

ONLINE SUPPLEMENTARY

Prevalence of mental health problems during the COVID-19 pandemic: A systematic review and meta-analysis

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Supplementary Table S1 Search strategy

For PubMed
((COVID-19 [Title/Abstract] OR “COVID 19”[Title/Abstract] OR COVID19[Title/Abstract] OR “new coronavirus”[Title/Abstract] OR “novel coronavirus”[Title/Abstract] OR “Severe Acute Respiratory Syndrome Coronavirus 2”[Title/Abstract] OR “SARS CoV-2”[Title/Abstract] OR “2019 nCoV”[Title/Abstract] OR 2019nCoV[Title/Abstract] OR “2019 novel coronavirus”[Title/Abstract] OR SARS-CoV[Title/Abstract] OR 2019-nCoV[Title/Abstract] OR SARS-CoV-2[Title/Abstract])) AND (mental[Title/Abstract] OR psychological[Title/Abstract] OR depression[Title/Abstract] OR anxiety[Title/Abstract] OR emotional responses[Title/Abstract] OR psychological distress[Title/Abstract] OR vicarious traumatization[Title/Abstract] OR wellbeing[Title/Abstract])
For Embase
(COVID-19:ab,ti OR “COVID 19”:ab,ti OR COVID19:ab,ti OR “new coronavirus”:ab,ti OR “novel coronavirus”:ab,ti OR “Severe Acute Respiratory Syndrome Coronavirus 2”:ab,ti OR “SARS CoV-2”:ab,ti OR “2019 nCoV”:ab,ti OR 2019nCoV:ab,ti OR “2019 novel coronavirus”:ab,ti OR SARS-CoV:ab,ti OR 2019-nCoV:ab,ti OR SARS-CoV-2:ab,ti) AND (mental:ab,ti OR psychological:ab,ti OR depression:ab,ti OR anxiety:ab,ti OR emotional responses:ab,ti OR psychological distress:ab,ti OR vicarious traumatization:ab,ti OR wellbeing:ab,ti)
For Web of Science
TS= (COVID-19 OR “COVID 19” OR COVID19 OR “new coronavirus” OR “novel coronavirus” OR “Severe Acute Respiratory Syndrome Coronavirus 2” OR “SARS CoV-2” OR “2019 nCoV” OR 2019nCoV OR “2019 novel coronavirus” OR SARS-CoV OR 2019-nCoV OR SARS-CoV-2) AND TS= (mental OR psychological OR depression OR anxiety OR emotional responses OR psychological distress OR vicarious traumatization OR wellbeing)
For Ovid
((COVID-19 or "COVID 19" or COVID19 or "new coronavirus" or "novel coronavirus" or "Severe Acute Respiratory Syndrome Coronavirus 2" or "SARS CoV-2" or "2019 nCoV" or 2019nCoV or "2019 novel coronavirus" or SARS-CoV or 2019-nCoV or SARS-CoV-2) and (mental or psychological or depression or anxiety or emotional responses or psychological distress or vicarious traumatization or wellbeing)).tx.
For SSRN, bioRxiv, and medRxiv the following items were used in combination search
COVID-19, novel coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2, 2019-nCoV, SARS-CoV-2 mental, psychological, depression, anxiety, emotional responses, psychological distress, vicarious traumatization, wellbeing
For CNKI
SU='新冠肺炎'+2019 冠状病毒病+新型冠状病毒+新冠疫情+COVID-19' AND SU='精神'+心理+'焦虑'+抑郁+'睡眠'+失眠+'紧张'+压力+'情绪'
For Wangfang Data
主题:(“新冠肺炎” + “新冠病毒” + “2019 冠状病毒病” + “新型冠状病毒” + “COVID-19” + “新冠疫情”) AND 主题:(“精神” + “心理” + “焦虑” + “抑郁” + “睡眠” + “失眠” + “紧张” + “压力” + “情绪”)

Supplementary Table S2 Characteristics of included studies

Authors	Countries	Recruitment period		Participants	Sample size	Female %	Age	Bachelor and above %	Outcomes	Measurement tools	No. of positive symptom
		Start date	End date								
Cai and Yuan, 2020	China	NA	NA	Physicians and nurses	48	77.1	32.5±2.0	100.0	Anxiety	SCL-90	42
									Depression	SCL-90	2
Cai et al., 2020	China	2020/1/31	2020/2/4	General population	22,302	66.8	22.4±5.3	78.1	Depression	PHQ-9	7,226
Cao et al., 2020a	China	2020/2/1	2020/2/28	COVID-19 patients	148	52.7	50.2±15.6	56.8	Anxiety	SAS	32
									Depression	SDS	74
Cao et al., 2020b	China	NA	NA	Physicians and nurses	37	78.4	32.8±9.6		Depression	PHQ-9	7
Cao et al., 2020c	China	NA	NA	Students	7,143	69.6			Anxiety	GAD-7	1,776
Chang et al., 2020	China	2020/1/31	2020/2/3	Students	3,881	63.1	20(19-22)	100.0	Anxiety	GAD-7	1,032
									Depression	PHQ-9	821
Chen et al., 2020b	China	NA	NA	Physicians and nurses	206	69.4	34.0±8.9		Anxiety	SAS	23
Chen et al., 2020c	China	NA	NA	Physicians and nurses	105	90.5	32.6±6.5		Anxiety	SAS	19
									Depression	SDS	31
Cheng et al., 2020a	China	2020/2/1	2020/2/2	Quarantined persons	56	64.3	32.5±3.8	75.0	Anxiety	Self-made questionnaire	36
									Depression		13
				COVID-19 patients	59	59.3	30.8±5.1	62.7	Anxiety		28
									Depression		16
Cheng et al., 2020b	China	2020/2/1	2020/2/16	COVID-19 patients	76	59.2	35.9±10.6	51.3	Anxiety	SAS	50
Chung and Yeung, 2020	China	2020/2/14	2020/2/23	Physicians and nurses	69				Depression	PHQ-9	34
Dai et al., 2020	China	2020/2/3	2020/2/11	Physicians and nurses	4,357	76.5	35±8.6		Distress	GHQ-12	1,704
				Non-medical staff	595				Distress	GHQ-12	182
Dong et al., 2020	China	2020/2/6	2020/2/6	Quarantined persons	40	57.5	35.3±4.3	97.5	Anxiety	GAD-7	23
									Depression	PHQ-9	16
				General population	38	57.9	33.4±4.7	89.5	Anxiety	GAD-7	12
									Depression	PHQ-9	7
Du et al., 2020	China	2020/2/13	2020/2/17	Non-medical staff	32		36±8.1		Anxiety	BAI	4
									Depression	BDI- II	1
Duan et al., 2020	China	2020/2/14	2020/2/16	Physicians and nurses	530				Anxiety	GAD-7	140
									Depression	PHQ-9	175

				Non-medical staff	112				Anxiety	GAD-7	49			
									Depression	PHQ-9	59			
Gao et al., 2020	China	2020/1/31	2020/2/2	General population	4,827	67.7	31.7±4.7	78.5	Anxiety	GAD-7	1,091			
										Depression	WHO-5	2,331		
				Physicians and nurses	251					Anxiety	GAD-7	53		
										Depression	WHO-5	124		
Guo et al., 2020	China	2020/2/18	2020/2/20	Physicians and nurses	11,118	74.8	35.0±4.6	96.4	Anxiety	SAS	1,940			
									Depression	SDS	3,497			
He et al., 2020	China	2020/1/24	2020/3/2	Physicians and nurses	362	55.2			Insomnia	PSQI	216			
Hu et al., 2020	China	2020/2/19	2020/2/26	General population	992	57.3	36(28-42)	74.6	Anxiety	SAS	95			
Hua et al., 2020	China	2020/2/1	2020/2/4	General population	1,588	66.9	33.7±12.0	69.6	Distress	K6	362			
				Suspected infection	256	62.1	21.2±5.5	74.6	Distress	K6	255			
Huang and Ke, 2020	China	NA	NA	Non-medical staff	50	64.0	38.3±11.9		Anxiety	SAS	11			
Huang and Zhao, 2020	China	2020/2/3	2020/2/17	General population	7,236	54.6	35.3±5.6		Anxiety	GAD-7	2,540			
									Depression	CES-D	1,454			
									Insomnia	PSQI	1,317			
				Physicians and nurses	2,250							Anxiety	GAD-7	802
												Depression	CES-D	446
												Insomnia	PSQI	531
Ji et al., 2020	China	2020/2/14	2020/2/19	General population	1,031	84.8	20.0±1.6	100.0	Anxiety	SAS	140			
									Depression	SDS	247			
									Insomnia	PSQI	79			
Kazmi, 2020	India	2020/4/1	2020/4/1	General population	1,000	62.0	25.4±2.7		Anxiety	DASS-21	430			
									Depression	DASS-21	389			
									Distress	DASS-21	357			
Kong et al., 2020	China	2020/2/23	2020/3/13	COVID-19 patients	144	51.4	50.0±13.7	37.5	Anxiety	HAMA	50			
									Depression	HAMD	41			
Lai et al., 2020	China	2020/1/29	2020/2/3	Physicians and nurses	1,257	76.7	31.9±4.3		Distress	IES	899			
									Anxiety	GAD-7	560			
									Depression	PHQ-9	634			
									Insomnia	ISI	427			
Li et al., 2020a	China	2020/2/6	2020/2/8	Students	396	49.7	12.8±2.6		Anxiety	SCARED	87			

