**Supplementary Material**

**Table s1**

***Scoring System Used for Rating the Methodological Quality of Included Studies***

|  |  |  |  |
| --- | --- | --- | --- |
| **Scoring criteria** | **2** | **1** | **0** |
| ***Selection: Representativeness of cohort*** |  |  |  |
| Non-participation Rate | Low rate (<20%) and differences described | High rate (>20%) and differences described | High rate, or not stated, or no description of differences |
| Setting | Population cohort | Clinical setting | No description |
| Inclusion/Exclusion Criteria | Clear description of inclusion/exclusion and excluded participants reported | Mention of inclusion/exclusion criteria but lacking detail, or excluded participants not reported | Not described or unclear |
| Definition of First Episode Status | Based on first presentation to a clinical setting, or medication naïve, or ≤ 6 months duration of treatment | Based on first hospitalisation only, or > 6 months duration of antipsychotic treatment | No description of derivations of the sample |
| ***Outcome: Validity and Reliability of Assessment*** |  |  |  |
| Measurement of Depressive Disorder | Use of a standardised measurement tool (structured interview) with inter-rater reliability conducted and reported | Use of standardised measurement tool | Not described or no use of standardised measurement tool |
| Measurement of Depressive Symptomatology/Caseness for Depressive Disorder | Use of observer-rated instrument with inter-rater reliability conducted and reported | Use of observer-rated instrument without inter-rater reliability or self-report instrument | N/A |

*Notes.* This scoring system was adapted from the Newcastle-Ottawa Quality Assessment Form for Cohort Studies. For studies examining both depressive disorder and depressive symptoms and/or caseness for depressive disorder, appraisal on measurement was based on depressive disorder.

**Table s2**

***Methodological Quality Assessment of Included Studies***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **aMeasurement of dep** | |  |
| **Study** | | **Non-participation** | **Setting** | **Inclusion/ exclusion** | **Definition of FE** | **Dep disorder** | **Caseness/ severity** | **Total (/10)** |
| **Addington, 1998** | | 0 | 1 | 1 | 0 | NA | 2 | 4 |
| **Allott, 2013** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Arranze, 2009** | | 0 | 1 | 2 | 2 | NA | 1 | 6 |
| **Arrasate, 2014** | | 0 | 1 | 1 | 2 | NA | 2 | 6 |
| **Barrett, 2010** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Bendall, 2008** | | 0 | 1 | 0 | 0 | 1 | NA | 2 |
| **Bertelsen, 2007** | | 0 | 1 | 0 | 2 | 1 | NA | 4 |
| **Binder, 1998** | | 0 | 1 | 0 | 2 | NA | 1 | 4 |
| **Chang, 2014** | | 0 | 1 | 1 | 0 | NA | 1 | 3 |
| **Chang, 2015** | | 0 | 1 | 1 | 1 | NA | 1 | 4 |
| **Chang, 2011** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Chang, 2017** | | 0 | 1 | 1 | 0 | NA | 2 | 4 |
| **Chen, 2009** | | 0 | 1 | 1 | 2 | NA | 2 | 6 |
| **Cotton, 2010** | | 0 | 1 | 1 | 2 | 1 | NA | 5 |
| **Dai, 2017** | | 0 | 1 | 2 | 2 | NA | 2 | 7 |
| **Ebdrup, 2016** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Emsley, 2015** | | 0 | 1 | 1 | 2 | NA | 2 | 6 |
| **Garcia, 2016** | | 0 | 1 | 1 | 1 | NA | 2 | 5 |
| **Herniman, 2017** | | 0 | 1 | 2 | 0 | 1 | NA | 4 |
| **Kampman, 2004** | | 0 | 1 | 1 | 0 | NA | 1 | 3 |
| **Lee, 2017** | | 0 | 1 | 1 | 0 | NA | 1 | 3 |
| **Noto, 2015** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Pawelczyk, 2016** | | 0 | 1 | 2 | 1 | NA | 2 | 6 |
| **Pena, 2011** | | 0 | 1 | 0 | 2 | NA | 1 | 4 |
| **Riedel, 2012** | | 0 | 1 | 1 | 0 | NA | 1 | 3 |
| **Roche, 2010** | | 0 | 1 | 0 | 2 | NA | 1 | 4 |
| **Ruggeri, 2015** | | 0 | 1 | 1 | 2 | NA | 2 | 6 |
| **Sanchez-Gistau, 2015** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Schultze-Lutter, 2007** | | 0 | 1 | 1 | 0 | 1 | NA | 3 |
| **Shoval, 2011** | | 0 | 1 | 0 | 0 | NA | 1 | 2 |
| **Stouten, 2014** | | 0 | 1 | 0 | 2 | NA | 1 | 4 |
| **Stowkowky, 2012** | | 0 | 1 | 1 | 0 | NA | 2 | 4 |
| **Strous, 2006** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Strous, 2009** | | 0 | 1 | 1 | 1 | NA | 1 | 4 |
| **Tosato, 2013** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |
| **Upthegrove, 2010** | | 2 | 1 | 2 | 2 | NA | 1 | 8 |
| **Wassink, 1999** | | 0 | 1 | 1 | 1 | 1 | NA | 4 |
| **Zabala, 2007** | | 0 | 1 | 1 | 1 | NA | 1 | 4 |
| **Zalsman, 2003** | | 0 | 1 | 1 | 2 | 1 | NA | 5 |
| **Zhao, 2012** | | 0 | 1 | 1 | 2 | NA | 1 | 5 |

*Notes.*NA = not applicable.

aFor studies examining both depressive disorder and depressive symptoms and/or caseness for depressive disorder, appraisal on measurement was based on depressive disorder.

