**Additional file 2**

Mental burden and its risk and protective factors during the early phase of the SARS-CoV-2 pandemic: systematic review and meta-analyses

Angela M Kunzler\*, Nikolaus Röthke\*, Lukas Günthner, Jutta Stoffers-Winterling, Oliver Tüscher, Michaela Coenen, Eva Rehfuess, Guido Schwarzer, Harald Binder, Christine Schmucker, Jörg Meerpohl, Klaus Lieb

**eTable 9.** Details on number of included (pandemic and comparative) studies

**eTable 10.** Study characteristics of the prepandemic comparative studies

**eTable 11.** Cut-off values reported in included pandemic studies

**eResults 1.** Forest plots of main analyses

**eTable 12.** Quality assessment of included pandemic studies

**eTable 13.** Assessment of level of comparability between pandemic and prepandemic comparative studies

**eResults 2.** Forest plots of sensitivity analyses

**eResults 3.** Detailed results of subgroup analyses

**eTable 14.** Risk factors in the general population, healthcare workers, and patients

**eTable 15.** Protective factors in the general population, healthcare workers, and patients

**eTable 9. Details on number of included (pandemic and comparative) studies**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Numbera** | **General population** | **Healthcare workers** | | | **Patients** | **Mixedb** | **Total** |
| **Systematic review** | | | | | | | |
| **Pandemic studies** | | | | | | | |
| Studies | 50 | 30 | | | 7 | 17 | 104 (108 reports) |
| Samplesc | 64 | 42 | | | 14 | 4 | 124 |
| Participants: studies (samples)d | 150455 (163191) | 26101 (35075) | | | 5159 (5998) | 26546 (3997) | 208261 |
| **Pairwise meta-analyses** | | | | | | | |
| **Pandemic studies** | | | | | | | |
| Studies | 23 | 13 | | 4 | | 3 | 43 (47 reports) |
| Samplesc | 29 | 14e | | 7f | |  | 50 |
| General population: 20 | COVID-19 patient exposure: 7 | | Psychiatric patient: 3 | |  |
| Students: 5 | COVID-19 patients: 2 | |
| Risk groups (eg, caregiver): 3 | No COVID-19 patient exposure: 7 | | Pregnant women: 2 | |
| Others: 1 |
| Participantsg | 61160 | 5508 | | 4945 | | 71613 |
| **Comparative studies** | | | | | | | |
|  |  | |  |  | | **GP studies (samples) used for comparison with HCW/P** |  |
| Studies | 29 | 10 | | 9 | | 1/6 | 48 (48 reports)h |
| Samples | 29 | 10 | | 10h | | 1/6 | 49h,i |
| Participants | 118068 | 10589 | | 11911 | | 37209 | 140568h |

a Number of included studies, samples, and participants in review and meta-analyses for pandemic studies (each population) and comparative studies.

b Mixed: eg, general population and healthcare workers.

c Mixed samples were immediately allocated to samples in healthcare workers or patients, if possible.

d Participants of mixed samples were also immediately allocated to samples in healthcare workers or patients, if possible (ie, n=3997 participants of mixed samples in systematic review refer to the four remaining samples that could not be assigned).

e two samples in Cai W et al101 were combined to one.

f two samples in Liu X et al42 were combined to one.

g across four primary outcomes for which pairwise meta-analyses were performed (anxiety, depression, stress, sleep-related symptoms) with single counting.

h total number only refers to three first columns.

i two different samples used in case of Wang et al185.

**eTable 10. Study characteristics of the prepandemic comparative studies**

| Comparative study | **Pandemic study to compare with** | **Country** | **Study sample used: sample size; female: No (%); age: M (SD)** | **Study design** | **Survey period** | **Study population** | **Study subsample/**  **data used** | **Relevant assessment tool(s)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Alosaimi et al (2018)148 | Badahdah et al (2020)98 | Saudi Arabia | 582; 168 (29%); 46.9 (7.9) | cross-sectional, observational | November 2014-March 2015 | physicians | NA | PSS |
| Balestrieri et al (2010)149 | Soraci et al (2020)78 | Italy | 21644; 13203 (61%); NA (mode: 45-65 years) | cross-sectional, observational | NA | primary care sample | NA | HADS |
| Basta et al (2019)150 | Tsipropoulou et al (2020)82 | Greece | 2771; 1496 (54%); NA (Md=21, IQR=18-23 years) | cross-sectional, observational | March-April 2016 | young general population (representative) | NAa | GAD-7, PHQ-9 |
| Bilgel et al (2010)151 | Özdin et al (2020)69 | Turkey | 1102; 642 (58%); 20.0 (1.5) | cross-sectional, observational | NA | students | NA | HADS |
| Bonfiglio et al (2016)152 | Germani et al (2020)51; Iasevoli et al (2020, controls)135;  Iasevoli et al (2020, caregivers)135 | Italy | 337; 249 (74%); 28.0 (9.6) | cross-sectional, observational (validation study) | NA | general population | non-clinical sample | PSS |
| Bottesi et al (2015)153 | Mazza et al (2020)63 | Italy | 417; 238 (57%); 36.4 (13.7) | cross-sectional, observational | NA | general population | NA | DASS-21 |
| Cai S et al (2018)154 | Cai W et al (2020)101 | China | 1608; 1608 (100%); 32.3 (8.6) | cross-sectional, observational | March-April 2015 | healthcare workers | NA | SCL-90 |
| Carlucci et al (2018)155 | Germani et al (2010)51 | Italy | 2938; 1667 (56%), 36.3 (20.3) | cross-sectional, observational | NA | general population | NA | STAI-Y |
| Carta et al (2013)156 | Iasevoli et al (2020, control group)135; Iasevoli et al (2020, patient group)135 | Italy | 1200; 618 (52%), NA (mode: 30-44 years) | cross-sectional, observational | November 2011-August 2012 | general population | NA | PHQ-9 |
| Choueiry et al (2016)157 | Babahdah et al (2020)98 | Lebanon | 462; 322 (70%); 21.2 (1.8) | cross-sectional, observational | September 2013-May 2014 | students | NA | GAD-7 |
| Chung et al (2010)158 | Hao F et al (2020)132 | China | 91; 73 (80%); 48.3 (9.5) | longitudinal, observational | NA | patients with major depressive disorder | baseline data | ISI |
| Dadfar et al (2019)159 | Zhang SX et al (2020c)121 | Iran | 157; 61 (39%); 25.5 (8.0) | cross-sectional, observational (validation study) | NA | students | NA | PHQ-2 |
| Dong et al (2017)160 | Xiao et al (2020)117; Wang S (2020)115; Wu K (2020)116 | China | 4951; 4667 (94%); 28 (6) | cross-sectional, observational | May-December 2015 | nurses | NA | PSQI |
| Ertekin et al (2018)161 | Durankus et al (2020)125 | Turkey | 99; 99 (100%); 27.9 (5.1) | randomized controlled intervention study | October 2014-December 2015 | pregnant women | control group | BDI |
| Fleishman et al (2007)162 | Olagoke et al (2020)146 | USA | 11109; 7854 (70%); NA (mode: 18-40 years) | cross-sectional, observational | 2004 | general population (representative) | NA | PHQ-2 |
| García-Campayo et al (2012)163 | González-Sanguino et al (2020)52 | Spain | 110; 80 (73%); 48.0 (16.1) | cross-sectional, observational, controlled | NA | primary care sample | control group | GAD-2 |
| Ho R et al (2016)164 | Liu X et al (2020a)42 | China | 51; 20 (39%); 52.4 (9.6) | randomized controlled intervention study | N/A | schizophrenia patients | Tai-chi group, baseline data | PSS |
| Hossain et al (2019)165 | Sakib et al (2020)74 | Bangladesh | 1140; 479 (42%); 19.5 (0.9) | longitudinal, observational | April 2016-July 2016 | students | follow-up dataa (baseline data not available) | PHQ-9 |
| Huang F et al (2020)166 | Guo et al (2020)131 | China | 9507; 4658 (49%); 47.5 (14.1) | cross-sectional, observational | 2015 | general population | NA | PSS |
| Ivziku et al (2019)167 | Iasevoli et al (2020, patients)135 | Italy | 80; 35 (44%); 76.4 (7.3) | cross-sectional, observational | November 2016-October 2017 | COPD patients | patient group | GAD-7 |
| Jeyagurunathan et al (2017)168 | Iasevoli et al (2020, caregivers)135 | Singapore | 339; 229 (70%); 49.7 (13.2) | cross-sectional, observational | July 2014-May 2015 | caregivers of mentally ill people | NA | GAD-7, PHQ-9 |
| Jin et al (1986)169, b | Tian et al (2020)81, b | China | 1388; NA; NA | cross-sectional, observational | NA | general population | NA | SCL-90 |
| Lee K et al (2017)170 | Yuan R et al (2020, parents of children hospitalized during pandemic)89; Yuan R et al (2020, parents of children not hospitalized during pandemic)89 | China | 8284; 4208 (51%), NA (mode: ≥60 years) | cross-sectional, observational | NA | general population | NA | HADS |
| Lin R et al (2018)171 | Hao F (2020, controls)132; Tan W et al (2020)80 | China | 1013; 625 (62%); 20.4 (1.5) | cross-sectional, observational | NA | students | sample 2 | ISI |
| Liu H et al (2009)172 | Liu X et al (2020a)42 | China | 101; 35 (35%); 34.1 (10.0) | cross-sectional, observational | January-May 2007 | schizophrenia patients | NA | HAMD |
| Liu R et al (2016)173 | Ma et al (2020)62 | China | 4604; NR; NR | cross-sectional, observational | 2012-2013 | general population | no hypertension group | PSQI |
| Liu X et al (2020)174 | Wang S et al (2020)115; Zhu J et al (2020)122; Wu K et al (2020, C19-group)116, Wu K et al (2020, nC19-group)116 | China | 242; NA; NA | cross-sectional, observational | November 2018-January 2019 | nurses | NA | SDS |
| Löwe et al (2008)175 | Amerio et al (2020)97; Bäuerle et al (2020)45; Consolo et al (2020)103; Iasevoli et al (2020; control group)135 | Germany | 5030; 2696 (54%); 48.4 (18.0) | cross-sectional, observational | May 2006-June 2006 | general population (representative) | NA | GAD-7 |
| Löwe et al (2010)176 | Bäuerle et al (2020)45; González-Sanguino et al (2020)52; Voitsidis et al (2020)83 | Germany | 5010; NA; NA | cross-sectional, observational | May 2006-June 2006 | general population (representative) | NA | PHQ-2 |
| Lu S et al (2018)177 | Hao F et al (2020; controls)132; McKay et al (2020)64; Tan W et al (2020)80; Wang C et al (2020b)85 | China | 13208; 8223 (62%); 19.7 (1.8) | cross-sectional, observational | NA | students | NA | DASS-21 |
| Lu W et al (2017)178 | Guo et al (2020, controls)131; Guo et al (2020, patients)131; Chang et al (2020)49; Zhou et al (2020)93 | China | 1096; 395 (36%); 18.3 (0.7) | cross-sectional, observational | January-December 2011 | students | NA | GAD-7 |
| Paparrigopoulos et al (2010)179 | Voitsidis et al (2020)83 | Greece | 1005; 522 (52%); NA (mode: >65 years) | cross-sectional, observational | NA | general population (representative) | NA | AIS |
| Pereira-Lima et al (2014)180 | Zhang SX et al (2020c)121 | Brazil | 305; 146 (48%); 28 (2.5) | cross-sectional, observational | NA | physicians | NA | GAD-2 |
| Ramón-Arbués et al (2019)181 | Odriozola-González et al (2020)66 | Spain | 1055; 744 (71%); 21.7 (5.2) | cross-sectional, observational | September 2018-January 2019 | students | NA | DASS-21 |
| Sasaki et al (2020)182 | Chew et al (2020)102; Tan B et al (2020)114 | Vietnam | 933; 806 (85%); 33.1 (6.8) | cross-sectional, observational | August-September 2018 | nurses | NA | DASS-21 |
| Schmidt et al (2015)183 | Amerio et al (2020)97 | Switzerland | 220; 124 (56%); NA (mode: 30-39 years) | cross-sectional, observational | 2011 | physicians | NA | ISI |
| Sinclair et al (2012)184 | Tull et al (2020)79 | USA | 499; 259 (52%); 44.7 (16.3) | cross-sectional, observational | NA | general population (representative) | NA | DASS-21 |
| Wang K et al (2016)185 | Hao F et al (2020; patient group)132; Ma et al (2020)62 | China | study 1: 1815; 1124 (62%), 18.8 (0.8);  study 2: 166; 79 (48%); 42.8 (9.6) | cross-sectional, observational, study 2 controlled | NA | students (study 1); schizophrenia patients (study 2) | students sample (study 1); schizophrenia patients (study 2) | DASS-21 |
| Wang W et al (2014)186 | Chang et al (2020)49; Guo et al (2020, controls)131; Guo et al (2020, patients)131; Zhou SJ et al (2020)93 | China | 1045; 679 (65%); 47.1 (16.2) | cross-sectional, observational | June 2011-January 2012 | general population (validation study) | NA | PHQ-9 |
| Wang WL et al (2020)187 | Liu X et al (2020a)42 | China | 207; 70 (34%); 42.3 (10.0) | cross-sectional, observational | July 2017-May 2018 | schizophrenia patients | NA | PSQI |
| Wang X et al (1999)188 | Lei et al (2020)57; Wang Y et al (2020)87 | China | 1158; NR; NR | cross-sectional, observational | NA | general population | NA | SAS |
| Wang Y et al (2019)189 | Liu X et al (2020a)42 | China | 99; 28 (28%); 39.8 (10.1) | randomized controlled intervention study | January 2017-February 2018 | schizophrenia patients | Buspirone group (larger sample) | HAMA |
| Wu Y et al (2020)127, c | Wu Y et al (2020)127, c | China | 2839; 2839 (100%); NA (mode: age <35 years) | cross-sectional, observational | January 2020 | pregnant women | group 1 | EPDS |
| Yang X et al (2016)190 | Cai X et al (2020)123 | China | 8178; 5016 (61%); 21.1 (1.4) | cross-sectional, observational | September 2012-July 2013 | students | study 1 | SAS |
| Yildirim et al (2018)191 | Satici et al (2020)75 | Turkey | 250; 120 (48%); 30 (9.3) | cross-sectional, observational, controlled | NA | general population | controls | SAS |
| Yu B et al (2019)192 | Cai X et al (2020)123; Lei et al (2020)57; Wang Y et al (2020)87 | China | 18994; 8661 (46%); 42.2 (11.9) | cross-sectional, observational | January 2013-December 2016 | general population | NA | SDS |
| Zhou et al (2016)193 | Mo et al (2020)108; Pu et al (2020)109;Wang S et al (2020)115; Wu K et al (2020, C19 group)116; Wu K et al (2020, nC19-group)116; Xiao et al (2020)117; Zhu J et al (2020)122 | China | 1129; 654 (58%); 38.0 (7.7) | cross-sectional, observational | NA | physicians | NA | SAS |

Abbreviations: AIS, Athens Insomnia Scale; BDI, Beck Depression Inventory, C19=COVID-19; DASS-21, Depression Anxiety Stress Scale-21; EPDS, Edinburgh Postnatal Depression Scale; GAD-2/7, Generalized Anxiety Disorder-2/7; HADS, Hospital Anxiety and Depression Scale; HAMA, Hamilton Anxiety Rating Scale; HAMD, Hamilton Depression Rating Scale; IRQ, interquartile range; ISI, Insomnia Severity Index; Md, median; NA, not applicable; nC19, non-COVID-19; NR, not reported; PHQ-2/9, Patient Health Questionnaire-2/9; PSQI, Pittsburgh Sleep Quality Index; PSS, Perceived Stress Scale; SAS, Self-Rating Anxiety Scale; SCL-90, Symptom Checklist-90; SDS, Self-Rating Depression Scale; STAI-Y, State Trait Anxiety Inventory-Y.

**a** received on request.

b comparative study mentioned in Tian et al (2020)81.

c comparison part of the study.

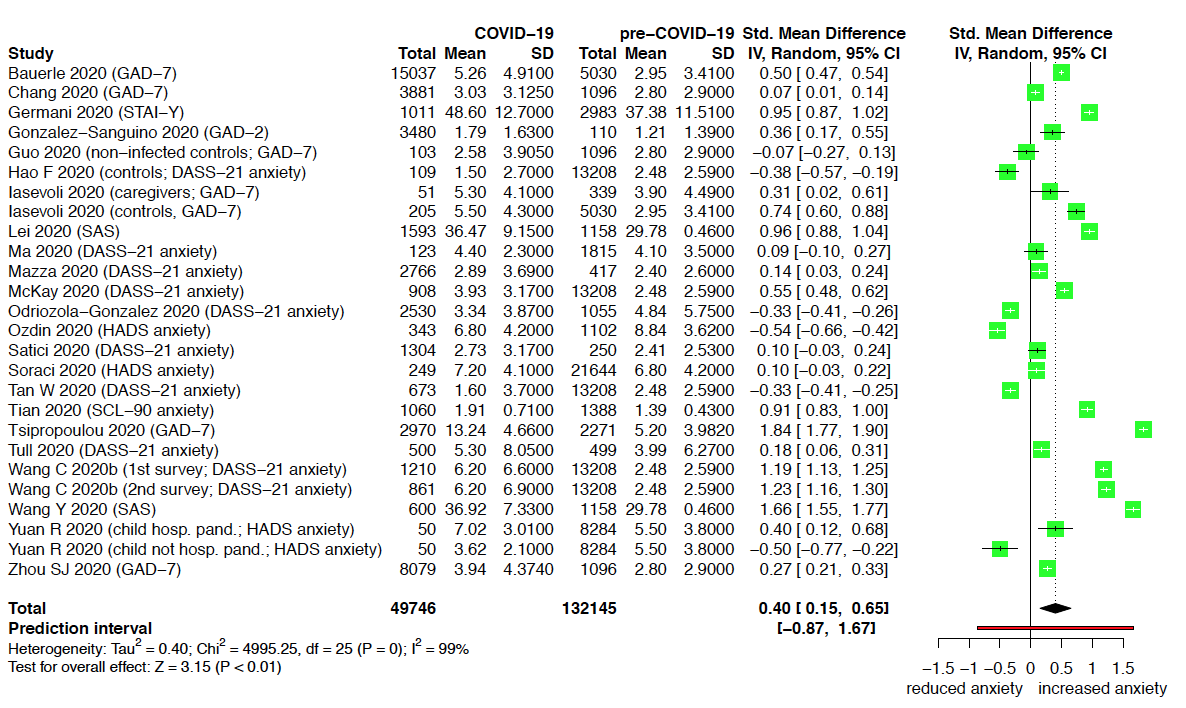
**eTable 11. Cut-off values reported in included pandemic studies**

