Review

Age-related risk factors and severity of SARS-CoV-2 infection: a systematic review and meta-analysis

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Keywords
COVID-19 pandemic • Symptoms and comorbidities • Systematic review • Age-related risk factors • Correlation analysis

Objectives. We aimed to estimate the prevalence of reported symptoms and comorbidities, and investigate the factors associated with age of the SARS-CoV-2 infected patients.

Methods. We performed a systematic review with meta-analysis (PROSPERO registration: CRD42020182677) where the databases (PubMed, SCOPUS, EMBASE, WHO, Semantic Scholar, and COVID-19 Primer) were searched for clinical studies published from January to April, 2020. Initially, the pooled prevalence of symptoms and comorbidity of COVID-19 patients were estimated using random effect model and the age-related factors were identified performing multivariate analysis [factor analysis].

Results. Twenty-nine articles with 4,884 COVID-19 patients were included in this study. Altogether, we found 33 symptoms and 44 comorbidities where the most frequent 19 symptoms and 11 comorbidities were included in the meta-analysis. The fever (84%), cough/dry cough (61%), and fatigue/weakness (42%) were found more prevalent while acute respiratory distress syndrome, hypertension and diabetes were the most prevalent comorbid condition. The factor analysis showed positive association between a cluster of symptoms and comorbidities with patients’ age. The symptoms comprising fever, dyspnea/shortness of breath, nausea, vomiting, abdominal pain, dizziness, anorexia and pharyngalgia; and the comorbidities including diabetes, hypertension, coronary heart disease, COPD/lung disease and ARDS were the factors positively associated with COVID-19 patient’s age.

Conclusion. As an unique effort, this study found a group of symptoms (fever, dyspnea/shortness of breath, nausea, vomiting, abdominal pain, dizziness, anorexia and pharyngalgia) and comorbidities (diabetes, hypertension, coronary heart disease, COPD/lung disease and ARDS), associated with the age of COVID-19 infected patients.

Introduction

The COVID-19 pandemic caused by Severe Acute Respiratory Virus 2 (SARS-CoV-2) is a serious public health crisis in the history of humanity. Originated in Wuhan, China, SARS-CoV-2 has spread to every corner of the world within a few months. As of March 22, 2021, over 123 million confirmed cases and 2.72 million deaths have been reported from over 219 countries [1]. As the virus is moving fast, various clinical spectrum and differential clinical outcomes are unfolding across different geographic locations. Several symptoms have been reported which includes fever, cough, myalgia, sputum production, headache, hemoptysis, diarrhea, and dyspnea [2]. The severity of COVID-19 has been reported to be linked with various host factors including diabetes, hypertension, cardiovascular disease, chronic obstructive pulmonary disease (COPD), malignancy, and chronic liver disease [2]. While susceptibility to COVID-19 covers all age groups, people with compromised immune systems or having comorbidity are at a higher risk [3, 4]. A few review studies investigated symptoms and comorbidities of the COVID-19 infected patients with a shorter time-frame [3, 5-8]. The mortality rate is high in older COVID-19 patients with organ dysfunctions comprising shock, acute respiratory distress syndrome (ARDS), acute cardiac injury, and acute kidney injury [9]. However, there is a scarce information regarding the relationship between symptoms, comorbidities, and age of the COVID-19 patients. The objective of this study was to estimate the prevalence of all reported symptoms and comorbidities, and then identified the risk factors associated with age of COVID-19 infected patients.

Methods

The PRISMA-P-2009 guidelines was followed in our systematic review and meta-analysis (PROSPERO registration: CRD42020182677) [10].

DATA SOURCES AND SEARCH STRATEGY
The major databases, such as PubMed, SCOPUS, EMBASE, WHO, Semantic Scholar, and COVID-19
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The quality of each study was assessed by ZF using Joanna Briggs Institute (JBI) guidelines [12]. A set of eight questions was used for the quality assessment. Random effect model was used to estimate the prevalence of all reported symptoms and comorbidities in the COVID-19 patients. Heterogeneity was assessed using the Cochran Q and the I² statistic [13, 14]. We performed Egger test (p < 0.001) to examine the presence of publication bias and small-study effects. Multivariate analysis [multivariable factor analysis (MFA)] was performed to examine the correlation/association among symptoms and comorbidities with the patients’ age [15, 16]. All statistical analyses were conducted by Stata version 15 (Stata Corp, College Station, TX) using the metaprop, metabias; and R-programming language using the FactoMineR package. Supplementary Table S1 have provided in the supplementary file. Please see supplementary file.

**Results**

A total of 799 articles (databases: 791, other sources: 8) were retrieved. Of them, 403 articles were removed due to duplication and irrelevance. Furthermore, 303 review articles, editorials, case reports, and irrelevant study populations were excluded. Fifty-three articles were excluded as they failed to meet all inclusion criteria. Finally, eleven articles were excluded due to not peer-reviewed and small sample sizes, resulting in the selection of 29 articles for our review. The PRISMA flow diagram visualizes the screening process of selected studies (Fig. 1). Supplementary Table S1 summarizes the characteristics of the selected studies and 83% of selected studies for this meta-analysis were reported from China. Five studies were conducted in the USA, India, Spain, and South Korea. The overall sample size was 4,884 COVID-19 patients, with an age range of 10 to 92 years. Among the patients, 2,675 (55%) were male, and 2,208 (45%) were female. The sample size ranged from 12 to 1,099 patients, where most studies (79%) had a retrospective research design. Altogether, 33 symptoms and 43 comorbidities were found. Almost all the studies reported fever (proportion of
patients ranging from 25 to 100%), cough/dry cough (22-92%) and myalgia or muscle ache (3-63%) as common symptoms of COVID-19. Other reported symptoms were: headache (3-66%); diarrhea (3-48%); fatigue/weakness (9-85%); dyspnea/shortness of breath (1-88%); sputum production or expectoration (4-42%); vomiting (1-19%); nausea (4-27%); chest tightness (7-55%); and sore throat (5-32%). For the comorbidities, about 93% and 86% of studies reported two comorbidities: diabetes (2 to 35%) and hypertension (8-50%). Other prevalent comorbidities were chronic obstructive pulmonary disease (COPD)/lung infection (0.2-38%); cardiovascular disease (5-23%); chronic liver disease (1-29%); malignancy (1-7%); coronary heart disease (1-33%); cerebrovascular disease (1-19%); chronic renal disease (1-8%); chronic kidney disease (1-29%); and Acute respiratory distress syndrome (ARDS) (17-100%). The less reported symptoms and comorbidities were presented in Supplementary Table S1.