**Table s3**

***Properties of Instruments Examining Severity of Depressive Symptoms***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Instrument** | **Self-Report**  **or Observer-Rated** | **Items (*n*)** | **Scoring** | **Range** | **Qualitative Interpretation** |
| BDI | Self-report | 21 | 0–3 | 0–63 | 0-13: minimal depression; 14-19: mild depression; 20-28: moderate depression; 29-63: severe depression |
| CES-D | Self-report | 20 | 0–3 | 0–60 | 14-25: mild depression; 26-39: moderate depression; 40>: severe depression |
| CDSS | Observer-rated | 9 | 0–3 | 0–27 | ≥5: MDE |
| HAMD | Observer-rated | 17 | 0–2 or 0–4 | 0–50 | 8-13: mild depression; 14-18: moderate depression; 19-22: severe depression; 23 very severe depression |
| MADRS | Observer-rated | 10 | 0–6 | 0–60 | 0-6: normal/symptom absent; 7-19: mild depression; 20-34: moderate depression; >34: severe depression |

*Notes.* BDI =Beck Depression Inventory; CES-D = Centre for Epidemiological Studies – Depression Scale; CES-D-R = Centre for Epidemiological Studies – Depression Scale – Revised; CDSS = Calgary Depression Rating for Schizophrenia; MADRS = Montgomery-Asberg Depression Rating Scale

**Table s4**

***Summary of Meta-Analyses Examining the Prevalence of Depressive Disorder, Prevalence of Caseness for Depressive Disorder, and Mean Severity of Depressive Symptoms (Standardised Scores), and Sub-Group Meta-Analyses for Categorical Moderators, in First Episode Schizophrenia Spectrum Disorders***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **95% CI** | |  |
|  | **Samples** | **Participants *N*** | **Event rate/Mean (Standard error)** | **Lower** | **Upper** | ***I2*** |
| **Prevalence of Depressive Disorder** | **7** | **855** | **0.26** | **0.22** | **0.30** | **30.67** |
| **Prevalence of Caseness for Depressive Disorder** | **11** | **1312** | **0.44** | **0.30** | **0.58** | **94.89** |
| Type of Instrument (between group *p*=0.009) |  |  |  |  |  |  |
| Observer-rated | 9 | 1184 | 0.39 | 0.25 | 0.55 | 94.95 |
| Self-report | 2 | 128 | 0.63 | 0.54 | 0.72 | 7.93 |
| Phase of Illness (between group *p*=0.018) |  |  |  |  |  |  |
| Acute Phase (PANSS-P≥14) | 3 | 377 | 0.47 | 0.19 | 0.76 | 96.38 |
| Post-Acute Phase | 1 | 351 | 0.15 | 0.12 | 0.19 | 0.00 |
| **Mean Percentage of Maximum Severity of Depressive Symptomatology (Standardised Scores)** | **38** | **3180** | **25.08 (1.83)** | **21.49** | **28.68** | **97.73** |
| Type of Instrument (between group *p*=0.039) |  |  |  |  |  |  |
| Observer-rated | 34 | 2876 | 24.24 (1.94) | 20.44 | 28.04 | 97.85 |
| Self-report | 4 | 304 | 32.09 (3.41) | 25.40 | 38.78 | 86.24 |
| Phase of Illness (between group *p<*0.045) |  |  |  |  |  |  |
| Acute Phase (PANSS-P≥14) | 18 | 1317 | 29.41 (1.84) | 25.80 | 33.01 | 93.53 |
| Post-Acute Phase | 5 | 795 | 14.85 (3.58) | 7.83 | 21.87 | 97.62 |
| **Mean Severity of Depressive Symptoms (Raw Scores) Grouped by Scalesa** |  |  |  |  |  |  |
| CDSS | 14 | 1348 | 5.35 | 4.16 | 6.53 | 96.47 |
| HAM-D | 14 | 1181 | 14.09 | 11.88 | 16.31 | 95.87 |
| MADRS | 6 | 347 | 14.89 | 10.85 | 18.93 | 93.46 |
| BDI/BDI-II | 2 | 176 | 16.48 | 10.58 | 22.38 | 86.38 |
| CES-D/CES-D-R | 2 | 128 | 23.30 | 16.82 | 29.79 | 79.39 |

*Notes*. PANSS-P=positive and negative syndrome scale–positive subscale; BDI =Beck Depression Inventory; CES-D = Centre for Epidemiological Studies – Depression Scale; CES-D-R = Centre for Epidemiological Studies – Depression Scale – Revised; CDSS = Calgary Depression Rating for Schizophrenia; MADRS = Montgomery-Asberg Depression Rating Scale.

aPooled mean severity of depressive symptoms (raw scores) correspond to ‘mild depression’ for the MADRS, BDI/BDI-II, CES-D/CES-D-R, ‘moderate depression’ for HAM-D, and levels consistent with MDE for the CDSS (Rush et al, 2008).