| **Assessment tool** | **Study: cut-off value, scale range/scoring** |
| --- | --- |
| **AIS** | Voitsidis et al (2020)83: NA, NA |
| **“Anxiety scale“** | Xu J et al (2020)118: ≥8, NA |
| **BAI** | Durankus et al (2020)125: NA, 0-63 |
| **BDI** | Durankus et al (2020)125: NA, 0-63 |
| **BDI-II** | Bacon et al (2020)44: NA, 21-63 |
| **BIP-Q5** | Perez-Fuentes et al (2020)70: NA, NA |
| **CES-D** | Huang Y et al (2020)134: ≥29, 0-60 |
| **CoVGAD-7** | McKay et al (2020)64: NA, NA |
| **CPDI** | Jahanshahi et al (2020)54: ≥28, 0-100;  Qiu et al (2020)41: ≥28, 0-100 |
| **DASS-21 anxiety subscale** | Chew et al (2020)102: ≥8, 0-42;  Hao F et al (2020)132: ≥10, NA;  Ma et al (2020)62: NA, NA;  Mazza et al (2020)63: ≥10, 0-42;  McKay et al (2020)64: NA, NA;  Odriozola-Gonzalez et al (2020)66: NA, NA;  Ozamiz-Etxebarria (2020)68: NA, NA;  Satici et al (2020)75: NA, NA;  Tan B et al (2020)114: ≥8, NA;  Tan W et al (2020)80: NA, NA;  Tull et al (2020)79: NA, 0-21;  Wang C et al (2020a)84: ≥10, 0-42 |
| **DASS-21 depression subscale** | Chew et al (2020)102: ≥10, 0-42;  Hao F et al (2020)132: ≥14, NA;  Ma et al (2020)62: NA, NA;  Mazza et al (2020)63: ≥13, 0-42;  McKay et al (2020)64: NA, NA;  Odriozola-Gonzalez et al (2020)66: NA, NA;  Ozamiz-Etxebarria et al (2020)68: NA, NA;  Satici et al (2020)75: NA, NA;  Tan B et al (2020)114: ≥10, NA  Tan W et al (2020)80: NA, NA;  Wang C et al (2020a)84: ≥13, 0-42 |
| **DASS-21-stress subscale** | Chew et al (2020)102: >14, 0-42;  Hao F et al (2020)132: ≥19, NA;  Ma et al (2020)62: NA, NA;  Mazza et al (2020)63: ≥19, 0-42;  McKay et al (2020)64: NA, NA;  Odriozola-Gonzalez et al (2020)66: NA, NA;  Ozamiz-Etxebarria et al (2020)68: NA, NA;  Satici et al (2020)75: NA, NA;  Tan B et al (2020)114: >14, NA;  Tan W et al (2020)80: NA, NA;  Wang C et al (2020a)84: ≥19, 0-42 |
| **“Depression score“** | Xu J et al (2020)118: ≥8, NA |
| **Developed by study authors** | Abdessater et al (2020)94: NA, NA;  Ahmad et al (2020)43: yes, binary item (yes, no);  Ahmed et al (2020)95: yes, binary item (yes, no);  Alhaj et al (2020)96: yes, binary item (yes, no);  Bäuerle et al (2020)45: ≥5, 1-7;  Bohlken et al (2020)99: ≥4, 1-5;  Buzzi et al (2020)47: NA, NA (nothing, little, moderately, a lot);  Büntzel et al (2020)130: NA, NA;  Cai H et al (2020)100: ≥2, 0-3;  Chew et al (2020)102: ≥„mild”, NA [no, mild, moderate, severe];  Jin YH et al (2020)136: yes, multiple choice with binary options;  Khusid et al (2020)107: NA, 1-5;  Ko et al (2020)137: NA, 1-5;  Lauri Korajlija et al (2020)55: NA, 6-30;  Lee SA et al (2020)56: NA, 0-4;  Liu S et al (2020)60: NA, 1-4;  Lopez et al (2020)61: NA, NA;  Roy et al (2020)73: ≥4, 1-5;  Sanchez et al (2020)67: more, NA [less, no change, more];  Sahu et al (2020)111: “definitely stressed out”, NA (happy, not/ only mildly/definitely stressed out)  Shammi et al (2020)76: NA, 1-5;  Suleiman et al (2020)113: NA, 0-10;  Sutin et al (2020)147: NA, 1-5;  Wu W et al (2020)141: NA, NA;  Xu H et al (2020)128: ≥ „some“, NA [no, some, often, always];  Yassa et al (2020)129: yes, ternary item [yes, no, I don’t know] |
| **Dream anxiety score** | Xu J et al (2020)118: NA, NA |
| **EPDS** | Durankus et al (2020)125: ≥13, 0-30;  Wu Y et al (2020)127: ≥10, NA |
| **EPDS-3A** | Wu Y et al (2020)127: NA, NA |
| **FCV-19S** | Harper et al (2020)53: NA, 7-35;  Reznik et al (2020)72: NA, NA;  Satici et al (2020)75: NA, 7-35;  Soraci et al (2020)78: NA, 7-35;  Tsipropoulou et al (2020)82: NA, 7-35 |
| **GAD-2** | González-Sanguino et al (2020)52: NA, 0-6;  Ni et al (2020)140: ≥3, 0-6;  Zhang WR et al (2020)144: ≥3, NA |
| **GAD-7** | Amerio et al (2020)97: ≥10, 0-21;  Bacon et al (2020)44: NA, 0-28;  Badahdah et al (2020)98: ≥10, 0-21;  Bäuerle et al (2020)45: ≥5, 0-21;  Cao et al (2020)48: NA, NA;  Chang et al (2020)49: ≥6, 0-21;  Consolo et al (2020)103: ≥10, 0-21;  Gao et al (2020)50: ≥10, 0-21;  Guo et al (2020)131: ≥5, NA;  Huang Y et al (2020)134: ≥11, 0-21;  Iasevoli et al (2020)135: ≥11  Kang et al (2020)106: NA, NA;  Lai et al (2020)18: ≥7, 0-21;  McKay et al (2020)64: NA, NA;  Ren et al (2020)71: NA, NA;  Rossi et al (2020)110: ≥15, NA;  Shevlin et al (2020)77: ≥10, NA;  Tsipropoulou et al (2020)82: ≥10, 0-21;  Zhang C et al (2020)120: ≥5, 0-21;  Zhang J et al (2020)143: ≥10, NA;  Zhou SJ et al (2020)93: ≥5, 0-21;  Zhu S et al (2020)145: ≥5, NA |
| **GPS (posttraumatic stress disorder subscale)** | Rossi et al (2020)110: ≥3 of 5 items, NA |
| **HAMA** | Li X et al (2020)126: ≥7, NA;  Liu X et al (2020)174: NA, NA;  Lu et al (2020)139: ≥7, 0-56 |
| **HAMD** | Li X et al (2020)126: ≥4, NA;  Liu X et al (2020)174: NA, NA;  Lu et al (2020)139: ≥7, 0-68 |
| **HADS anxiety subscore** | Özdin et al (2020)69: ≥8, 0-21;  Soraci et al (2020)78: NA, 0-21;  Yuan R et al (2020)89: ≥8, NA |
| **HADS depression subscore** | Özdin et al (2020)69: ≥11, 0-21;  Soraci et al (2020)78: NA, 0-21;  Yuan R et al (2020)89: NA, NA; |
| **HAI** | Özdin et al (2020)69: NA, 0-54 |
| **IES** | Odriozola-Gonzalez et al (2020)66: ≥26, 0-75;  Zhang Y et al (2020)92: ≥26, 0-75 |
| **IES-R** | Chew et al (2020)102: ≥24, NA;  Hao F et al (2020)132: ≥18, NA;  Kang et al (2020)106: NA, NA;  Lai et al (2020)18: ≥26, 0-88;  Li Y et al (2020)58: ≥24, NA;  Tan B et al (2020)114: ≥24, NA;  Tan W et al (2020)80: ≥18, NA;  Wang C et al (2020b)85: ≥25, NA;  Zhang C et al (2020)120: ≥9, 0-88 |
| **ISI** | Amerio et al (2020)97: NA, NA;  Hao F et al (2020)132: ≥15, 0-28;  Kang et al (2020)106: NA, NA;  Lai et al (2020)18: ≥14, 0-28;  Ren et al (2020)71: NA, NA;  Rossi et al (2020)110: ≥22, NA;  Tan W et al (2020)80: ≥15, 0-28;  Zhang C et al (2020)120: ≥8, 0-28;  Zhang WR et al (2020)144: ≥8, NA |
| **K-6** | Hao X et al (2020)133: ≥13, 0-24;  Li Y et al (2020)58: ≥5, NA;  Shacham et al (2020)112: ≥19, 0-30;  Wang H et al (2020)86: NA, NA;  Zhang SX et al (2020b)91: NA, NA;  Zhang SX et al (2020c)121: NA, NA |
| **K-10** | Moccia et al (2020)65: ≥25, NA |
| **PCL-C-2** | González-Sanguino et al (2020)52: NA, 0-8 |
| **PCL-5** | Guo et al (2020)131: NA, NA;  Liu N et al (2020)59: ≥2 in 1 criterion-B-item + 1 criterion -C- item + 2 criterion -D-items + 2 criterion -E-items, and, for single items: ≥2;  Ren et al (2020)71: NA, NA;  Yin et al (2020)119: ≥33, 0-80 |
| **PHQ-2** | Bäuerle et al (2020)45: ≥3, range 0-6;  González-Sanguino et al (2020)52: NA, 0-6;  Ni et al (2020)140: ≥3, 0-6;  Olagoke et al (2020)146: NA, NA;  Voitsidis et al (2020)83: NA, NA  Zhang WR et al (2020)144: ≥3, NA |
| **PHQ-4** | Zhang SX et al (2020c)121: NA, NA |
| **PHQ-9** | Amerio et al (2020)97: ≥10, 0-27;  Chang et al (2020)49: ≥5, 0-27;  Guo et al (2020)131: ≥5, NA;  Iasevoli et al (2020)135: ≥16, NA;  Kang et al (2020)106: NA, NA;  Lai et al (2020)18: ≥10, 0-27;  Ren et al (2020)71: NA, NA;  Rossi et al (2020)110: ≥15, NA;  Sakib et al (2020)74: NA, 0-27;  Tsipropoulou et al (2020)82: ≥ 10, 0-27;  Zhang C et al (2020)120: ≥5, 0-27;  Zhang J et al (2020)143: ≥10, NA;  Zhou SJ et al (2020)93: ≥5, 0-27;  Zhu S et al (2020)145: ≥5, NA |
| **PROMIS-SF anxiety** | Harper et al (2020)53: NA, 8-40 |
| **PROMIS-SF depression** | Harper et al (2020)53: NA, 7-35 |
| **PSQI** | Huang Y et al (2020)134: ≥8, 0-21;  Ma et al (2020)62: NA, 0-54;  Liu X et al (2020)42: only 4 items, NA;  Xiao et al (2020)117: NA, 0-21;  Wang S et al (2020)115: ≥8, 0-21;  Wu K et al (2020)116: ≥8, 0-21;  Yin et al (2020)82: only 4 items, NA;  Yuan S et al (2020)142: NA, NA |
| **PSS (-10)** | Badahdah et al (2020)98: NA, 0-40;  Germani et al (2020)51: ≥14, 10-40;  Guo et al (2020)131: NA, NA;  Iasevoli et al (2020)135: ≥27, NA;  Liu X et al (2020)42: NA, NA  Ren et al (2020)71: NA, NA  Rossi et al (2020)110: quartile split; no official cut-off for PSS available |
| **PTSD-SS** | Cai X et al (2020)123: ≥51, 24-120;  Huang JZ et al (2020)105: ≥50, NA |
| **SAS** | Cai X et al (2020)123: ≥51, NA;  Huang JZ et al (2020)105: ≥49, NA;  Lei et al (2020)57: ≥50, NA;  Mo et al (2020)108: NA, NA;  Pu et al (2020)109: NA, NA;  Wang S et al (2020)115: ≥50, NA;  Wang Y et al (2020)87: >59, NA;  Wu K et al (2020)116: ≥53, NA;  Xiao et al (2020)117: NA, NA;  Zhu J et al (2020)122: ≥50, NA |
| **SASR** | Xiao et al (2020)117: NA, 0-150 |
| **SCL-90** | Cai W et al (2020)101: any subscale score ≥3 /positive items ≥ 44 / total score ≥161, NA;  Tian et al (2020)81: Global Severity Index≥63, NA;  Wu K et al (2020)116: NA, NA |
| **SDS** | Lei et al (2020)57: ≥50, NA;  Wang S et al (2020)115: ≥50, NA;  Wang Y et al (2020)87: ≥63, NA;  Zhu J et al (2020)122: ≥50, NA;  Wu K et al (2020)116: ≥50, NA;  Yuan B et al (2020)124: ≥51, NA;  Cai X et al (2020)123: ≥54, NA |
| **SHAI** | Tull et al (2020)79: NA, 18-72 |
| **SOS** | Mo et al (2020)108: ≥51, 22-110 |
| **SRQ** | Yuan S et al (2020)142: NA, NA |
| **SRQ-20** | Zhu S et al (2020)145: ≥7, NA |
| **STAI-Y** | Germani et al (2020)51: ≥40, 20-80 |
| **TEMPS-A Anxious** | Moccia et al (2020)65: NA, NA |
| **TEMPS-A Depressive** | Moccia et al (2020)65: NA, NA |
| **VAS** | Gan et al (2020)104: NA, 0-100;  Shevlin et al (2020)77: NA, 0-100 |
| **VDAS** | Yuan R et al (2020)89: NA, NA |
| **WHO-5** | Gao J et al (2020)50: <13, 0-25;  Badahdah et al (2020)98: < 49, 0-100 |
| **Vicarious Traumatization Questionnaire** | Li Z et al (2020)138: NA, NA |

Abbreviations:AIS, Athens Insomnia Scale; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BDI(-II), Beck Depression Inventory(-II); BIP-Q5, Brief Illness Perception Questionnaire 5; CES-D, Center for Epidemiologic Studies Depression Scale; CoVGAD-7, Generalized Anxiety Disorder Scale-7 for COVID-19 Anxiety; CPDI, CoViD-19 Peritraumatic Distress Index; DASS-21, Depression Anxiety Stress Scale-21; DT, Distress Thermometer; EPDS, Edinburgh Postnatal Depression Scale; EPDS-3A, Edinburgh Postnatal Depression Scale- Anxiety subscale; FCV-19S, Fear of COVID-19 scale; GAD-2(-7), Generalized Anxiety Disorder Scale-2(/-7); GPS-PTSD, Global Psychotrauma Scale-posttraumatic stress disorder subscale; HADS, Hospital Anxiety and Depression Scale; HAI, Health Anxiety Inventory; HAMA, Hamilton Anxiety Rating Scale; HAMD, Hamilton Depression Rating Scale; IES, Impact of Event Scale; IES-R, Impact of Event Scale-Revised; ISI, Insomnia Severity Index; K-6(/-10), Kessler Psychological Distress Scale-6(/-10); MINI, Mini International Neuropsychiatric Interview; NA, not available; NRS, Numeric Rating Scale; PCL-5(-C), Post-traumatic Stress Disorder Checklist-5(/-Civilian Version); PHQ-2(/-4/-9/-15), Patient Health Questionnaire-2(/-4/-9/-15); PROMIS-SFs, Patient Reported Outcomes Measurement Information System short forms; PSQI, Pittsburgh Sleep Quality Index; PSS(-10), Perceived Stress Scale(-10); PTSD-SS, Post-traumatic Stress Disorder Self-rating Scale; SAS, Self-Rating Anxiety Scale; SASR, Stanford Acute Stress Reaction; SCL-90, Symptom Checklist-90; SDS, Self-Rating Depression Scale; SF-12(/-36), Short Form 12 Health Survey; SHAI, Short Health Anxiety Inventory; SOS, Stress Overload Scale; SRQ, Stress Response Questionnaire; SRQ-20, 20-item Self-Report Questionnaire; STAI-Y, State Trait Anxiety Inventory-Y; TEMPS-A, Temperament Evaluation of Memphis, Pisa, Paris and San Diego-Anxious; VAS, Visual Analogue Scale; VDAS, Van Dream Anxiety Scale; WHO-5, World Health Organization- Five Well-Being Index.

**eResults 1. Forest plots of main analyses**

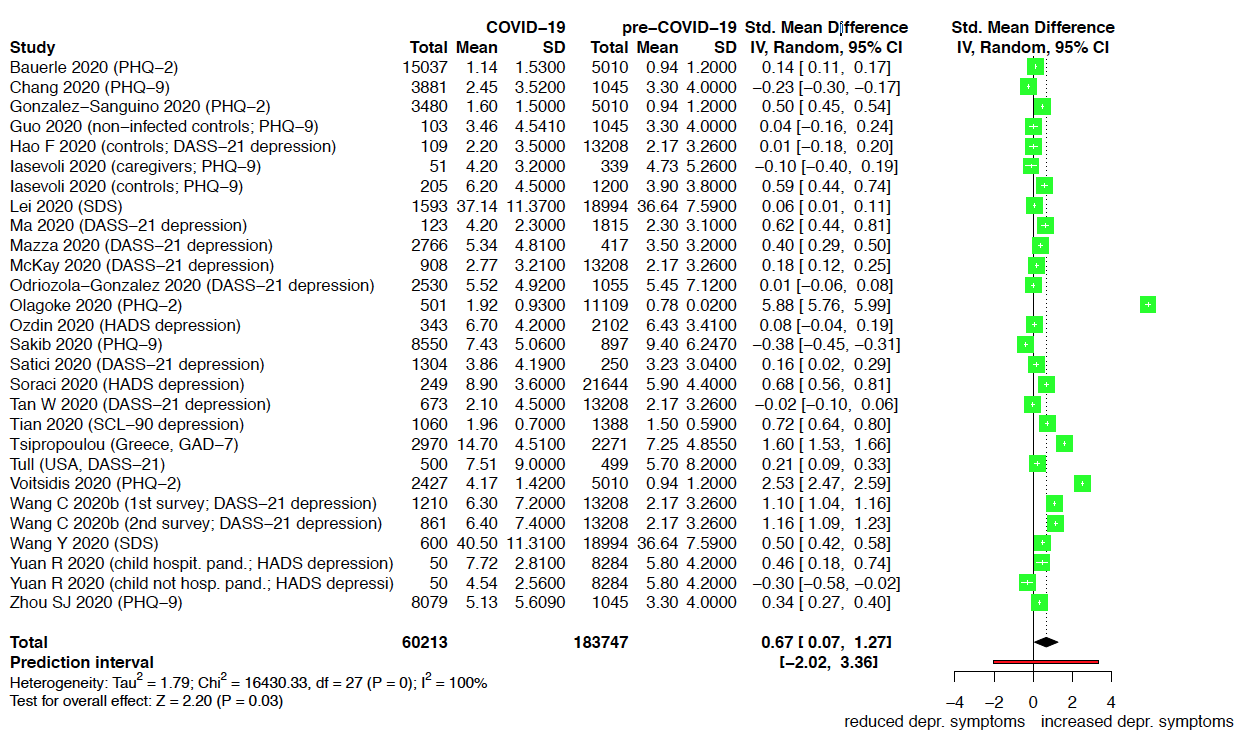
**eFigure 1. Forest plot of main analyses for anxiety, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

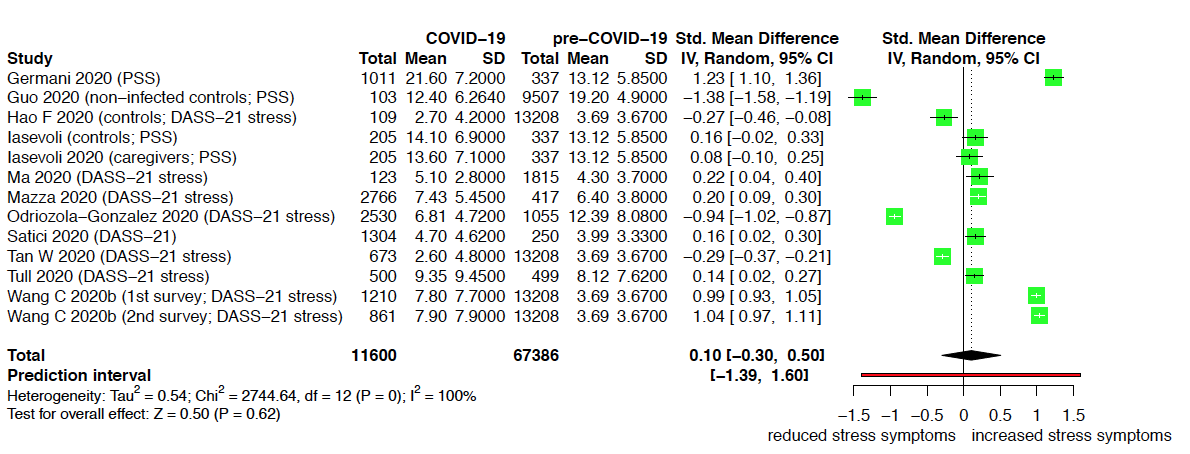
**eFigure 2. Forest plot of main analyses for depression, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