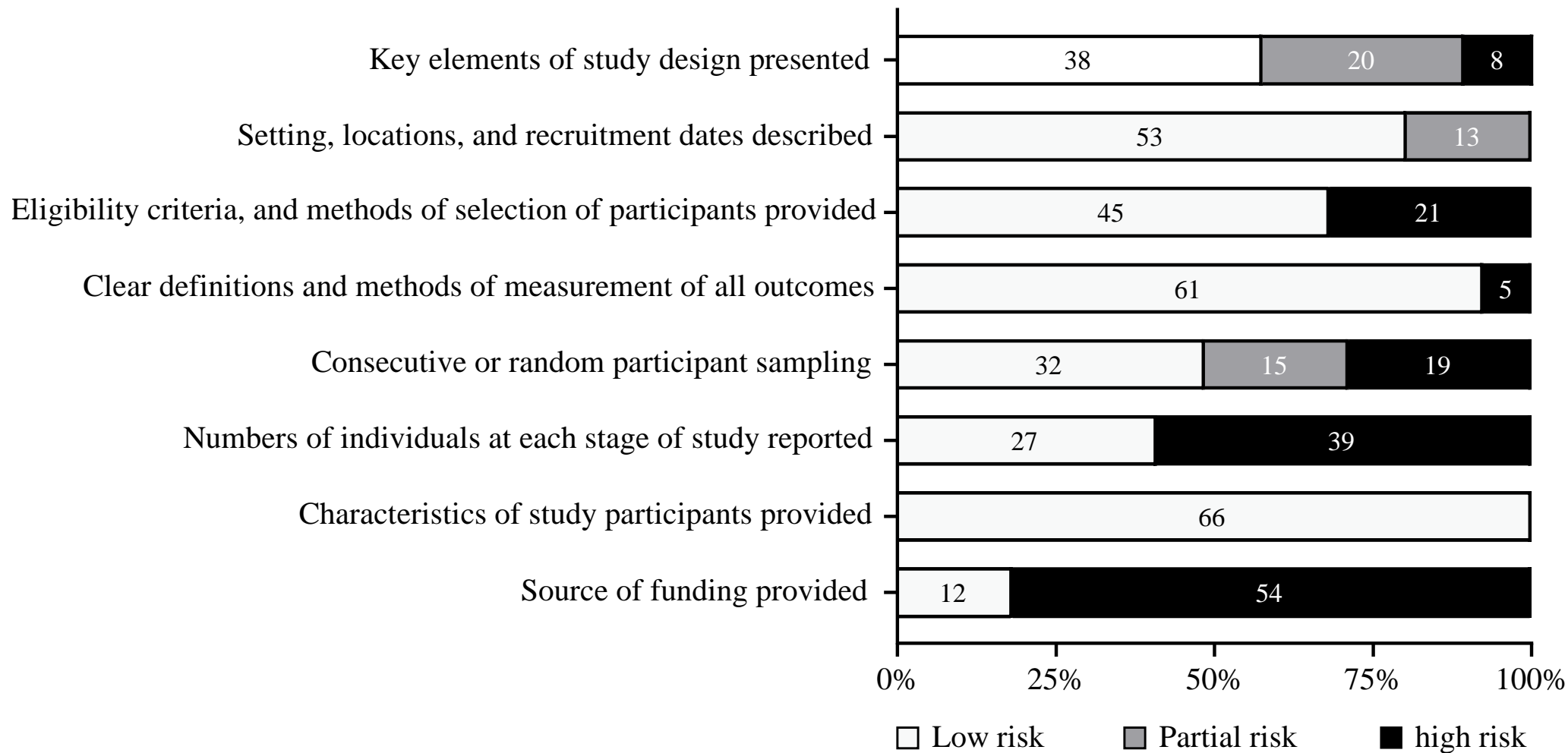
Li et al., 2020c	China	2020/1/31	2020/2/22	Quarantined persons	76	46.1			Anxiety	HAMA	36
									Depression	HAMD	23
Li et al., 2020d	China	2020/1/30	2020/2/1	General population	977	78.6	33.2±8.6	54.8	Anxiety	GAD-7	188
									Depression	PHQ-9	212
Liu et al., 2020a	China	2020/2/10	2020/2/20	Physicians and nurses	512	84.6	33.8±6.6	94.9	Anxiety	SAS	64
Liu et al., 2020b	China	2020/1/30	2020/2/13	General population	13,904				Anxiety	GAD-7	6,196
					14,036				Depression	PHQ-9	7,503
				Students	1,646				Anxiety	GAD-7	739
					1,660				Depression	PHQ-9	973
				Physicians and nurses	1,814				Anxiety	GAD-7	787
					1,827				Depression	PHQ-9	940
Liu et al., 2020d	China	2020/2/1	2020/2/5	Students	509	65.4	21.3		Anxiety	SAS	45
									Depression	PHQ-9	70
Liu et al., 2020e	China	2020/2/17	2020/2/24	Physicians and nurses	4,679	82.3	35.9±9.0		Distress	SRQ-20	744
									Anxiety	SAS	749
									Depression	SDS	1,619
Lu et al., 2020b	China	2020/2/25	2020/2/26	Physicians and nurses	2,042	77.9	34.0±5.1	70.8	Anxiety	HAMA	521
									Depression	HAMD	247
				Non-medical staff	257	75.5	35.4±4.9	61.9	Anxiety	HAMA	48
									Depression	HAMD	21
Luo et al., 2020	China	2020/2/10	2020/2/20	Physicians and nurses	171	76.0	29.2±4.0	100.0	Distress	PSS-10	141
									Anxiety	GAD-7	77
									Depression	PHQ-9	68
Lv et al., 2020a	China	NA	NA	Physicians and nurses	7,071	71.2	33.7±4.3		Anxiety	GAD-7	2,519
									Depression	PHQ-9	2,614
									Insomnia	ISI	2,487
Lv et al., 2020b	China	NA	NA	Physicians and nurses	8,028				Anxiety	GAD-7	2,786
Mei et al., 2020	China	2020/1/15	2020/2/10	Physicians and nurses	70	75.7	35.1±8.4	97.1	Insomnia	PSQI	70
Moghanibashi-Mansourieh, 2020	Iran	2020/3/1	2020/3/9	General population	10,754	65.8	30.6±5.3	41.9	Anxiety	DASS-21	5,472
Mu, 2020	China	2020/1/31	2020/2/11	General population	217	53.5	65.5±7.5	10.1	Anxiety	GAD-7	17
									Depression	PHQ-9	12

Naser et al., 2020	Jordan	2020/3/22	2020/3/28	General population	1,798	64.3	34.3±7.7	83.7	Anxiety	GAD-7	1,043
									Depression	PHQ-9	1,199
				Students	1,165	53.8	24.7±2.8		Anxiety	GAD-7	928
								Depression	PHQ-9	1,017	
				Physicians and nurses	1,163	56.1	30.8±6.2		Anxiety	GAD-7	823
								Depression	PHQ-9	907	
Qiu et al., 2020	China	2020/1/31	2020/2/10	General population	52,730	64.7			Distress	CPDI	18,155
Shi et al., 2020	China	NA	NA	Noninfectious chronic disease patients	60	53.3	46.3±12.1	55.0	Anxiety	SAS	32
Tan et al., 2020	Singapore	2020/2/19	2020/3/13	Physicians and nurses	296	68.2	30(28-35)		Distress	DASS-21	19
									Anxiety	DASS-21	32
									Depression	DASS-21	24
				Non-medical staff	174	68.4	33(28-39)		Anxiety	DASS-21	36
									Depression	DASS-21	18
									Distress	DASS-21	12
Wang et al., 2020a	China	2020/1/31	2020/2/2	General population	1,210	67.3	26.0±4.6	87.9	Anxiety	DASS-21	440
									Depression	DASS-21	367
									Distress	DASS-21	389
Wang et al., 2020b	China	2020/2/6	2020/2/9	General population	600	55.5	32±12	73.2	Anxiety	SAS	38
									Depression	SDS	103
Wang et al., 2020c	China	2020/1/31	2020/2/2	General population	4,827	67.7	32.3±10.0	78.5	Anxiety	GAD-7	2,669
									Depression	WHO-5	2,331
Wang et al., 2020d	China	2020/2/6	2020/2/8	Students	396	49.7	12.8±2.6		Depression	DSRS	41
Wu et al., 2020b	China	2020/1/1	2020/2/9	General population	1,285		30(27-32)	79.7	Depression	EPDS	381
Xia et al., 2020	China	2020/2/24	2020/2/29	Noninfectious chronic disease patients (peritoneal)	156	59.6	45.4±7.0	30.1	Distress	IES	67
				Noninfectious chronic disease patients (hemodialysis)	76	46.1	43.9±5.8	35.5	Distress	IES	43

