICTOR OF METABOLIC SYNDROME						
Pan et al. (2012)	Non-institutionalized adults (≥18 years)	Diagnosed depression or depressive symptoms	All definitions of MetS (ATP-III), IDF, other organizations)	4	3,834	OR=1.52 (1.20-1.91)
LONGITUDINAL STUDIES: METABOLIC SYNDROME AS A PREDICTOR OF DEPRESSION						
Pan et al. (2012)	Non-institutionalized adults (≥18 years)	All definitions of MetS (ATP-III), IDF, other organizations)	Diagnosed depression or depressive symptoms	9	26,936	OR=1.49 (1.19-1.87)

Table 4, Part 1

Meta-analyses on the association between depression and diabetes. RR=Relative risk. OR=Odds ratio. UDD=Undiagnosed diabetes. IGM=Impaired glucose metabolism. *Full references are shown in supplementary online material. **The most extensively controlled risk estimates are reported if meta-analyses provided risk estimates for uncontrolled and controlled models. ***The lowest and highest risk estimates are highlighted with bold font.

AUTHORS, YEAR*	STUDY POPULATION	DEFINITION OF DEPRESSION	OUTCOME	NUMBER OF STUDIES	NUMBER OF PARTICIPANTS	RISK ESTIMATE**,***
CROSS-SECTIONAL STUDIES						
Anderson et al. (2001)	People with diabetes type 1/2	Clinically relevant depression or depressive symptoms	Diabetes type 1 and 2	42	21,351	OR=2.0 (1.8-2.2) (overall) OR=2.9 (1.6-5.5) (diabetes type 1) OR=2.9 (2.3-3.7) (diabetes type 2)
Ali et al. (2006)	Patients with diabetes type 2	Clinically relevant depression or depressive symptoms	Diabetes type 2	10	51,331	OR=1.59 (1.5-1.7)
Cosgrove et al. (2008)	People with diabetes type 2	Clinically relevant depression or depressive symptoms	Diabetes type 2	14	284,868	RR=1.17 (1.05-1.29)
Nouwen et al. (2011)	People with impaired glucose metabolism, undiagnosed diabetes	Depression and depressive symptoms	Impaired glucose metabolism, undiagnosed diabetes	13	9,840	OR=0.96 (0.85-1.08) (impaired glucose metabolism) OR=0.94 (0.71-1.25) (undiagnosed diabetes)
Reynolds & Helgeson (2011)	Children, diabetes type 1 vs. controls	Depression and depressive symptoms	Diabetes type 1	9	Not reported	d=0.26** (depressive symptoms) d=0.40** (clinically relevant depression)
Valkanova & Ebmeier (2013)	Diabetes	Late-life depression, depression or depressive symptoms	Diabetes	15	24,466	OR=1.46 (1.14-1.86)
Vancampfort et al. (2015)	Patients with diabetes type 2	Diagnosis of major depressive disorder	Diabetes type 2	16	158,834	RR=1.36 (1.28-1.44) (age-/sex-matched)
Yu et al. (2015)	People with depression	Depression	Diabetes	33	2,411,641	*RR=1.41 (1.25-1.59) (diabetes all types) RR=1.32 (1.18-1.47) (diabetes type 2)
Chen et al. (2016)	Prediabetes, undiagnosed diabetes, previously diagnosed diabetes	Depression and depressive symptoms	Prediabetes, undiagnosed diabetes, previously diagnosed diabetes type 2	20	345,714	OR=1.11 (1.03-1.19) (pre-diabetes) OR=1.27, 1.02-1.59 (undiagnosed) OR=1.80 (1.40-2.31) (previously diagnosed)
Vancampfort et al. (2016)	Patients with diabetes type 2	Psychiatric diagnosis of major depressive disorder according to DSM-IV or ICD-10	Diabetes type 2	20	Not reported	RR=1.43 (0.88-2.25)
Elamoshy et al. (2018)	Patients with diabetes type 1 and 2	Depression, use of antidepressants or depressive symptoms	Diabetes type 1 and 2	23	Not reported	OR=1.67 (1.47-1.90)
Gonzalez-Castro et al. (2019)	People with obesity, patients with diabetes type 2	Clinically relevant depression or depressive symptoms	Diagnosis of diabetes type 2	27	48,466	OR=1.63 (1.40-1.92)
Wang et al. (2019)	People with diabetes type 2	Major depressive disorder assessed via clinical interview	Diagnosis of diabetes type 2	26	96,842	OR=1.73 (1.38-2.16)

Table 4, Part 2

Meta-analyses on the association between depression and diabetes. RR=Relative risk. OR=Odds ratio. UDD=Undiagnosed diabetes. IGM=Impaired glucose metabolism. *Full references are shown in supplementary online material.**The most extensively controlled risk estimates are reported if meta-analyses provided risk estimates for uncontrolled and controlled models. ***The lowest and highest risk estimates are highlighted with bold font.