**Meta-analysis of symptoms and comorbidities**

We meta-analysed 19 symptoms and 11 comorbidities, using random effect models that were reported in at least five selected articles (Tab. II and Supplementary Figs S2-S31). Meta-analysis showed a higher prevalence of fever (pooled prevalence: 84, 95% confidence interval (CI): 80-88%) and cough/dry cough (61, 95% CI: 55-67%); followed by fatigue/weakness (42, 95% CI: 34-51%); dyspnea/shortness of breath (39, 95% CI: 27-51%); headache and diarrhea (12, 95% CI: 8-17%); sore throat (15, 95% CI: 11-20%); myalgia/muscle ache and sputum production/expectoration (24, 95% CI: 18-30%); rhinorrhea (13, 95% CI: 4-26%); chest tightness (25, 95% CI: 15-35%).
CI: 15-31%); and anorexia (26, 95% CI: 16-38%). The less prevalent symptoms were: chest pain (3%), nausea (8%), vomiting (6%), abdominal pain (4%), dizziness (5%), pharyngalgia (7%), and hemoptysis (2%).

The most prevalent comorbidities were ARDS (61, 95% CI: 15-97%), hypertension (23, 95% CI: 18-28%), and diabetes (12, 95% CI: 9-15%), followed by cardiovascular disease (10, 95% CI: 7-13%); coronary heart disease (7, 95% CI: 3-12%); cerebrovascular disease (6, 95% CI: 2-08%); COPD/lung disease (3, 95% CI: 02-50%); chronic liver disease (05, 95% CI: 03-07%); chronic Renal disease (0.01, 95% CI: 00%-03%); chronic Kidney disease (05, 95% CI: 02-10%); and malignancy (03, 95% CI: 02-04%).

There was a high heterogeneity (I² ranged from 85 to 97%, Cochran Q-statistic p < 0.001) in all the prevalence of symptoms, except chest pain (I² = 0%, Cochran Q-statistic p < 0.95); abdominal pain (I² = 22.89%, Cochran Q-statistic p < 0.26); dizziness (I² = 64.21%, Cochran Q-statistic p < 0.002); and haemoptysis (I² = 63.48%, Cochran Q-statistic p < 0.01). In the case of comorbidities, the heterogeneity was found higher in almost all the comorbidities (I² ranged from 68.06 to 98.01%, Cochran Q-statistic p < 0.001) (Tab. II).

**Symptoms and comorbidity factors associated with age of COVID-19 infected Patients**

Nineteen symptoms and 11 comorbidities were categorized into: symptom group and comorbidity group to determine the association between symptoms/comorbidities and age of the COVID-19 patients (Fig. 2). In factor analysis, the correlation circle represented between/within-group integration with the patients’ age. The longer vectors indicated more influential than others, and the vectors that were close to each other with the same direction indicated a highly positive association. Vectors that were the opposite direction showed a negative association, and the vectors with an almost 90-degree angle demonstrated no association. The first principal component showed 31.59% variation and the second one showed 20.45% variation in the dataset.

Tab. II. Overall prevalence summary for clinical symptoms and comorbidities of the COVID-19 patients.