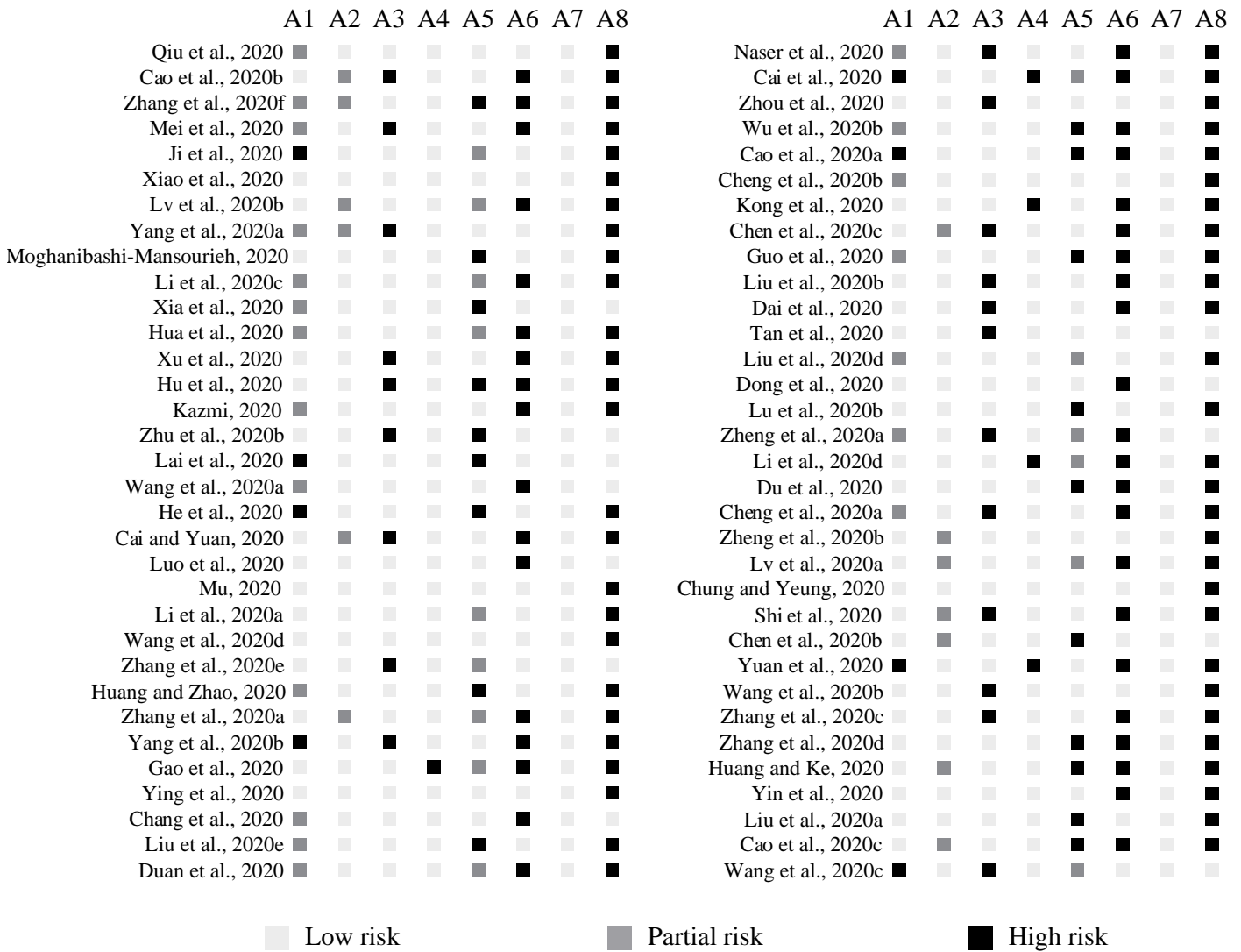
Xiao et al., 2020	China	2020/2/6	2020/2/8	Physicians and nurses	432	67.8	37.2±3.0		Anxiety	SAS	53
									Depression	SDS	96
Xu et al., 2020	China	2020/2/7	2020/2/15	Physicians and nurses	360	80.8	34.8±7.1		Anxiety	SAS	68
									Depression	SDS	138
Yang et al., 2020a	China	NA	NA	General population	176	67.0	34.7±5.0	88.6	Anxiety	SAS	71
Yang et al., 2020b	China	2020/2/1	2020/2/1	Noninfectious chronic disease patients	50	36.0	51.2±4.3		Anxiety	SAS	36
Yin et al., 2020	China	2020/2/4	2020/2/18	General population	8,151	56.9	31.7±13.7	71.3	Anxiety	GAD-7	627
									Depression	PHQ-9	1,241
Ying et al., 2020	China	2020/2/10	2020/2/20	General population	845	47.3	38.0±9.4	87.8	Anxiety	GAD-7	285
									Depression	PHQ-9	248
Yuan et al., 2020	China	2020/1/27	2020/2/24	Quarantined persons	145	55.9	45.2±16.6	37.9	Anxiety	SAS	126
									Depression	SDS	102
Zhang et al., 2020a	China	NA	NA	Noninfectious chronic disease patients	75	38.7	44.2±14.0	56.0	Anxiety	SAS	31
									Depression	SDS	37
Zhang et al., 2020c	China	2020/1/29	2020/2/3	Physicians and nurses	1,563	82.7	31.5±5.1	97.9	Anxiety	GAD-7	864
									Depression	PHQ-9	792
				Non-medical staff	125			Insomnia	ISI	564	
								Insomnia	ISI	45	
Zhang et al., 2020d	China	2020/2/15	2020/2/29	General population	98	65.3	29.6±12.7	41.8	Anxiety	GAD-7	38
									Depression	GHQ-9	49
				Quarantined persons	50	46.0	36.2±10.9	42.0	Anxiety	GAD-7	14
									Depression	GHQ-9	15
				COVID-19 patients	57	49.1	46.9±15.4	40.4	Anxiety	GHQ-9	26
									Depression	GHQ-9	36
Zhang et al., 2020e	China	2020/2/19	2020/3/6	Non-medical staff	1,255	57.6			Anxiety	GAD-7	107
									Depression	PHQ-9	119
									Insomnia	ISI	383
				Physicians and nurses	927	73.1			Anxiety	GAD-7	121
Depression	PHQ-9	113									

									Insomnia	ISI	356
Zhang et al., 2020f	China	NA	NA	Students	1,486	69.5	21.7±2.3	100.0	Anxiety	GAD-7	231
									Depression	PHQ-9	528
Zheng et al., 2020a	China	2020/2/18	2020/2/21	Physicians and nurses	373	74.5	34.7±4.5	85.5	Depression	PHQ-9	117
Zheng et al., 2020b	China	NA	NA	Noninfectious chronic disease patients	86	81.4			Depression	SDS	35
Zhou et al., 2020	China	2020/2/9	2020/2/11	General population	248	57.7	36.1±4.8	75.8	Anxiety	PHQ-4	58
									Depression	PHQ-4	62
				Physicians and nurses	258	67.1	38.6±4.0	97.7	Anxiety	PHQ-4	51
									Depression	PHQ-4	54
Zhu et al., 2020b	China	2020/2/8	2020/2/10	Physicians and nurses	5,062	85.0	32.5±7.5		Anxiety	GAD-7	1,218
									Depression	PHQ-9	681
				Non-medical staff	641				Anxiety	GAD-7	123
									Depression	PHQ-9	78

Note: C, Cross-sectional study; N, Non-randomized controlled study; Q, Qualitative interview; R, Randomized controlled trial; CPDI, COVID-19 Peritraumatic Distress Index; PHQ-9, Patient Health Questionnaire-9; GAD-7, Generalized Anxiety Disorder-7; PSQI, Pittsburgh sleep quality index; SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale; DASS-21, Depression, Anxiety and Stress Scale-21; HAMA, Hamilton Anxiety Scale; HAMD, Hamilton Depression Scale; IES, Impact of Event Scale; K6, the six-item Kessler psychological distress scale; ISI, Insomnia Severity Index; SCL-90, Symptom Checklist-90; PPS-10, 10-term Perceived Stress Scale; SCARED, Screen for Child Anxiety Related Emotional Disorder; DSRS, Depression Self-rating Scale for Children; CES-D, Center for Epidemiology Scale for Depression; WHO-5, WHO-Five Well-Being Index; SRQ-20, Self-rating questionnaire-20; PHQ-4, patient health questionnaire-4; EPDS, Edinburgh Postnatal Depression Scale; GHQ-12, general health questionnaire-12; BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-II; GHQ-9, general health questionnaire-9.