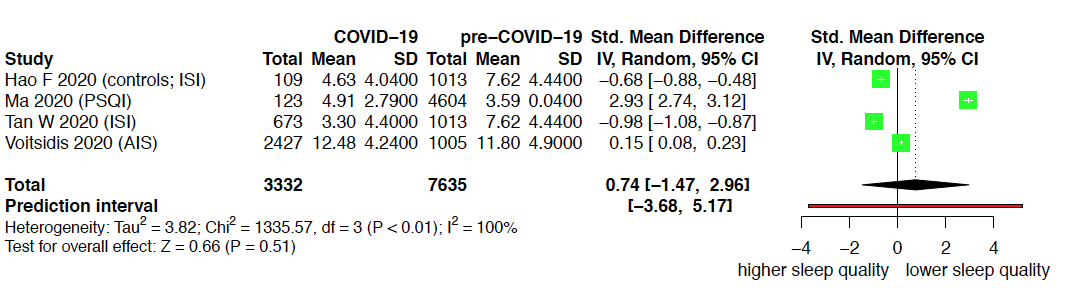
**eFigure 3. Forest plot of main analyses for stress, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

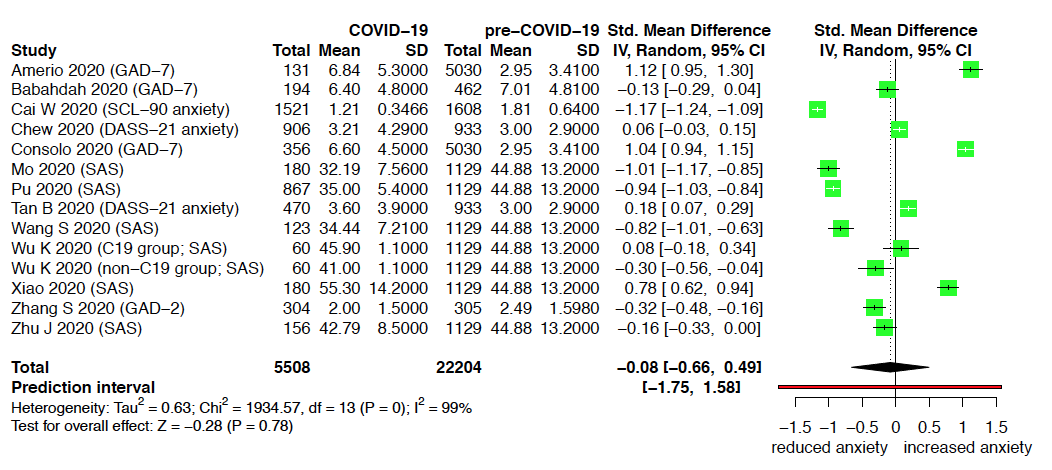
**eFigure 4. Forest plot of main analyses for sleep-related symptoms, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

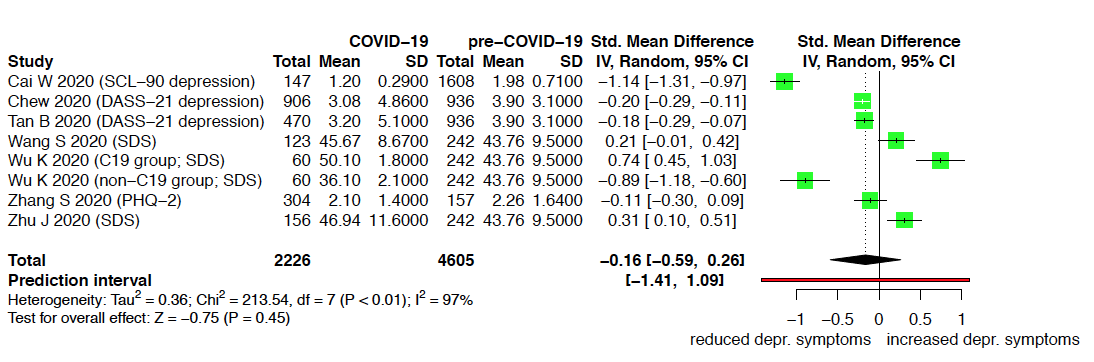
**eFigure 5. Forest plot of main analyses for anxiety, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

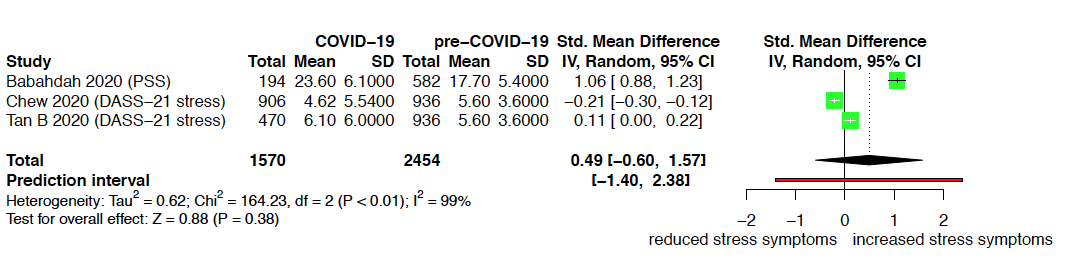
**eFigure 6. Forest plot of main analyses for depression, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

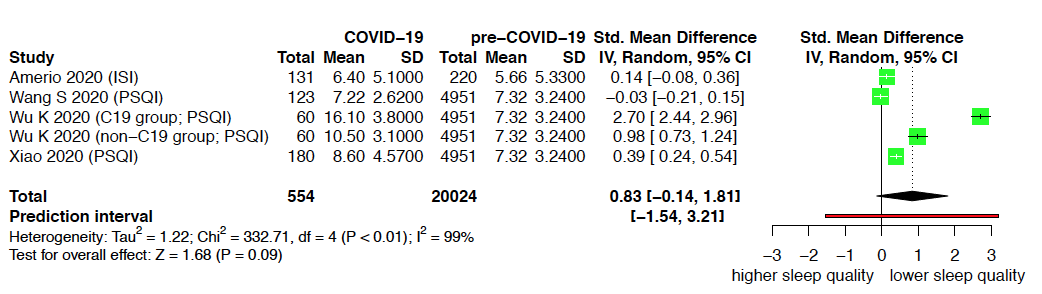
**eFigure 7. Forest plot of main analyses for stress, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

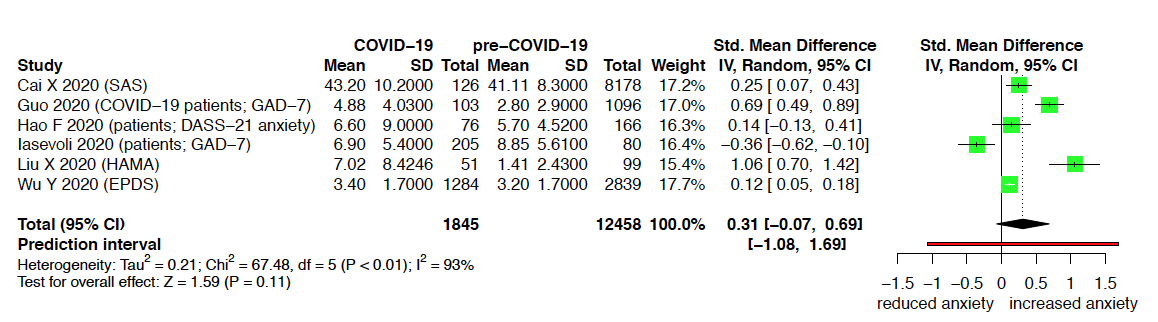
**eFigure 8. Forest plot of main analyses for sleep-related symptoms, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

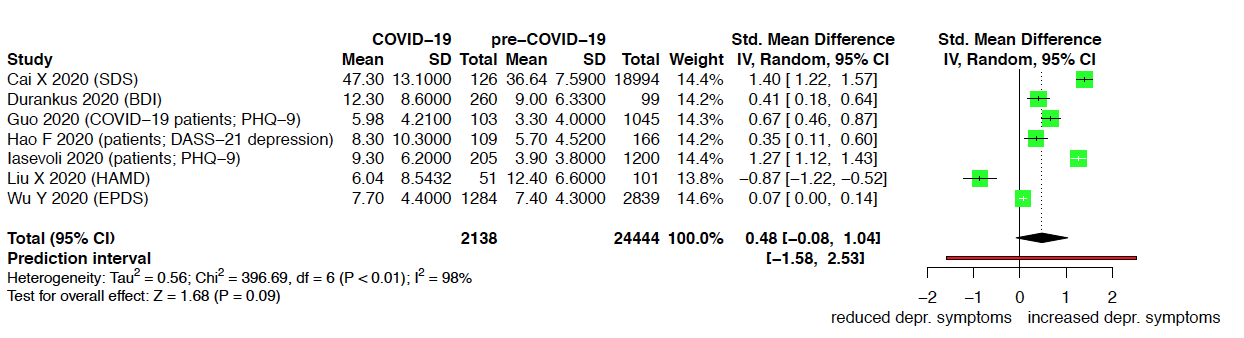
**eFigure 9. Forest plot of main analyses for anxiety, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

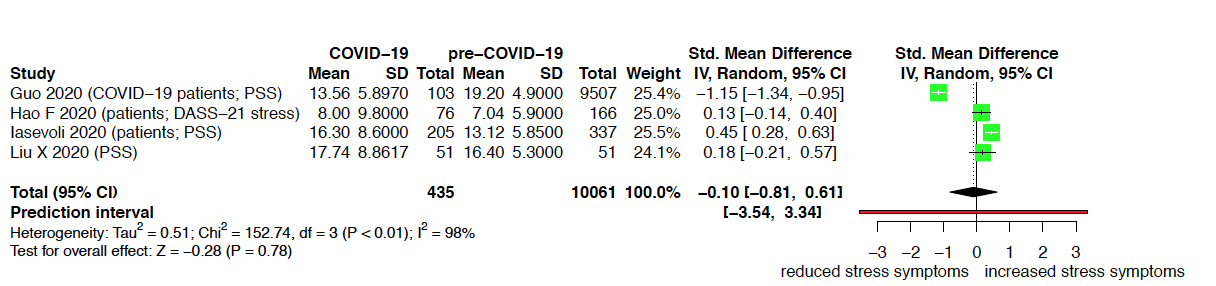
**eFigure 10. Forest plot of main analyses for depression, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

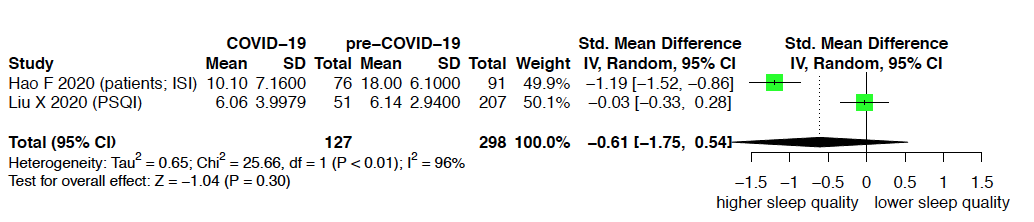
**eFigure 11. Forest plot of main analyses for stress, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

**eFigure 12. Forest plot of main analyses for sleep-related symptoms, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

**eTable 12. Quality (risk of bias) assessment of included pandemic studies**

| **Study** | | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | **8. Was the exposure (independent variable) clearly specified?** | | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | **Quality Rating** | | | **Comments** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General population** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ahmad et al (2020)43 | | Y | | N | | NR | | NR | | N | | | | Y | | NR | | N | | | | + | | I, II, III, IV, V | |
| Bacon et al (2020)44 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | N | | | | + | | IV | |
| Bäuerle et al (2020)45; Teufel et al (2020)46 | | Y | | Y | | NA | | Y | | N | | | | Y | | N | | Y | | | | ++ | | I | |
| Buzzi et al (2020)47 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | N | | | | + | | IV | |
| Cao et al (2020)48 | | Y | | Y | | Y | | Y | | N | | | | Y | | NR | | Y | | | | ++ | | II, III | |
| Chang et al (2020)49 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Gao J et al (2020)50 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Germani et al (2020)51 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| González-Sanguino et al (2020)52 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, III | |
| Harper et al (2020)53 | | Y | | Y | | NA | | Y | | Y | | | | Y | | Y | | Y | | | | ++ | | I | |
| Jahanshahi et al (2020)54 | | Y | | Y | | NA | | N | | N | | | | Y | | Y | | N | | | | + | | I, IV, V | |
| Lauri Korajlija et al (2020)55 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | N | | | | + | | I, II, IV, V | |
| **Study** | | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | | **8. Was the exposure (independent variable) clearly specified?** | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | | **Quality Rating** | | **Comments** | |
| Lee SA et al (2020)56 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | N | | | | + | | I, IV, V | |
| Lei et al (2020)57 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Li Y et al (2020)58 | | Y | | Y | | Y | | Y | | N | | | | Y | | Y | | Y | | | | +++ | |  | |
| Liu N et al (2020)59 | | Y | | N | | NA | | Y | | N | | | | Y | | Y | | Y | | | | + | | I, V | |
| Liu S et al (2020)60 | | Y | | Y | | NR | | NR | | N | | | | Y | | NR | | Y | | | | + | | I, II, III | |
| Lopez et al (2020)61 | | Y | | N | | NA | | Y | | N | | | | Y | | NR | | N | | | | + | | I, II, IV, V | |
| Ma et al (2020)62 | | Y | | Y | | Y | | Y | | N | | | | Y | | NR | | Y | | | | ++ | | II | |
| Mazza et al (2020)63 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| McKay et al (2020)64 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | Y | | | | + | | I, III | |
| Moccia et al (2020)65 | | Y | | Y | | NA | | Y | | Y | | | | Y | | Y | | Y | | | | ++ | | I | |
| Odriozola-González et al (2020)66 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, III | |
| Olagoke et al (2020)146 | | Y | | Y | | NA | | Y | | N | | | | Y | | NR | | Y | | | | + | | I, II | |
| Ozamiz-Etxebarria et al (2020)68 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | Y | | | | + | | I, III, V | |
| Özdin et al (2020)69 | | Y | | Y | | NA | | NR | | Y | | | | Y | | Y | | Y | | | | ++ | | I, V | |
| **Study** | | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | | **8. Was the exposure (independent variable) clearly specified?** | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | | **Quality Rating** | | **Comments** | |
| Perez-Fuentes et al (2020)70 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | Y | | | | + | | I, III, V | |
| Qiu et al (2020)41 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Ren et al (2020)71 | | Y | | N | | NR | | NR | | N | | | | Y | | Y | | Y | | | | + | | I, III, V | |
| Reznik et al (2020)72 | | Y | | Y | | NA | | N | | N | | | | Y | | NR | | Y | | | | + | | I, II | |
| Roy et al (2020)73 | | Y | | N | | NA | | Y | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Sakib et al (2020)74 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, III | |
| Satici et al (2020)75 | | Y | | Y | | NA | | NR | | N | | | | Y | | NR | | Y | | | | + | | I, II, III, V | |
| Shammi et al (2020)76 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | N | | | | + | | I, III, IV | |
| Shevlin et al (2020)77 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | +++ | |  | |
| Soraci et al (2020)78 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, iii | |
| Sutin et al (2020)147 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Tan W et al (2020)80 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | Y | | | | + | | I | |
| Tian et al (2020)81 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Tsipropoulou et al (2020)82 | | Y | | Y | | NR | | Y | | Y | | | | Y | | Y | | Y | | | | ++ | | I | |
| Tull et al (2020)79 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | +++ | | iii | |
| **Study** | | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | | **8. Was the exposure (independent variable) clearly specified?** | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | | **Quality Rating** | | **Comments** | |
| Voitsidis et al (2020)83 | | Y | | N | | NR | | N | | N | | | | Y | | Y | | Y | | | | + | | I, III, V | |
| Wang, C et al (2020a)84; Wang C et al (2020b)85 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Wang H et al (2020)86 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, III | |
| Wang Y et al (2020)87 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, V | |
| Yang H et al (2020)88 | | Y | | Y | | NA | | NR | | N | | | | Y | | Y | | Y | | | | ++ | | II, III | |
| Yuan R et al (2020)89 | | Y | | Y | | NR | | NR | | N | | | | Y | | Y | | Y | | | | + | | I, II, III, V | |
| a Zhang SX et al (2020a)90; Zhang SX et al (2020b)91 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I, iii | |
| Zhang Y et al (2020)92 | | Y | | Y | | Y | | Y | | N | | | | Y | | Y | | Y | | | | ++ | | I | |
| Zhou SJ et al (2020)93 | | Y | | Y | | NR | | Y | | N | | | | Y | | Y | | Y | | | | + | | I | |
| **Healthcare workers** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Abdessater et al (2020)94 | | Y | | Y | | Y | | Y | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Ahmed et al (2020)95 | | Y | | Y | | NA | | Y | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Alhaj et al (2020)96 | | Y | | N | | N | | NR | | N | | | | Y | | Y | | N | | | | + | | I, IV | |
| Amerio et al (2020)97 | | Y | | Y | | N | | Y | | N | | | | Y | | N | | Y | | | | + | | I | |
| **Study** | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | **8. Was the exposure (independent variable) clearly specified?** | | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | **Quality Rating** | | | **Comments** | |
| Badahdah et al (2020)98 | Y | | N | | NR | | N | | N | | | Y | | | NR | | Y | | | + | | | I, II, iii, V | |
| Bohlken et al (2020)99 | Y | | Y | | N | | Y | | N | | | Y | | | Y | | N | | | + | | | IV, VII | |
| Cai H et al (2020)100 | Y | | Y | | NR | | NR | | N | | | Y | | | NR | | N | | | + | | | I, II, IV | |
| Cai W et al (2020)101 | Y | | Y | | NR | | NR | | N | | | Y | | | NR | | Y | | | + | | | I, II, V | |
| Chew et al (2020)102 | Y | | Y | | NA | | Y | | N | | | Y | | | N | | Y | | | ++ | | | I, V | |
| Consolo et al (2020)103 | Y | | N | | NA | | NR | | Y | | | Y | | | Y | | Y | | | + | | | I, V | |
| Gan et al (2020)104 | Y | | Y | | N | | Y | | Y | | | Y | | | Y | | Y | | | ++ | | | I | |
| Huang JZ et al (2020)105 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | Y | | | +++ | | |  | |
| Kang et al (2020)106 | Y | | Y | | NR | | NR | | N | | | Y | | | Y | | Y | | | + | | | I, VI | |
| Khusid et al (2020)107 | Y | | Y | | N | | Y | | N | | | Y | | | Y | | N | | | + | | | I, III, IV, VII | |
| Lai et al (2020)18 | Y | | Y | | Y | | Y | | Y | | | Y | | | Y | | Y | | | +++ | | |  | |
| Mo et al (2020)108 | Y | | Y | | Y | | NR | | N | | | Y | | | NR | | Y | | | + | | | I, II | |
| Pu et al (2020)109 | Y | | Y | | NR | | NR | | N | | | Y | | | NR | | Y | | | + | | | II, iii | |
| Rossi et al (2020)110 | Y | | Y | | NA | | Y | | N | | | Y | | | Y | | Y | | | ++ | | | I | |
| Sahu et al (2020)111 | Y | | N | | NA | | Y | | N | | | Y | | | Y | | N | | | + | | | I, III, IV, V | |
| **Study** | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | **8. Was the exposure (independent variable) clearly specified?** | | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | **Quality Rating** | | | **Comments** | |
| Shacham et al (2020)112 | Y | | Y | | NA | | Y | | N | | | Y | | | Y | | Y | | | ++ | | | I | |
| Suleiman et al (2020)113 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | N | | | + | | | I, IV | |
| Tan B et al (2020)114 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | Y | | | +++ | | | iii | |
| Wang S et al (2020)115 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | Y | | | +++ | | |  | |
| Wu K et al (2020)116 | Y | | Y | | NR | | Y | | N | | | Y | | | NR | | Y | | | + | | | I, II | |
| Xiao et al (2020)117 | Y | | Y | | Y | | NR | | N | | | Y | | | NR | | Y | | | + | | | II, III | |
| Xu J et al (2020)118 | Y | | Y | | NR | | NR | | N | | | Y | | | Y | | N | | | + | | | I, IV, V | |
| Yin et al (2020)119 | Y | | Y | | NA | | Y | | N | | | Y | | | Y | | Y | | | ++ | | | I | |
| Zhang C et al (2020)120 | Y | | Y | | NA | | Y | | N | | | Y | | | Y | | Y | | | ++ | | | I | |
| Zhang SX et al (2020c)121 | Y | | Y | | NR | | NR | | N | | | Y | | | Y | | Y | | | + | | | I, iii | |
| Zhu J et al (2020)122 | Y | | Y | | NA | | Y | | N | | | Y | | | Y | | Y | | | ++ | | | I | |
| **Patients** | | | | | | | | | | | | | | | | | | | | | | | | |
| bCai X et al (2020)123; Yuan B et al (2020)124 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | Y | | | +++ | | |  | |
| Durankus et al (2020)125 | Y | | N | | Y | | Y | | N | | | Y | | | NR | | Y | | | + | | | I, II, V | |
| Li X et al (2020)126 | Y | | Y | | Y | | Y | | N | | | Y | | | Y | | Y | | | +++ | | |  | |
| **Study** | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | | **8. Was the exposure (independent variable) clearly specified?** | | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | | **Quality Rating** | | | **Comments** | |
| Liu X et al (2020a)42 | Y | | Y | | Yc | | Y | | N | | | Y | | | Y | | Y | | | +++, ++d | | | Ie | |
| Wu Y et al (2020)127 | Y | | Y | | NA | | Y | | N | | | Y | | | N | | Y | | | ++ | | |  | |
| Xu H et al (2020)128 | Y | | Y | | NR | | Y | | N | | | Y | | | Y | | N | | | + | | | I, IV | |
| Yassa et al (2020)129 | Y | | Y | | NR | | Y | | N | | | Y | | | NR | | N | | | + | | | I, II, IV | |
| **Mixed groups** | | | | | | | | | | | | | | | | | | | | | | | | |
| Büntzel et al (2020)130 | Y | | Y | | NA | | NR | | N | | Y | | | | Y | | N | | + | | | | I, IV, V | |
| Guo et al (2020)131 | Y | | Y | | NR | | Y | | N | | Y | | | | Y | | Y | | + | | | | I | |
| Hao F et al (2020)132 | Y | | Y | | NA, NRf | | Y | | N | | Y | | | | Y | | Y | | ++, +g | | | | I | |
| Hao X et al (2020)133 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | Y | | ++ | | | | I | |
| Huang Y et al (2020)134 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | Y | | ++ | | | | I | |
| Iasevoli et al (2020)135 | Y | | Y | | NR | | Y | | N | | Y | | | | Y | | Y | | + | | | | I | |
| Jin YH et al (2020)136 | Y | | Y | | Y | | Y | | N | | Y | | | | Y | | N | | ++ | | | | IV | |
| Ko et al (2020)137 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | N | | + | | | | I, IV | |
| Li Z et al (2020)138 | Y | | N | | NA | | Y | | N | | Y | | | | Y | | N | | + | | | | III, V | |
| Lu W et al (2020)139 | Y | | Y | | Y | | Y | | N | | Y | | | | Y | | Y | | ++, +++h | | | | Ii | |
| Ni et al (2020)140 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | Y | | ++ | | | | I | |
| **Study** | **1. Research question?** | | **2. Study population clearly defined?** | | **3. Participation rate ≥ 50%?** | | **4. Selection criteria?** | | **5. Sample size justification, power description, variance and effect estimates?** | | **8. Was the exposure (independent variable) clearly specified?** | | | | **9. Was the exposure consistent across all study participants?** | | **11. Outcome measures clearly defined, valid, reliable, and implemented consistently?** | | **Quality Rating** | | | | **Comments** | |
| Sanchez et al (2020)67 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | N | | + | | | | I, IV | |
| Wu W et al (2020)141 | Y | | Y | | NR | | Y | | N | | Y | | | | Y | | N | | + | | | | IV | |
| Yuan S et al (2020)142 | Y | | N | | NR | | NR | | N | | Y | | | | Y | | N | | + | | | | II, III, V | |
| Zhang J et al (2020)143 | Y | | N | | NR | | NR | | N | | Y | | | | Y | | Y | | + | | | | I, V | |
| Zhang WR et al (2020)144 | Y | | Y | | NA | | Y | | N | | Y | | | | Y | | Y | | ++ | | | | I, III | |
| Zhu S et al (2020)145 | Y | | Y | | NA | | NR | | N | | Y | | | | Y | | Y | | + | | | | I, V | |