AUTHORS, YEAR*	STUDY POPULATION	DEFINITION OF DEPRESSION	OUTCOME	NUMBER OF STUDIES	NUMBER OF PARTICIPANTS	RISK ESTIMATE**,***
LONGITUDINAL STUDIES: DEPRESSION AS A PREDICTOR OF DIABETES						
Mezuk et al. (2008)	People with depression	Depression and depressive symptoms	Diabetes type 2	13	6,916	RR=1.15 (1.02-1.30)
Hasan et al. (2013)	People with depression	Depression, depressive reaction or symptomatology	Diabetes type 2	15	Not reported	RR=1.41 (1.13-1.76)
Elamoshy et al. (2018)	Patients with diabetes type 1 and 2	Depression, use of antidepressants or depressive symptoms	Diabetes type 1 and 2	13	Not reported	OR=1.48 (1.16-1.88)
LONGITUDINAL STUDIES: DIABETES AS A PREDICTOR OF DEPRESSION						
Mezuk et al. (2008)	People with diabetes type 2	Diabetes type 2	Depression and depressive symptoms	7	6,414	RR=1.60 (1.37-1.88)
Nouwen et al. (2010)	People with diabetes type 2	Impaired glucose metabolism, undiagnosed diabetes	Depression and depressive symptoms	11	48,808	RR=1.24 (1.09-1.40) (overall) RR=1.19 (1.03-1.39) (questionnaires) RR=1.29 (1.05-1.59) (diagnostic criteria)
Hasan et al. (2013)	People with diabetes type 2	Diabetes type 2	Depression, depressive reaction or symptomatology	14	–	RR=1.23 (1.15-1.31)
Rotella et al. (2013)	Patients with diabetes type 1/2	Diabetes type 1 and 2	Depression, depressive symptoms, use of anti-depressants	16	497,223	RR=1.25 (1.10-1.44)
Tong et al. (2016)	Impaired glucose metabolism, newly diagnosed diabetes, previously diagnosed diabetes	Impaired glucose metabolism, newly diagnosed diabetes, previously diagnosed diabetes type 2	Depression and depressive symptoms	5	18,051	RR=1.08 (0.84-1.38) (impaired glucose metabolism) RR=1.07 (0.74-1.55) (newly diagnosed) RR=1.29 (1.03-1.63) (previously diagnosed)
Arafa & Dong (2019)	Women with gestational diabetes	Gestational diabetes	Postpartum depression diagnosis or symptoms	10	2,000,002	RR=1.32 (1.09-1.60)
Azami et al. (2019)	Women with gestational diabetes	Gestational diabetes	Postpartum depression diagnosis or symptoms	18	2,370,958	RR=1.59 (1.22-2.07)
Chireh et al. (2019)	People with diabetes	Self-report doctor's diagnoses or diagnostic blood test measurement of diabetes	Clinically relevant depression or depressive symptoms	20	547,417	RR=1.33 (1.18-1.51)

Table 5

Meta-analyses on the association between depression and overweight/obesity. RR=Relative risk. OR=Odds ratio. *Full references are shown in supplementary online material. **The most extensively controlled risk estimates are reported if meta-analyses provided risk estimates for uncontrolled and controlled models. ***The lowest and highest risk estimates are highlighted with bold font.