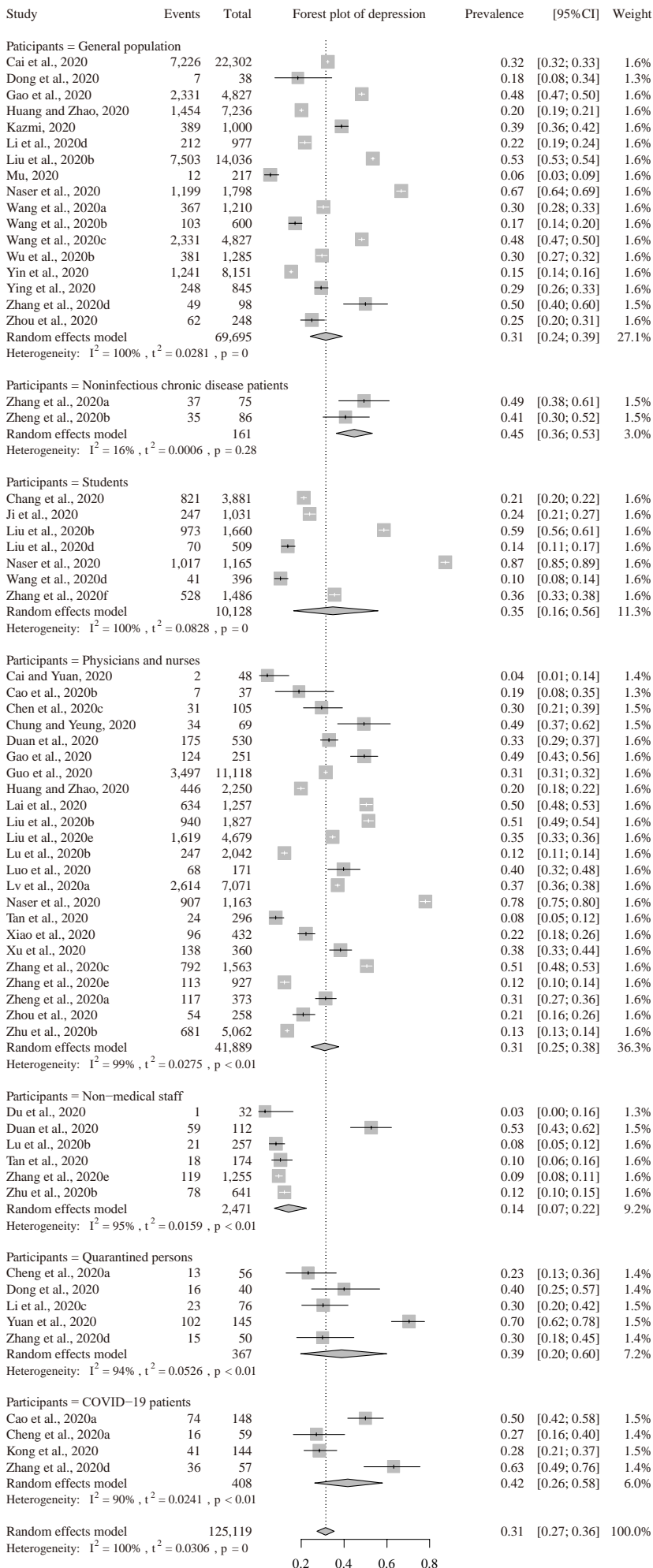


Supplementary Figure S1 Overall risk of bias of included studies (Strengthening the Reporting of Observational Studies in Epidemiology)

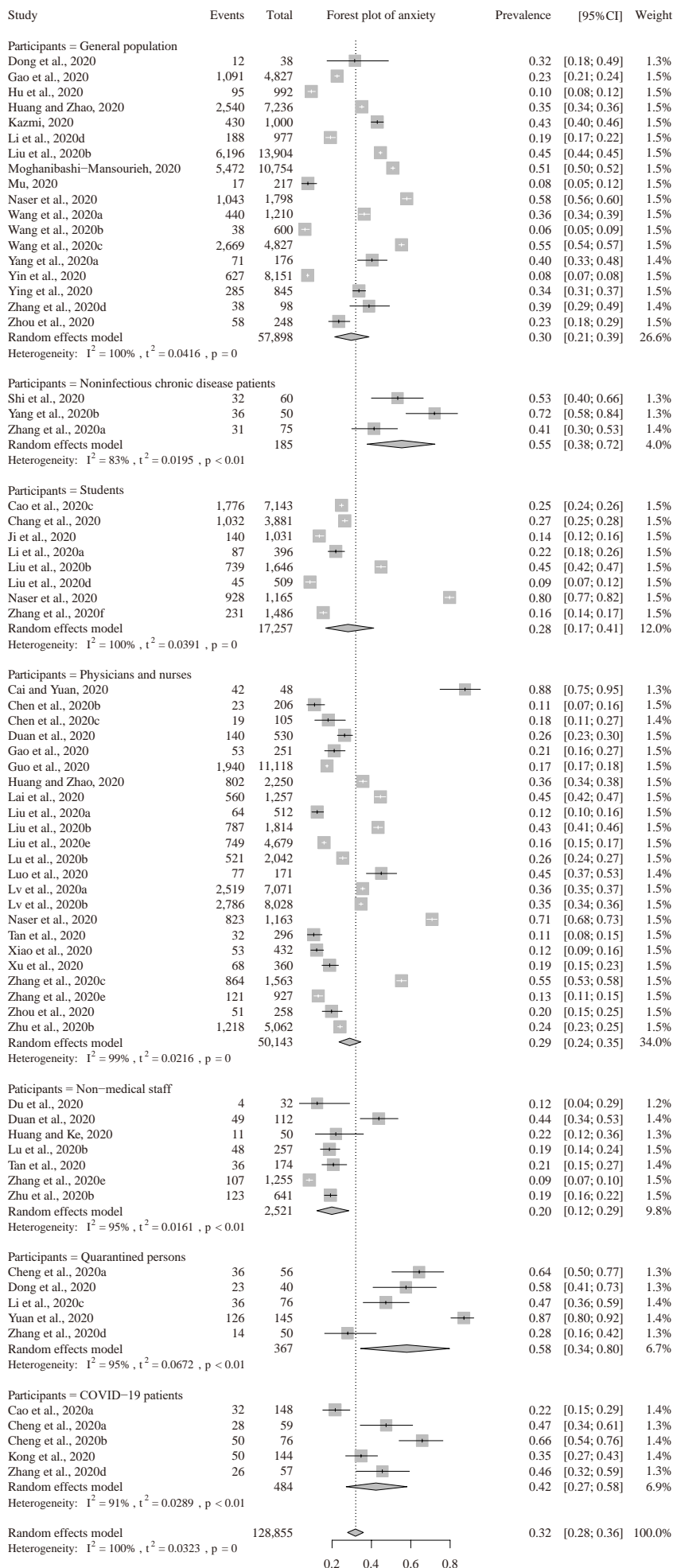


Supplementary Figure S2 Methodological quality assessment of included studies (Strengthening the Reporting of Observational Studies in Epidemiology)

