Supplementary files

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Computed tomography scan findings in COVID-19 patients: a systematic review and meta-analysis

Milad Azami, Mohammad Karimian

Citation

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Review question

What is the prevalence of positive Computed tomography (CT) scans in Coronavirus Disease 2019 (COVID-19) patients?

What is the prevalence of bilateral involvement in CT scan of patients with COVID-19 pneumonia?

What is of prevalence of ground glass opacity (GGO) pattern, mixed (GGO plus consolidation or reticular) pattern, consolidation pattern, of reticular pattern, presence of nodule pattern and crazypaving pattern in CT scan of patients with COVID-19 pneumonia?

What is of prevalence of thickened intralobular septa, thickening of the adjacent pleura and bronchial wall thickening in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of fibrous stripes, cystic changes, lymphadenopathy, and bronchiolectasis in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of air bronchogram sign in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of vascular enlargement in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of peripheral, central and both (peripheral and central) lung involvement in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of number (single, two, three, four and five) lung involvement in CT scan of patients with COVID-19 pneumonia?

What is the prevalence of any lobes (right upper lobe, right middle lobe, right lower lobe, left upper lobe, left lower lobe) involvement in CT scan of patients with COVID-19 pneumonia?

Sensitivity analysis of the prevalence of each CT scan findings in patients with COVID-19 pneumonia?

?How is the publication bias in the studies?

What is the result of risk of bias assessment ?(based on Cochrane tools)?

Searches

We will searched the Web of Science (ISI), Ovid, ScienceDirect, Scopus, EMBASE, PubMed/MEDLINE, Cochrane Library (Cochrane Database of Systematic Reviews - CDSR), EBSCO, CINAHL databases using the following keywords: “2019 nCoV”, “Novel coronavirus”,“COVID-19”, “Novel coronavirus 2019”, “Wuhan pneumonia”, “Wuhan coronavirus”, “acute respiratory infection”, “COVID-19”, and “SARS-CoV-2”, “CT scan”, “Computed tomography”, “Radiology”, “Radiography”, “Clinical Characteristics”, “clinical features”, and “COVID-19”. An example of a combined search within PubMed is as follows: (“2019 nCoV”, OR “Novel coronavirus”, OR “COVID-19”, OR “Novel coronavirus 2019”, OR “Wuhan pneumonia”, OR “Wuhan coronavirus”, OR “acute respiratory infection”, OR “COVID-19”, OR “SARS-

CoV-2") AND ("CT scan" OR "Computed tomography" OR "Radiology" OR "Radiography" OR "Clinical characteristics" OR "clinical features" OR "COVID-19").

The search will be conducted on April 5, 2020, studies from January 1, 2020 until April 5, 2020 without language restrictions. . Additional studies will be identified by reviewing the reference lists of relevant articles. No language restrictions will be applied. Since the present study was based on a regular review of previous studies, approval of the organizational review board and patient satisfaction was not necessary. The research received no specific funding. Grey literature will be found at medrxiv (https://www.medrxiv.org/) and manual search of related articles will be also conducted.

Types of study to be included

Observational studies

Condition or domain being studied

Inclusion criteria were all cross-sectional epidemiological studies aimed at examining CT scan findings in COVID-19 patients from January 1, 2020 until April 5, 2020 without language restrictions.

Participants/population

All epidemiological studies aimed at examining CT scan findings in patients with COVID-19

Intervention(s), exposure(s)

Diagnostic intervention for COVID-19 other than laboratory nucleic acid or PCR confirmation and CT scans findings have been verified by at least one radiology expert

Comparator(s)/control

Not applicable

Context

Main outcome(s)

Computed tomography scan findings in COVID-19 patients

* Measures of effect

CT scans findings have been verified by at least one radiology expert

Additional outcome(s)

The prevalence of positive CT scans in COVID-19 patients.

The prevalence of bilateral involvement in CT scan of patients with COVID-19 pneumonia.

What is of prevalence of ground glass opacity (GGO) pattern, mixed (GGO plus consolidation or reticular) pattern, consolidation pattern, of reticular pattern, presence of nodule pattern and crazypaving pattern in CT scan of patients with COVID-19 pneumonia.

What is of prevalence of thickened intralobular septa, thickening of the adjacent pleura and bronchial wall thickening in CT scan of patients with COVID-19 pneumonia.

The prevalence of fibrous stripes, cystic changes, lymphadenopathy, and bronchiolectasis in CT scan of patients with COVID-19 pneumonia.

The prevalence of air bronchogram sign in CT scan of patients with COVID-19 pneumonia.

The prevalence of vascular enlargement in CT scan of patients with COVID-19 pneumonia.

The prevalence of peripheral, central and both (peripheral and central) lung involvement in CT scan of patients with COVID-19 pneumonia.

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The prevalence of number (single, two, three, four and five) lung involvement in CT scan of patients with COVID-19 pneumonia.

The prevalence of any lobes (right upper lobe, right middle lobe, right lower lobe, left upper lobe, left lower lobe) involvement in CT scan of patients with COVID-19 pneumonia.

Sensitivity analysis of the prevalence of each CT scan findings in patients with COVID-19 pneumonia.

* Measures of effect

Not applicable

Data extraction (selection and coding)

Two authors independently presented the results of the initial search with the title and abstract. At this stage, duplicate and unrelated studies will be excluded. Duplicate studies will be identified manually or using EndNote X9. Both authors then reviewed the full text of appropriate articles for the inclusion and exclusion criteria. Finally, the authors independently extracted the data from the articles. Any discrepancies between the data extractors will be resolved by consensus or by a third author. It should be noted that when an article reported duplicate information from the same patients, both reports will be combined to obtain the most complete data, but will be considered as one case.

Data summary form includes the following items: First author's name and year of publication, country and province, article references, study design, mean age and standard deviation, average duration from onset of symptoms until admission, time of performing CT scan, COVID-19 detection method, patient description, sample (respiratory secretions, blood, etc.), sample location (nasal, pharyngeal, etc.), number of patients (total, male and female), number of patients referred to the ICU, quality of articles, positive CT scan in COVID-19 patients, number of positive CT scan findings in COVID-19 patients available in the studies.

Risk of bias (quality) assessment

Based on the type of studies, the adapted Newcastle–Ottawa Scale (NOS) will be used to evaluate the quality of studies. Three categories were defined: studies with scores less than 6 were low quality studies, studies with scores 6 or 7 were medium quality, and studies with scores 8 or 9 were high quality studies.