Abbreviations:+, poor; ++, fair; +++, high; Y, Yes; N, No; NA, not applicable; NR, not reported; C19, COVID-19; Comments: I, (possible) selection bias because of insufficient information; II, no or insufficient details on survey period; III, no cut-off-values and/or scale range for the outcome assessment reported (iii, no cut-off); IV, no validated assessment measure for the outcome or outcome measure not clearly defined; V, insufficient description of the study sample; VI, insufficient justification of the summary of the outcomes; VII, reporting bias;

a data description by Zhang XS et al (2020b)91 considered.

b data description by Cai X et al (2020)123 considered.

c Liu X et al (2020a)42: sample 1 (C19 suspected): Y; sample 2 (not C19 suspected): NA.

d Liu X et al (2020a)42: sample 1 (C19 suspected): +++; sample 2 (not C19 suspected): ++.

e sample 2 (not C19 suspected): comment a.

f Hao F et al (2020)132: sample 1 (control sample): NA; sample 2 (patients): NR.

g Hao F et al (2020)132: sample 1 (control sample): ++; sample 2 (patients): +.

h Lu W et al (2020)139: sample 1 (general population): ++; sample 2 (healthcare workers): +++.

i Lu W et al (2020)139: a for sample 1; for studies including samples with two different overall quality ratings, a more conservative rating was used for the quantitative analysis described in the main text (eg, 57 studies judged at poor quality).

**eTable 13. Assessment of level of comparability between pandemic and prepandemic comparative studies**

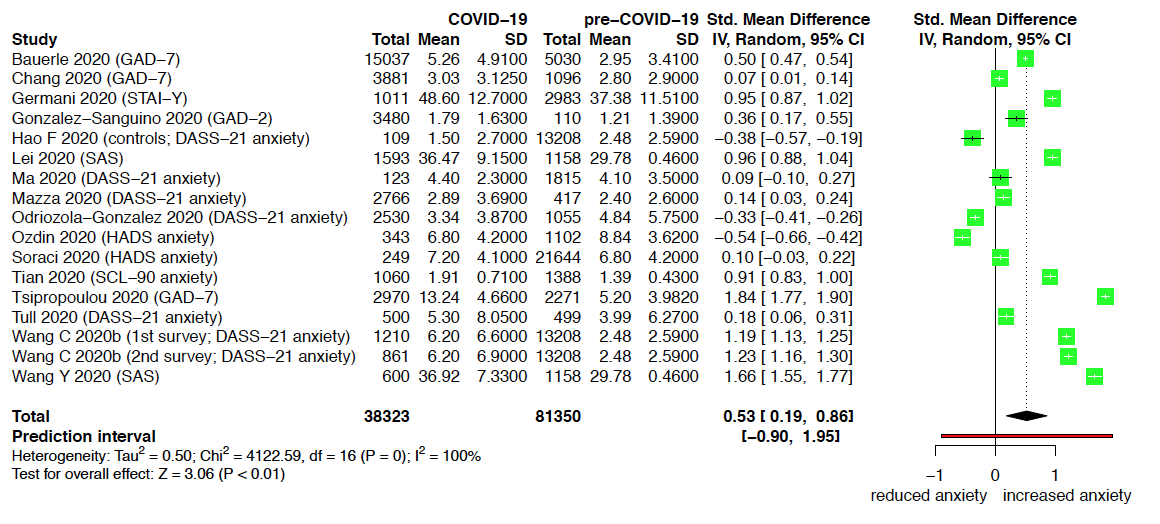
| Comparative study | **Pandemic study to compare with** | **Level of comparabilitya** | **Comments: pandemic study vs comparative study** |
| --- | --- | --- | --- |
| Alosaimi et al (2018)148 | Badahdah et al (2020)98 | **+** | HCW (Oman) vs students (Lebanon) |
| Balestrieri et al (2010)149 | Soraci et al (2020)78 | **++** | GP (Italy) vs primary care sample (Italy) |
| Basta et al (2019)150 | Tsipropoulou et al (2020)82 | **++** | GP (Greece) vs young GP (Greece) |
| Bilgel et al (2010)151 | Özdin et al (2020)69 | **++** | GP (Turkey) vs students (Turkey) |
| Bonfiglio et al (2016)152 | Germani et al (2020)51 | **+++** |  |
| Iasevoli et al (2020, control group)135 | **+++** |  |
| Iasevoli et al (2020, caregiver group)135 | **+++** |  |
| Iasevoli et al (2020, patient group)135 | **++** | psychiatric patients (Italy) vs COPD patients (Italy) |
| Bottesi et al (2015)153 | Mazza et al (2020)63 | **+++** |  |
| Cai S et al (2018)154 | Cai W et al (2020)101 | **+++** |  |
| Carlucci et al (2018)155 | Germani et al (2010)51 | **+++** |  |
| Carta et al (2013)156 | Iasevoli et al (2020, control group)51 | **+++** |  |
| Iasevoli et al (2020, patient group)51 | **++** | P (Italy) vs GP (Italy) |
| Choueiry et al (2016)157 | Babahdah et al (2020)98 | **+** | HCW (Oman) vs students (Lebanon) |
| Chung et al (2010)158 | Hao F et al (2020)132 | **+++** |  |
| Dadfar et al (2019)159 | Zhang SX et al (2020c)121 | **++** | HCW (Iran) vs GP (Iran) |
| Dong et al (2017)160 | Xiao et al (2020)117 | **++++** |  |
| Wang S (2020)115 | **++++** |  |
| Wu K et al (2020, C19-group)116 | **++++** |  |
| Wu K et al (2020, nC19-group)116 | **++++** |  |
| Ertektin et al (2018)161 | Durankus et al (2020)125 | **++++** |  |
| Fleishman et al (2007)162 | Olagoke et al (2020)146 | **++++** |  |
| García-Campayo et al (2012)163 | González-Sanguino et al (2020)52 | **++** | GP (Spain) vs primary care sample (Spain) |
| Ho R et al (2016)164 | Liu X et al (2020a)42 | **+++** |  |
| Hossain et al (2019)165 | Sakib et al (2020)74 | **++** | GP (Bangladesh) vs students (Bangladesh) |
| Huang et al (2020)166 | Guo et al (2020)131 | **+++** |  |
| Ivziku et al (2019)167 | Iasevoli et al (2020, patient group)135 | **+++** |  |
| Jeyagurunathan et al (2017)168 | Iasevoli et al (2020, caregiver group)135 | **+** | caregivers (Italy) vs caregivers (Singapore) |
| Jin et al (1986)169 | Tian et al (2020)81 | **+++** |  |
| Lee K et al (2017)170 | Yuan R et al (2020, group EH)89 | **++++** |  |
| Yuan R et al (2020, group NEH)89 | **++++** |  |
| Lin R et al (2018)171 | Hao F et al (2020, controls)132 | **++** | GP (China) vs students (China) |
| Tan W et al (2020)80 | **++** | GP (China) vs students (China) |
| Liu H et al (2009)172 | Liu X et al (2020a)42 | **+++** |  |
| Liu R et al (2016)173 | Ma et al (2020)62 | **+++** |  |
| Liu X et al (2020)174 | Wang S et al (2020)115 | **++++** |  |
| Zhu J et al (2020)122 | **++++** |  |
| Wu K et al (2020, C19 group)116 | **++++** |  |
| Wu K et al (2020, nC19 group)116 | **++++** |  |
| Löwe et al (2008)175 | Amerio et al (2020)97 | **+** | HCW (Italy) vs GP (Germany) |
| Bäuerle et al (2020)45 | **++++** |  |
| Consolo et al (2020)103 | **+** | HCW (Italy) vs GP (Germany) |
| Iasevoli et al (2020, control group)135 | **+** | GP (Italy) vs GP (Germany) |
| Löwe et al (2010)176 | Bäuerle et al (2020)45 | **++++** |  |
| González-Sanguino et al (2020)52 | **+** | GP (Spain) vs GP (Germany) |
| Voitsidis et al (2020)83 | **+** | GP (Greece) vs GP (Germany) |
| Lu S et al (2018)177 | Hao F et al (2020; controls)132 | **++** | GP (China) vs students (China) |
| McKay et al (2020)64 | **++** | GP (China) vs students (China) |
| Tan W et al (2020)80 | **++** | GP (China) vs students (China) |
| Wang C et al (2020b, 1st survey)85 | **++** | GP (China) vs students (China) |
| Wang C et al (2020b, 2nd survey)85 | **++** | GP (China) vs students (China) |
| Lu W et al (2017)178 | Guo et al (2020, controls)131 | **++** | GP vs. students |
| Guo et al (2020, patients)131 | **++** | P vs GP |
| Chang et al (2020)49 | **+++** |  |
| Zhou SJ et al (2020)93 | **+++** |  |
| Paparrigopoulos et al (2010)179 | Voitsidis et al (2020)83 | **++++** |  |
| Pereira-Lima et al (2014)180 | Zhang SX et al (2020c)121 | **+** | HCW (Iran) vs HCW (Brazil) |
| Ramón-Arbués et al (2019)181 | Odriozola-González et al (2020)66 | **+++** |  |
| Sasaki et al (2020)182 | Chew et al (2020)102 | **+** | HCW (Singapore, India) vs HCW (Vietnam) |
| Tan B et al (2020)114 | **+** | HCW (Singapore) vs HCW (Vietnam) |
| Schmidt et al (2015)183 | Amerio et al (2020)97 | **+** | HCW (Italy) vs HCW (Switzerland) |
| Sinclair et al (2012)184 | Tull et al (2020)79 | **++++** |  |
| Wang K et al (2016)185 | Hao F et al (2020; patient group)132 | **+++** |  |
| Ma et al (2020)62 | **++** | GP (China) vs students (China) |
| Wang W et al (2014)186 | Chang et al (2020)49 | **++++** |  |
| Guo et al (2020, controls)131 | **++++** |  |
| Guo et al (2020, patients)131 | **++** | P (China) vs GP (China) |
| Zhou SJ et al (2020)93 | **++++** |  |
| Wang WL et al (2020)187 | Liu X et al (2020a)42 | **+++** |  |
| Wang X et al (1999)188 | Lei et al (2020)57 | **+++** |  |
| Wang Y et al (2020)87 | **+++** |  |
| Wang Y et al (2019)189 | Liu X et al (2020a)42 | **+++** |  |
| Wu Y et al (2020)127 | Wu Y et al (2020)127 | **++++** |  |
| Yang X et al (2016)190 | Cai X et al (2020)123 | **++** | P (China) vs students (China) |
| Yildirim et al (2018)191 | Satici et al (2020)75 | **+++** |  |
| Yu B et al (2019)192 | Cai X et al (2020)123 | **++** | P (China) vs GP (China) |
| Lei et al (2020)57 | **+++** |  |
| Wang Y et al (2020)87 | **+++** |  |
| Zhou et al (2020)193 | Mo et al (2020)108 | **++++** |  |
| Pu et al (2020)109 | **++++** |  |
| Wang S et al (2020)115 | **++++** |  |
| Wu K et al (2020)116 | **++++** |  |
| Wu K et al (2020)116 | **++++** |  |
| Xiao et al (2020)117 | **++++** |  |
| Zhu J et al (2020)122 | **++++** |  |

Abbreviations: GP, general population; HCW, healthcare workers; P, patients; vs, versus.

a Level of comparability (see eTable 8): +, level 1; ++, level 2; +++, level 3; ++++, level 4.

**eResults 2. Forest plots of sensitivity analyses**

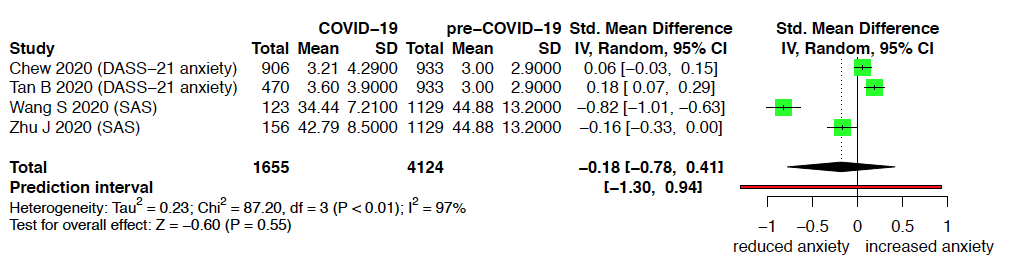
**eFigure 13. Forest plot for sensitivity analysis (quality of pandemic studies) for anxiety, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

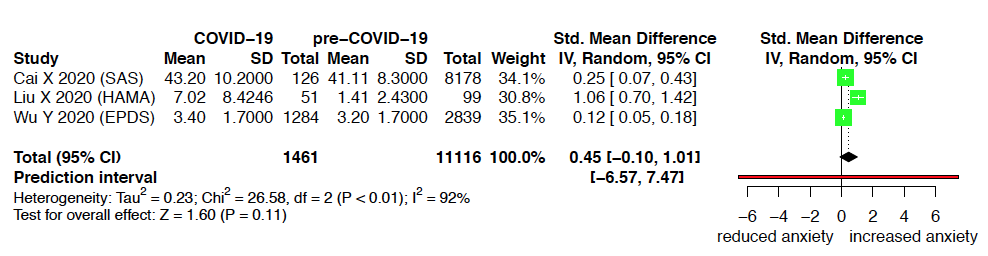
**eFigure 14. Forest plot for sensitivity analysis (quality of pandemic studies) for anxiety, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

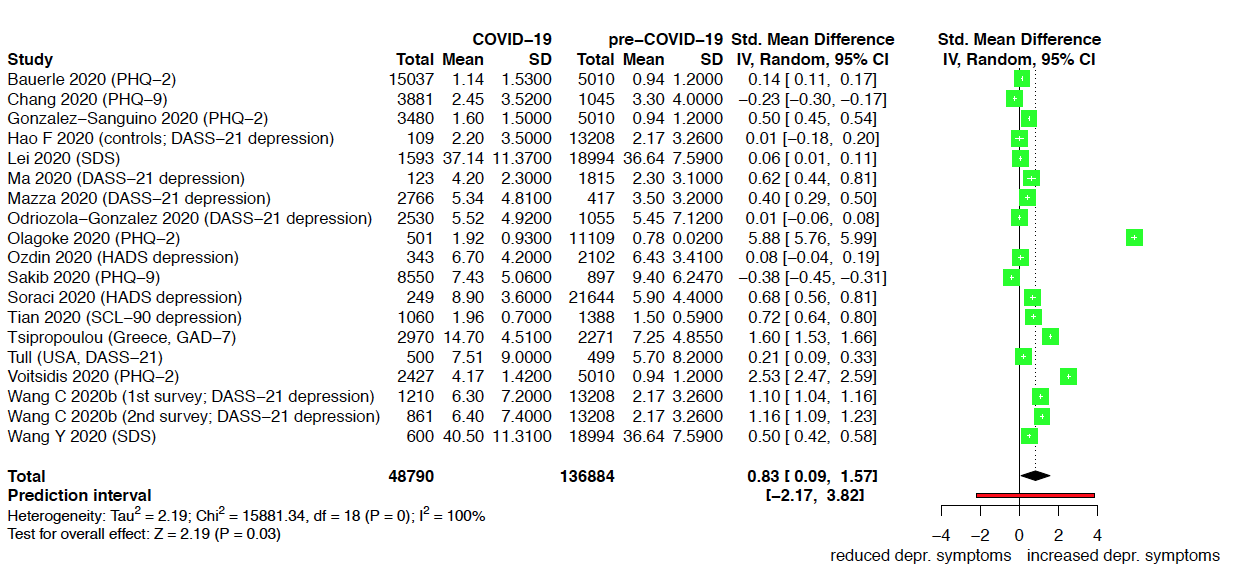
**eFigure 15. Forest plot for sensitivity analysis (quality of pandemic studies) for anxiety, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