| Clinical characteristics (symptoms) | No. reports | No. patients | Pooled prevalence | Test for Heterogeneity | Egger’s test |
|------------------------------------|-------------|-------------|------------------|------------------------|-------------|
|                                    |             |             |                  | I² (2%)                | P-value     |
| Fever                              | 29 (100%)   | 4,115       | 0.84 (0.80-0.88) | 90.670 < 0.001         | < 0.001     |
| Cough/dry cough                    | 29 (100%)   | 3,039       | 0.61 (0.55-0.67) | 93.400 < 0.001         | 0.382       |
| Fatigue/Weakness                   | 21 (72.41%) | 1,627       | 0.42 (0.34-0.51) | 96.320 < 0.001         | 0.107       |
| Dyspnoea/shortness of breath       | 18 (62.06%) | 920         | 0.39 (0.27-0.51) | 97.370 < 0.001         | < 0.001     |
| Headache                           | 22 (72.86%) | 448         | 0.12 (0.09-0.16) | 89.980 < 0.001         | 0.109       |
| Diarrhoea                          | 22 (72.86%) | 474         | 0.12 (0.08-0.17) | 95.720 < 0.001         | 0.004       |
| Sore throat                        | 9 (31.03%)  | 348         | 0.15 (0.11-0.20) | 84.990 < 0.001         | 0.266       |
| Myalgia/muscle ache                | 25 (86.20%) | 925         | 0.24 (0.18-0.30) | 95.000 < 0.001         | < 0.001     |
| Rhinorrhoea                        | 5 (17.24%)  | 48          | 0.15 (0.04-0.26) | 88.010 < 0.001         | 0.088       |
| Sputum production/expectoration    | 15 (51.72%) | 1,066       | 0.24 (0.19-0.30) | 92.310 < 0.001         | 0.956       |
| Chest tightness                    | 11 (37.93%) | 462         | 0.25 (0.15-0.31) | 88.440 < 0.001         | 0.527       |
| Chest pain                         | 5 (17.24%)  | 15          | 0.03 (0.01-0.04) | 0.000 < 0.95           | 0.878       |
| Nausea                             | 12 (41.37%) | 238         | 0.08 (0.04-0.12) | 91.780 < 0.001         | 0.023       |
| Vomiting                           | 14 (48.27%) | 209         | 0.06 (0.03-0.09) | 88.330 < 0.001         | 0.096       |
| Abdominal pain                     | 6 (20.68%)  | 42          | 0.04 (0.03-0.06) | 22.890 < 0.26          | 0.431       |
| Dizziness                          | 6 (20.68%)  | 71          | 0.05 (0.03-0.08) | 64.21 < 0.002          | 0.632       |
| Anorexia                           | 7 (24.13%)  | 539         | 0.26 (0.16-0.38) | 94.470 < 0.001         | < 0.001     |
| Pharyngalgia                       | 6 (20.68%)  | 86          | 0.07 (0.04-0.13) | 88.050 < 0.001         | 0.017       |
| Haemoptysis                        | 7 (24.13%)  | 47          | 0.02 (0.01-0.04) | 63.480 < 0.01          | 0.005       |

| Comorbidity                        |             |             |                  |                        |            |
|------------------------------------|-------------|-------------|------------------|------------------------|-------------|
| Diabetes                           | 27 (93.10%) | 539         | 0.12 (0.09-0.15) | 83.09 < 0.001          | 0.009       |
| Hypertension                       | 25 (86.20%) | 1,096       | 0.25 (0.18-0.28) | 93.24 < 0.001          | 0.149       |
| Cardiovascular disease             | 15 (51.72%) | 212         | 0.1 (0.07-0.13)  | 73.96 < 0.001          | 0.031       |
| Coronary heart disease             | 10 (34.48)  | 141         | 0.07 (0.03-0.12) | 92.21 < 0.001          | 0.007       |
| Cerebrovascular disease            | 10 (34.48)  | 100         | 0.06 (0.02-0.08) | 90.77 < 0.001          | 0.004       |
| COPD/lung disease                  | 21 (72.41%) | 136         | 0.03 (0.02-0.05) | 86.67 < 0.001          | < 0.001     |
| Chronic liver disease              | 15 (51.72%) | 96          | 0.03 (0.02-0.05) | 86.67 < 0.001          | < 0.001     |
| Chronic renal disease              | 9 (31.03%)  | 32          | 0.01 (0.00-0.03) | 54.65 < 0.001          | 0.005       |
| Chronic kidney disease             | 6 (20.68%)  | 41          | 0.05 (0.02-0.10) | 86.69 < 0.001          | 0.056       |
| Malignancy                         | 15 (51.72%) | 82          | 0.03 (0.02-0.04) | 68.06 < 0.001          | < 0.001     |
| ARDS**                             | 4 (15.79%)  | 111         | 0.61 (0.15-0.97) | 98.01 < 0.001          | 0.301       |

** ARDS reported in four studies and we include this study into our analysis because it showed higher prevalence rate.
In symptom group, fever, dyspnea/shortness of breath, nausea, vomiting, abdominal pain, dizziness, anorexia, and pharyngalgia were found positively associated with the COVID-19 patients’ age. In contrast, sore throat, headache, rhinorrhea, myalgia/muscle ache, fatigue, and hemoptysis were negatively associated with age. Similarly, in the comorbidity group, diabetes, hypertension, coronary heart disease, COPD/lung disease, and ARDS were in the same direction and positively associated with the age of the COVID-19 infected patients. The symptoms like chest tightness/pain and the comorbidities, including chronic liver and kidney diseases, showed no association with the patients’ age.

Considering group integration, the fever, dyspnea/shortness of breath, dizziness, pharyngalgia, and anorexia in the symptom group were positively associated with diabetes, ARDS, and kidney, cardiovascular, and liver diseases in comorbidity group. The symptoms like diarrhea, nausea, vomiting, and abdominal pain were positively associated with hypertension, coronary heart disease, and COPD/lung disease. The symptoms of sore throat, headache, rhinorrhea, myalgia/muscle ache, fatigue, and hemoptysis were positively associated with cerebrovascular disease (Fig. 2).

Table III summarizes the quality assessment of the selected studies. In 16 (55%) studies, participant recruitment method was appropriate, while the method was unclear in 45% studies. Thirteen (45%) studies had a sample size of more than 100, and about 96% of studies reported the subjects and design in detail. Validated methods were used in all studies, where the measurement was reliable, and the response rate was 100% (Tab. III).

The Egger test of symptoms – fever, dyspnea/shortness of breath, diarrhea, myalgia/muscle ache, nausea, anorexia, pharyngalgia, and hemoptysis – were found significant (p < 0.05), which suggested the presence of small-study effects. The comorbidities – diabetes, cardiovascular disease, cerebrovascular disease, COPD/lung disease, chronic liver disease, chronic renal disease, chronic kidney disease, and malignancy were found significant (p < 0.05) by the Egger’s test, that recommended the presence of small-study effects.