Strategy for data synthesis

I^2 index (with values ranging from 0 to 100%) will be used to evaluate the heterogeneity between studies; values above 75% indicate high heterogeneity, 50-74% indicate significant heterogeneity, 25-49% indicate moderate heterogeneity, and values below 25% indicate low heterogeneity (52, 53). In addition, $P< 0.1$ will be also defined for heterogeneity. Meta-analysis will be performed with at least three studies. In case of low heterogeneity, the fixed effects model and otherwise, the random effects model will be used to combine the studies. Results will be reported as pooled prevalence and 95% CI. Sensitivity analysis for meta-analyses with at least five studies will be performed by omitting one study at a time to evaluate the consistency of the results. Funnel plots and the Begger's and Egger's test will be used to evaluate publication bias. All analyses will be performed using Comprehensive Meta-Analysis (CMA). P-values less than 0.05 will be considered statistically significant.

Analysis of subgroups or subsets

To find the cause of heterogeneity, we perform subgroup analysis or meta-regression.

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Type and method of review
Meta-analysis, Systematic review

Anticipated or actual start date
03 April 2020

Anticipated completion date
15 April 2021

Funding sources/sponsors
None

Conflicts of interest

Language
English

Country
Iran

Stage of review
Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
COVID-19; Humans; Tomography, X-Ray Computed; severe acute respiratory syndrome coronavirus 2

Date of registration in PROSPERO
07 April 2020

Date of publication of this version
07 April 2020

Details of any existing review of the same topic by the same authors

Stage of review at time of this submission
The review has not started

Stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

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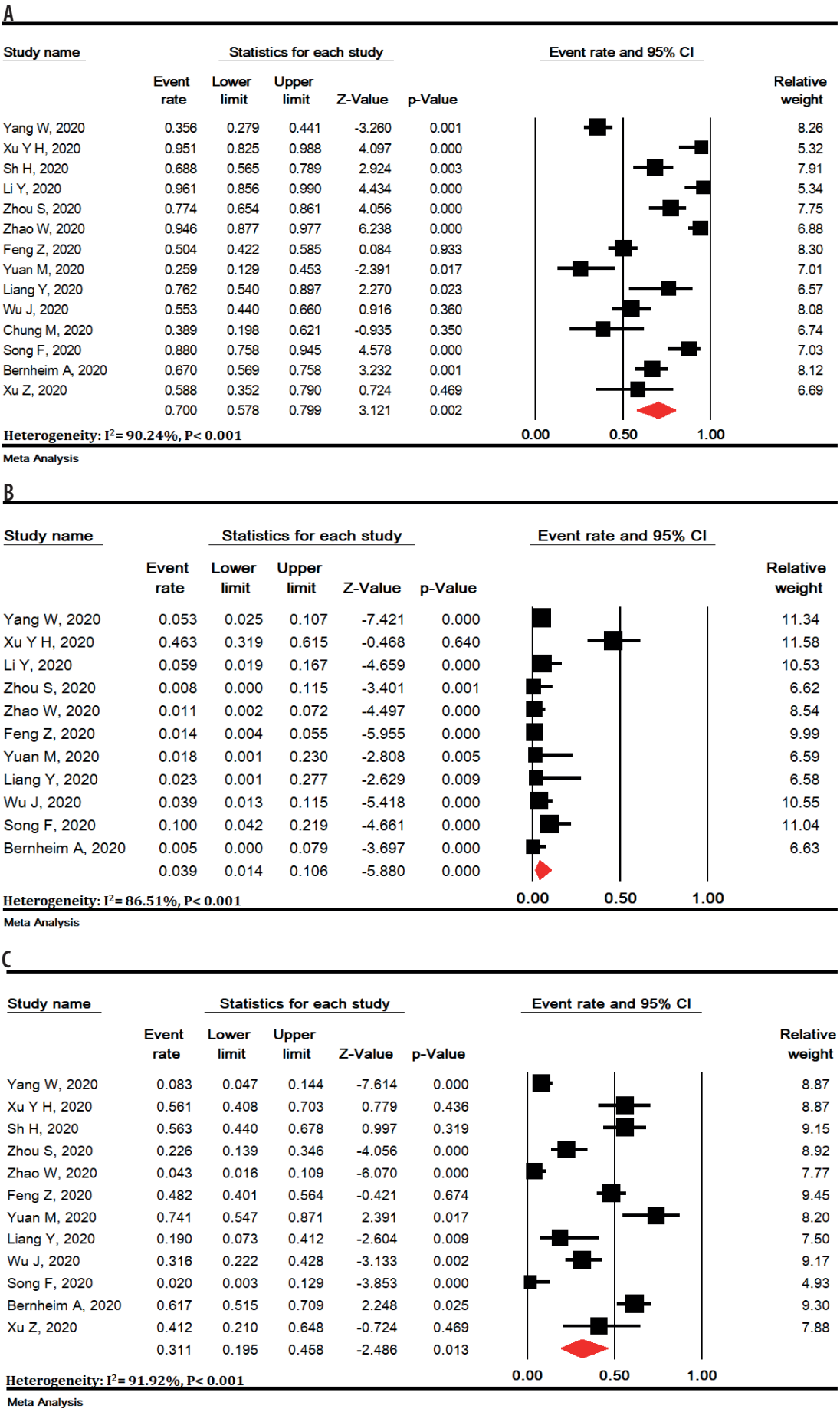
The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

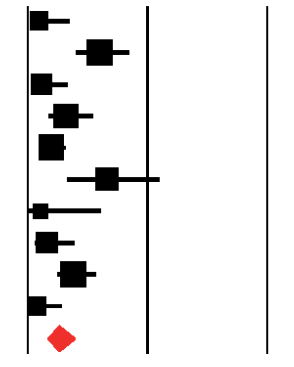
07 April 2020



Supplementary Figure 1. Meta-analysis of the distribution of lung lesions in patients with COVID-19 pneumonia was as follows: peripheral (**A**), central (**B**), and peripheral and central (**C**)