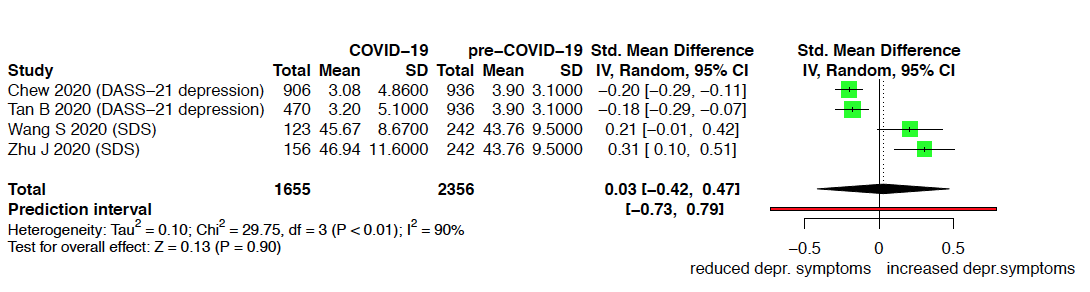
**eFigure 16. Forest plot for sensitivity analysis (quality of pandemic studies) for depression, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

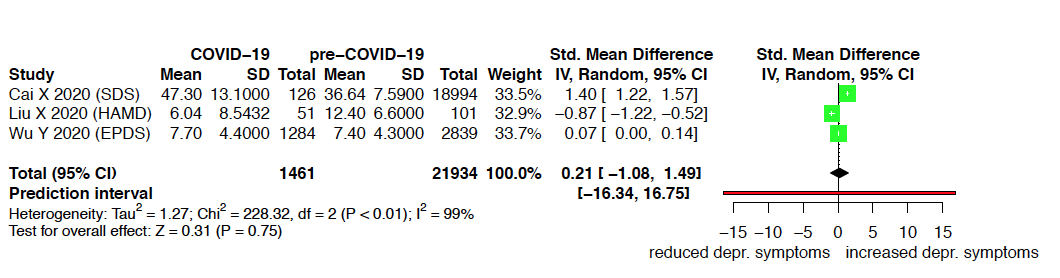
**eFigure17. Forest plot for sensitivity analysis (quality of pandemic studies) for depression, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

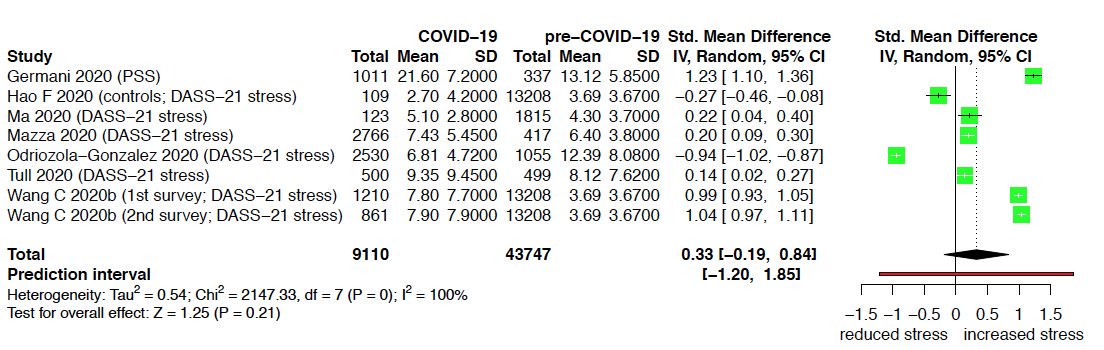
**eFigure 18. Forest plot for sensitivity analysis (quality of pandemic studies) for depression, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

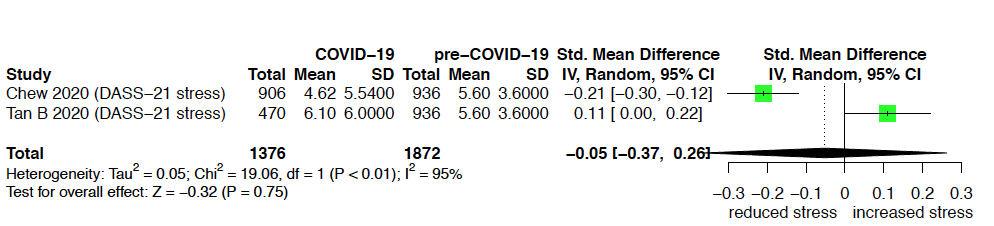
**eFigure 19. Forest plot for sensitivity analysis (quality of pandemic studies) for stress, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

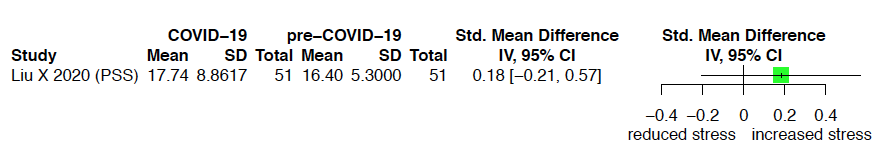
**eFigure 20. Forest plot for sensitivity analysis (quality of pandemic studies) for stress, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

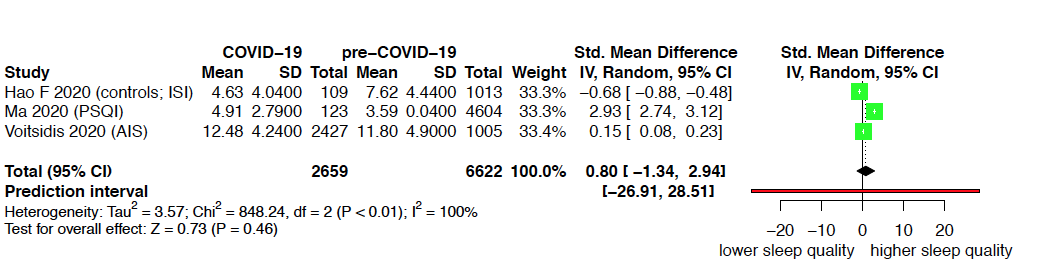
**eFigure 21. Forest plot for sensitivity analysis (quality of pandemic studies) for stress, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

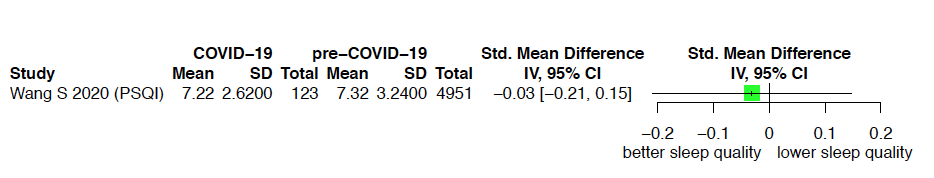
**eFigure 22. Forest plot for sensitivity analysis (quality of pandemic studies) for sleep-related symptoms, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

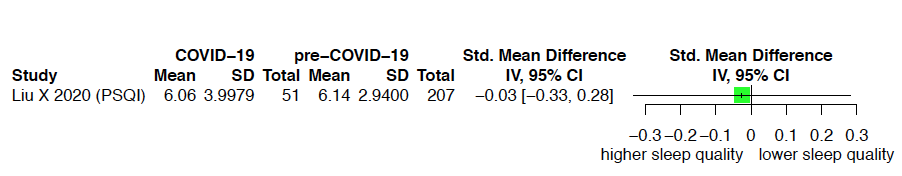
**eFigure 23. Forest plot for sensitivity analysis (quality of pandemic studies) for sleep-related symptoms, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

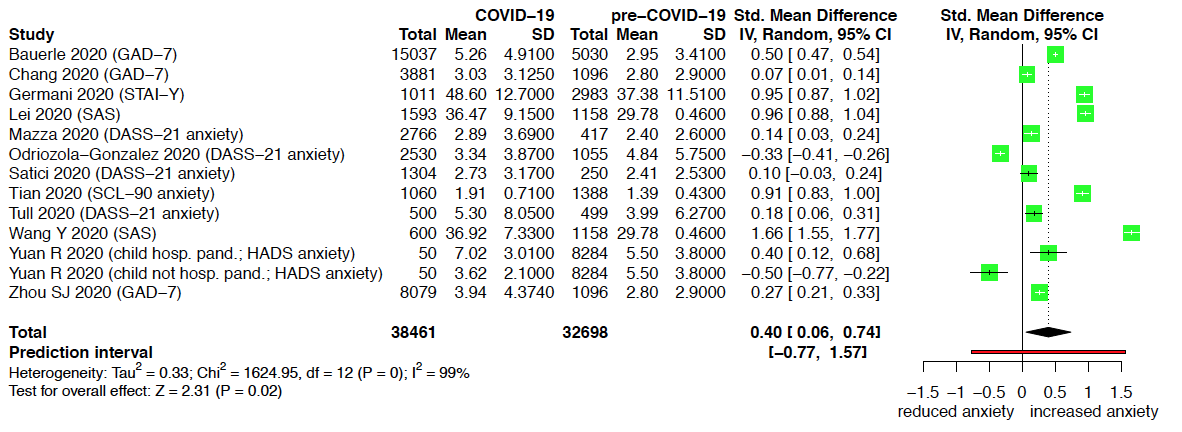
**eFigure 24. Forest plot for sensitivity analysis (quality of pandemic studies) for sleep-related symptoms, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

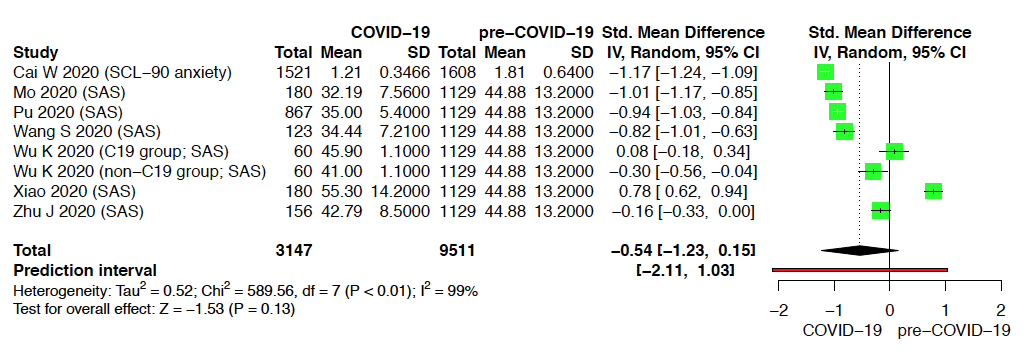
**eFigure 25. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for anxiety, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

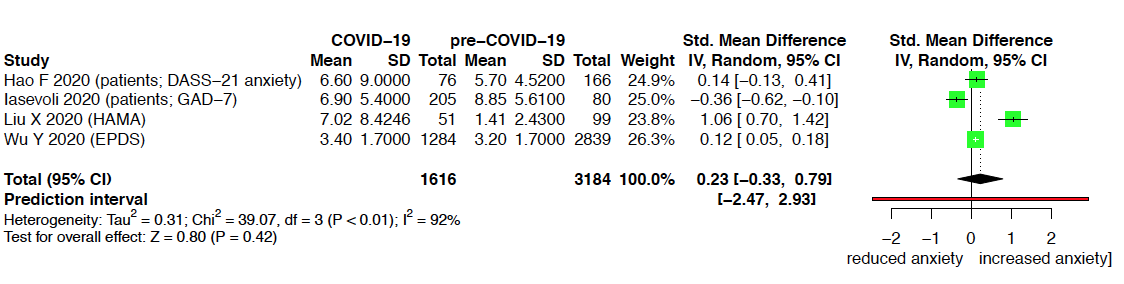
**eFigure 26. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for anxiety, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

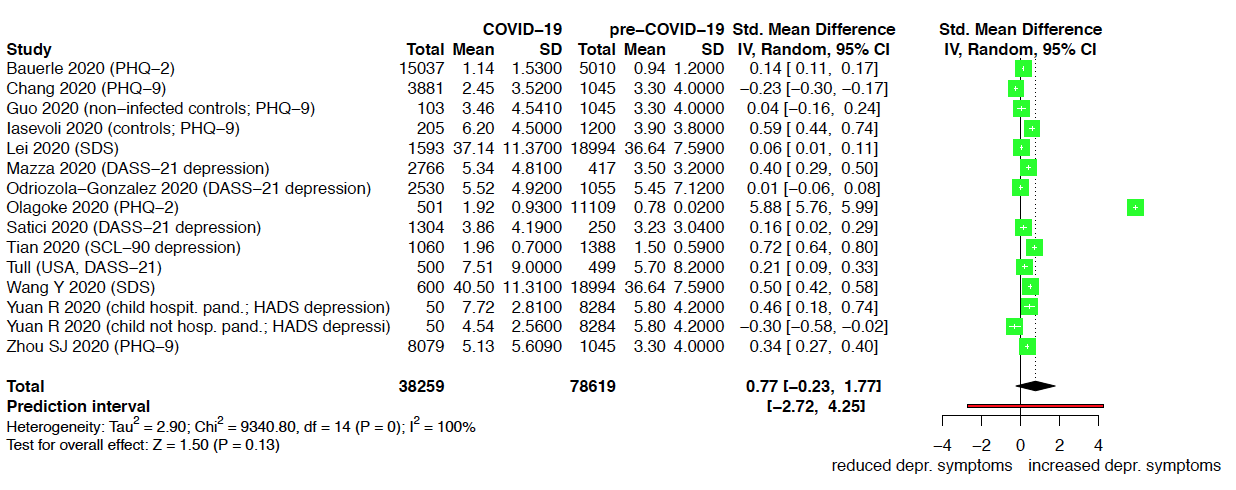
**eFigure 27. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for anxiety, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

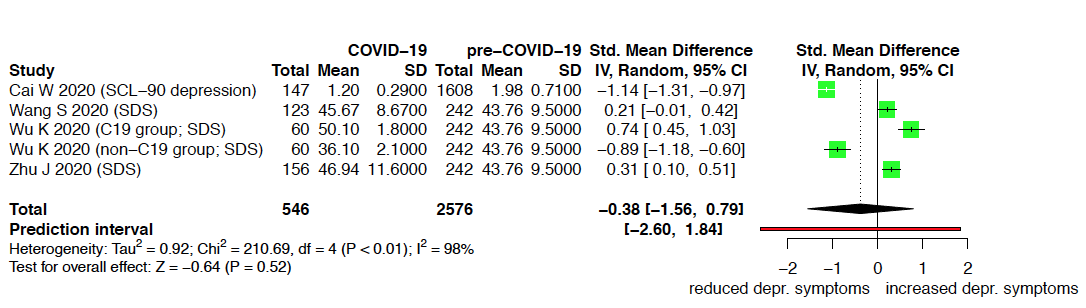
**eFigure 28. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for depression, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

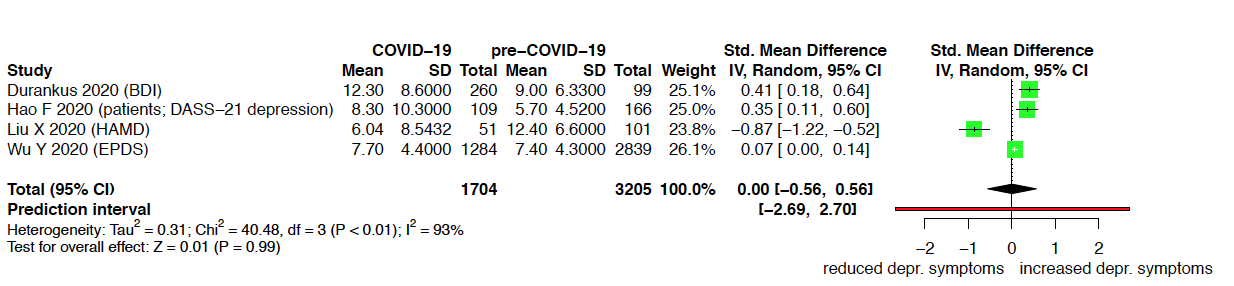
**eFigure 29. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for depression, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

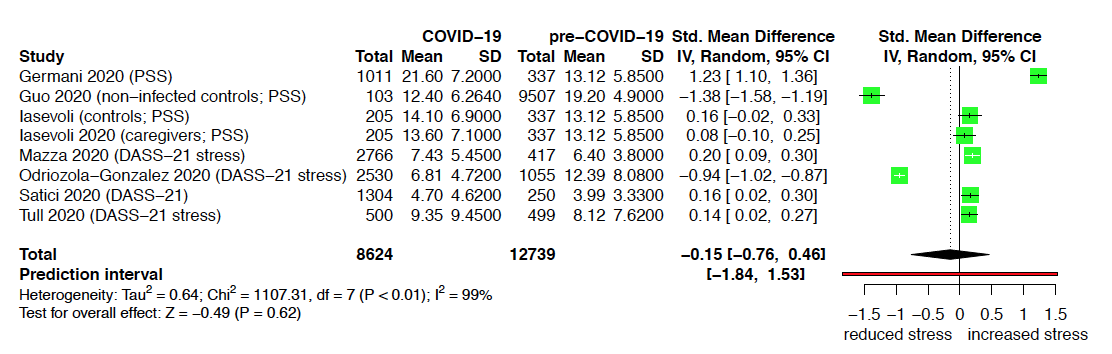
**eFigure 30. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for depression, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

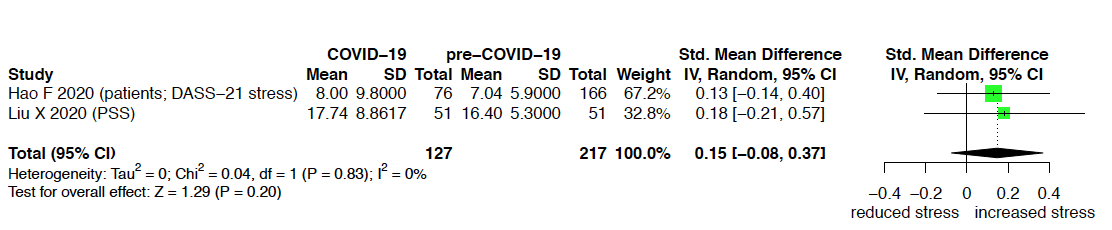
**eFigure 31. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for stress, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

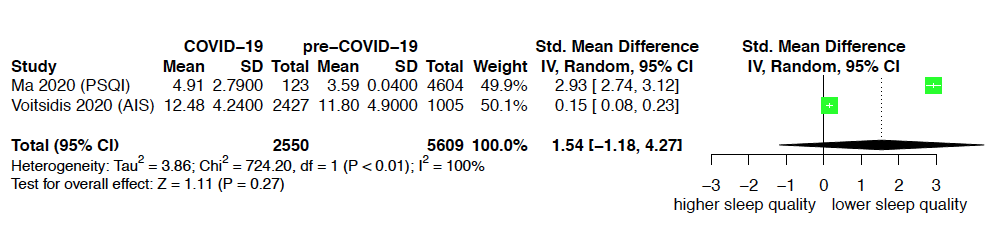
**eFigure 32. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for stress, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

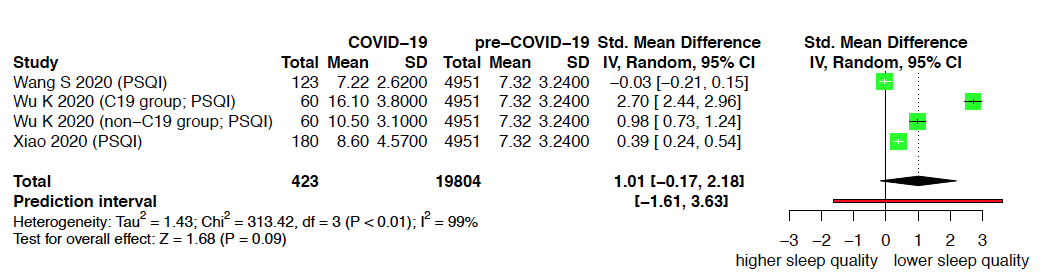
**eFigure 33. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for sleep-related symptoms, general population**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

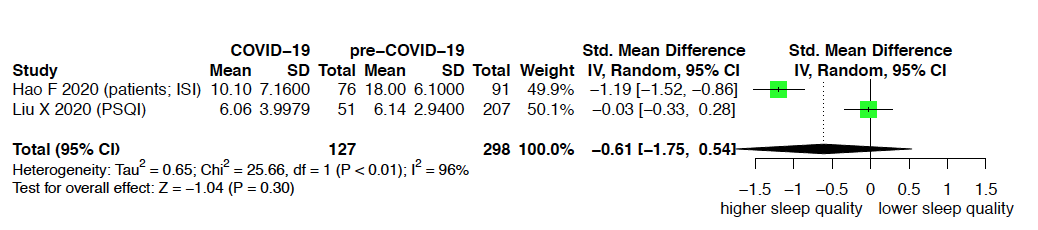
**eFigure 34. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for sleep-related symptoms, healthcare workers**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; multilevel meta-analysis.

