**Table 1:** Studies included in the meta-analysis

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| First author and year of publication | Country | Study design | Felow up | Study population | Age range  | Sex | Sample size in anzlysis | Obesity/overweight | Anxiety (Duration) | Anxiety type | Quality assessment: Risk of bias  | Results | Adjustment for other covariates |
| Selection | Performance | Detection bias | Confounding | Attrition |
| Barry 2008(Barry, Pietrzak, & Petry, 2008) | USA | Cross-sectional | - | Adults, with and Without Obesity | age≥18 | Both %50.88 women | 40,790 | self-reported, obesity is defined as a BMI≥ 30; overweight as a BMI25-29.9; normal weight is defined as a BMI 18.5-24.9 | DSM-IV mood and anxiety interview (lifetime and 12-anxiety prevalence) | generalized anxietydisorder, panic disorder without agoraphobia, panic disorder with agoraphobia, agoraphobiawithout history of panic disorder, social phobia, and specific phobia | Low | Moderate | Low | Moderate | Moderate | Odd ratio overweight and lifetime anxiety in men=1.1 (CI 0.96-1.25), in women=1.24 (CI 1.12-1.38); obesity and lifetime anxiety in men=1.35 (CI 1.18-1.53); in women=1.76 (CI 1.58-1.96); overweight and past year anxiety in men=1.14 (CI 0.99-1.33); in women=1.26 (CI 1.11-1.43); obesity and past year anxiety in men=1.36 (CI 1.16-1.61); in women=1.79 (CI 1.58-2.03) | age, level of education, Race/ethnicity income, marital status, region of country, and urban vs. rural residence |
| Baumeister 2007(Baumeister & Harter, 2007) | Germany | Cross-sectional | - | Adults, with and Without Obesity | Mean= 45.2 in overweight; Mean= 47.1 in obesity; Mean= 52 in obesity inpatients; Mean= 33.7 in health; | Both %44.7 women | 2842 | Measured, obesity is defined as a BMI≥ 30; overweight as a BMI25≥ & BMI <30 | Munich-composite international diagnostic interview in theDIA-X version accordingto DSM-IV criteria (Current, 12-month prevalence and lifetime anxiety prevalence) | Panic disorder, agoraphobia, specific phobia, social phobia, obsessive-compulsive disorder, generalized anxiety disorder,anxiety disorder due to general medical condition, anxiety disorder NOS | Moderate | Low | Low | Moderate | Moderate | Odd ratio overweight and 4-week anxiety 2.1 (CI 1.3-3.2); obesity and 4-week anxiety 2.5 (CI 1.6-4.0); overweight and 12-months anxiety 1.8 (CI 1.2-2.5); obesity and 12-months anxiety 2.2 (CI 1.5-3.2); overweight and lifetime anxiety 1.7 (CI 1.2-2.3); obesity and lifetime anxiety 2.0 (CI 1.4-3.0) | Sex, age |
| Becker 2001(Becker, Margraf, Turke, Soeder, & Neumer, 2001) | Germany | Cross-sectional | - | Adults, with and Without Obesity | 18–24 | women | 1659 | Self-reported, obesity is defined as a BMI≥ 30; overweight as a BMI25-30 | Using DIPS a structured interview allowing for the diagnosis ofAxis I disorders according to DSM-IV(lifetime anxiety prevalence) | - | High | Moderate | Low | High | Moderate | Odd ratio obesity and anxiety 2.59 (CI 1.26-5.34) | Unadjusted  |
| Bjerkeset 2007(Bjerkeset, Romundstad, Evans, & Gunnell, 2008) | Norway | prospective | 11years | Adults, with and Without Obesity | age≥20 | Both %50.87 women | 6612 | Self-reported; BMI categorized into four groups: undeweight≤18; normal weight 18.8-24;overweight 25-29; obesity ≥30  | Hospital Anxiety and Depression Rating Scale for anxiety (HADS-A)(current anxiety prevalence) | - | Low | Moderate | Moderate | Low | low | Odd ratio obesity and anxiety in all persons 1.16(CI 1.03-1.31), overweight 1.03 (CI 0.96-1.11); obesity and anxiety 1.50 (CI 1.23-1.83) in men, overweight 1.03(CI 0.93-1.16); obesity and anxiety in women 0.99(CI 0.85-1.15); overweight 1.01 (CI 0.92-1.12)  | age, sex, education, marital status, smoking (never, former, current), frequency of alcohol use, physical activity, vigor, nervousness, calmness, cheerfulness, and frequency of using tranquilizers |