Discussion

We aimed to estimate the prevalence of all reported symptoms and comorbidities, and investigate the factors associated with age of patients tested positive in COVID-19. In our selected 29 studies, the ratio
Tab. III. Quality assessment of the selected studies.

| Authors            | Were study participants sampled in an appropriate way? | Was the sample size adequate? | Were the study subjects and the setting described in detail? | Were the data analysis conducted with sufficient coverage of the identified sample? | Were valid methods used for the identification of the condition? | Were the condition measured in a standard, reliable way for all participants? | Was there appropriate statistical analysis? | Was there an appropriate response rate, and if not, was the low response rate managed appropriately? |
|--------------------|--------------------------------------------------------|-------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wan et al. [17]    | Yes                                                    | Yes                           | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Zhang et al. [18]  | Yes                                                    | Yes                           | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Xu et al. [19]     | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Zhu et al. [20]    | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Chen et al. [21]   | Yes                                                    | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Liu et al. [22]    | Yes                                                    | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Chen et al. [23]   | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Mo et al. [24]     | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Liu et al. [25]    | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Jin et al. [26]    | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Wang et al. [27]   | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Yuan et al. [28]   | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Guan et al. [29]   | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Liu et al. [30]    | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Zhou et al. [31]   | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Huang et al. [32]  | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Chen et al. [33]   | Yes                                                    | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Du et al. [34]     | Not clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Xu et al. [35]     | Yes                                                    | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Not Clear                                                                                                                                                                                           |
| Goyal et al. [36]  | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Not Clear | Yes                                                                                                                                                                                                 |
| Barrasa et al. [37] | Yes                                                      | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Yan et al. [38]    | Yes                                                    | No                             | Not Clear                                                      | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Gupta et al. [39]  | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | No                                                            | Yes                                                                                                                                                                                                 |
| Yang et al. [40]   | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Han et al. [41]    | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Kim et al. [42]    | Yes                                                    | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | No                                                            | Yes                                                                                                                                                                                                 |
| Wang et al. [43]   | Yes                                                    | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | No                                                            | Yes                                                                                                                                                                                                 |
| Shi et al. [44]    | Not Clear                                              | Yes                            | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
| Yang et al. [45]   | Not Clear                                              | No                             | Yes                                                           | Yes                                                                              | Yes                                                             | Yes                                                             | Yes                                                          | Yes                                                                                                                                                                                                 |
of infection was reported higher in males than in females (100:82.5), and this result is consistent with previous studies [2, 5, 27, 45]. It is generally assumed that males are more likely to be infected by bacteria and viruses than females, because of the women’s robust innate and adaptive immune responses [3, 46]. Moreover, males are more vulnerable to infectious disease because of different patterns of occupation, social communication, and lifestyle than females. Furthermore, in many developing countries, women are housewives who stay at home and have little contact with others [47].

We found 33 symptoms and 43 comorbidities in the studies, and our meta-analysis included most reported 19 symptoms and 11 comorbidities. Fever, cough/dry cough, fatigue, dyspnea, anorexia, chest tightness, myalgia, sore throat, rhinorrhea, headache, and diarrhea were highly prevalent symptoms where the others symptoms were found rarely. All studies reported fever (84%) and cough/dry cough (61%) as symptoms consistent with relevant studies across the countries [19, 23, 25, 48]. Previous studies reported hypertension as the most common comorbidity [3, 6, 7], but our study suggests three major comorbidities – acute respiratory distress syndrome (61%), hypertension (23%), and diabetes (12%). Acute respiratory distress syndrome was found a higher prevalence rate (61%) as reported in three studies in China and one in outside China [28, 32, 36, 44]. We observed that the symptoms like anorexia (26%), chest tightness (25%) and rhinorrhea (13%), and one comorbidity, i.e., acute respiratory distress syndrome (61%) were examined with significant prevalence, but they were under-reported in the published systematic reviews [5, 6, 49, 50].

Human aging is associated with declines in adaptive and innate immunity, and it loses the body’s ability to protect against infections [51-53]. Virologists and clinicians agree that the older adults are more vulnerable to COVID-19, and the patient’s age can strongly be associated with symptoms and comorbidities [30, 54-57]. Our multivariate analysis revealed that a cluster of symptoms, including fever, dyspnea/shortness of breath, nausea, vomiting, abdominal pain, dizziness, anorexia, and pharyngalgia, as well as a cluster of comorbidities, including diabetes, hypertension, coronary heart disease, COPD/lung disease, and ARDS, were positively associated with the age of COVID-19 infected patients. The Centers for Disease Control and Prevention (CDC) suggested that the older adults are more likely to be asymptomatic and they are at greater risk of requiring hospitalization or dying if they are diagnosed with COVID-19 [58]. The comorbid conditions (e.g. hypertension, heart problems, diabetes) and disease symptoms were more severe in the elderly age than any other age groups [59-63]. In a study, Wu Z and the authors reported that the COVID-19 infected elderly aged above 80 years had a higher case fatality rate (14.8 vs 8.0%) than 70-80 years aged peoples [64]. The World Health Organization (WHO) reported that older people with pre-existing medical conditions including asthma, diabetes, and heart disease appear to be more vulnerable to becoming severely ill with the virus and this findings supports to many other studies [65-68].

During literature search, we were limited to only in English texts within the time frame January to April, 2020. The majority of the studies were found in China, and only five from other countries. More studies outside of China could add value in prevalence estimation. We found no data for <10 years children and thus, more studies are warranted in the child COVID-19 patients. Lastly, a few studies were found low sample size.