**eFigure 35. Forest plot for sensitivity analysis (level of comparability pandemic vs comparative studies) for sleep-related symptoms, patients**



Abbreviations: CI, confidence interval; df, degrees of freedom; I2, indicator of statistical heterogeneity; P, p value; SD, standard deviation; Std., standardized; Tau2, indicator of statistical heterogeneity; Total, the number of participants; Z, z value; Chi2, Chi2 test for heterogeneity.

a Horizontal lines indicate the 95% CI of each study; diamond, the pooled estimate with 95% CI; classic random-effects model.

**eResults 3. Detailed results of subgroup analyses**

**Table eResults 3a. Subgroup analyses according to population characteristics**

| **Subgroup** | **Studies (samples)** | **N (pand.)** | **N (comp.)a** | **Standardized mean difference (95% CI)** | **Test for subgroup differenceb** |
| --- | --- | --- | --- | --- | --- |
| **Age** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26) | 49746 | 132145 (total) | 0.40 (0.15-0.65) | Chi2 = 9.5, df = 5 (p=.09) |
| ≤30 years | 7 (8) | 21846 | 20863 | 0.94 (0.43.1.44) |  |
| >30≤35 years | 7 (7) | 7050 | 37815 | 0.11 (-0.42-0.65) |
| >35≤40 years | 5 (6) | 4546 | 11810 | 0 (-0.61-0.62) |
| >40≤45 years | 2 (2) | 1011 | 14304 | 0.59 (-0.17-1.35) |
| multiple groups | 1 (1) | 15037 | 5030 | 0.37 (-0.87-1.61) |
| age not specified | 1 (2) | 256 | 5369 | 0.53 (-0.47-1.53) |
| **Depression** | 25 (28) | 60213 | 183747 (total) | 0.67 (0.07-1.27) | Chi2 = 29.3, df = 5 (p<.001) |
| ≤30 years | 8 (9) | 31812 | 23736 | 1.55 (0.71-2.40) |  |
| >30≤35 years | 8 (8) | 7551 | 66760 | 0.76 (-0.14-1.66) |
| >35≤40 years | 5 (6) | 4546 | 17710 | -0.23 (-1.24-0.79) |
| >40≤45 years | 2 (2) | 1011 | 14253 | 1.09 (0.10-2.09) |
| multiple groups | 1 (1) | 15037 | 5010 | -0.69 (-1.88-0.50) |
| age not specified | 1 (2) | 256 | 1539 | 0.24 (-1.95-2.43) |
| **Stress** | 11 (13) | 11600 | 67386 (total) | 0.10 (-0.30-0.50) | Chi2 = 1043.3, df = 4 (p<.001) |
| ≤30 years | 4 (5) | 6916 | 14850 | 0.59 (-0.19-1.37) |  |
| >30≤35 years | 3 (3) | 3548 | 13625 | -0.71 (-1.49-0.08) |
| >35≤40 years | 2 (2) | 623 | 2314 | 0.18 (-1.05-1.42) |
| >40≤45 years | 1 (1) | 103 | 9507 | -1.38 (-3.10- -0.07) |
| age not specified | 1 (2) | 410 | 337 | -0.52 (-1.32-0.27) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 (total) | 0.74 (-1.47-2.96) | Chi2 = 188.7, df = 2 (p<.001) |
| ≤30 years | 1 (1) | 2427 | 1005 | 0.15 (-0.25-0.56) |  |
| >30≤35 years | 2 (2) | 782 | 1013 | -0.84 (-1.15- -0.53) |
| >35≤40 years | 1 (1) | 123 | 4604 | 2.93 (2.49-3.37) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 (total) | -0.08 (-0.66-0.49) | Chi2 = 8.7, df = 4 (p=.07) |
| ≤30 years | 2 (2) | 2427 | 2541 | -0.56 (-1.42-0.31) |  |
| >30≤35 years | 8 (9) | 2400 | 2367 | -0.28 (-0.70-0.15) |
| >40≤45 years | 1 (1) | 194 | 462 | -0.13 (-1.36-1.10) |
| >45 years | 1 (1) | 131 | 5030 | 1.12 (-0.11-2.35) |
| several age groups | 1 (1) | 356 | 5030 | 1.04 (-0.18-2.27) |
| **Depression** | 7 (8) | 2226 | 4605 (total) | -0.16 (-0.59-0.26) | Chi2 = 2.2, df = 1 (p=.14) |
| ≤30 years | 2 (2) | 1053 | 2544 | -0.67 (-1.44-0.11) |  |
| >30≤35 years | 5 (6) | 1173 | 1335 | 0.01 (-0.44-0.46) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 164.2, df = 2 (p<.001) |
| ≤30 years | 1 (1) | 906 | 936 | -0.21 (-0.30- -0.12) |  |
| >30≤ 5 years | 1 (1) | 470 | 936 | 0.11 (0.00-0.22) |
| >40≤45 years | 1 (1) | 194 | 582 | 1.06 (0.88-1.23) |  |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 (total) | 0.83 (-0.14-1.81) | Chi2 = 0.3, df = 1 (p=.57) |
| >30≤35 years | 3 (4) | 423 | 4951 | 1.01 (-0.55-2.57) |  |
| >45 years | 1 (1) | 131 | 220 | 0.14 (-2.43-2.71) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 17.14, df = 4 (p=.002) |
| ≤30 years | 1 (1) | 1284 | 2839 | 0.12 (-0.30-0.54) |  |
| >30≤35 years | 1 (1) | 76 | 166 | 0.14 (-0.35-0.64) |
| >40≤45 years | 2 (2) | 154 | 1195 | 0.84 (0.49-1.20) |
| >45 years | 1 (1) | 126 | 8178 | 0.25 (-0.20-0.70) |
| age not specified | 1 (1) | 205 | 80 | -0.36 (-0.85-0.13) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 3.74, df = 4 (p=.44) |
| ≤30 years | 2 (2) | 1544 | 2938 | 0.24 (-0.83-1.31) |  |
| >30≤35 years | 1 (1) | 109 | 166 | 0.35 (-0.17-1.88) |
| >40≤45 years | 2 (2) | 154 | 1146 | -0.09 (-1.17-1.00) |
| >45 years | 1 (1) | 126 | 18994 | 1.40 (-1.12-2.91) |
| age not specified | 1 (1) | 205 | 1200 | 1.27 (-0.24-2.79) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 0.8, df = 2 (p=.68) |
| >30≤35 years | 1 (1) | 76 | 166 | 0.13 (-1.71-1.97) |  |
| >40≤45 years | 2 (2) | 154 | 9558 | -0.49 (-1.80-0.81) |
| age not specified | 1 (1) | 205 | 337 | 0.45 (-1.37-2.28) |
| **Sleep-related symptoms** | 2 (2) | 127 | 298 | -0.61 (-1.75-0.54) | Chi2 = 25.7, df = 1 (p<.001) |
| >30≤35 years | 1 (1) | 76 | 91 | -1.19 (-1.52- -0.86) |  |
| >40≤45 years | 1 (1) | 51 | 207 | -0.03 (-0.33-0.28) |
| **Stressor exposure (general population)** | | | | | |
| **Anxiety** | 23 (26)c | 49746 | 132145 (total) | 0.40 (0.15-0.65) | Chi2 = 2.8, df = 3 (p=.42) |
| General population | 17 (18) | 33971 | 48173 | 0.51 (0.21-0.80) |  |
| Students | 4 (4) | 15501 | 5134 | 0.24 (-0.38-0.86) |
| Others | 1 (1) | 50 | 8284 | -0.50 (-1.77-0.78) |
| Special exposure | 3 (3) | 224 | 10438 | 0.27 (-0.47-1.00) |
| **Depression** | 25 (28)c | 60213 | 183747 (total) | 0.67 (0.07-1.27) | Chi2 = 1.9, df = 3 (p=.60) |
| General population | 19 (20) | 36899 | 79137 | 0.88 (0.20-1.56) |  |
| Students | 4 (4) | 23040 | 2997 | 0.20 (-1.08-1.48) |
| Others | 1 (1) | 50 | 8284 | -0.38 (-2.67-1.91) |
| Special exposure | 3 (3) | 224 | 10438 | 0.33 (-1.18-1.83) |
| **Stress** | 11 (13)c | 11600 | 67386 (total) | 0.10 (-0.30-0.50) | Chi2 = 0.12, df = 3 (p=.99) |
| General population | 8 (9) | 7731 | 24218 | 0.01 (-0.60-0.62) |  |
| Students | 2 (2) | 3541 | 1392 | 0.14 (-1.05-1.33) |
| Others | 1 (1) | 205 | 337 | -0.10 (-1.77-1.57) |
| Special exposure | 1 (1) | 123 | 1815 | 0.22 (-1.48-1.92) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 14.28, df = 1 (p<.001) |
| Special exposure | 1 (1) | 123 | 4604 | 2.93 (1.53-4.33) |  |
| General population | 3 (3) | 3209 | 2018 | -0.35 (-1.33-0.62) |
| **COVID-19 patient contact (healthcare workers)** | | | | | |
| **Anxiety** | 13 (14)c | 5508 | 22204 (total) | -0.08 (-0.66-0.49) | Chi2 = 0, df = 1 (p=.95) |
| Low contact risk | 7 (7) | 2818 | 7859 | -0.07 (-0.72-0.58) |  |
| High contact risk | 7 (7) | 2690 | 3670 | -0.09 (-0.83-0.64) |
| **Depression** | 7 (8)1 | 2226 | 4605 (total) | -0.16 (-0.59-0.26) | Chi2 = 1.0, df = 1 (p=.31) |
| Low contact risk | 3 (3) | 1270 | 1335 | -0.50 (-1.23-0.24) |  |
| High contact risk | 5 (5) | 956 | 2786 | -0.06 (-0.70-0.57) |
| **Stress** | 3 (3) | 1570 | 2454 (total) | 0.49 (-0.60-1.57) | Chi2 = 0, df = 1 (p=1.00) |
| Low contact risk | 2 (2) | 1100 | 1518 | 0.42 (-0.82-1.66) |  |
| High contact risk | 1 (1) | 470 | 936 | 0.42 (-1.22-2.07) |
| **Sleep-related symptoms** | 4 (5)c | 554 | 20024 (total) | 0.83 (-0.14-1.81) | Chi2 = 0.2, df = 1 (p=.69) |
| Low contact risk | 2 (2) | 191 | 5171 | 0.56 (-1.17-2.29) |  |
| High contact risk | 3 (3) | 363 | 4951 | 1.02 (-0.40-2.43) |
| **Subgroup of patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 0.3, df = 2 (p=.88) |
| COVID-19 patients | 2 (2) | 229 | 9274 | 0.47 (-0.35-1.29) |  |
| Pregnant women | 1 (1) | 1284 | 2839 | 0.12 (-1.03-1.27) |
| Psychiatric patients | 3 (3) | 332 | 345 | 0.27 (-0.41-0.95) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 1.3, df = 2 (p=.51) |
| COVID-19 patients | 2 (2) | 229 | 20039 | 1.03 (-0.08-2.14) |  |
| Pregnant women | 2 (2) | 1544 | 2938 | 0.24 (-0.87-1.35) |
| Psychiatric patients | 3 (3) | 365 | 1467 | 0.27 (-0.64-1.18) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 44.8, df = 1 (p<.001) |
| COVID-19 patients | 1 (1) | 103 | 9507 | -1.15 (-1.50- -0.80) |  |
| Psychiatric patients | 3 (3) | 332 | 554 | 0.29 (0.06-0.52) |

Abbreviations: df, degrees of freedom; p, p value; CI, confidence interval; comp., comparative studies; pand., pandemic studies; N, sample size.

a in meta-analyses with multiply used comparative studies (general population, healthcare workers), the respective study was only counted once to determine the number of control participants.

b Chi2=test for subgroup differences.

c Sum of studies does not add up to total number of studies as two samples of the same study were part of different subgroups.