A

Study name	Event rate	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Xu Y H, 2020	0.049	0.012	0.175	-4.097	0.000	7.09
Pan Y, 2020	0.302	0.201	0.425	-3.059	0.002	13.36
Li Y, 2020	0.059	0.019	0.167	-4.659	0.000	8.63
Zhou S, 2020	0.161	0.089	0.275	-4.775	0.000	12.30
Feng Z, 2020	0.099	0.060	0.161	-7.831	0.000	13.26
Liang Y, 2020	0.333	0.168	0.553	-1.497	0.134	10.50
Chung M, 2020	0.056	0.008	0.307	-2.753	0.006	4.56
Song F, 2020	0.080	0.030	0.195	-4.685	0.000	9.64
Bernheim A, 2020	0.191	0.124	0.284	-5.495	0.000	13.54
Jian-ya G, 2020	0.039	0.010	0.144	-4.434	0.000	7.13
	0.128	0.081	0.197	-7.354	0.000	

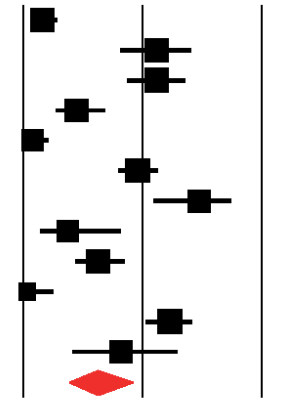


Heterogeneity: I^2= 72.38%, P< 0.001

Meta Analysis

B

Study name	Event rate	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Yang W, 2020	0.083	0.047	0.144	-7.614	0.000	8.87
Xu Y H, 2020	0.561	0.408	0.703	0.779	0.436	8.87
Sh H, 2020	0.563	0.440	0.678	0.997	0.319	9.15
Zhou S, 2020	0.226	0.139	0.346	-4.056	0.000	8.92
Zhao W, 2020	0.043	0.016	0.109	-6.070	0.000	7.77
Feng Z, 2020	0.482	0.401	0.564	-0.421	0.674	9.45
Yuan M, 2020	0.741	0.547	0.871	2.391	0.017	8.20
Liang Y, 2020	0.190	0.073	0.412	-2.604	0.009	7.50
Wu J, 2020	0.316	0.222	0.428	-3.133	0.002	9.17
Song F, 2020	0.020	0.003	0.129	-3.853	0.000	4.93
Bernheim A, 2020	0.617	0.515	0.709	2.248	0.025	9.30
Xu Z, 2020	0.412	0.210	0.648	-0.724	0.469	7.88
	0.311	0.195	0.458	-2.486	0.013	

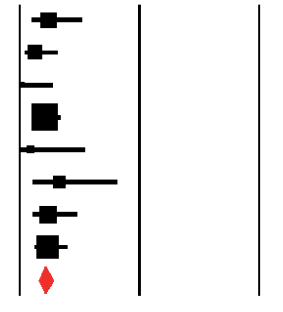


Heterogeneity: I^2= 0%, P= 0.724

Meta Analysis

C

Study name	Event rate	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Xu Y H, 2020	0.122	0.052	0.261	-4.136	0.000	10.85
Pan Y, 2020	0.063	0.024	0.157	-5.209	0.000	9.25
Li Y, 2020	0.010	0.001	0.136	-3.261	0.001	1.22
Feng Z, 2020	0.106	0.065	0.169	-7.792	0.000	33.11
Liang Y, 2020	0.048	0.007	0.271	-2.924	0.003	2.35
Chung M, 2020	0.167	0.055	0.409	-2.545	0.011	6.18
Song F, 2020	0.120	0.055	0.242	-4.578	0.000	13.04
Bernheim A, 2020	0.117	0.066	0.199	-6.298	0.000	23.99
	0.105	0.080	0.138	-13.611	0.000	

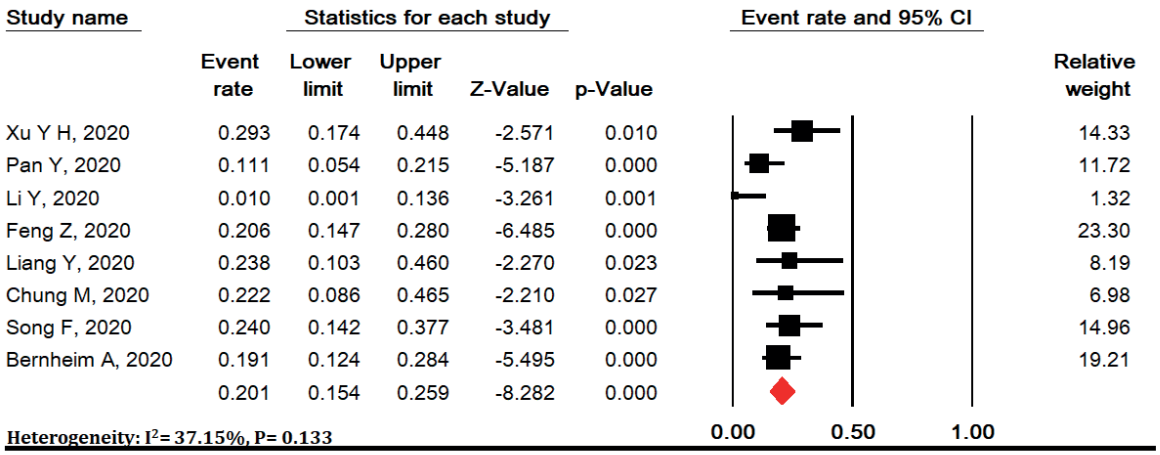


Heterogeneity: I^2= 0%, P= 0.540

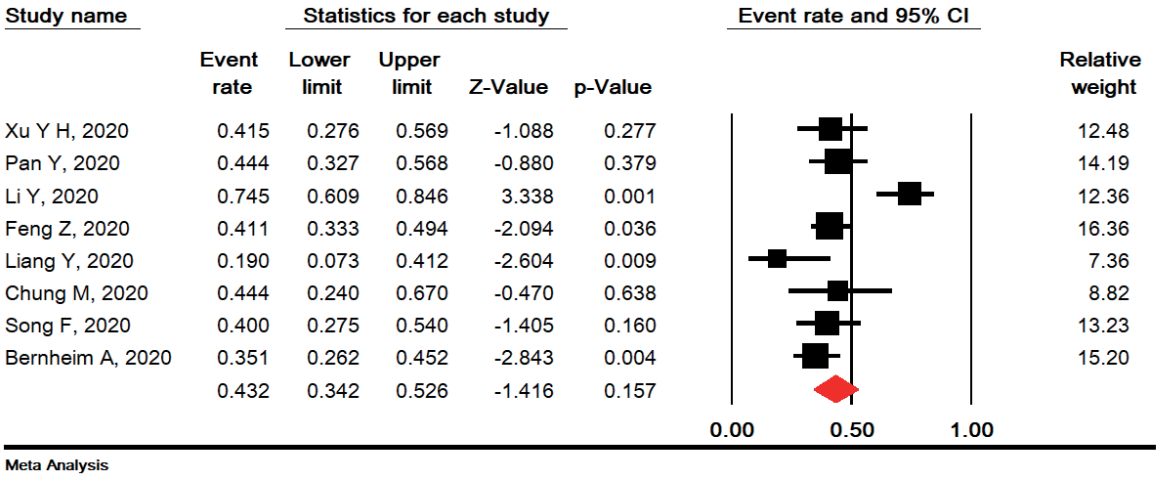
Meta Analysis

Supplementary Figure 2. Meta-analysis of one lobe involvement (**A**), two lobes involvement (**B**), three lobes involvement (C), four lobes involvement (**D**), and five lobes involvement (**E**)