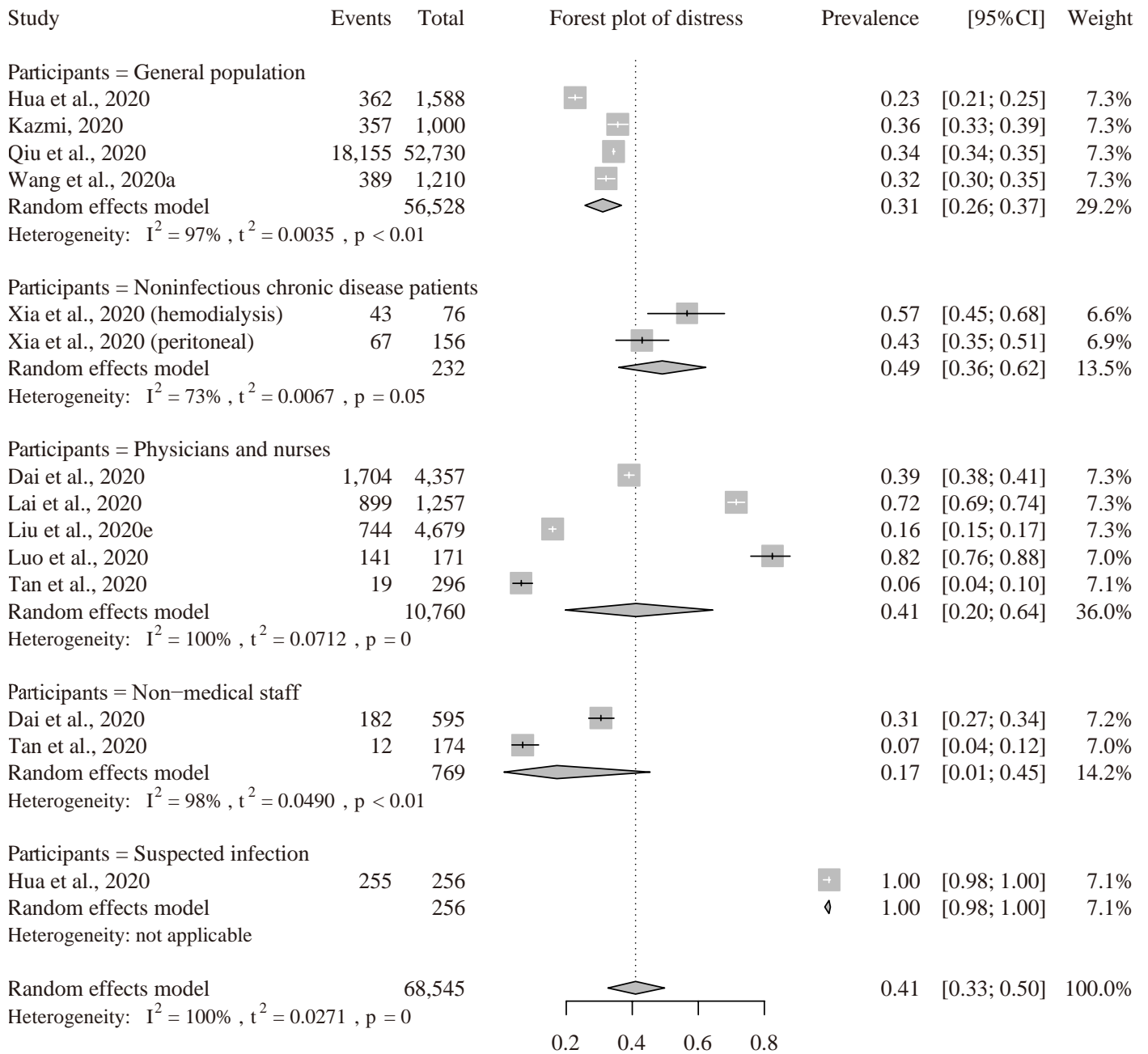
Note: A1: Key elements of study design presented; A2: Setting, locations, and recruitment dates described; A3: Eligibility criteria, and methods of selection of participants provided; A4: Clear definitions and methods of measurement of all outcomes; A5: Consecutive or random participant sampling; A6: Numbers of individuals at each stage of study reported; A7: Characteristics of study participants provided; A8: Source of funding provided.



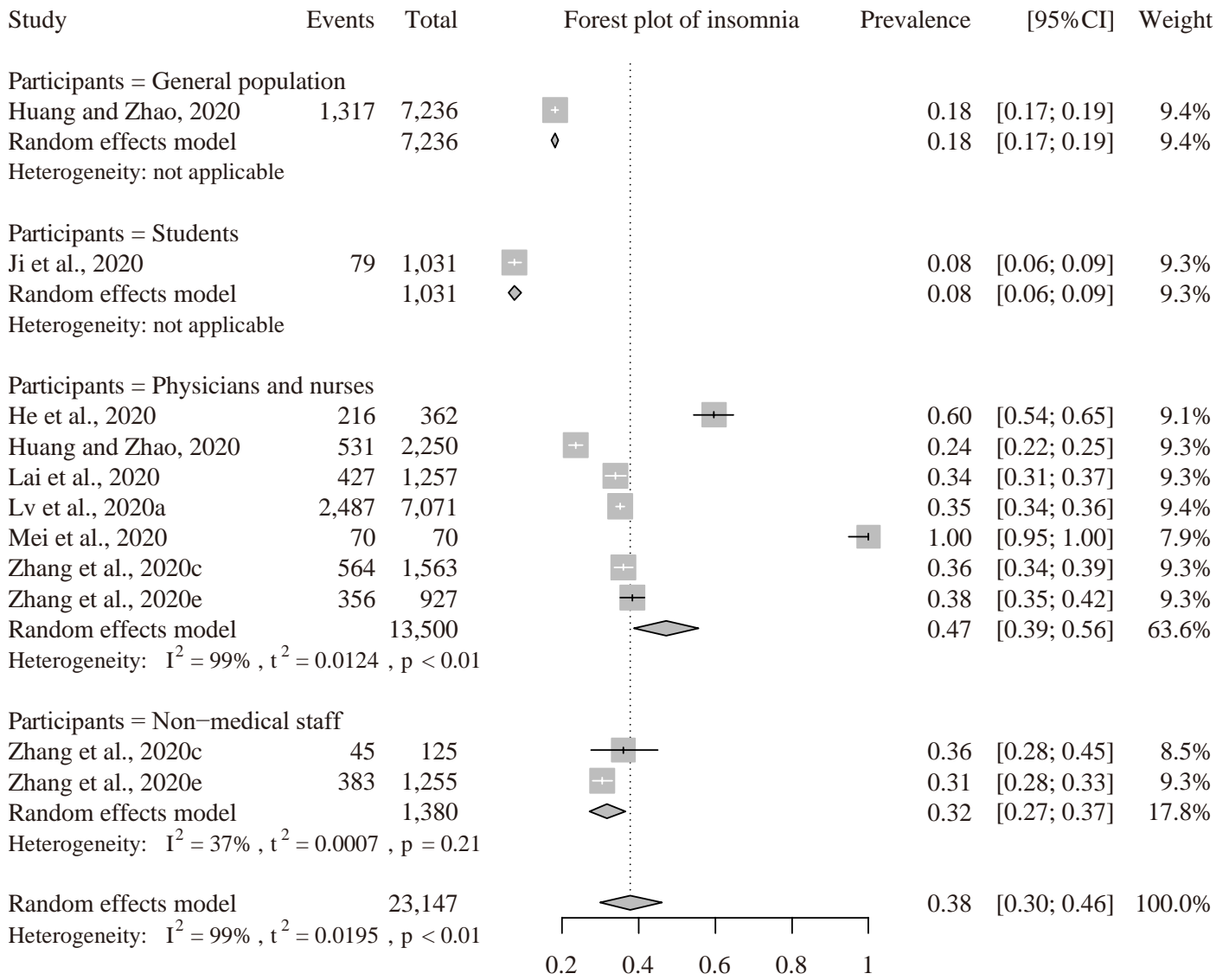
Supplementary Figure S3 Forest plot of pooled prevalence of depression



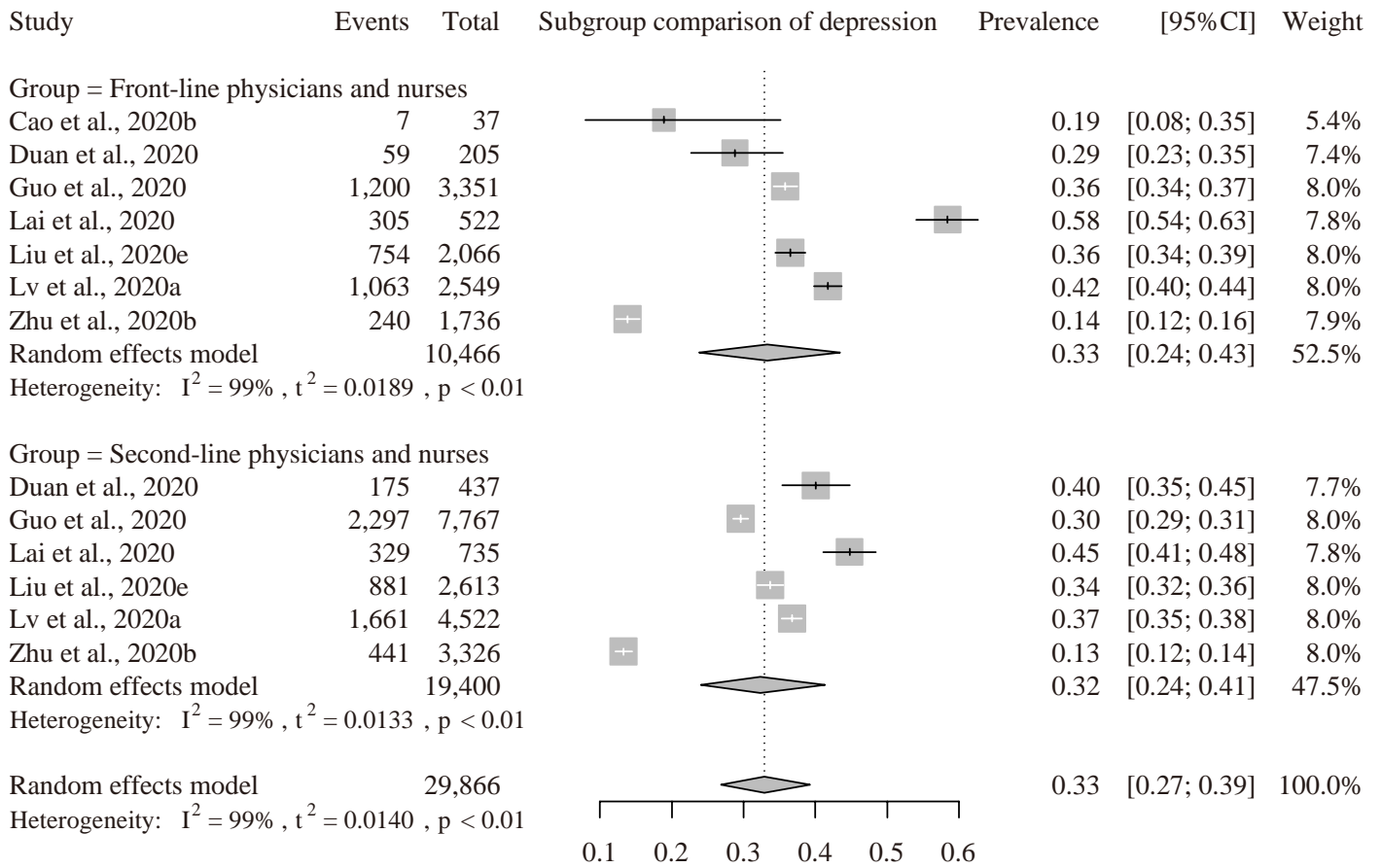
Supplementary Figure S4 Forest plot of pooled prevalence of anxiety