**Table eResults 3b. Subgroup analyses according to pandemic study characteristics**

| **Subgroup** | **Studies (samples)** | **N (pand.)** | **N (comp.)a** | **Standardized mean difference (95% CI)** | **Test for subgroup differenceb** |
| --- | --- | --- | --- | --- | --- |
| **Survey start** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26)c | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 3.55, df = 4 (p=.47) |
| ≤ 4 weeks | 7 (7) | 8570 | 18665 | 0.65 (0.13-1.17) |  |
| > 4 ≤ 6 weeks | 5 (5) | 2894 | 14310 | -0.08 (-0.79-0.62) |
| > 6 ≤ 8 weeks | 8 (9) | 33408 | 32674 | 0.36 (-0.08-0.81) |
| > 8 weeks | 1 (1) | 500 | 499 | 0.18 (-1.13-1.49) |
| not specified | 3 (4) | 4374 | 10805 | 0.54 (-0.16-1.25) |
| **Depression** | 25 (28)c | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 10.15, df = 4 (p=.04) |
| ≤ 4 weeks | 8 (8) | 17120 | 37347 | 0.34 (-0.49-1.16) |  |
| > 4 ≤ 6 weeks | 5 (5) | 2894 | 15310 | -0.04 (-1.25-1.17) |
| > 6 ≤ 8 weeks | 8 (9) | 34824 | 30710 | 0.51 (-0.29-1.32) |
| > 8 weeks | 2 (2) | 1001 | 11608 | 3.04 (1.45-4.64) |
| not specified | 3 (4) | 4374 | 10805 | 0.56 (-0.68-1.81) |
| **Stress** | 11 (13)c | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 0.31, df = 4 (p=.99) |
| ≤ 4 weeks | 3 (3) | 1436 | 24530 | -0.06 (-1.20-1.09) |  |
| > 4 ≤ 6 weeks | 3 (3) | 1643 | 13208 | -0.36 (-1.76-1.04) |
| > 6 ≤ 8 weeks | 4 (5) | 6717 | 1809 | -0.00 (-1.06-1.05) |
| > 8 weeks | 1 (1) | 500 | 499 | 0.14 (-1.84-2.13) |
| not specified | 1 (1) | 1304 | 250 | 0.16 (-1.82-2.14) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 188.73, df = 2 (p<.001) |
| ≤ 4 weeks | 1 (1) | 123 | 4604 | 2.93 (2.49-3.37) |  |
| > 4 ≤ 6 weeks | 2 (2) | 782 | 1013 | -0.84 (-1.15- -0.53) |
| > 6 ≤ 8 weeks | 1 (1) | 2427 | 1005 | 0.15 (-0.25-0.56) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 7.91, df = 4 (p=.10) |
| ≤ 4 weeks | 5 (5) | 1835 | 2026 | 0.01 (-0.55-0.57) |  |
| > 4 ≤ 6 weeks | 2 (2) | 374 | 1591 | -0.57 (-1.46-0.32) |
| > 6 ≤ 8 weeks | 2 (2) | 435 | 5335 | 0.40 (-0.49-1.29) |
| > 8 weeks | 1 (1) | 356 | 5030 | 1.04 (-0.21-2.30) |
| not specified | 3 (4) | 2508 | 2737 | -0.59 (-1.22-0.04) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 0.95, df = 2 (p=.62) |
| ≤ 4 weeks | 4 (4) | 1655 | 1178 | -0.03 (-0.75-0.69) |  |
| > 6 ≤ 8 weeks | 1 (1) | 304 | 157 | -0.11 (-1.45-1.23) |
| not specified | 2 (3) | 267 | 1850 | -0.51 (-1.32-0.30) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 13.17, df = 1 (p<.001) |
| ≤ 4 weeks | 2 (2) | 1376 | 936 | -0.05 (-0.40-0.30) |  |
| > 4 ≤ 6 weeks | 1 (1) | 194 | 582 | 1.06 (0.57-1.54) |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 | 0.83 (-0.14-1.81) | Chi2 = 4.21, df = 2 (p=.12) |
| ≤ 4 weeks | 2 (2) | 303 | 4951 | 0.18 (-1.18-1.54) |  |
| > 6 ≤ 8 weeks | 1 (1) | 131 | 220 | 0.14 (-1.69-1.97) |
| not specified | 1 (2) | 120 | 4951 | 1.84 (0.48-3.21) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07-0.69) | Chi2 = 4.58, df = 2 (p=.10) |
| ≤ 4 weeks | 3 (3) | 1438 | 4034 | 0.59 (0.15-1.03) |  |
| > 4 ≤ 6 weeks | 2 (2) | 202 | 8344 | 0.20 (-0.34-0.74) |
| > 6 ≤ 8 weeks | 1 (1) | 205 | 80 | -0.36 (-1.13-0.42) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 3.08, df = 3 (p=.38) |
| ≤ 4 weeks | 3 (3) | 1438 | 3985 | -0.03 (-0.89-0.82) |  |
| > 4 ≤ 6 weeks | 2 (2) | 235 | 19160 | 0.88 (-0.17-1.92) |
| > 6 ≤ 8 weeks | 1 (1) | 205 | 1200 | 1.27 (-0.19-2.74) |
| not specified | 1 (2) | 260 | 99 | 0.41 (-1.07-1.89) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 0.76, df = 2 (p=.68) |
| ≤ 4 weeks | 2 (2) | 154 | 9558 | -0.49 (-1.80-0.81) |  |
| > 4 ≤ 6 weeks | 1 (1) | 76 | 166 | 0.13 (-1.71-1.97) |
| > 6 ≤ 8 weeks | 1 (1) | 205 | 337 | 0.45 (-1.37-2.28) |
| **Sleep-related symptoms** | 2 (2) | 127 | 298 | -0.61 (-1.75-0.54) | Chi2 = 25.66, df = 1 (p<.001) |
| ≤ 4 weeks | 1 (1) | 51 | 207 | -0.03 (-0.33-0.28) |  |
| > 4 ≤ 6 weeks | 1 (1) | 76 | 91 | -1.19 (-1.52- -0.86) |
| **Study conduction in China** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26) | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 0.10, df = 1 (p=.75) |
| China | 12 (14) | 19300 | 26949 | 0.45 (0.06-0.83) |  |
| Non-China | 11 (12) | 30446 | 35700 | 0.36 (-0.02-0.73) |  |
| **Depression** | 25 (28) | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 0.60, df = 1 (p=.44) |
| China | 12 (14) | 19300 | 44734 | 0.35 (-0.65-1.36) |  |
| Non-China | 13 (14) | 40913 | 46793 | 0.85 (0.09-1.61) |
| **Stress** | 11 (13) | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 0.10, df = 1 (p=.76) |
| China | 5 (6) | 3079 | 24530 | -0.06 (-0.81-0.68) |  |
| Non-China | 6 (7) | 8521 | 2558 | 0.09 (-0.54-0.72) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 0.07, df = 1 (p=.79) |
| China | 3 (3) | 905 | 5617 | 1.04 (-2.65-4.74) |  |
| Non-China | 1 (1) | 2427 | 1005 | 0.15 (-5.08-5.38) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 2.84, df = 1 (p=.09) |
| China | 7 (8) | 3147 | 2737 | -0.61 (-1.41-0.19) |  |
| Non-China | 6 (6) | 2361 | 6730 | 0.26 (-0.37-0.90) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 0.08, df = 1 (p=.78) |
| China | 4 (5) | 546 | 1850 | -0.33 (-1.16-0.50) |  |
| Non-China | 3 (3) | 1680 | 1093 | -0.16 (-1.06-0.74) |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 | 0.83 (-0.14-1.81) | Chi2 = 0.32, df = 1 (p=.57) |
| China | 3 (4) | 423 | 4951 | 1.01 (-0.55-2.57) |  |
| Non-China | 1 (1) | 131 | 220 | 0.14 (-2.43-2.71) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 3.35, df = 1 (p=.07) |
| China | 5 (5) | 1640 | 12378 | 0.43 (0.09-0.77) |  |
| Non-China | 1 (1) | 205 | 80 | -0.36 (-1.13-0.42) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 0.62, df = 1 (p=.43) |
| China | 5 (5) | 1673 | 23145 | 0.33 (-0.35-1.02) |  |
| Non-China | 2 (2) | 465 | 1299 | 0.84 (-0.24-1.93) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 0.73, df = 1 (p=.39) |
| China | 3 (3) | 230 | 9724 | -0.29 (-1.15-0.57) |  |
| Non-China | 1 (1) | 205 | 337 | 0.45 (-1.02-1.92) |
| **Outcome measure** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26) | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 10.7, df = 6 (p=.10) |
| DASS-21 | 9 (10) | 10984 | 17244 | 0.22 (-0.16-0.60) |  |
| GAD-2 | 1 (1) | 3480 | 110 | 0.36 (-0.80-1.51) |
| GAD-7 | 6 (7) | 30326 | 8736 | 0.55 (0.10-1.00) |
| HADS | 3 (4) | 692 | 31030 | -0.14 (-0.73-0.45) |
| SAS | 2 (2) | 2193 | 1158 | 1.31 (0.47-2.15) |
| SCL-90 | 1 (1) | 1060 | 1388 | 0.91 (-0.23-2.06) |
| STAI-Y | 1 (1) | 1011 | 2983 | 0.95 (-0.19-2.09) |
| **Depression** | 25 (28) | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 11.46, df = 5 (p=.04) |
| DASS-21 | 9 (10) | 10984 | 17244 | 0.32 (-0.60-1.25) |  |
| HADS | 3 (4) | 692 | 32030 | 0.27 (-1.03-1.57) |
| PHQ-2 | 4 (4) | 21445 | 16119 | 3.14 (1.61-4.67) |
| PHQ-9 | 6 (7) | 23839 | 5752 | 0.33 (-0.68-1.34) |
| SCL-90 | 1 (1) | 1060 | 1388 | 0.72 (-1.61-3.04) |
| SDS | 2 (2) | 2193 | 18994 | 0.28 (-1.83-2.39) |
| **Stress** | 11 (13) | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 0.16, df = 1 (p=.69) |
| DASS-21 | 8 (9) | 10076 | 17244 | 0.08 (-0.50-0.66) |  |
| PSS | 3 (4) | 1524 | 9844 | -0.14 (-1.05-0.77) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 188.73, df = 2 (p<.001) |
| AIS | 1 (1) | 2427 | 1005 | 0.15 (-0.25-0.56) |  |
| ISI | 2 (2) | 782 | 1013 | -0.84 (-1.15- -0.53) |
| PSQI | 1 (1) | 123 | 4604 | 2.93 (2.49-3.37) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 2.80, df = 4 (p=.59) |
| DASS-21 | 2 (2) | 1376 | 933 | 0.12 (-1.46-1.70) |  |
| GAD-2 | 1 (1) | 304 | 305 | -0.32 (-2.08-1.45) |
| GAD-7 | 3 (3) | 681 | 5492 | 0.54 (-0.63-1.72) |
| SAS | 6 (7) | 1626 | 1129 | -0.34 (-1.78-1.10) |
| SCL-90 | 1 (1) | 1521 | 1608 | -1.17 (-2.92-0.59) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 2.91, df = 3 (p=.41) |
| DASS-21 | 2 (2) | 1376 | 936 | -0.19 (-1.10-0.72) |  |
| PHQ-2 | 1 (1) | 304 | 157 | -0.11 (-1.33-1.12) |
| SCL-90 | 1 (1) | 147 | 1608 | -1.14 (-2.36-0.00) |
| SDS | 3 (4) | 399 | 242 | 0.09 (-0.63-0.82) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 13.17, df = 1 (p<.001) |
| DASS-21 | 2 (2) | 1376 | 936 | -0.05 (-0.40-0.30) |  |
| PSS | 1 (1) | 194 | 582 | 1.06 (0.57-1.54) |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 | 0.83 (-0.14-1.81) | Chi2 = 0.32, df = 1 (p=.57) |
| ISI | 1 (1) | 131 | 220 | 0.14 (-2.43-2.71) |  |
| PSQI | 3 (4) | 423 | 4951 | 1.01 (-0.55-2.57) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07-0.69) | Chi2 = 1.18, df = 4 (p=.88) |
| DASS-21 | 1 (1) | 76 | 166 | 0.14 (-1.31-1.60) |  |
| EPDS-3A | 1 (1) | 1284 | 2839 | 0.12 (-1.32-1.55) |
| GAD-7 | 2 (2) | 308 | 1176 | 0.17 (-0.86-1.20) |
| HAMA | 1 (1) | 51 | 99 | 1.06 (-0.42-2.53) |
| SAS | 1 (1) | 126 | 8178 | 0.25 (-1.19-1.69) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 16.95, df = 5 (p=.005) |
| BDI | 1 (1) | 260 | 99 | 0.41 (-0.45-1.26) |  |
| DASS-21 | 1 (1) | 109 | 166 | 0.35 (-0.35-1.21) |
| EDPS | 1 (1) | 1284 | 2839 | 0.07 (-0.76-0.89) |
| HAMD | 1 (1) | 51 | 101 | -0.87 (-1.76-0.03) |
| PHQ-9 | 2 (2) | 308 | 2245 | 0.97 (0.38-1.57) |
| SDS | 1 (1) | 126 | 18994 | 1.40 (0.55-2.24) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 0.09, df = 1 (p=.76) |
| DASS-21 | 1 (1) | 76 | 166 | 0.13 (-1.56-1.83) |  |
| PSS | 3 (3) | 359 | 9895 | -0.18 (-1.15-0.80) |
| **Sleep-related symptoms** | 2 (2) | 127 | 298 | -0.61 (-1.75-0.54) | Chi2 = 25.66, df = 1 (p<.001) |
| ISI | 1 (1) | 76 | 91 | -1.19 (-1.52- -0.86) |  |
| PSQI | 1 (1) | 51 | 207 | -0.03 (-0.33-0.28) |
| **Sample size** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26)c | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 1.86, df = 1 (p=.17) |
| <1000 participants | 12 (14) | 4825 | 54175 | 0.24 (-0.10-0.58) |  |
| ≥1000 participants | 12 (12) | 44921 | 28966 | 0.58 (0.22-0.93) |
| **Depression** | 25 (28)c | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 0.03, df = 1 (p=.86) |
| <1000 participants | 13 (15) | 5326 | 80239 | 0.70 (-0.02-1.42) |  |
| ≥1000 participants | 13 (13) | 54887 | 44535 | 0.63 (-0.12-1.38) |
| **Stress** | 11 (13)c | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 2.31, df = 1 (p=.13) |
| <1000 participants | 7 (8) | 2779 | 25366 | -0.27 (-0.87-0.33) |  |
| ≥1000 participants | 5 (5) | 8821 | 15267 | 0.31 (-0.36-0.97) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 0.07, df = 1 (p=.79) |
| <1000 participants | 3 (3) | 905 | 5617 | 1.04 (-2.65-4.74) |  |
| ≥1000 participants | 1 (1) | 2427 | 1005 | 0.15 (-5.08-5.38) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 2.83, df = 1 (p=.09) |
| <500 participants | 10 (11) | 2214 | 7859 | 0.09 (-0.45-0.64) |  |
| ≥500 participants | 3 (3) | 3294 | 3670 | -0.57 (-1.34-0.20) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 0.00, df = 1 (p=.96) |
| <500 participants | 6 (7) | 1320 | 2943 | -0.16 (-0.66-0.34) |  |
| ≥500 participants | 1 (1) | 906 | 936 | -0.20 (-1.49-1.08) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 0.79, df = 1 (p=.37) |
| <500 participants | 2 (2) | 664 | 1518 | 0.58 (-0.35-1.51) |  |
| ≥500 participants | 1 (1) | 906 | 936 | 0.02 (-1.20-1.25) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07-0.69) | Chi2 = 3.60, df = 1 (p=.06) |
| <200 participants | 4 (4) | 356 | 9539 | 0.52 (0.14-0.90) |  |
| ≥200 participants | 2 (2) | 1489 | 2919 | -0.11 (-0.63-0.42) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 0.09, df = 1 (p=.77) |
| <200 participants | 4 (4) | 389 | 20306 | 0.40 (-0.41-1.21) |  |
| ≥200 participants | 3 (3) | 1749 | 4138 | 0.58 (-0.34-1.51) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 0.73, df = 1 (p=.39) |
| <200 participants | 3 (3) | 230 | 9724 | -0.29 (-1.15-0.57) |  |
| ≥200 participants | 1 (1) | 205 | 337 | 0.45 (-1.02-1.92) |

Abbreviations: df, degrees of freedom; p, p value; CI, confidence interval; comp., comparative studies; pand., pandemic studies; N, sample size.

a in meta-analyses with multiply used comparative studies (general population, healthcare workers), the respective study was only counted once to determine the number of control participants.

b Chi2=test for subgroup differences.

c Sum of studies does not add up to total number of studies as two samples of the same study were part of different subgroups.

**Table eResults 3c. Subgroup analyses according to comparative study characteristics**

| **Subgroup** | **Studies (samples** | **N (pand.)** | **N (comp.)a** | **Standardized mean difference (95% CI)** | **Test for subgroup differenceb** |
| --- | --- | --- | --- | --- | --- |
| **Sample size** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26) | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 0.9, df = 3 (p=.83) |
| ≤500 participants | 4 (4) | 8050 | 1276 | 0.19 (-0.48-0.86) |  |
| >1.000≤5.000 participants | 11 (11) | 22293 | 12868 | 0.54 (0.11-0.97) |
| >5.000≤10.000 participants | 3 (5) | 15393 | 13653 | 0.30 (-0.36-0.96) |
| >10.000 participants | 5 (6) | 4010 | 34852 | 0.35 (-0.37-1.07) |
| **Depression** | 25 (28) | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 3.5, df = 4 (p=.48) |
| ≤500 participants | 3 (3) | 4570 | 1166 | 0.25 (-1.32-1.83) |  |
| >500≤1.000 participants | 1 (1) | 8550 | 897 | -0.38 (-3.11-2.35) |
| >1.000≤ 5.000 participants | 9 (10) | 19345 | 11215 | 0.43 (-0.52-1.39) |
| >5.000≤10.000 participants | 4 (5) | 21044 | 13294 | 0.58 (-1.19-2.35) |
| >10.000 participants | 8 (9) | 6704 | 64955 | 1.69 (0.39-2.98) |
| **Stress** | 11 (13) | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 8.6, df = 3 (p=.03) |
| ≤500 participants | 5 (6) | 5991 | 1503 | 0.33 (-0.16-0.82) |  |
| >1.000≤5.000 participants | 2 (2) | 2653 | 2870 | -0.37 (-1.21-0.48) |
| >5.000≤10.000 participants | 1 (1) | 103 | 9507 | -1.38 (-2.59- -0.19) |
| >10.000 participants | 3 (4) | 2853 | 13208 | 0.37 (-0.23-0.97) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 9.93, df = 3 (p=.02) |
| ≤500 participants | 2 (2) | 498 | 767 | -0.22 (-1.04-0.59) |  |
| >500≤1.000 participants | 2 (2) | 1376 | 933 | 0.12 (-0.74-0.98) |
| >1.000≤5.000 participants | 7 (8) | 3147 | 2737 | -0.51 (-1.03-0.01) |
| >5.000≤10.000 participants | 2 (2) | 487 | 5030 | 1.08 (0.22-1.95) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 4.3, df = 2 (p=0.12) |
| ≤500 participants | 4 (5) | 703 | 399 | 0.05 (-0.41-0.52) |  |
| >500≤1.000 participants | 2 (2) | 1376 | 936 | -0.19 (-0.91-0.53) |
| >1.000≤5.000 participants | 1 (1) | 147 | 1608 | -1.14 (-2.16- -0.11) |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 | 0.83 (-0.14-1.81) | Chi2 = 0.3, df = 1 (p=.57) |
| ≤500 participants | 1 (1) | 131 | 220 | 0.14 (-2.43-2.71) |  |
| >1.000≤5.000 participants | 3 (4) | 423 | 4951 | 1.01 (-0.55-2.57) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 0.1, df = 2 (p=.97) |
| ≤500 participants | 3 (3) | 332 | 345 | 0.27 (-0.44-0.98) |  |
| >1.000≤5.000 participants | 2 (2) | 1387 | 3935 | 0.40 (-0.45-1.25) |
| >5.000≤10.000 participants | 1 (1) | 126 | 8178 | 0.25 (-0.95-1.45) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 3.9, df = 2 (p=.14) |
| ≤500 participants | 3 (3) | 420 | 366 | -0.02 (-0.78-0.73) |  |
| >1.000≤5.000 participants | 3 (3) | 1592 | 5084 | 0.67 (-0.07-1.41) |
| >10.000 participants | 1 (1) | 126 | 18994 | 1.40 (0.11-2.68) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 44.8, df = 1 (p<.001) |
| ≤500 participants | 3 (3) | 332 | 554 | 0.29 (0.06-0.52) |  |
| >5.000≤10.000 participants | 1 (1) | 103 | 9507 | -1.15 (-1.50- -0.80) |
| **Publication year** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26) | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 8.0, df = 5 (p=.16) |
| published ≤1 year ago | 2 (2) | 5500 | 3326 | 0.75 (-0.08-1.58) |  |
| published ≤2 years ago6 | 6 (7) | 6076 | 16441 | 0.48 (0.03-0.92) |
| published >2≤5 years ago | 5 (6) | 14929 | 9797 | 0.05 (-0.43-0.54) |
| published >5≤10 years ago | 4 (4) | 4572 | 23355 | 0.02 (-0.57-0.61) |
| published >10 years ago | 5 (6) | 18546 | 7915 | 0.85 (0.37-1.34) |
| unclear | 1 (1) | 123 | 1815 | 0.09 (-1.10-1.27) |
| **Depression** | 25 (28) | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 12.4, df = 5 (p=.03) |
| published ≤1 year ago | 4 (4) | 15643 | 23217 | 0.29 (-0.79-1.36) |  |
| published ≤2 years ago | 5 (6) | 5065 | 13458 | 0.36 (-0.98-1.70) |
| published >2≤5 years ago | 3 (4) | 2989 | 10516 | 0.34 (-0.87-1.54) |
| published >5≤10 years ago | 9 (10) | 34012 | 29737 | 0.43 (-0.40-1.26) |
| published >10 years ago | 2 (2) | 1561 | 12497 | 3.30 (1.74-4.85) |
| unclear | 2 (2) | 943 | 21096 | 0.38 (-1.09-1.85) |
| **Stress** | 11 (13) | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 11.6, df = 4 (p=.02) |
| published ≤1 year ago | 2 (2) | 2633 | 10562 | -1.16 (-1.96- -0.36) |  |
| published ≤2 years ago | 3 (4) | 2853 | 13208 | 0.37 (-0.20-0.94) |
| published >2≤5 years ago | 3 (4) | 4187 | 754 | 0.42 (-0.15-0.98) |
| published >5≤10 years ago | 1 (1) | 500 | 499 | 0.14 (-0.99-1.28) |
| unclear | 2 (2) | 1427 | 2065 | 0.19 (-0.62-0.99) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 188.7, df = 2 (p<.001) |
| published ≤2 years ago | 2 (2) | 782 | 1013 | -0.84 (-1.15- -0.53) |  |
| unclear | 1 (1) | 123 | 4604 | 2.93 (2.49-3.37) |
| published >5≤10 years ago | 1 (1) | 2427 | 1005 | 0.15 (-0.25-0.56) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 14.5, df = 3 (p=.002) |
| published ≤1 year ago | 8 (9) | 3002 | 2062 | -0.24 (-0.59-0.11) |  |
| published ≤2 years ago | 1 (1) | 1521 | 1608 | -1.17 (-2.21- -1.13) |
| published >2≤5 years ago | 2 (2) | 498 | 767 | -0.22 (-0.96-0.52) |
| published >10 years ago | 2 (2) | 487 | 5030 | 1.08 (0.34-1.82) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 4.6, df = 1 (p=.03) |
| published ≤1 year ago | 6 (7) | 2079 | 1335 | -0.02 (-0.38-0.35) |  |
| published ≤2 years ago | 1 (1) | 147 | 1608 | -1.14 (-2.10- -0.10) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 13.2, df = 1 (p<.001) |
| published ≤1 year ago | 2 (2) | 1376 | 936 | -0.05 (-0.40-0.30) |  |
| published ≤2 years ago | 1 (1) | 194 | 582 | 1.06 (0.57-1.54) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 0.1, df = 2 (p=.94) |
| published ≤1 year ago | 2 (2) | 256 | 179 | 0.34 (-0.52-1.19) |  |
| published >2≤5 years ago | 3 (3) | 305 | 9440 | 0.36 (-0.33-1.05) |
| unclear | 1 (1) | 1284 | 2839 | 0.12 (-1.06-1.29) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 17.0, df = 5 (p=.005) |
| published ≤1 year ago | 1 (1) | 126 | 18994 | 1.40 (0.55-2.24) |  |
| published ≤2 years ago | 1 (1) | 260 | 99 | 0.41 (-0.45-1.26) |
| published >2≤5 years ago | 1 (1) | 109 | 166 | 0.35 (-0.51-1.21) |
| published >5≤10 years ago | 2 (2) | 308 | 2245 | 0.97 (0.38-1.57) |
| published >10 years ago | 1 (1) | 51 | 101 | -0.87 (-1.76-0.03) |
| unclear | 1 (1) | 1284 | 2839 | 0.07 (-0.76-0.89) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 44.8, df = 1 (p<.001) |
| published ≤1 year ago | 1 (1) | 103 | 9507 | -1.15 (-1.50- -0.80) |  |
| published >2≤5 years ago | 3 (3) | 332 | 554 | 0.29 (0.06-0.52) |
| **Sleep-related symptoms** | 2 (2) | 127 | 298 | -0.61 (-1.75-0.54) | Chi2 = 25.7, df = 1 (p<.001) |
| published >5≤10 years ago | 1 (1) | 76 | 91 | -1.19 (-1.52- -0.86) |  |
| published ≤1 year ago | 1 (1) | 51 | 207 | -0.03 (-0.33-0.28) |

Abbreviations: df, degrees of freedom; p, p value; CI, confidence interval; comp., comparative studies; pand., pandemic studies; N, sample size.

a in meta-analyses with multiply used comparative studies (general population, healthcare workers), the respective study was only counted once to determine the number of control participants.

b Chi2=test for subgroup differences.