| Bruffaerts 2008(Bruffaerts et al., 2008) | 6 European country | Cross-sectional | - | Adults, with and Without Obesity | age≥18 | Both %41 women | 20868 | Self-reported, BMI categorized into four groups: undeweight≤18; normal weight 18.8-24;overweight 25-29; obesity ≥30 | Composite International DiagnosticInterview was administered to assess mental disorders (mood, anxiety, and alcoholdisorders) according to the Diagnostic Statistical Manual of Mental Disorders-fourthedition(12-month anxiety prevalence) | GAD, panic disorder and/or agoraphobia,PTSD, and social phobia | Moderate | Moderate | Low | Low | Moderate | Odd ratio obesity 1.1 (CI 0.80-1.60), overweight 1.20 (CI 0.90-1.50) | Sex, age employment,education, urbanicity, marital status |
| Halfon 2013(Halfon, Larson, & Slusser, 2013) | USA | Cross-sectional | - | Children and adolescence  | 10-17 | Both %47.81 women | 100 | parent-reported, overweight defined as if their BMI was inthe 85th to <95th percentile compared with children ofthe same age and sex, and obese if their BMI was in the95th percentile and above | General health status indicators include parent-reportedglobal child health status (current anxiety prevalence) | - | Moderate | Moderate | Moderate | Low | Moderate | Odd ratio obesity 1.27 (CI0.95-1.70), overweight 1.21(CI 0.88-1.65)  | age, gender, race/ethnicity, parent education, household income, and family structure |
| Hallstrom 1981(Hallstrom & Noppa, 1981) | Sweden  | Cross-sectional | - | Adults, with and Without Obesity | 38, 46, 50 and 54 years oldage strata | women | 800  | Measured, Obesity was defined as the upper decile of weight index with 119-210  | Psychiatric interview(current anxiety prevalence)  | Anxiety attacks, phobia | Low | Low | Low | High | Moderate | Odd ratio anxiety attacks 0.90 (CI 0.48-1.69), phobia 1.64 (0.90-2.98)\* | Unadjusted |
| Herpertz 2006(Herpertz et al., 2006) | Germany  | Cross-sectional | - | Adults, with and Without Obesity | 18-65 | Both %71.52 women | 302 | Measured, Normal weight defined as BMI 18.5-24.9; obesity BMI≥30 | Composite International Diagnostic Interview, M-CIDI/DIA-X(current and lifetime anxiety prevalence) | panic disorderwith or without agoraphobia, social phobia, generalized anxietydisorder, and any specific phobia | High | Low | Low | High | Moderate | Odd ratio current anxiety 2.0 (CI 0.3-12.9) in men, 2.2 (CI 0.8-6.4) IN women; lifetime anxiety 2.0 (CI 0.3-12.9) in men, 2.1 (CI 1.0-4.6) in women\*\*  | Unadjusted |
| Kasen 2008(Kasen et al., 2008) | USA | prospective | 38years | Adults, with and Without Obesity | in baseline 27±5.3; in follow-up 59±6.3  | women | 544 | Self-reported, Normal weight defined as BMI 18.5-25; obesity BMI≥30 | interview items covering DSM-IV diagnostic criteria for GAD(6-month anxiety prevalence) | GAD | High | Moderate | Low | Moderate | Moderate | Odd ratio 6.27 (CI 1.39-28.16) | Age, education level,previous depressivesymptoms, marital status,chronic disease, low socialsupport, financial strain |
| Lapidoth 2014(Lapidoth Jde & von Hausswolff-Juhlin, 2014) | Sweden | Cross-sectional | - | Adults, with and Without Obesity | 26.7±8.2 | Both %96.9 women | 3,798 | Measured, obesity defined is unknown | Structured clinical interview for DSM-IV Axis I, Comprehensive psychopathological rating scale (CPRS-SA)(current anxiety prevalence) | - | Moderate | Low | Low | High | Moderate | Odd ratio obesity 1.53 (CI 1.28-1.82), overweight 1.04 (CI 0.88-1.22)\* | age |