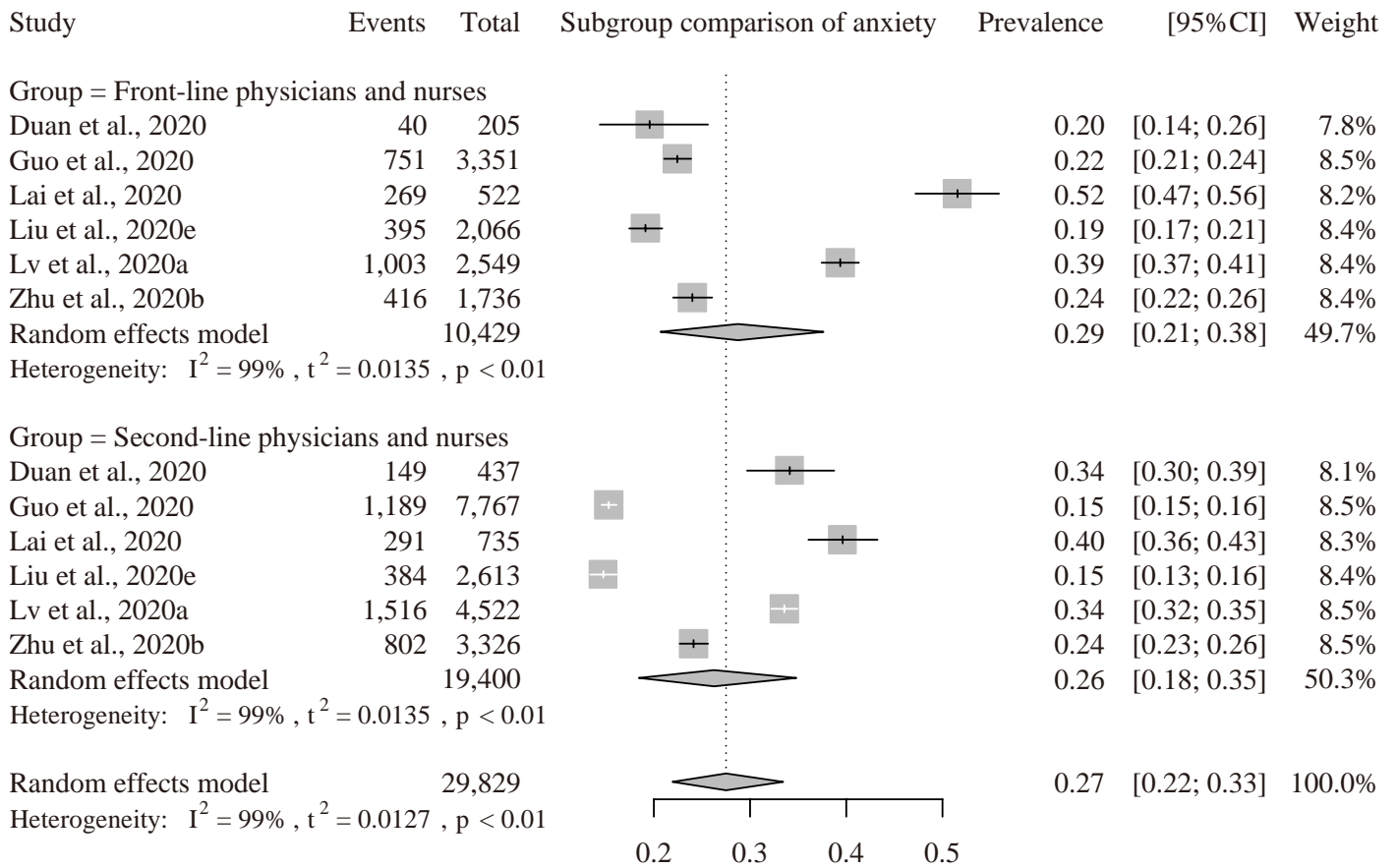
Supplementary Figure S5 Forest plot of pooled prevalence of distress



Supplementary Figure S6 Forest plot of pooled prevalence of insomnia



Supplementary Figure S7 Subgroup comparison of depression between front- and second-line medical personnel



Supplementary Figure S8 Subgroup comparison of anxiety between front- and second-line medical personnel

Supplementary Table S3 Meta-regression of factors affecting heterogeneity for depression

	Est.	S.E.	95%CI of Est.	P value
Participants				
General population (ref)				
Noninfectious chronic disease patients	0.1532	0.1776	-0.195–0.5013	0.3886
Students	0.0923	0.1135	-0.1302–0.3148	0.4163
Physicians and Nurses	0.0512	0.0945	-0.134–0.2364	0.5877
Non-medical staff	-0.1829	0.1419	-0.4611–0.0953	0.1976
Quarantined persons	0.1826	0.1439	-0.0995–0.4648	0.2045
COVID-19 patients	0.2050	0.1594	-0.1074–0.5174	0.1984
Published language				
Chinese (ref)				
English	0.0686	0.0743	-0.0769–0.2142	0.3555
Gender				
Male (ref)				
Female	-0.0026	0.0036	-0.0098–0.0045	0.4708
Measurement tools				
BDI-II (ref)				
CES-D	0.2514	0.2346	-0.2084–0.7112	0.2839
DASS-21	0.2601	0.2174	-0.1661–0.6863	0.2316
DSRS	0.1174	0.2672	-0.4063–0.6411	0.6605
EPDS	0.3641	0.2664	-0.158–0.8862	0.1716
GHQ-9	0.5514	0.2259	0.1085–0.9942	0.0147
HAMD	0.2341	0.2179	-0.193–0.6612	0.2827
PHQ-4	0.2888	0.2356	-0.1729–0.7505	0.2202
PHQ-9	0.4191	0.2009	0.0254–0.8128	0.0369
SCL-90	0.0149	0.2755	-0.5252–0.5549	0.9569
SDS	0.4355	0.2054	0.0328–0.8382	0.0340
WHO-5	0.5601	0.2233	0.1224–0.9977	0.0121

Supplementary Table S4 Meta-regression of factors affecting heterogeneity for anxiety

	Est.	S.E.	95%CI of Est.	P value
Participants				
General population (ref)				
Noninfectious chronic disease patients	0.3898	0.163	0.0703–0.7093	0.0168
Students	-0.0107	0.0954	-0.1977–0.1763	0.9105
Physicians and Nurses	0.0019	0.0848	-0.1643–0.1681	0.9821
Non-medical staff	-0.1142	0.1137	-0.3371–0.1088	0.3155
Quarantined persons	0.3145	0.1275	0.0646–0.5645	0.0137
COVID-19 patients	0.2211	0.1416	-0.0565–0.4986	0.1185
Published language				
Chinese (ref)				
English	-0.0219	0.0659	-0.1511–0.1072	0.7391
Gender				
Male (ref)				
Female	0.0003	0.0037	-0.0069–0.0075	0.9324
Measurement tools				
BAI (ref)				
DASS-21	0.0256	0.251	-0.4664–0.5175	0.9188
GAD-7	0.0027	0.2351	-0.458–0.4635	0.9907
GHQ-9	-0.0653	0.3329	-0.7178–0.5872	0.8444
HAMA	-0.1085	0.245	-0.5886–0.3717	0.6579
PHQ-4	-0.1075	0.2773	-0.651–0.4361	0.6984
SAS	-0.1563	0.2337	-0.6144–0.3017	0.5036
SCARED	-0.1092	0.3301	-0.7563–0.5379	0.7408
SCL-90	0.5792	0.3139	-0.036–1.1944	0.0650