**Table s5**

***Meta-Regressions Examining Demographic, Illness, Functional, and Treatment Correlates of Depressive Psychopathology in First Episode Schizophrenia Spectrum Disorders***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **95% CI** | |  |
| **Moderator Variable** | **Samples** | **Participants *N*** | ***β*** | **Lower** | **Upper** | ***P-*value** |
| **Prevalence of Depressive Disorder** | **(/7)** |  |  |  |  |  |
| Age | 6 | 428 | -0.02 | -0.14 | -0.10 | 0.744 |
| % female | 6 | 428 | -0.03 | -0.09 | 0.04 | 0.444 |
| Quality score | 7 | 855 | 0.03 | -0.27 | 0.33 | 0.845 |
| **Prevalence of Caseness for Depressive Disorder** | **(/11)** |  |  |  |  |  |
| Age (years) | 9 | 1258 | -0.11 | -0.18 | 0.04 | 0.003\* |
| % female | 9 | 1258 | -0.06 | -0.10 | 0.03 | <0.001\* |
| % antipsychotic naïve | 5 | 943 | <-0.01 | -0.02 | 0.02 | 0.717 |
| Positive symptoms (PANSS–P) | 4 | 728 | 0.07 | -0.15 | 0.28 | 0.540 |
| Negative symptoms (PANSS–N) | 4 | 728 | 0.11 | -0.19 | 0.41 | 0.47 |
| Quality score | 11 | 1312 | -0.05 | -0.45 | 0.34 | 0.795 |
| **Mean Percentage of Maximum Depressive Symptom Severity (standardised scores)** | **(/38)** |  |  |  |  |  |
| Age (years) | 33 | 2757 | -0.08 | -0.88 | 0.72 | 0.849 |
| % female | 34 | 3021 | -0.56 | -0.57 | 0.06 | 0.115 |
| DUP (mean days) | 15 | 1367 | -0.02 | -0.05 | <0.01 | 0.048\* |
| % antipsychotic naïve | 15 | 1367 | -0.01 | -0.14 | 0.19 | 0.869 |
| % prescribed antidepressant | 11 | 817 | 0.41 | -0.28 | 1.10 | 0.242 |
| Positive symptoms (PANSS-P subscale mean) | 23 | 2112 | 0.90 | -0.32 | 1.47 | 0.002\* |
| Negative symptoms (PANSS-N mean) | 23 | 1975 | 1.31 | 0.45 | 2.17 | 0.003\* |
| Negative symptoms (PANNS-N mean) – only CDSS | 11 | 976 | 1.45 | 0.49 | 2.40 | 0.003\* |
| Functioning (GAF) | 8 | 434 | 0.05 | -0.34 | 0.43 | 0.816 |
| Quality score | 38 | 3180 | 0.64 | -3.57 | 3.57 | 0.670 |

*Notes.* DUP = duration of untreated psychosis; PANSS-P = positive and negative syndrome scale – positive subscale; PANSS-N = positive and negative syndrome scale – negative subscale; GAF = Global Assessment of Functioning; CDSS = Calgary Depression Rating Scale for Schizophrenia. \**p*<0.05.



*Figure 1s.* Significant, positive association between severity of depressive symptoms (standardised scores) and severity of positive psychotic symptoms in first episode schizophrenia spectrum disorders



*Figure 2s.* Significant, positive association between severity of depressive symptoms (standardised scores) and severity of negative psychotic symptoms in first episode schizophrenia spectrum disorders



Figure 3s. Significant, positive association between severity of depressive symptoms (standardised scores) using the Calgary Depression Rating Scale (CDSS) and severity of negative psychotic symptoms in first episode schizophrenia spectrum disorders



*Figure 4s.* Significant, negative association between severity of depressive symptoms (standardised scores) and duration of untreated psychosis in first episode schizophrenia spectrum disorders



*Figure 5s.* Significant, negative association between the prevalence of caseness for depressive disorder and age in first episode schizophrenia spectrum disorders



*Figure 6s.* Significant, negative association between the prevalence of caseness for depressive disorder and percentage of females in first episode schizophrenia spectrum disorders



*Figure 7s*. Differences in the prevalence of caseness for depressive disorder between self-report versus observer-rater instruments in first episode schizophrenia spectrum disorders



*Figure 8s*. Differences in the prevalence of caseness for depressive disorder between those in the acute versus post-acute phase of first episode schizophrenia spectrum disorders



*Figure 9s.* Differences in severity of depressive symptoms (standardised scores) between those in the acute versus post-acute phase of first episode schizophrenia spectrum disorders



*Figure 10s*. Differences in severity of depressive symptoms (standardised scores) between self-report versus observer-rated instruments in first episode schizophrenia spectrum disorders