| Mather 2009(Mather, Cox, Enns, & Sareen, 2009) | Canada  | Cross-sectional | - | Adults, with and Without Obesity | age≥15 | Both %55.9 women | 34900 | Self-reported, Obesity is defined as BMI≥30, non-obese BMI<30 | Health Survey-Mental Health and Well-Being (CCHS 1.2) base on World Mental Health–Composite International Diagnostic Interview(WMH-CIDI)(12-month and lifetime anxiety prevalence) | panic attacks, panic disorder,social phobia, agoraphobia, agoraphobia without panicdisorder | Moderate | Moderate | Low | Low | Moderate | Odd ratio lifetime anxiety 1.20 (CI 1.05-1.38) in women; 1.25 (CI 1.06-1.46) in men; past-year anxiety 1.19 (CI 1.00-1.42) in women; 1.45 (CI 1.14-1.84) in men | age, education, other psychiatric disorders, and Charlson Comorbidity Index |
| McCarthy 2014(McCarthy, Ilgen, Austin, Blow, & Katz, 2014) | USA | Prospective  | 8 years | Adults, with and Without Obesity | age≥18 | Both %5.3 women | 3,951,782 | Reported, BMI was calculated in metric units by multiplying a conversion factor of 703 ×(weight in pounds/(height in inches×height in inches; BMI was categorized as underweight (<18.5), normal (18.5-24.9), overweight (25-29.9), or obese (BMI≥30 | Clinical diagnosed (lifetime anxiety prevalence) | PTSD, others anxiety disorders  | Low | Moderate | Low | High | Low | Odd ratio obesity 1.34 (CI 1.32-1.36) in PTSD, overweight 1.06 (CI 1.04-1.07) in PTSD;obesity 0.87 (CI 0.86-0.89) in Non-PTSD anxiety, overweight 0.88 (CI 0.87-0.89) in Non-PTSD anxiety | Unadjusted  |
| McLaren 2008(McLaren, Beck, Patten, Fick, & Adair, 2008) | Canada  | Cross-sectional | - | Adults, with and Without Obesity | 18-64 | Both %51.7 women | 3886 | Self-reported, BMI is defined in four categoriesUnderweight <18.5 , normal weight 18.5–24.9, overweight (25-29.9) and obese >=30 | Mini Neuropsychiatric Interview(MINI-Plus, version 5.0),anxiety item from the EQ-5D quality of life instrument(12-month anxiety prevalence) | panic disorder, agoraphobia, social phobia, and generalized anxiety disorder | Moderate | Moderate | Low | low | Moderate | Odd ratio obesity 0.46 (CI 0.19-1.1) in men; 1.5 (0.95-2.2) in women; overweight 1.1 (CI 0.67-1.9) in men; 1.1 (0.75-1.7) in women | Age, marital status, education;excludes subjects with anymood disorder, any substanceuse disorder, bulimia nervosa |
| Rosen-Reynoso 2011(Rosen-Reynoso, Alegria, Chen, Laderman, & Roberts, 2011) | USA | Cross-sectional | - | Adults, with and without obesity | age≥ 18 | Both(unspecified) | 13,837 | Self-reported, Obesity is defined as BMI ≥30, non-obese BMI<30 | Diagnostic interview of the world mental health survey initiative version of the WMH-CIDI based on criteria of the DSM-IV(12-month anxiety prevalence) | agoraphobia, social phobia, GAD, PTSD, panic disorder, agoraphobia without panic | Moderate | Moderate | Low | Low | Moderate | Odd ratio 0.90 (CI 0.71-1.14) in non-latino white, 0.98 (CI 0.70-1.39) in latino, 1.02 (CI 0.53-1.96) in Asian, african-american 1.22 (CI 0.81-1.83), afro-caribbean 2.80 (CI 1.34-5.83) | Age, gender, smoking, socioeconomic status, other diseases, physical health status |
| Scott (1) 2008(Scott, McGee, et al., 2008) | New Zealand | Cross-sectional | - | Adults, with and without obesity | Age>16 | Both %52 women | 12,738 | Self-reported, obesity is defined as BMI≥30 | WHM-Composite international diagnostic interview (12-month anxiety prevalence) | panic disorder, agoraphobia without panic, specific phobia, social phobia, GAD,PTSD, OCD | Moderate | Moderate | Low | Low | Moderate | Odd ratio 1.36 (CI 1.13-1.65) | Age, sex, ethnicity, education, smoking status, psychiatric comorbidity  |