AUTHORS, YEAR*	STUDY POPULATION	DEFINITION OF DEPRESSION	OUTCOME	NUMBER OF STUDIES	NUMBER OF PARTICIPANTS	RISK ESTIMATE**,***
CROSS-SECTIONAL STUDIES						
de Wit et al. (2010)	Adults	Depression and depressive symptoms	Obesity (BMI ≥30) or waist-circumference (men: 102cm, women: 88cm)	17	204,507	OR=1.26 (1.17-1.36)
Xu et al. (2011)	Adults	Depression and depressive symptoms	Obesity (all possible criteria)	15	Not reported	OR=1.38 (1.22-1.57)
Abou Abbas et al. (2014)	Adults	Depression and depressive symptoms	General or central obesity (self-reported or objectively assessed BMI ≥30) or cut-offs for waist-hip-ratio	8	12,641	OR=1.27 (1.11-1.44)
Pereira et al. (2017)	Adults	Clinical diagnosed depression and depressive symptoms	Overweight (BMI ≥25) and obesity (BMI ≥30)	9	171,701	RR=1.07 (1.04-1.11) (overweight) PR=1.32 (1.26-1.38) (obesity)
Quek et al. (2017)	Children and adolescents	Clinical diagnosed depression and depressive symptoms	Overweight and obesity (mostly based on age- and sex-specific criteria)	18	51,272	OR=1.16 (0.93-1.44) (overweight) OR=1.34 (1.10-1.64) (obesity)
Sutaria et al. (2019)	Children and adolescents	Clinical diagnosed depression and depressive symptoms	Overweight and obesity (mostly based on age- and sex-specific criteria)	12	117,963	OR=1.26 (1.09-1.45)
Wang et al. (2019)	Children and adolescents	Depressive symptoms	Overweight and obesity (based on age- and sex-specific criteria)	11	17,894	OR=1.46 (1.14-1.87)
Rao et al. (2020)	Children and adolescents	Clinical diagnosis of major depression	No information available	11	69,893	OR=1.07 (0.89-1.28) (overweight) OR=1.85 (1.41-2.43) (obesity)
Silva et al. (2020)	Adults with MDD	Different subtype of depression	BMI	8	14,757	OR=2.47 (1.44-3.50)
Yu et al. (2020)	Older adults (≥60 years)	Clinical diagnosed depression and depressive symptoms	Overweight assessed via BMI, waist circumference, waist-to-hip-ratio, and body fat	14	Not reported	OR=0.85 (0.79-0.91) (overweight) OR=0.80 (0.66-0.96) (obesity)
LONGITUDINAL STUDIES: DEPRESSION AS A PREDICTOR OF OVERWEIGHT/OBESITY						
Blaine (2008)	Adults and adolescents	Depressed vs. non-depressed	Weight change or obesity status	16	33,690	OR=1.18 (1.13-1.23) (all)
Luppino et al. (2010)	Adults	Clinical depression diagnosis and depressive symptoms	Overweight (BMI ≥25) and obesity (BMI ≥30)	9	7,196	OR=0.98 (0.83-1.16) (overweight) OR=1.40 (1.15-1.71) (obesity)
Mannan et al. (2016a)	Adults	Clinical depression (clinical interview, use of anti-depressants) and depressive symptoms	Overweight (BMI ≥25) and obesity (BMI ≥30)	9	85,405	RR=1.17 (0.77-1.77) (overweight) RR=1.37 (1.17-1.48) (obesity)
Mannan et al. (2016b)	Adolescents	Clinical diagnosed depression and depressive symptoms	Obesity (BMI≥30)	7	16,172	RR=1.70 (1.40-2.07)
LONGITUDINAL STUDIES: OVERWEIGHT/OBESITY AS A PREDICTOR OF DEPRESSION						
Luppino et al. (2010)	Adults	Overweight (BMI ≥25) and obesity (BMI ≥30)	Clinical depression diagnosis and depressive symptoms	8	55,387	1.08 (1.02-1.14) (overweight) 1.57 (1.23-2.01) (obesity)
Mannan et al. (2016a)	Adults	Overweight (BMI ≥25) and obesity (BMI ≥30)	Clinical depression (clinical interview, use of anti-depressants) and depressive symptoms	10	140,658	RR=1.18 (1.04-1.35) (obesity)
Mannan et al. (2016b)	Adolescents and young adults	Obesity (BMI ≥30)	Clinical diagnosed depression and depressive symptoms	6	15,854	RR=1.40 (1.16-1.70)
Sutaria et al. (2019)	Children and adolescents	Overweight and obesity (mostly based on age- and sex-specific criteria)	Clinical diagnosed depression and depressive symptoms	10	27,696	OR=1.51 (1.21-1.88)

Search Terms (in Title) and Linkage between Search Terms

A) Review on the Association between Depression and (i) Excess Mortality, (ii) CVD, and (iii) Cardiovascular Risk Factors

Review OR meta-an* AND depress* AND mortality OR CVD OR cardiovascular risk OR metabolic syndrome OR diabetes OR obesity OR hypertension OR lipids OR cholesterol OR dyslipidemia

B) Literature on Potential of Physical Activity, Exercise and Fitness to favourably influence the Relationship between Depression and Premature Mortality

Depress* AND mortality OR CVD OR cardiovascular risk OR metabolic syndrome OR diabetes OR obesity OR hypertension OR lipids OR cholesterol OR dyslipidemia AND physical activity OR exercise OR fitness

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