Conclusions

This review study is the unique effort of its kind that estimated all frequent symptoms and comorbidities, and determines the age related risk factors of the COVID-19 patients. We found a cluster of symptoms and comorbidities that were the age associated risk factors of patients infected in COVID-19. Thus, in very early stages of SARS-CoV-2 infection, if a patient exhibits any of the symptoms within the cluster, this patient should be isolated and the necessary actions should be taken. Our findings also suggest a prioritize vaccination by age groups and older people with underlying conditions. Finally, policymakers should develop a comprehensive mass media campaign to educate the general population about these symptoms and comorbidities.

Data availability statement

The full list of data and the data entries for all included studies is provided in the manuscript as a supplementary file. No additional supporting data is available.

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Conflict of interest statement

The authors declare no conflict of interest.

Authors’ contributions

MMR contributed to conceptualization, design and supervision of the study. MMR, BB and ZF
contributed to the screening of studies for inclusion and data extraction. MMR, BB, MJU and MABC searched the databases. MMR and ZF contributed to the analysis and interpretation of the data. MMR, BB and MH contributed to drafting and formatting of the manuscript. MMR, MH, MABC, MSH, MHS, MZI, ER and MJU contributed to supervision, editing and checking of the manuscript. All authors contributed to the reviewing for important intellectual context and approved of the manuscript to be submitted.

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## Supplementary Material

### S1. Characteristics of studies that evaluated the age related risk factors of COVID-19 patients.

| Authors       | Publication Date | Country & Location | Study Design | Mean/ Median Age | Patient No. (n) | Male (n) | Female (n) | Gender | Fever | Cough / Dry cough | Fatigue | Dyspnoea/ Shortness of breath | Headache | Diarrhoea |
|---------------|------------------|--------------------|--------------|------------------|----------------|----------|------------|--------|-------|---------------------|---------|--------------------------|----------|----------|
| Wang et al.   | 21.02.2020       | Chongqing, China   | N/M          | 47               | 138            | 72        | 63         | Both   | 0.69  | 0.77               | 0.33    | 0.13                     | 0.33     | 0.13     |
| Zhang et al.  | 18.2.2020        | Wuhan, China       | N/M          | 57               | 140            | 71        | 69         | Both   | 0.79  | 0.64               | 0.64    | 0.31                     | N/M      | 0.13     |
| Xu et al.     | 19.2.2020        | Zhejiang, China    | Retrospective| 41               | 62             | 35        | 27         | Both   | 0.77  | 0.81               | 0.52    | N/M                      | 0.34     | 0.08     |
| Zhu et al.    | 13.3.2020        | Anhui, China       | Retrospective| 46               | 32             | 15        | 17         | Both   | 0.84  | 0.66               | 0.16    | N/M                      | 0.05     | 0.03     |
| Chen et al.   | 16.02.2020       | Wuhan, China       | Retrospective| 56               | 21             | 17        | 4          | Both   | 0.99  | 0.80               | 0.85    | 0.52                     | 0.10     | 0.20     |
| Liu et al.    | 9.02.2020        | Shenzhen, China    | N/M          | 60               | 12             | 8         | 4          | Both   | 0.83  | 0.92               | N/M     | N/M                      | N/M      | N/M     |
| Chen et al.   | 26.03.2020       | Wuhan, China       | Retrospective| 62               | 274            | 171       | 103        | Both   | 0.91  | 0.68               | 0.50    | 0.44                     | 0.11     | 0.28     |
| Mo et al.     | 16.3.2020        | Wuhan, China       | Retrospective, single center | 54               | 155            | 86        | 69         | Both   | 0.81  | 0.63               | 0.73    | 0.32                     | 0.32     | 0.10     |
| Liu et al.    | 07.02.2020       | Hubei, China       | Retrospective| 57               | 137            | 61        | 76         | Both   | 0.82  | 0.48               | 0.32    | 0.19                     | 0.10     | 0.08     |
| Jin et al.    | 24.03.2020       | Zhejiang, China    | Retrospective| 46               | 651            | 351       | 320        | Both   | 0.84  | 0.67               | 0.18    | N/M                      | 0.10     | 0.50     |
| Wang et al.   | 17.03.2020       | Wuhan, China       | Retrospective, single center | 56               | 138            | 75        | 63         | Both   | 0.99  | 0.59               | 0.70    | 0.31                     | 0.07     | 0.10     |
| Yuan et al.   | 19.03.2020       | Hubei, China       | Retrospective| 60               | 27             | 12        | 15         | Both   | 0.78  | 0.59               | N/M     | 0.41                     | N/M      | N/M     |
| Guan et al.   | 28.02.2020       | China (50 provinces) | Cohort       | 47               | 1099           | 639       | 460        | Both   | 0.89  | 0.68               | 0.38    | N/M                      | 0.14     | 0.04     |
| Liu et al.    | 27.03.2020       | Hainan, China      | Retrospective| 68               | 56             | 31        | 25         | Both   | 0.76  | 0.56               | 0.09    | N/M                      | N/M      | N/M     |
| Zhou et al.   | 12.03.2020       | Wuhan, China       | N/M          | 51               | 254            | 115       | 139        | Both   | 0.84  | 0.39               | 0.52    | 0.04                     | 0.11     | 0.04     |
| Huang et al.  | 24.01.2019       | Wuhan, China       | Cohort       | 49               | 41             | 30        | 11         | Both   | 0.98  | 0.76               | 0.44    | 0.53                     | 0.08     | 0.03     |
| Chen et al.   | 29.01.2019       | Wuhan, China       | Retrospective, single center | 55.5             | 99             | 67        | 32         | Both   | 0.83  | 0.82               | N/M     | N/M                      | 0.08     | 0.02     |
| Du et al.     | 3.04.2020        | Wuhan, China       | Retrospective| 66               | 85             | 62        | 23         | Both   | 0.92  | 0.22               | 0.59    | 0.71                     | 0.05     | 0.19     |
| Xu et al.     | 28.02.2020       | Guangzhou, China   | N/M          | 50               | 90             | 39        | 51         | Both   | 0.78  | 0.63               | 0.21    | N/M                      | 0.04     | 0.06     |
| Goyal et al.  | 17.04.2020       | New York, USA      | Retrospective| 62               | 393            | 258       | 155        | Both   | 0.77  | 0.79               | N/M     | 0.57                     | N/M      | 0.24     |
| Burreau et al.| 1.04.2020        | Vitoria, Spain     | N/M          | 63               | 48             | 27        | 21         | Both   | 1.00  | 0.73               | N/M     | 0.88                     | N/M      | N/M     |
| Yan et al.    | 12.4.2020        | USA                | Cross sectional | 48.5             | 59             | 29        | 29         | Both   | 0.70  | 0.66               | 0.81    | 0.54                     | 0.66     | 0.48     |
| Gupta et al.  | 6.04.2020        | New Delhi, India   | Retrospective, Observational | 40               | 21             | 14        | 7          | Both   | 0.43  | 0.43               | N/M     | N/M                      | 0.14     | 0.14     |
| Yang et al.   | 21.02.2020       | Wenzhou, China     | Retrospective cohort | 45               | 149            | 81        | 68         | Both   | 0.77  | 0.58               | N/M     | 0.01                     | 0.09     | 0.07     |
| Han et al.    | 15.04.2020       | Wuhan, China       | Retrospective | 62.5             | 206            | 91        | 115        | Both   | 0.67  | 0.26               | 0.45    | N/M                      | N/M      | 0.33     |
| Kim et al.    | 6.04.2020        | South Korea        | Cohort       | 40               | 28             | 15        | 13         | Both   | 0.25  | 0.29               | 0.11    | N/M                      | 0.25     | 0.11     |
| Wang et al.   | 15.03.2020       | Wuhan, China       | Retrospective, single-centre | 69               | 339            | 166       | 173        | Both   | 0.92  | 0.53               | 0.40    | 0.41                     | 0.04     | 0.13     |
| Shi et al.    | 24.02.2020       | Wuhan, China       | Retrospective | 49.5             | 81             | 42        | 39         | Both   | 0.73  | 0.59               | 0.09    | 0.42                     | 0.06     | 0.04     |
| Yang et al.   | 21.02.2020       | Wuhan, China       | Retrospective, single-centre, Observational | 60               | 52             | 35        | 17         | Both   | 0.98  | 0.77               | N/M     | 0.64                     | 0.06     | N/M     |