| Scott (2) 2008(Scott, Bruffaerts, et al., 2008) | 13 countries | Cross-sectional | - | Adults, with and without obesity | Age>18 | Both%39.2 women | 62 277 | Self-reported, obesity is defined as BMI≥30; in some analysis obesity subdivided into obesity (BMI 30-34.9) and severe obesity (BMI >35) | WHOComposite International Diagnostic Interview(12-month anxiety prevalence) | generalized anxiety disorder, panic disorder and/or agoraphobia, post-traumatic stress disorder andsocial phobia | Moderate | Moderate | Low | Moderate | Moderate | Odd ratio 1.2 (CI 1.1-1.3), In men 1.0 (CI 0.8-1.3),In women 1.3 (CI 1.2-1.5)  | Age, sex, education  |
| Simon 2006(Simon et al., 2006) | USA | Cross-sectional | - | Adults, with and without obesity | 44.8±0.4 | Both %51.4 women | 9125 | Self-reported, Obesity is defined as BMI ≥30, non-obese BMI<30 | WHO composite international diagnostic interview(lifetime anxiety prevalence) | panic disorder, agoraphobia without panic, generalized anxiety disorder | Moderate | Moderate | Low | Moderate | Moderate | Odd ratio lifetime 1.21 (CI 0.96-1.52); 12-month 1.34 (CI 1.07-1.66); Men 1.17 (CI 0.82-1.67),Women 1.34 (CI 1.09-1.64) | Lifetime: Age, sex, smoking, mood and substance usedisorders |
| Smith 2014(Smith, White, Hadden, Young, & Marriott, 2014) | USA | Cross-sectional | - | Adults, with and without obesity | Age>17 | Both %25 women | 15,195 | Self-reported, BMI <18.5 was considered underweight, BMI 18.5 to 24.9 equaled normal weight, BMI ≥25.0 to 29.9 was classed as overweight, BMI >30.0 were considered obese | Patient Health Questionnaire (PHQ), PTSD Checklist-Civilian (PCL-C)(current anxiety prevalence) | GAD, PTSD | High | Moderate | Moderate | High | High | Odd ratio obesity and generalized anxiety disorder 1.3 (CI 1.02-1.77) in men, 1.4 (CI 0.96-2.15) in women, overweight and GAD 1.1 (CI 0.82-1.57)in men , 1.2 (CI 0.93-1.65) in women ; obesity and PTSD 1.3 (CI 0.81-1.83) in men, 1.8 (CI 1.11-3.0) in women, overweight and PTSD 1.0 (CI 0.83-1.27)in men , 1.3 (CI 0.92-1.80) in women | Unadjusted |
| Subramaniam 2013(Subramaniam et al., 2013) | Singapore | Cross-sectional | - | Adults, with and without obesity | Age>18 | Both %39.9 women | 5845 | self-reported, BMI <18.5 was considered underweight, BMI 18.5 to 24.9 equaled normal weight, BMI ≥25.0 to 30 was classed as overweight, BMI >30.0 were considered obese | World Mental Health Composite International Diagnostic Interviewversion 3.0 (CIDI 3.0)(12-month and lifetime time anxiety prevalence) | generalized anxiety disorder, obsessive compulsive disorder  | Moderate | Moderate | Low | Low | Moderate | Odd ratio obesity and lifetime anxiety 0.75 (CI 0.32-1.78), overweight 1.17 (CI 0.69-1.97); obesity and past year anxiety 0.42 (CI 0.17-1.06), overweight 0.64 (CI 0.27-1.51) | age, gender, ethnicity, marital status, nationality, smoking status, employment status, educational attainment and income |
| Sunwoo 2011(Sunwoo et al., 2011) | Korea  | Cross-sectional | - | Adults, with and without obesity | 18-64 | Both %49.3 women | 6042 | Self-reported, Underweight ( BMI< 18.5), normal weight (BMI 18.5-24.9), obesity (BMI ≥25.0)  | Korean version of the Composite International Diagnostic Interview (K-CIDI)(lifetime anxiety prevalence) | panic disorder, agoraphobia, specific phobia, PTSD, Obscessive-compulsive disorders | Low | Moderate | Low | Low | Moderate | Odd ratio 1.17 (CI 0.90-1.51) | age, gender, smoking, marital status, education level and other psychiatric disorder |