Supplementary Table S5 Meta-regression of factors affecting heterogeneity for distress

	Est.	S.E.	95%CI of Est.	P value
Participants				
General population (ref)				
Noninfectious chronic disease patients	-0.7584	0.0747	-0.9049--0.6119	<0.0001
Physicians and Nurses	-0.3339	0.0327	-0.3979--0.2699	<0.0001
Non-medical staff	-0.3208	0.0409	-0.4009--0.2407	<0.0001
Suspected infection	0.9581	0.0369	0.8857--1.0305	<0.0001
Published language				
Chinese (ref)				
English	-0.9355	0.0554	-1.044--0.827	<0.0001
Gender				
Male (ref)				
Female	-0.0082	0.0032	-0.0144--0.002	0.0099
Measurement tools				
CPDI (ref)				
DASS-21	-0.0056	0.0439	-0.0916--0.0805	0.8988
GHQ-12	0.367	0.0616	0.2463--0.4876	<0.0001
IES	0.7158	0.0695	0.5796--0.8519	<0.0001
K6	-0.1291	0.0507	-0.2285--0.0297	0.0109
PSS-10	0.8442	0.078	0.6914--0.9971	<0.0001
SRQ-20	0.1184	0.0684	-0.0157--0.2524	0.0836

Supplementary Table S6 Meta-regression of factors affecting heterogeneity for insomnia

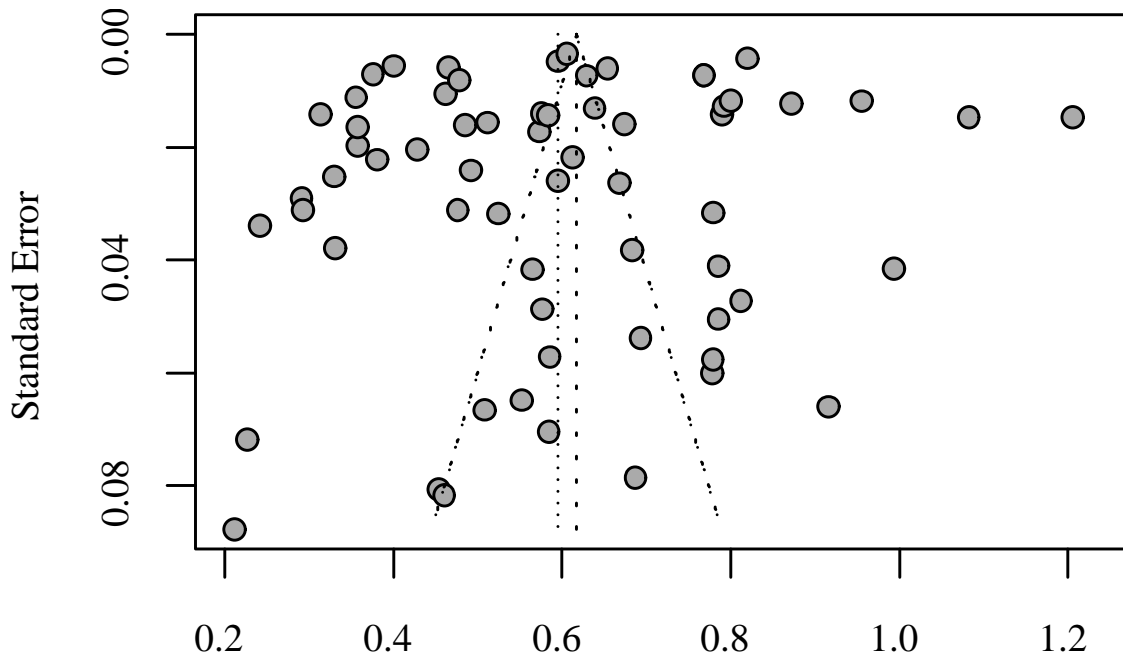
	Est.	S.E.	95%CI of Est.	P value
Participants				
General population (ref)				
Students	-1.5318	0.2567	-2.0349--1.0287	<0.0001
Physicians and Nurses	-0.2364	0.1407	-0.5122--0.0393	0.0928
Non-medical staff	0.083	0.1129	-0.1383--0.3042	0.4623
Published language				
Chinese (ref)				
English	-0.7515	0.0977	-0.943--0.56	<0.0001
Gender				
Male (ref)				
Female	0.0206	0.0051	0.0105--0.0306	<0.0001
Measurement tools				
ISI (ref)				
PSQI	0.0585	0.0735	-0.0855--0.7296	0.4258

Supplementary Table S7 Sensitivity analyses of random effects pooled prevalence of depression and anxiety

	depression				anxiety			
	No. of studies	Pooled prevalence (95%CI)	I ²	Q statistic (p value)	No. of studies	Pooled prevalence (95%CI)	I ²	Q statistic (p value)
Key elements of study design presented								
Low risk	6	45.2 (35.7–54.9)	99,3%	11.14 (<0.01)	6	48.4 (29.7–67.3)	99.40%	10.85 (<0.01)
Partial risk	19	36.9 (28.9–45.3)	99,6%		19	39.8 (31.4–48.5)	99.60%	
High risk	39	26.6 (20.8–32.8)	99,6%		44	26.5 (22.0–31.3)	99.50%	
Setting, locations, and recruitment dates described								
Low risk	57	31.5 (27.1–36.1)	99.60%	0.04 (0.84)	58	31.6 (26.9–36.5)	99.60%	0.04 (0.85)
Partial risk	7	32.1 (26.9–37.5)	87.80%		11	32.3 (26.8–38.1)	98.40%	
Eligibility criteria, and methods of selection of participants provided								
Low risk	40	30.8 (27.4–34.3)	99.00%	0.04 (0.85)	26	36.9 (29.3–44.9)	99.50%	3.18 (0.07)
Partial risk	24	31.8 (22.9–41.4)	99.70%		43	28.9 (24.6–33.4)	99.50%	
Clear definitions and methods of measurement of all outcomes								
Low risk	58	30.3 (25.7–35.1)	99.60%	3.90 (0.05)	64	31.5 (27.4–35.9)	99.60%	0.37 (0.54)
Partial risk	6	41.1 (31.6–50.9)	99.20%		5	36.3 (22.4–51.5)	98.70%	
Consecutive or random participant sampling								
Low risk	33	33.1 (25.4–41.3)	99.60%	1.74 (0.42)	15	26.1 (19.2–33.5)	99.50%	10.34 (0.01)
Partial risk	15	31.5 (25.8–37.6)	99.30%		21	24.3 (18.8–30.3)	99.60%	
High risk	16	27.2 (21.8–33.0)	99.20%		33	40.1 (32.0–48.5)	99.60%	
Numbers of individuals at each stage of study reported								
Low risk	24	20.1 (15.2–25.6)	99.30%	24.19 (<0.01)	42	38.4 (32.9–44.1)	99.60%	13.87 (<0.01)
Partial risk	40	39.1 (33.9–44.3)	99.50%		27	22.8 (17.2–28.9)	99.50%	
Source of funding provided								
Low risk	14	23.1 (15.0–32.4)	99.50%	4.11 (0.04)	14	27.2 (18.8–36.4)	99.40%	1.31 (0.25)
Partial risk	50	33.8 (29.3–38.5)	99.60%		55	33.1 (28.6–37.9)	99.60%	

Supplementary Table S8 Sensitivity analysis of random effects pooled prevalence of distress and insomnia