D

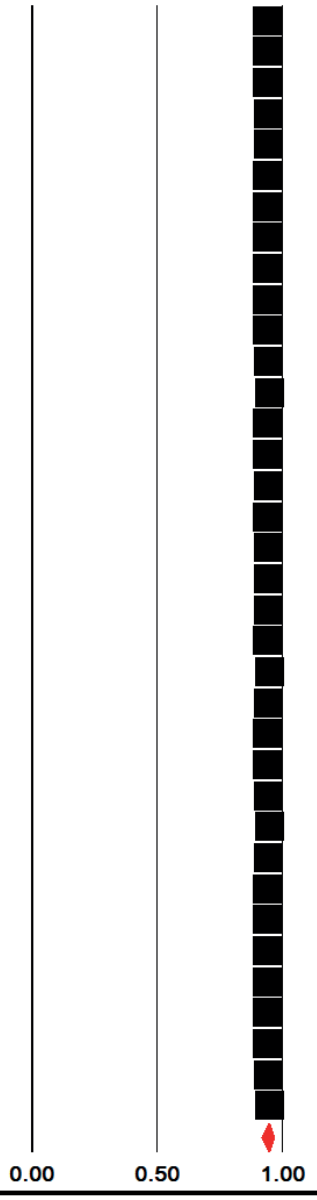


E



Supplementary Figure 2. Cont.

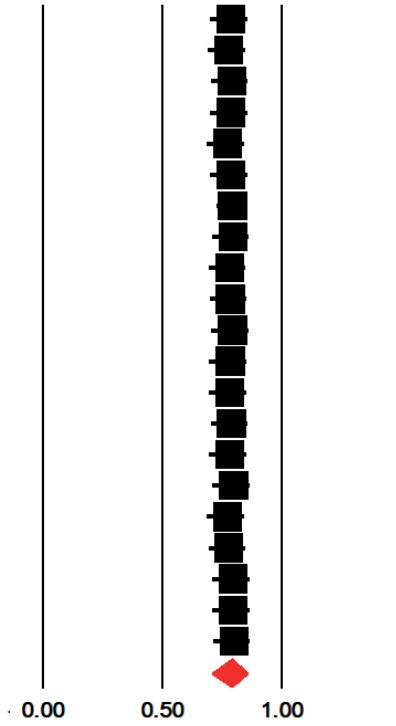
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Chen G, 2020	0.944	0.916	0.963	12.626	0.000
Huang C, 2020	0.943	0.915	0.963	12.600	0.000
Chen N, 2020	0.942	0.913	0.962	12.577	0.000
Yang W, 2020	0.948	0.920	0.966	12.389	0.000
Xu Y H, 2020	0.948	0.921	0.966	12.602	0.000
Sh H, 2020	0.942	0.914	0.962	12.582	0.000
Wang D, 2020	0.942	0.913	0.962	12.572	0.000
Pan Y, 2020	0.943	0.914	0.962	12.588	0.000
Xu X, 2020	0.943	0.914	0.962	12.551	0.000
Li Y, 2020	0.943	0.914	0.962	12.594	0.000
Zhou S, 2020	0.943	0.914	0.962	12.588	0.000
Zhao W, 2020	0.946	0.918	0.965	12.513	0.000
Guan W. J, 2020	0.951	0.923	0.969	12.352	0.000
Ai J. W, 2020	0.944	0.916	0.963	12.628	0.000
Yuan M, 2020	0.944	0.915	0.963	12.615	0.000
Qian G. Q, 2020	0.945	0.917	0.964	12.536	0.000
Liang Y, 2020	0.944	0.916	0.963	12.626	0.000
Huang Y, 2020	0.947	0.919	0.965	12.603	0.000
Wu J, 2020	0.944	0.916	0.964	12.539	0.000
Chung M, 2020	0.947	0.919	0.965	12.664	0.000
Song F, 2020	0.943	0.915	0.963	12.559	0.000
Bernheim A, 2020	0.950	0.923	0.968	12.390	0.000
Xu Z, 2020	0.948	0.921	0.966	12.702	0.000
Zhang JJ, 2020	0.941	0.912	0.961	12.531	0.000
Wang Y, 2020	0.941	0.913	0.961	12.860	0.000
Hu Z, 2020	0.949	0.922	0.967	12.796	0.000
Haiyan Fu, 2020	0.950	0.924	0.967	12.933	0.000
Li J, 2020	0.945	0.917	0.964	12.629	0.000
Cai Q, 2020	0.941	0.912	0.961	12.566	0.000
Jian-ya G, 2020	0.943	0.914	0.962	12.594	0.000
Cui P, 2020	0.943	0.915	0.963	12.606	0.000
Cao M, 2020	0.941	0.912	0.961	12.554	0.000
Xu Y, 2020	0.943	0.914	0.962	12.585	0.000
Chen J, 2020	0.942	0.914	0.962	12.528	0.000
Liu J, 2020	0.946	0.918	0.965	12.548	0.000
Lei Y, 2020	0.950	0.923	0.968	12.690	0.000
	0.945	0.917	0.963	12.784	0.000



Meta Analysis

Supplementary Figure 3. Sensitivity analysis of sensitivity of chest computed tomography scan in patients with COVID-19

Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Chen G, 2020	0.790	0.705	0.856	5.712	0.000
Huang C, 2020	0.780	0.694	0.847	5.569	0.000
Chen N, 2020	0.793	0.707	0.859	5.670	0.000
Sh H, 2020	0.791	0.705	0.857	5.678	0.000
Wang D, 2020	0.777	0.692	0.844	5.568	0.000
Zhao W, 2020	0.789	0.703	0.855	5.670	0.000
Guan W. J, 2020	0.797	0.732	0.849	7.423	0.000
Ai J. W, 2020	0.799	0.715	0.863	5.878	0.000
Feng Z, 2020	0.784	0.700	0.850	5.697	0.000
Yuan M, 2020	0.788	0.702	0.854	5.669	0.000
Qian G. Q, 2020	0.797	0.710	0.863	5.694	0.000
Huang Y, 2020	0.787	0.701	0.853	5.652	0.000
Kui L, 2020	0.787	0.702	0.853	5.686	0.000
Chung M, 2020	0.792	0.707	0.858	5.749	0.000
Song F, 2020	0.786	0.701	0.853	5.646	0.000
Bernheim A, 2020	0.801	0.714	0.867	5.677	0.000
Li K, 2020	0.777	0.691	0.844	5.547	0.000
Zhang JJ, 2020	0.782	0.698	0.848	5.686	0.000
Xu Y, 2020	0.800	0.714	0.865	5.767	0.000
Liu J, 2020	0.800	0.714	0.865	5.788	0.000
Lei Y, 2020	0.804	0.720	0.868	5.910	0.000
	0.791	0.708	0.855	5.869	0.000

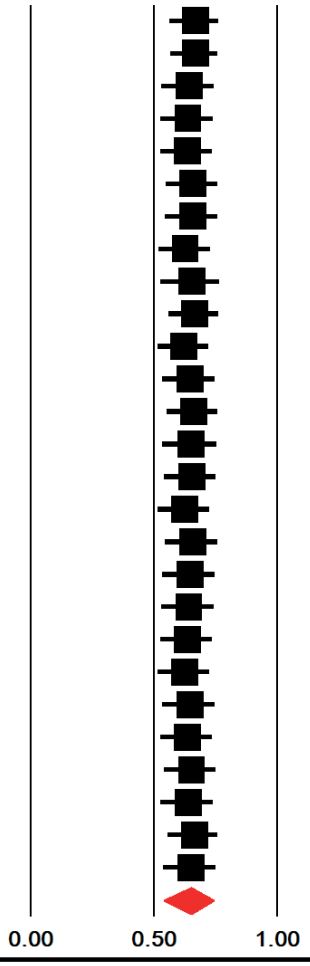


Meta Analysis

Supplementary Figure 4. Sensitivity analysis of bilateral lung involvement in chest computed tomography scan of patients with COVID-19 pneumonia

A

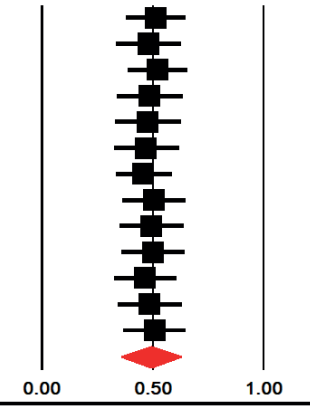
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Chen N, 2020	0.670	0.567	0.759	3.163	0.002
Yang W, 2020	0.671	0.571	0.758	3.258	0.001
Xu Y H, 2020	0.646	0.534	0.744	2.539	0.011
Sh H, 2020	0.640	0.529	0.738	2.453	0.014
Pan Y, 2020	0.638	0.527	0.736	2.425	0.015
Li Y, 2020	0.661	0.551	0.756	2.828	0.005
Zhou S, 2020	0.660	0.549	0.756	2.777	0.005
Zhao W, 2020	0.629	0.520	0.727	2.313	0.021
Guan W. J, 2020	0.656	0.527	0.765	2.358	0.018
Ai J. W, 2020	0.668	0.561	0.760	3.026	0.002
Feng Z, 2020	0.624	0.517	0.721	2.256	0.024
Yuan M, 2020	0.649	0.538	0.746	2.596	0.009
Qian G. Q, 2020	0.663	0.554	0.757	2.891	0.004
Cao W, 2020	0.652	0.536	0.752	2.552	0.011
Liang Y, 2020	0.656	0.545	0.752	2.730	0.006
Wu J, 2020	0.627	0.518	0.725	2.275	0.023
Kui L, 2020	0.661	0.548	0.758	2.751	0.006
Chung M, 2020	0.649	0.538	0.746	2.604	0.009
Song F, 2020	0.643	0.532	0.741	2.498	0.012
Xu Z, 2020	0.638	0.528	0.735	2.454	0.014
Li K, 2020	0.626	0.517	0.724	2.249	0.025
Hu Z, 2020	0.647	0.536	0.744	2.579	0.010
Haiyan Fu, 2020	0.637	0.527	0.734	2.437	0.015
Li J, 2020	0.655	0.544	0.751	2.715	0.007
Jian-ya G, 2020	0.642	0.530	0.740	2.478	0.013
Xu Y, 2020	0.667	0.560	0.759	3.000	0.003
Liu J, 2020	0.654	0.541	0.751	2.641	0.008
	0.649	0.541	0.744	2.677	0.007



Meta Analysis

B

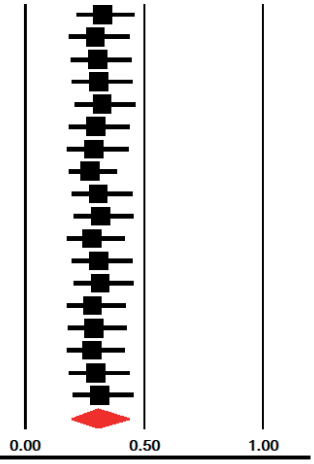
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Yang W, 2020	0.515	0.382	0.646	0.218	0.827
Xu Y H, 2020	0.482	0.338	0.628	-0.242	0.809
Sh H, 2020	0.525	0.391	0.655	0.360	0.719
Li Y, 2020	0.487	0.341	0.635	-0.173	0.862
Zhou S, 2020	0.479	0.335	0.627	-0.268	0.789
Zhao W, 2020	0.472	0.331	0.618	-0.367	0.714
Feng Z, 2020	0.460	0.337	0.589	-0.599	0.549
Yuan M, 2020	0.508	0.367	0.648	0.111	0.912
Liang Y, 2020	0.497	0.354	0.640	-0.044	0.965
Chung M, 2020	0.504	0.363	0.645	0.053	0.957
Song F, 2020	0.467	0.330	0.609	-0.448	0.654
Xu Z, 2020	0.489	0.347	0.632	-0.147	0.883
Liu J, 2020	0.510	0.369	0.650	0.138	0.890
	0.492	0.357	0.628	-0.114	0.909