| Wimmelmann 2016(Wimmelmann, Lund, Christensen, Osler, & Mortensen, 2016) | Denmark | Cross-sectional | - | Adults, with and without obesity | 49-63 | Both %32 women | 5187 | Measured, underweight (BMI<18.5), Normal weight (BMI 18.5-24.9), overweight (BMI 25-29.9), obese (BMI 30-39.9), severely obese (BMI >40) | shorter version comprising 35 items of Symptom Check-List’ (SCL-90)(current anxiety prevalence) | - | High | Low | Moderate | Low | Moderate | Odd ratio obesity 1.1 (CI 0.7-1.5) in men, 0.9 (CI 0.5-1.7) in women; overweight 0.8 (CI 0.6-1.0) in men, 0.8 (CI 0.5-1.3) | age, occupational social class, and duration of education |
| Zhao 2009(Zhao et al., 2009) | USA | Cross-sectional | - | Adults, with and without obesity | age≥18 | Both %60.9 women | 177 047 | Self-reported, underweight (BMI<18.5), Normal weight (BMI 18.5-<25), overweight (BMI 25-<30), class 1 obesity (BMI 30-<35), class 2 obesity (BMI 35-<40), class 3 obesity (BMI ≥40) | Self-reported(lifetime anxiety prevalence)  | acute or post-traumatic stress disorder, anxiety, generalizedanxiety disorder, obsessive–compulsive disorder, panic disorder, phobia or social anxiety disorder | Moderate | Moderate | Moderate | Low | Low | Odd ratio 1.2 (CI 1.1-1.3) in men, 1.1 (CI 1.0-1.2) in women\*\* | Age, Race, education, employment, marital status, obesity-related comorbidities, smoking, alcohol drinkingand physical activity, general health status, emotional support and life satisfaction |
| Black 1992(Black, Goldstein, & Mason, 1992) | USA | Case-control | - | Adults, with and without obesity | age≥18 | Both %80.04 women | 164 | Reported, 100% above ideal body weight  | National institute of mental health diagnostic interview schedule (lifetime anxiety prevalence) | Panic, OCD, agoraphobia, social phobia, simple phobia, PTSD, GAD, | High | Moderate | Low | Moderate | Moderate | Odd ratio 4.9 (CI 2.3-10.3) | Age, sex |
| Borges 2010(Borges, Benjet, Medina-Mora, & Miller, 2010) | Mexico | Cross-sectional | - | Adolescence, with and without overweight | 12-17 | Both %50.1 women | 3005 | Self-reported, classifying the adolescents BMIs accordingly to the CDC recommendations, that is a BMI age- and sex-specific; Underweight was defined for those with a BMI less than the 5th percentile, normal weight as those from the 5th percentile to less than the 85th percentile, and overweight as those above the 85th percentile | computer assisted (CAPI) version of the World Mental Health version of the Adolescent Composite International Diagnostic Interview (WMH-CIDI-A)(12-month anxiety prevalence) | specific phobia, social phobia, panic disorder, agoraphobia without panic disorder, separation anxiety disorder, generalized anxiety disorder and posttraumatic stress disorder | Moderate | Moderate | Low | Moderate | Moderate | Odd ratio total 1.1 (CI 0.9-1.3); In men 1.2 (CI 0.9-1.7); in women 0.9 (CI 0.7-1.2) | other disorder, Sex, Exercise, Living with parents, Current student, Adolescent burden, Parents education, Parents income, Used tobacco 12 months, Non-medical diet last 12 months |
| Lamertz 2002(Lamertz, Jacobi, Yassouridis, Arnold, & Henkel, 2002) | Germany | Cross-sectional | - | Adults, with and without obesity (only adults included in meta-analysis) | 18-24 | Both%46.9 women | 170 | Self-reported, underweight(BMI≤5th percentile), underweight (BMI≤10th percentile),average weight (BMI>5th percentile to<95th percentile),overweight (BMI≥90th percentile), and obesity (BMI≥95thpercentile) | Munich composite International Diagnostic Interview (M-CIDI), Symptom Checklist revised90 (SCL-90-R)(lifetime anxiety prevalence) | obsessive-compulsive, phobia, anxiety | high | Moderate | Low | High | High | Odd ratioIn men 3.25 (0.99-10.58), In women 2.28 (CI 0.94-5.50) | Unadjusted |

\*Odd ratio calculated by author, \*\*Odd ratio was obtained from secondary article