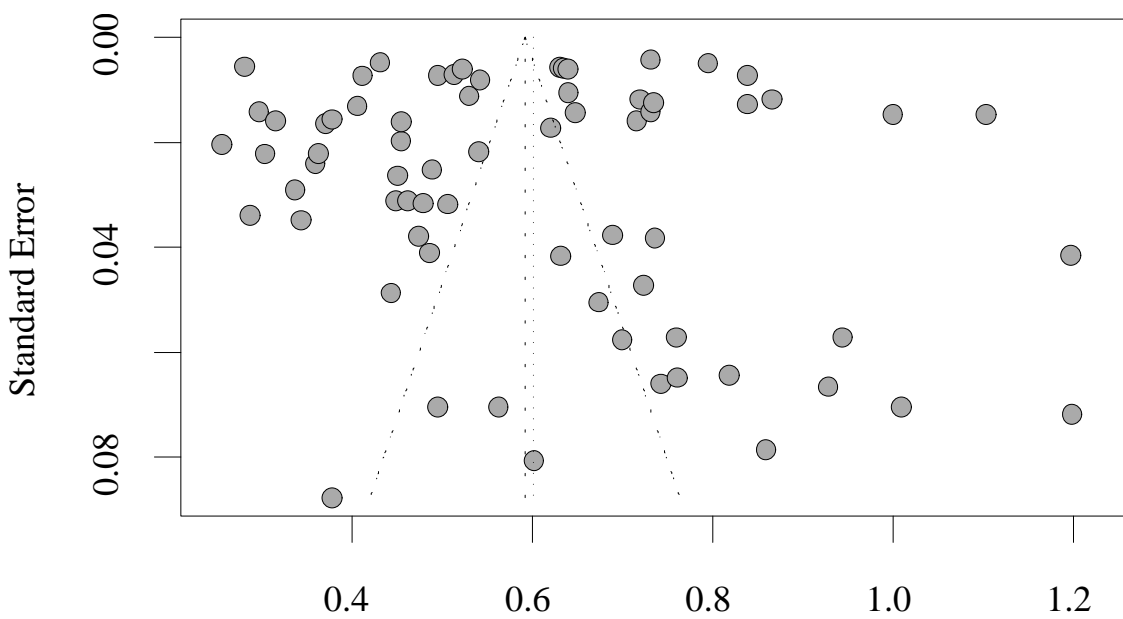
	distress				insomnia			
	No. of studies	Pooled prevalence (95%CI)	I ²	Q statistic (p value)	No. of studies	Pooled prevalence (95%CI)	I ²	Q statistic (p value)
Key elements of study design presented								
Low risk	1	71.5 (69.0–74.0)	NA	36.83 (< 0.01)	5	35.0 (32.6–37.5)	76.50%	2.92 (0.23)
Partial risk	8	44.0 (32.9–55.4)	99.60%		3	50.4 (32.8–68.0)	99.40%	
High risk	5	30.5 (13.6–50.6)	99.10%		3	31.4 (7.9–61.7)	99.60%	
Setting, locations, and recruitment dates described								
Low risk	14	41.1 (32.6–49.8)	99.60%	NA	10	38.3 (29.2–47.9)	99.20%	0.45 (0.50)
Partial risk	0	NA	NA		1	35.2 (34.1–36.3)	NA	
Eligibility criteria, and methods of selection of participants provided								
Low risk	4	18.8 (6.2–36.3)	99.00%	8.68 (< 0.01)	6	28.2 (18.9–38.6)	99.50%	7.15 (0.01)
Partial risk	10	51.0 (39.2–62.8)	99.70%		5	50.8 (37.8–63.8)	98.30%	
Clear definitions and methods of measurement of all outcomes								
Low risk	14	41.1 (32.6–49.8)	99.60%	NA	11	37.9 (29.9–46.2)	99.30%	NA
Partial risk	0	NA	NA		0	NA	NA	
Consecutive or random participant sampling								
Low risk	4	46.0 (12.1–82.1)	99.80%	1.15 (0.56)	4	32.9 (21.6–45.2)	99.20%	2.89 (0.24)
Partial risk	2	70.5 (0.0–100.0)	99.90%		3	64.4 (23.1–95.8)	99.00%	
High risk	8	31.8 (25.9–38.0)	99.50%		4	26.7 (14.7–40.7)	99.40%	
Numbers of individuals at each stage of study reported								
Low risk	7	51.7 (36.7–66.4)	99.40%	3.90 (0.05)	4	55.2 (41.4–68.5)	98.60%	9.56 (< 0.01)
Partial risk	7	30.9 (18.3–45.1)	99.70%		7	29.0 (20.3–38.4)	99.20%	
Source of funding provided								
Low risk	7	41.5 (31.4–52.1)	99.70%	0 (0.95)	3	34.2 (30.0–38.6)	86.40%	0.85 (0.36)
Partial risk	7	40.6 (18.9–64.4)	99.40%		8	39.5 (29.2–50.3)	99.50%	



Freeman–Tukey Double Arcsine Transformed Prevalence of Depression

Egger regression: $\beta=-1.173$, $SE=2.817$, $p=0.679$

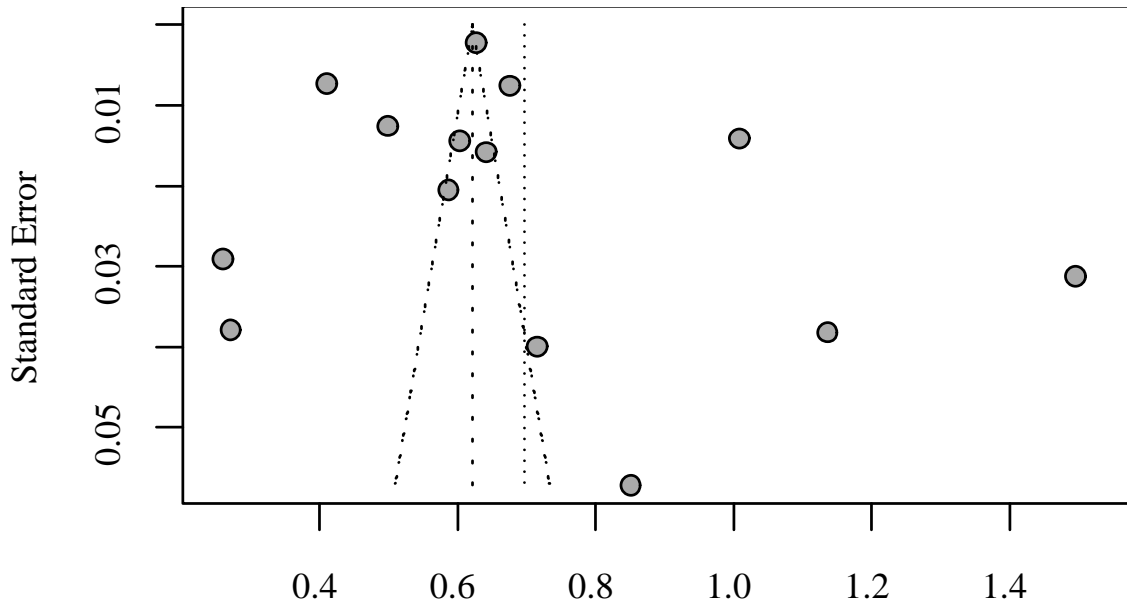
Supplementary Figure S9 Funnel plots and Egger regression of depression



Freeman–Tukey Double Arcsine Transformed Prevalence of Anxiety

Egger regression: $\beta=-0.590$, $SE=2.830$, $p=0.835$

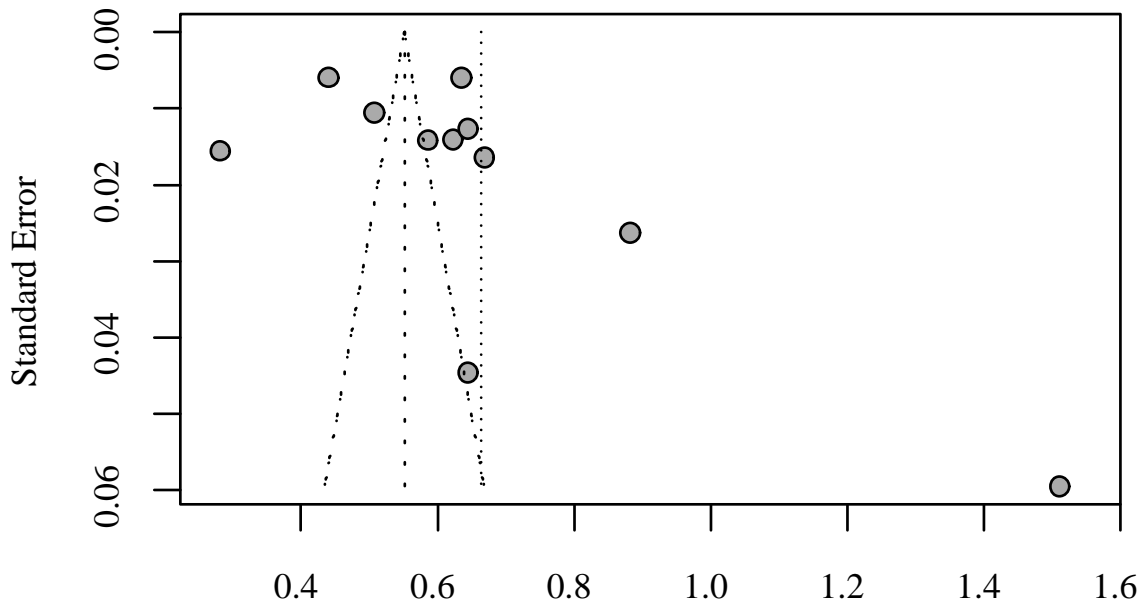
Supplementary Figure S10 Funnel plots and Egger regression of anxiety



Freeman–Tukey Double Arcsine Transformed Prevalence of Distress

Egger regression: $\beta=2.681$, $SE=5.327$, $p=0.624$

Supplementary Figure S11 Funnel plots and Egger regression of distress



Freeman–Tukey Double Arcsine Transformed Prevalence of Insomnia

Egger regression: $\beta=8.617$, $SE=6.582$, $p=0.223$

Supplementary Figure S12 Funnel plots and Egger regression of insomnia

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