Supplementary Figure 5. Sensitivity analysis of pure ground-glass opacity (GGO) **(A)**, mixed (GGO pulse consolidation or reticular) **(B)**, consolidation **(C)**, reticular **(D)**, and presence of nodule **(E)** findings in chest computed tomography scan of COVID-19 pneumonia

C

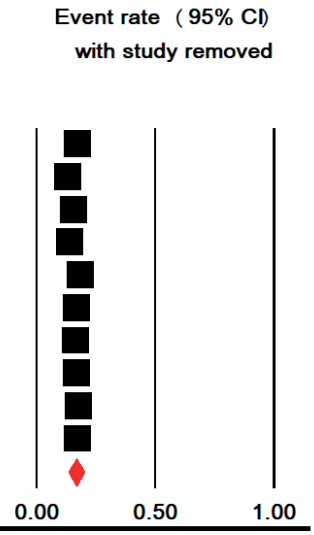
Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Yang W, 2020	0.328	0.218	0.462	-2.496	0.013
Xu Y H, 2020	0.298	0.187	0.439	-2.744	0.006
Sh H, 2020	0.308	0.195	0.449	-2.620	0.009
Pan Y, 2020	0.311	0.198	0.451	-2.601	0.009
Li Y, 2020	0.326	0.213	0.464	-2.451	0.014
Zhou S, 2020	0.299	0.187	0.442	-2.699	0.007
Zhao W, 2020	0.290	0.179	0.435	-2.770	0.006
Feng Z, 2020	0.275	0.185	0.387	-3.722	0.000
Yuan M, 2020	0.310	0.198	0.450	-2.619	0.009
Liang Y, 2020	0.320	0.208	0.458	-2.521	0.012
Wu J, 2020	0.282	0.177	0.418	-3.040	0.002
Kui L, 2020	0.312	0.199	0.452	-2.591	0.010
Chung M, 2020	0.318	0.207	0.456	-2.560	0.010
Song F, 2020	0.286	0.179	0.423	-2.958	0.003
Xu Z, 2020	0.291	0.183	0.428	-2.903	0.004
Li K, 2020	0.283	0.177	0.420	-3.007	0.003
Jian-ya G, 2020	0.299	0.188	0.442	-2.708	0.007
Liu J, 2020	0.316	0.204	0.455	-2.556	0.011
	0.303	0.196	0.436	-2.825	0.005



Meta Analysis

D

Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Sh H, 2020	0.175	0.142	0.214	-12.242	0.000
Pan Y, 2020	0.132	0.104	0.167	-13.660	0.000
Li Y, 2020	0.160	0.128	0.197	-12.687	0.000
Zhao W, 2020	0.144	0.113	0.181	-12.597	0.000
Feng Z, 2020	0.189	0.152	0.232	-11.012	0.000
Yuan M, 2020	0.170	0.138	0.207	-12.810	0.000
Liang Y, 2020	0.169	0.137	0.205	-13.026	0.000
Bernheim A, 2020	0.170	0.139	0.207	-12.933	0.000
Li K, 2020	0.178	0.145	0.218	-11.977	0.000
Jian-ya G, 2020	0.173	0.141	0.211	-12.441	0.000
	0.166	0.136	0.202	-13.203	0.000

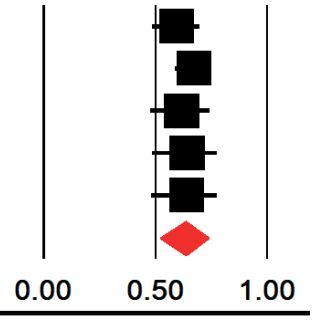


Meta Analysis

Supplementary Figure 5. Cont.

A

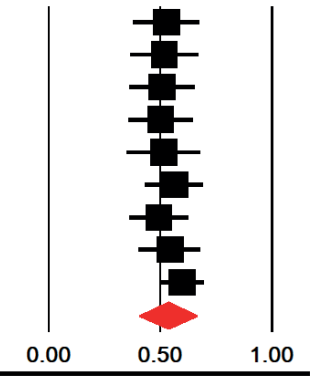
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.597	0.488	0.697	1.749	0.080
Sh H, 2020	0.675	0.592	0.748	3.996	0.000
Li Y, 2020	0.620	0.482	0.741	1.712	0.087
Wu J, 2020	0.645	0.488	0.775	1.819	0.069
Li K, 2020	0.643	0.485	0.775	1.777	0.076
	0.636	0.521	0.738	2.298	0.022



Meta Analysis

B

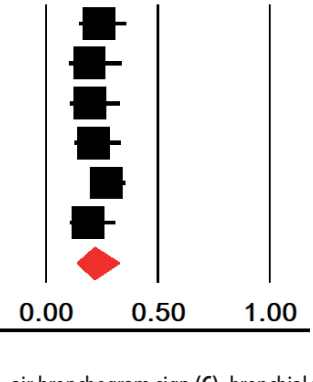
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.530	0.382	0.674	0.397	0.692
Sh H, 2020	0.520	0.367	0.669	0.252	0.801
Li Y, 2020	0.510	0.364	0.654	0.127	0.899
Zhou S, 2020	0.504	0.362	0.646	0.055	0.956
Feng Z, 2020	0.517	0.354	0.677	0.202	0.840
Yuan M, 2020	0.567	0.434	0.691	0.990	0.322
Song F, 2020	0.496	0.366	0.626	-0.064	0.949
Xu Z, 2020	0.547	0.407	0.680	0.656	0.512
Jian-ya G, 2020	0.601	0.500	0.694	1.963	0.050
	0.535	0.403	0.662	0.514	0.607



Meta Analysis

C

Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Sh H, 2020	0.240	0.152	0.358	-3.971	0.000
Feng Z, 2020	0.196	0.103	0.339	-3.706	0.000
Wu J, 2020	0.197	0.108	0.331	-3.933	0.000
Chung M, 2020	0.215	0.129	0.336	-4.143	0.000
Bernheim A, 2020	0.271	0.200	0.356	-4.896	0.000
Li K, 2020	0.188	0.107	0.309	-4.362	0.000
	0.217	0.138	0.325	-4.556	0.000