N/M: Not Mentioned
S1 (Continued). Characteristics of studies that evaluated the age related risk factors of COVID-19 patients.

| Authors | Sore Throat | Myalgia | Muscle Ache | Cough | Rhinorrhea | Sputum Production | Chest tightness | Chest pain | Nausea | Vomiting | Abdominal Pain | Diarrhea | Anorexia | Pharyngitis | Hemoptysis | Others | No. of Symptoms |
|---------|-------------|---------|-------------|-------|------------|-------------------|----------------|------------|--------|----------|---------------|----------|----------|-------------|-----------|--------|----------------|
| Wan et al. | N/M 0.33 | N/M 0.09 | N/M | N/M | N/M | N/M | N/M 0.18 | N/M 0.03 | Loss of appetite-4.4%, Palpitation-3.7%, Retching-3.7% |
| Zhang et al. | N/M N/M | N/M N/M | N/M 0.31 | N/M 0.17 | N/M 0.06 | N/M 0.17 | N/M N/M | N/M | N/M 0.03 | N/M 8 |
| Xu et al. | N/M 0.52 | N/M 0.16 | N/M | N/M 0.09 | N/M N/M | N/M N/M | N/M | N/M | N/M 0.03 | N/M 8 |
| Zhu et al. | N/M 0.16 | N/M 0.55 | N/M | N/M | N/M | N/M | N/M 0.26 | N/M 0.38 | N/M 0.09 | N/M 0.24 | N/M 0.04 | N/M 0.03 | 15 |
| Chen et al. | N/M 0.40 | N/M 0.30 | N/M | N/M 0.09 | N/M | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Heart palpitation-7% |
| Liu et al. | N/M 0.33 | N/M 0.17 | N/M | N/M | N/M 0.17 | N/M N/M | N/M | N/M 0.09 | N/M 0.40 | N/M 0.17 | N/M |
| Chen et al. | N/M 0.22 | N/M 0.39 | N/M | N/M 0.04 | N/M | N/M | N/M 0.04 | N/M 0.32 | N/M 0.05 | N/M 0.40 | N/M 0.17 | N/M 0.34 | N/M |
| Mo et al. | N/M 0.61 | N/M 0.30 | N/M | N/M 0.09 | N/M | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | 14 |
| Liu et al. | N/M 0.32 | N/M 0.10 | N/M | N/M 0.04 | N/M | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Nasal obstruction-6% |
| Jin et al. | N/M 0.15 | N/M 0.10 | N/M | N/M 0.10 | N/M 0.04 | N/M 0.09 | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Conjunctival congestion-1%, Nasal congestion-5%, Chills-11.5%, Throat congestion-2%, Throat swelling-2%, Rash-0.2% |
| Wang et al. | N/M 0.35 | N/M 0.34 | N/M | N/M 0.05 | N/M 0.05 | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Conjunctival congestion-1%, Nasal congestion-5%, Chills-11.5%, Throat congestion-2%, Throat swelling-2%, Rash-0.2% |
| Yuan et al. | N/M 0.40 | N/M 0.34 | N/M | N/M 0.05 | N/M 0.05 | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Conjunctival congestion-1%, Nasal congestion-5%, Chills-11.5%, Throat congestion-2%, Throat swelling-2%, Rash-0.2% |
| Guan et al. | N/M 0.14 | N/M 0.15 | N/M | N/M 0.05 | N/M 0.05 | N/M | N/M 0.04 | N/M 0.32 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Conjunctival congestion-1%, Nasal congestion-5%, Chills-11.5%, Throat congestion-2%, Throat swelling-2%, Rash-0.2% |
| Liu et al. | N/M N/M | N/M 0.07 | N/M | N/M | N/M 0.17 | N/M N/M | N/M | N/M 0.05 | N/M 0.05 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 |
| Zhou et al. | N/M 0.06 | N/M 0.34 | N/M 0.26 | N/M | N/M | N/M 0.07 | N/M | N/M 0.05 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Nasal congestion-5% |
| Huang et al. | N/M 0.44 | N/M 0.28 | N/M | N/M | N/M | N/M | N/M 0.05 | N/M 0.05 | N/M 0.04 | N/M 0.02 | N/M 0.05 | Nasal congestion-5% |
| Chen et al. | N/M 0.05 | N/M 0.11 | N/M | N/M | N/M | N/M | N/M 0.09 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Du et al. | N/M 0.17 | N/M 0.04 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Xu et al. | N/M 0.26 | N/M 0.04 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Goyal et al. | N/M 0.19 | N/M 0.19 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Barua et al. | N/M 0.04 | N/M 0.04 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Yan et al. | N/M 0.32 | N/M 0.31 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Gupta et al. | N/M 0.24 | N/M 0.03 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Yang et al. | N/M 0.14 | N/M 0.03 | N/M | N/M | N/M | N/M | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | N/M 0.04 | Nasal congestion-5% |
| Han et al. | N/M 0.21 | N/M 0.24 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Kim et al. | N/M 0.29 | N/M 0.25 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Wang et al. | N/M 0.05 | N/M 0.04 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Shi et al. | N/M N/M | N/M 0.26 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |
| Yang et al. | N/M 0.12 | N/M 0.06 | N/M | N/M | N/M | N/M | N/M 0.06 | N/M 0.04 | N/M 0.02 | N/M 0.05 | N/M 0.04 | Nasal congestion-5% |