**Table eResults 3d. Subgroup analyses according to relationship of sample sizes between pandemic and prepandemic comparative studies**

| **Subgroup** | **Studies (samples)** | **N (pand.)** | **N (comp.)a** | **Standardized mean difference (95% CI)** | **Test for subgroup differenceb** |
| --- | --- | --- | --- | --- | --- |
| **Relationship of sample sizes** | | | | | |
| **General population** | | | | | |
| **Anxiety** | 23 (26)c | 49746 | 132145 | 0.40 (0.15-0.65) | Chi2 = 10.0, df = 3 (p=.02) |
| Ratio ≥2 | 8 (8) | 37128 | 8297 | 0.18 (-0.21-0.57) |  |
| Ratio ≥0.5<2 | 5 (5) | 6723 | 5316 | 1.11 (0.62-1.60) |
| Ratio ≥0.1<0.5 | 2 (2) | 1354 | 4085 | 0.21 (-0.57-0.98) |
| Ratio <0.1 | 10 (11) | 4541 | 51077 | 0.28 (-0.05-0.61) |
| **Depression** | 25 (28) | 60213 | 183747 | 0.67 (0.07-1.27) | Chi2 = 4.8, df = 3 (p=.19) |
| Ratio ≥2 | 7 (7) | 42147 | 8674 | 0.02 (-0.90-0.95) |  |
| Ratio ≥0.5<2 | 4 (4) | 8010 | 9168 | 0.31 (-0.84-1.46) |
| Ratio ≥0.1<0.5 | 5 (6) | 3238 | 22904 | 0.80 (-0.08-1.69) |
| Ratio <0.1 | 9 (11) | 6818 | 75054 | 1.33 (0.41-2.25) |
| **Stress** | 11 (13) | 11600 | 67386 | 0.10 (-0.30-0.50) | Chi2 = 0.4, df = 2 (p=.84) |
| Ratio ≥2 | 4 (4) | 7611 | 2059 | 0.18 (-0.64-1.01) |  |
| Ratio ≥0.5<2 | 2 (3) | 910 | 836 | -0.12 (-1.13-0.90) |
| Ratio <0.1 | 5 (6) | 3079 | 24530 | -0.11 (-0.96-0.73) |
| **Sleep-related symptoms** | 4 (4) | 3332 | 7635 | 0.74 (-1.47-2.96) | Chi2 = 1335.6, df = 3 (p<.001) |
| Ratio ≥2 | 1 (1) | 2427 | 1005 | 0.15 (0.08-0.23) |  |
| Ratio ≥0.5<2 | 1 (1) | 673 | 1013 | -0.98 (-1.08- -0.87) |
| Ratio ≥0.1<0.5 | 1 (1) | 109 | 1013 | -0.68 (-0.88- -0.48) |
| Ratio <0.1 | 1 (1) | 123 | 4604 | 2.93 (2.74-3.12) |
| **Healthcare workers** | | | | | |
| **Anxiety** | 13 (14) | 5508 | 22204 | -0.08 (-0.66-0.49) | Chi2 = 4.2, df = 2 (p=.12) |
| Ratio ≥0.5<2 | 5 (5) | 4068 | 3975 | -0.45 (-1.09-0.19) |  |
| Ratio ≥0.1<0.5 | 5 (5) | 833 | 1591 | 0.03 (-0.68-0.75) |
| Ratio <0.1 | 3 (4) | 607 | 6159 | 0.50 (-0.26-1.26) |
| **Depression** | 7 (8) | 2226 | 4605 | -0.16 (-0.59-0.26) | Chi2 = 3.8, df = 2 (p=.15) |
| Ratio ≥0.5<2 | 5 (5) | 1959 | 1335 | 0 (-0.47-0.47) |  |
| Ratio ≥0.1<0.5 | 1 (2) | 120 | 242 | -0.08 (-0.84-0.69) |
| Ratio <0.1 | 1 (1) | 147 | 1608 | -1.14 (-2.19- -0.08) |
| **Stress** | 3 (3) | 1570 | 2454 | 0.49 (-0.60-1.57) | Chi2 = 13.2, df = 1 (p<.001) |
| Ratio ≥0.5<2 | 2 (2) | 1376 | 936 | -0.05 (-0.40-0.30) |  |
| Ratio ≥0.1<0.5 | 1 (1) | 194 | 582 | 1.06 (0.57-1.54) |
| **Sleep-related symptoms** | 4 (5) | 554 | 20024 | 0.83 (-0.14-1.81) | Chi2 = 0.32, df = 1 (p=.57) |
| Ratio ≥0.5<2 | 1 (1) | 131 | 220 | 0.14 (-2.43-2.71) |  |
| Ratio <0.1 | 3 (4) | 423 | 4951 | 1.01 (-0.55-2.57) |
| **Patients** | | | | | |
| **Anxiety** | 6 (6) | 1845 | 12458 | 0.31 (-0.07, 0.69) | Chi2 = 17.7, df = 3 (p<.001) |
| Ratio ≥2 | 1 (1) | 205 | 80 | -0.36 (-0.82-0.11) |  |
| Ratio ≥0.5<2 | 1 (1) | 51 | 99 | 1.06 (0.53-1.59) |
| Ratio ≥0.1<0.5 | 2 (2) | 1360 | 3005 | 0.13 (-0.18-0.43) |
| Ratio <0.1 | 2 (2) | 229 | 9274 | 0.46 (0.16-0.77) |
| **Depression** | 7 (7) | 2138 | 24444 | 0.48 (-0.08-1.04) | Chi2 = 3.0, df = 3 (p=.39) |
| Ratio ≥2 | 1 (1) | 260 | 99 | 0.41 (-1.08-1.90) |  |
| Ratio ≥0.5<2 | 2 (2) | 160 | 267 | -0.25 (-1.31-0.81) |
| Ratio ≥0.1<0.5 | 2 (2) | 1489 | 4039 | 0.67 (-0.38-1.71) |
| Ratio <0.1 | 2 (2) | 229 | 20039 | 1.03 (-0.02-2.08) |
| **Stress** | 4 (4) | 435 | 10061 | -0.10 (-0.81-0.61) | Chi2 = 64.2, df = 2 (p<.001) |
| Ratio ≥0.5<2 | 2 (2) | 256 | 388 | 0.37 (0.13-0.62) |  |
| Ratio ≥0.1<0.5 | 1 (1) | 76 | 166 | 0.13 (-0.22-0.48) |
| Ratio <0.1 | 1 (1) | 103 | 9507 | -1.15 (-1.44- -0.85) |
| **Sleep-related symptoms** | 2 (2) | 127 | 298 | -0.61 (-1.75-0.54) | Chi2 = 25.7, df = 1 (p<.0001) |
| Ratio ≥0.5<2 | 1 (1) | 76 | 91 | -1.19 (-1.52- -0.86) |  |
| Ratio ≥0.1<0.5 | 1 (1) | 51 | 207 | -0.03 (-0.33-0.28) |

Abbreviations: df, degrees of freedom; p, p value; CI, confidence interval; comp., comparative studies; pand., pandemic studies; N, sample size.

a in meta-analyses with multiply used comparative studies (general population, healthcare workers), the respective study was only counted once to determine the number of control participants.

b Chi2=test for subgroup differences.

c Sum of studies does not add up to total number of studies as two samples of the same study were part of different subgroups.

**eTable 14. Risk factors in the general population, healthcare workers, and patients across all categories of mental burdena**

|  | **Demographic factors** | **Profession and work-related factors** | **Pandemic-specific factors** | **Information/communication related factors** | **Psychosocial factors** | **Health related factors** |
| --- | --- | --- | --- | --- | --- | --- |
| General population | * being female (González-Sanguinob, Changb, c, Mazzab, Odriozola-Gonzálezd, Özdinb, Sakibe, Tsipropouloue, Tullb, Zhou SJb, Reznike, Voitsidise) 49,52,63,66,69,72,74,79,82,83,93; * being male (Wang Cb)85; * being a student (González-Sanguinob, Reznike, Leie, Liu Se, Olagokee)52,57,60,72,146; * being mother (Lauri Korajlija e)155; * grandparents alive (Lauri Korajlijae)155; * lower education (Tsipropouloue, Tiane)81,82; * higher education (Sutinb, Zhang SXb)121,147; * younger age (Leic, e , Gao Jb, Wang He, Wang Cb) 50,57,85,86,; * older age (Lauri Korajlijaf, Tsipropoulouc, e, Tiane, Yang Hb) 81,82,88,155; * financial damage (Leie)57; * arts, sciences, health sciences, social sciences, research area: arts, health sciences (vs. engineering; Odriozola-Gonzálezd)66; * unemployment or changes in employment (Odriozola-Gonzálezd, Olagokee)66,146; * no children (Mazzab)63; * no current relationship (Olagokee, Tan Wb, c, Leie, Tiane)57,80,81,146; * being married (Yang Hb)88; * living with someone (González-Sanguinob)52; * large household size (Wang Cb)85; * financial damage (Leie)57; * health profession (Odriozola-Gonzálezd, Wu We, Tiane)66,81,141; * agricultural worker, enterprise staff, other professions (Tiane)81; * rural area (Changb, c, Leie)49,57; * location: suburb (Changb, c)49; * urban area (Özdinb, c, Voitsidise)69,83; * history of epidemics in the community (Wang He)86 | * non-medical students(Changb, c)49; * presential job (González-Sanguinob, Mazzab)52,63; * perceived risk of unemployment (Olagokee)146; * missing support by colleagues / workplace (Tan Wb)80; * perceived health risk at workplace (Tan Wb, c)80 | * economic worries about COVID-19 (Caof)48; * worries/fears and anxiety about relatives or oneself (Caob, Germani†, McKayf, Leie, Odriozola-Gonzálezd, Sakibb, Saticib, Tsipropoulouf, Tan Wb, Voitsidisb, Yuan Re)48,51,57,64,66,74,75,80,82,83,89; * personal/social worries about COVID-19 (Germanif, Caof, Wang Cb, Zhou SJb, Wang H b)48,51,85,86,93; * relatives/ loved-ones with COVID-19 (González-Sanguinob, Mazzab)52,63; * COVID-19 related behaviour changes (Harperf)53; * children hospitalized during pandemic (Yuan Re)89; * current local outbreak severity (Lei e, Wu We, Yang Hb, Zhou SJb,)57,88,93,116; * stay-at-home order (Tullb)79; * COVID-19 impact on daily life (Tullb)79; * own or close person’s quarantine (Leie, Wang Cb, Mae)57,62,85; * close contact to COVID-19 (Nib)140; * working in designated COVID-19 hospital (Wu Ke)116; * intention to self-isolate (Bacone)44; * feeling that too much unnecessary worry has been made about COVID-19 epidemic (Wang Cb)85; * history of visiting Wuhan (Wang Hb)86 | * negative information concerning epidemic (Changb, c)49; * social media exposure (Gao Jb, Nib)50,140; * knowledge about COVID-19f(Germani)51; * primary source of health information on COVID-19 radio (Wang Cb)85; * time spent on COVID-19 news (via social media) (Hao Xb, Nib,)133,140; * news exposure (Olagokeb)146; * concerns with media reports related to epidemic (Wang He)86; * unawareness of potential contact with COVID-19 (Voitsidise)83 | * history of stressful situations (Mazzab, Li Yb, González-Sanguinob, Sutinb)52,58,63,147; * reward reactivity (Baconf)44; * impulsivity (Baconf)44; * behavioural inhibition (Baconf)44; * fight-flight-freeze-reaction (Baconf)44; * level of concern about personal safety (Baconf)44; * emotional and behavioural difficulties (Germanif, Wang Hb)51,86; * stress(Germanif)51; * loneliness (González-Sanguinob, Voitsidisb)52,83; * care/harm as a moral foundation(Harperf)53; * purity/sanctity as a moral foundation (Harperf)53; * negative affect (Mazzab)63; * detachment (Mazzab)63; * disgust propensity and sensitivity (McKayf)64; * negative appraisal of effect of confinement (Odriozola-Gonzálezd)66; * reward reactivity (Baconf)44; * cyclothymic temperament (Mocciab)65; * depressive temperament (Mocciab)65; * irritable temperament (Mocciae)65; * anxious temperament (Mocciab)65; * need for approval (Mocciab)65; * preoccupation with relationships (Mocciae)65; * higher school grades (Zhou SJb)93; * being religious (Reznike)72; * intolerance of uncertainty (Voitsidisb)83 | * negative attitudes to illness (Baconf)44; * reduced perceived health(Gao Jb, Hao Fb, c , Leie, Wang Cb, Tan Wb,)50,57,80,85,132,; * mental disease /or symptoms (González-Sanguinob, Özdinb, Baconf, McKayf, Sakibf, Soracif, Tsipropoulouf, Wu Kf, Voitsidis, Li Yb, Germani†, Hao Fb, Iasevolie)44,51,52,58,64,69,74,78,82,83,116,132,135; * physical symptoms (González-Sanguinob, Odriozola-Gonzálezd, Tan Wb, Wang Cb, Hao Fb)52,66,80,85,132; * vulnerability to COVID-19 (Wang Cb, Olagokeb, Harperf)53,85,146; * previous (chronic) medical disease (Lauri Korajlijae, Özdin\*, Mazzab, McKayf, González-Sanguinob, Wang Cb, Iasevolie)52,55,63,64,69,85,135; * COVID-19 diagnosis (González-Sanguinob)52; * previous/current treatment (Odriozola-Gonzálezd)66; * psychoactive medication (Odriozola-Gonzálezd)66; * physical concerns (McKayf)64; * epidemic-related dreams (Wang Hb)86; * (history of) alcohol abuse (Changb, c)86; * internet addiction (Li Y b)58 |
| Healthcare workers | * being female (Rossib, Yinb, Zhang SXb, Badahdahe)98,110,119,121; * urban/suburban practice setting (Khusidb, c)107; * being an only child (Wang Sb)115; * low education (Zhang Cb)120; * younger age (Sahug)111 | * being a nurse/ nonmedical healthcare worker (Tan Be, Zhu Jg, Rossib)110,114,122; * concern about professional future (Consolof, Sahug)103,111; * current redeployment (Khusidb, c)107; * professional experience (Pue, Abdessaterb)94,109; * (subjective) workload (Khusidb, c, Shachamb)107,112; * being a general practitioner (Rossib)110; * impact on work-life balance (Sahug)111 | * concern about infection with COVID-19 (Consolof, Pue, Zhang Cb, Zhang SXb)103,109,120121; * concerns about patients (Consolof)103; * current local COVID-19 severity (Khusidb,c , Xu Je, Abdessaterb, Wu We)94,107,118,141; * concerns about loved ones (Khusidb, c)107; * colleagues affected by SARS-CoV-2 (Rossib)110; * exposure to COVID-19 patients (Abdessaterb ,Rossib, Wang Sb, Yin b, f)94,110,115,119,; * working in high risk departments (Pue, Zhang Cb)109,120 | * insatisfaction with perceived psychological support from media (Zhang Cb)120 | * concern about autonomy (Khusidb, c)107; * doubts about effective disease control (Zhang Cb)120 | * physical symptoms (Chewb)102; * personal history of infection with COVID-19 (Khusidb, c)107; * mental disease /or symptoms (Ameriof, Wang Sb, Wu Kf, Yine, f, Zhu Jb, c)97,115,116,119,122; * previous medical disease (Abdessaterb)94 |
| Patients | * women (Li Xb)126; * unemployment (Wu Yb)127; * part-time occupation (Wu Yb)127; * little living area (Wu Yb)127; * having siblings (Wu Yb)127 |  | * effect of COVID-19 on psychology (Durankusb)125; * contact with COVID-19 (Li Xb)126 |  | * social isolation (Durankusb)125; * perceived poor family support (Wu Yb)127; * <7h exercise per week (Wu Yb)127 | * mental disease /or symptoms (Durankusb)125; * (suspected) COVID-19 (Guoe, Zhang Je, Liu Xe)42,131,143,; * inflammatory markers in blood (Guof, Liu Xe)131,174; * placenta previa (Wu Yb)127 |

a Across all categories of mental burden: anxiety, depression, stress, sleep-related symptoms, psychological distress, posttraumatic stress disorder; additional results regarding the frequency of reported risk factors are available on request by the corresponding author.

b regression analysis.

c ambiguous data.

d General Linear Model.

e comparison of means-

f correlation analysis.

g comparison of frequencies.

**eTable 15. Protective factors in the general population, healthcare workers, and patients across all categories of mental burdena**

|  | **Demographic factors** | **Profession and work-related factors** | **Pandemic-specific factors** | **Information/communication-related factors** | **Psychosocial factors** | **Health related factors** |
| --- | --- | --- | --- | --- | --- | --- |
| General population | * good economic situation (Caob, González-Sanguinob, Tullb, Nib, Olagokec, Yang Hb)48,52,79,88,140,146; * living in a big city (Caob)48; * rural areas (Gao Jb)50; * living with parents (Caob)48; * older age (Changb, d, González-Sanguinob, Odriozola-Gonzáleze, Sutinb, Tullb, Nib, Mazzab, Mocciac, Zhang SX 2020ab)49,52,63,65,66,79,90,140,147; * being male (Jahanshahib, Mocciab, Wang Cb,)54,65,85; * being single (Gao Jb)50; * not being single (Odriozola-Gonzáleze, Tan Wb, Wang Hb, Yang Hb)66,80,86,88; * residence outside Hubei (Gao Jb)50; * residence in Hubei (Yang Hb)88; * having (several) children (González-Sanguinob, Jahanshahib)52,54; * being retired(González-Sanguinob)52; * not being a student (Odriozola-Gonzáleze)66; * student (vs. unemployed; Jahanshahib)54; * higher education (Gao Jb, Odriozola-Gonzáleze, Olagokec, González-Sanguinob)50,52,66,146; * not being unemployed (González-Sanguinob, Jahanshahib)52,54; * distance to epicentre squared (u-shaped, Zhang SX 2020bb)91; * living with 1 (vs. 2-4, Odriozola-Gonzálezd)66 | * non-presential job (González-Sanguinob, d, Jahanshahib)52,54; * work not paused (Zhang SX 2020ab)90 | * prevention and control measures (Zhou SJb)93; * hygiene behaviour (Tan Wb, Wang Cb)80,85 | * satisfaction with/level of information on COVID-19 (González-Sanguinob, Wang Cb, Bäuerlef, Changb, d, Zhou SJb, Yang Hb)45,49,52,85,88,93; * knowledge about not being infected (Jahanshahib)54 | * social support (Caof, González-Sanguinob, Nib)48,52,140; * horizontal collectivism (Germanif)51; * sense of belonging (González-Sanguinob)52; * self-compassion (González-Sanguinob)52; * spiritual well-being (González-Sanguinob)52; * positive appraisal for effect of confinement (Odriozola-Gonzálezd)66; * optimism (Wang Cb, Zhou SJb,)85,93; * being a caregiver for a psychiatric patient (Iasevolic)135; * trust in governmental actions to face COVID-19 (Bäuerlef)45; * environment-related factors for quality of life (Harperf)53; * good family functioning (Li Yb)58; * positive coping style (Wang Hb)86; * confidence (Mocciab)65; * discomfort with closeness (Mocciab)65; * physical exercise (Jahanshahib)54; * sense of control (Yang Hb)88 | * physical quality of life (Harperf)53 |
| Healthcare workers | * older age (Rossib, Badahdahf)98,110,; * male gender (Khusidb, d, Zhu Jb, d)107,122; * being married (Badahdahc)98 | * work experience (Cai Wc)101; * perceived access to PPE (Khusidb, d)107; * prior intensive care unit training (Khusidb, d)107; * perceived professional support (Khusidb, d)107; * physicians (Zhang Cb)120 | * availability of test (Khusidb, d)107 |  | * positive coping style (Zhu Jf)145; * social support (Nib)140 | * physical health-related quality of life (Ameriof)97; * mental health-related quality of life (Ameriof)97 |
| Patients | * higher education (Wu Yb)127; * economic well-being (Wu Yb)127 |  |  |  |  | * higher lymphocyte ratio in blood (Liu Xc)42; * concomitant medical diseases (Iasevolic)135; * no change, poor or worse self-reported physical health status (Hao Fb, d)132; * physical symptoms (Hao Fb)132; * no drug-resistant epilepsy (Hao Xb, d)133 |

a Across all categories of mental burden: anxiety, depression, stress, sleep-related symptoms, psychological distress, posttraumatic stress disorder; additional results regarding the frequency of reported protective factors are available on request by the corresponding author.

b regression analysis.

c comparison of means.

d ambiguous data.

e General Linear Model.

f correlation analysis.