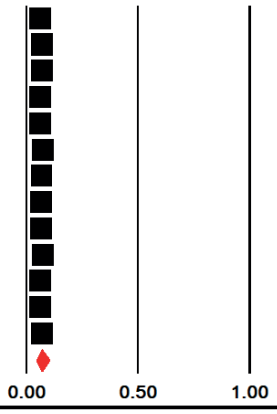


Meta Analysis

Supplementary Figure 6. Sensitivity analysis of thickened interlobular septa (**A**), vascular enlargement (**B**), air bronchogram sign (**C**), bronchial wall thicke-ning (**D**), bronchiolectasis (**E**), fibrous stripes (**F**), crazy-paving pattern (G), thickening of the adjacent pleura (**H**), pleural effusion (**I**) and lymphadeno-pathy (**J**) findings in chest computed tomography scan of COVID-19 pneumonia

D

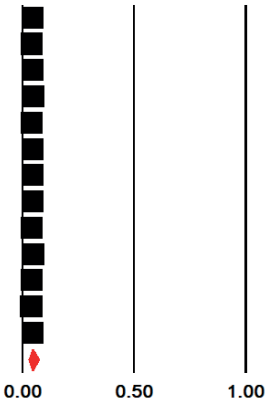
Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.066	0.043	0.100	-11.485	0.000
Sh H, 2020	0.071	0.047	0.106	-11.400	0.000
Li Y, 2020	0.073	0.049	0.106	-12.073	0.000
Zhou S, 2020	0.065	0.042	0.100	-11.314	0.000
Zhao W, 2020	0.063	0.043	0.092	-13.113	0.000
Feng Z, 2020	0.078	0.053	0.111	-12.179	0.000
Yuan M, 2020	0.070	0.047	0.104	-11.818	0.000
Wu J, 2020	0.068	0.044	0.104	-11.222	0.000
Song F, 2020	0.067	0.044	0.102	-11.363	0.000
Bernheim A, 2020	0.076	0.053	0.108	-12.601	0.000
Li K, 2020	0.066	0.042	0.101	-11.119	0.000
Jian-ya G, 2020	0.064	0.042	0.095	-11.917	0.000
Liu J, 2020	0.073	0.050	0.105	-12.354	0.000
	0.069	0.047	0.101	-12.272	0.000



Meta Analysis

E

Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.048	0.030	0.078	-11.481	0.000
Sh H, 2020	0.043	0.025	0.071	-11.172	0.000
Li Y, 2020	0.050	0.031	0.078	-11.945	0.000
Zhao W, 2020	0.052	0.033	0.081	-12.156	0.000
Feng Z, 2020	0.046	0.027	0.078	-10.511	0.000
Yuan M, 2020	0.048	0.030	0.077	-11.677	0.000
Wu J, 2020	0.047	0.028	0.078	-10.913	0.000
Chung M, 2020	0.047	0.029	0.076	-11.597	0.000
Song F, 2020	0.044	0.026	0.074	-11.030	0.000
Bernheim A, 2020	0.052	0.033	0.079	-12.431	0.000
Xu Z, 2020	0.044	0.029	0.067	-13.803	0.000
Li K, 2020	0.042	0.025	0.070	-11.412	0.000
Liu J, 2020	0.050	0.032	0.078	-12.026	0.000
	0.047	0.030	0.075	-12.127	0.000

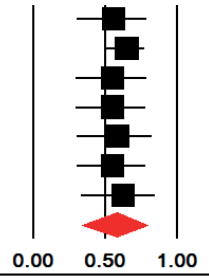


Meta Analysis

Supplementary Figure 6. Cont.

A

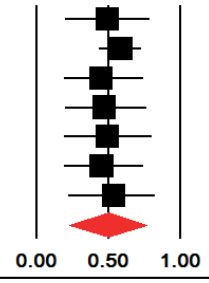
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.557	0.298	0.789	0.414	0.679
Sh H, 2020	0.652	0.507	0.773	2.054	0.040
Li Y, 2020	0.554	0.297	0.784	0.393	0.694
Chung M, 2020	0.551	0.294	0.784	0.372	0.710
Bernheim A, 202	0.589	0.300	0.827	0.582	0.560
Li K, 2020	0.552	0.302	0.778	0.391	0.696
Liu J, 2020	0.625	0.334	0.847	0.833	0.405
	0.584	0.336	0.795	0.653	0.514



Meta Analysis

B

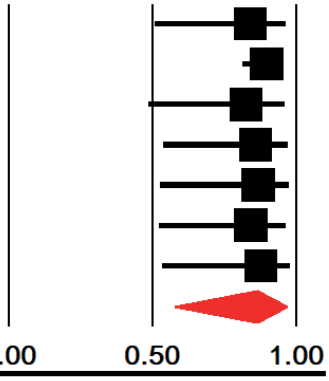
Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.491	0.201	0.788	-0.051	0.959
Sh H, 2020	0.587	0.431	0.727	1.097	0.273
Li Y, 2020	0.448	0.188	0.740	-0.325	0.745
Chung M, 2020	0.470	0.196	0.764	-0.181	0.856
Bernheim A, 202	0.492	0.191	0.799	-0.043	0.966
Li K, 2020	0.454	0.194	0.741	-0.295	0.768
Liu J, 2020	0.538	0.224	0.824	0.213	0.831
	0.497	0.230	0.766	-0.017	0.987



Meta Analysis

C

Study name	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.842	0.512	0.965	2.018	0.044
Sh H, 2020	0.898	0.817	0.946	6.276	0.000
Li Y, 2020	0.827	0.489	0.960	1.906	0.057
Chung M, 2020	0.861	0.539	0.970	2.144	0.032
Bernheim A, 2020	0.870	0.529	0.976	2.089	0.037
Li K, 2020	0.845	0.524	0.964	2.078	0.038
Liu J, 2020	0.879	0.536	0.979	2.112	0.035
	0.865	0.577	0.968	2.354	0.019

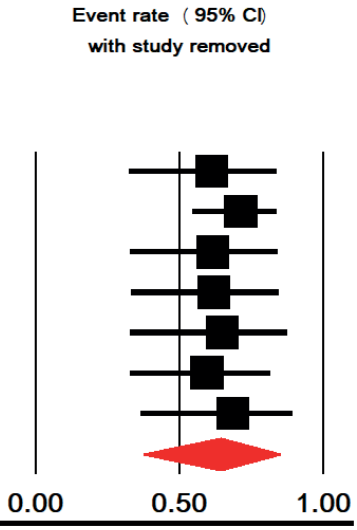


Meta Analysis

Supplementary Figure 7. Sensitivity analysis of right upper lobe **(A)**, right middle lobe (B), right lower lobe **(C)**, left upper lobe (D), and left lower lobe **(E)** involvement in chest computed tomography scan of COVID-19 pneumonia