N/M: Not Mentioned
### S1 (Continued). Characteristics of studies that evaluated the age related risk factors of COVID-19 patients.

| Authors | Diabetes | Hypertension | Cardiovascular Disease | Coronary heart disease | Cerebrovascular disease | COPD / Lung disease | Chronic liver disease | Chronic Renal disease | Chronic Kidney disease | Malignancy | ARDS | Others | No. of Comorbidities |
|---------|----------|--------------|------------------------|------------------------|------------------------|---------------------|----------------------|----------------------|----------------------|------------|------|--------|---------------------|
| Wua et al. | 0.09 | 0.10 | 0.05 | N/M | N/M | 0.007 | 0.02 | N/M | N/M | 0.03 | N/M | N/M | N/M | 6 |
| Zhang et al. | 0.12 | 0.30 | N/M | 0.05 | N/M | 0.014 | 0.06 | 0.01 | N/M | N/M | N/M | N/M | 12 |
| Xu et al. | 0.02 | 0.08 | N/M | N/M | 0.02 | 0.20 | 0.11 | 0.02 | N/M | N/M | N/M | N/M | 6 |
| Zhu et al. | 0.13 | 0.22 | N/M | 0.06 | 0.03 | 0.06 | 0.06 | 0.03 | N/M | N/M | N/M | N/M | 9 |
| Chen et al. | 0.14 | 0.24 | N/M | N/M | 0.33 | N/M | 0.08 | 0.08 | N/M | N/M | N/M | N/M | 2 |
| Liu et al. | 0.08 | 0.25 | N/M | N/M | 0.07 | N/M | 0.01 | 0.07 | N/M | N/M | N/M | N/M | 7 |
| Chen et al. | 0.17 | 0.34 | 0.08 | N/M | 0.01 | 0.07 | N/M | 0.01 | 0.03 | N/M | N/M | N/M | 11 |
| Mo et al. | 0.10 | 0.24 | 0.10 | N/M | 0.05 | 0.05 | 0.05 | 0.04 | N/M | N/M | 0.05 | N/M | Tuberculosis-2%, HIV-1% | 10 |
| Liu et al. | 0.10 | 0.10 | 0.07 | N/M | N/M | 0.015 | N/M | N/M | N/M | 0.02 | N/M | N/M | N/M | 5 |
| Jin et al. | 0.07 | 0.15 | N/M | 0.01 | N/M | 0.002 | 0.04 | 0.01 | N/M | N/M | 0.01 | N/M | N/M | 8 |
| Wang et al. | 0.10 | 0.31 | 0.15 | N/M | 0.05 | 0.03 | 0.03 | 0.03 | N/M | 0.03 | 0.07 | N/M | N/M | 9 |
| Yuan et al. | 0.22 | 0.19 | 0.11 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 0.41 | N/M | 9 |
| Guan et al. | 0.07 | 0.15 | N/M | 0.03 | 0.01 | 0.01 | 0.01 | N/M | N/M | 0.01 | N/M | N/M | N/M | 9 |
| Liu et al. | 0.07 | 0.17 | N/M | 0.11 | N/M | N/M | 0.06 | N/M | N/M | 0.03 | N/M | N/M | N/M | 6 |
| Zhou et al. | 0.10 | 0.25 | 0.05 | 0.07 | N/M | 0.02 | 0.01 | N/M | N/M | 0.01 | N/M | N/M | N/M | 8 |
| Huang et al. | 0.20 | 0.15 | 0.15 | N/M | 0.02 | 0.02 | N/M | N/M | N/M | 0.02 | N/M | N/M | N/M | 6 |
| Chen et al. | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 0.17 | N/M | 5 |
| Du et al. | 0.22 | 0.38 | 0.08 | 0.12 | N/M | 0.02 | 0.06 | N/M | N/M | 0.04 | 0.07 | N/M | N/M | 8 |
| Xu et al. | 0.06 | 0.19 | 0.03 | N/M | N/M | 0.01 | N/M | N/M | N/M | 0.02 | N/M | N/M | N/M | 6 |
| Goyal et al. | 0.25 | 0.50 | N/M | 0.14 | N/M | 0.05 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 6 |
| Barrasa et al. | 0.19 | 0.44 | N/M | 0.10 | N/M | 0.38 | N/M | N/M | N/M | 1.00 | N/M | N/M | N/M | 7 |
| Yang et al. | 0.09 | 0.14 | 0.05 | N/M | N/M | 0.05 | N/M | N/M | N/M | 0.04 | N/M | N/M | N/M | 7 |
| Gupta et al. | 0.14 | 0.24 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 6 |
| Yang et al. | N/M | N/M | 0.19 | N/M | 0.19 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | Obstructive sleep apnea-5%, Respiratory system disease-0.67%, Digestive system disease-5%, Endocrine disease-6% | 5 |
| Han et al. | 0.10 | 0.27 | N/M | N/M | 0.08 | 0.04 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 4 |
| Kim et al. | 0.07 | 0.27 | N/M | N/M | 0.04 | N/M | N/M | N/M | N/M | N/M | N/M | N/M | N/M | 5 |
| Wang et al. | 0.16 | 0.41 | 0.16 | N/M | 0.06 | 0.06 | 0.01 | N/M | N/M | 0.04 | 0.04 | N/M | N/M | N/M | 9 |
| Shi et al. | 0.12 | 0.15 | 0.10 | N/M | 0.07 | 0.11 | 0.09 | 0.04 | N/M | N/M | 0.05 | N/M | N/M | N/M | 8 |
| Yang et al. | 0.35 | 0.23 | N/M | N/M | 0.29 | N/M | 0.29 | N/M | N/M | 0.67 | N/M | N/M | N/M | N/M | 7 |