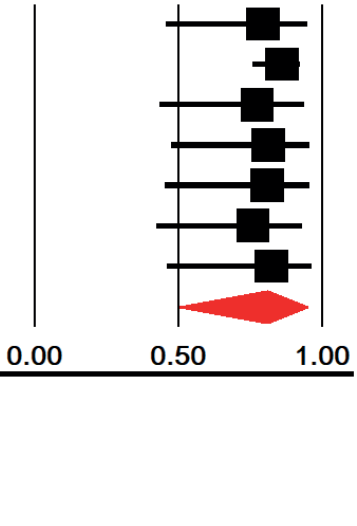
D

Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.614	0.328	0.838	0.767	0.443
Sh H, 2020	0.715	0.549	0.838	2.497	0.013
Li Y, 2020	0.618	0.331	0.841	0.795	0.427
Chung M, 2020	0.622	0.333	0.845	0.817	0.414
Bernheim A, 2020	0.651	0.330	0.876	0.917	0.359
Li K, 2020	0.597	0.329	0.817	0.697	0.486
Liu J, 2020	0.687	0.366	0.893	1.154	0.249
	0.645	0.373	0.847	1.048	0.295

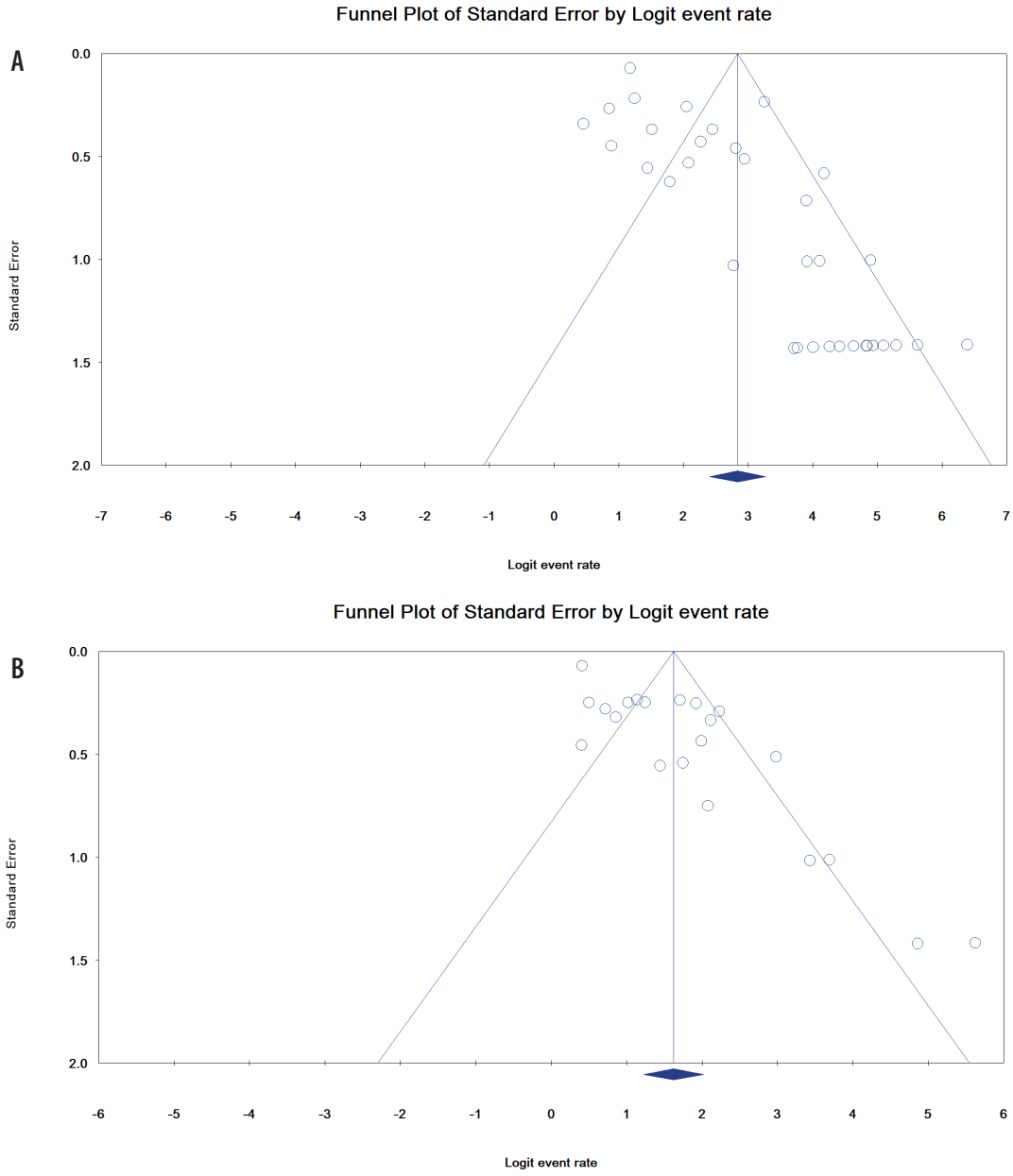


E

Study name	Statistics with study removed				
	Point	Lower limit	Upper limit	Z-Value	p-Value
Xu Y H, 2020	0.796	0.458	0.948	1.744	0.081
Sh H, 2020	0.862	0.761	0.924	5.347	0.000
Li Y, 2020	0.775	0.437	0.939	1.629	0.103
Chung M, 2020	0.815	0.479	0.955	1.856	0.064
Bernheim A, 2020	0.811	0.457	0.956	1.752	0.080
Li K, 2020	0.761	0.426	0.931	1.559	0.119
Liu J, 2020	0.826	0.461	0.963	1.782	0.075
	0.810	0.505	0.947	1.987	0.047



Supplementary Figure 7. Cont.



Supplementary Figure 8. Publication bias for positive chest computed tomography (CT) scan of COVID-19 patients **(A)** and for studies that showed bilateral lung involvement in chest CT scan of COVID-19 patients pneumonia **(B)**