N/M: Not Mentioned
POOLED ESTIMATION OF THE SYMPTOMS AND COMORBIDITIES

SYMPTOMS

**Fever**

Meta-analysis of the prevalence of clinical symptom (Fever) in COVID-19 infected patients

| Study | ES (95% CI) |
|-------|-------------|
| Wang et al. (N=135) (Chongqing, China) | 0.89 (0.82, 0.93) |
| Zhang et al. (N=140) (Wuhan, China) | 0.79 (0.71, 0.85) |
| Xu et al. (N=62) (Zhejiang, China) | 0.77 (0.66, 0.86) |
| Zhu et al. (N=32) (Anhui, China) | 0.84 (0.68, 0.93) |
| Chen et al. (N=21) (Wuhan, China) | 1.00 (0.85, 1.00) |
| Liu et al. (N=12) (Shenzhen, China) | 0.83 (0.56, 0.95) |
| Chen et al. (N=274) (Wuhan, China) | 0.91 (0.87, 0.94) |
| Mo et al. (N=155) (Wuhan, China) | 0.81 (0.74, 0.87) |
| Liu et al. (N=137) (Hubei, China) | 0.82 (0.74, 0.87) |
| Jin et al. (N=651) (Zhejiang, China) | 0.84 (0.81, 0.87) |
| Wang et al. (N=138) (Wuhan, China) | 0.99 (0.96, 1.00) |
| Yuan et al. (N=27) (Hubei, China) | 0.78 (0.59, 0.89) |
| Guan et al. (N=1099) (30 provinces, China) | 0.89 (0.87, 0.91) |
| Liu et al. (N=56) (Hainan, China) | 0.77 (0.64, 0.86) |
| Zhou et al. (N=254) (Wuhan, China) | 0.84 (0.79, 0.88) |
| Huang et al. (N=41) (Wuhan, China) | 0.98 (0.87, 1.00) |
| Chen et al. (N=96) (Wuhan, China) | 0.83 (0.74, 0.89) |
| Du et al. (N=85) (Wuhan, China) | 0.92 (0.84, 0.96) |
| Xu et al. (N=90) (Guangzhou, China) | 0.78 (0.68, 0.85) |
| Goyal et al. (N=393) (New York, USA) | 0.77 (0.73, 0.81) |
| Barrasa et al. (N=48) (Vitoria, Spain) | 1.00 (0.93, 1.00) |
| Yan et al. (N=59) (USA) | 0.69 (0.57, 0.80) |
| Gupta et al. (N=21) (New Delhi, India) | 0.43 (0.24, 0.63) |
| Yang et al. (N=149) (Wenzhou, China) | 0.77 (0.70, 0.83) |
| Han et al. (N=206) (Wuhan, China) | 0.67 (0.60, 0.73) |
| Kim et al. (N=28) (South Korea) | 0.25 (0.13, 0.43) |
| Wang et al. (N=339) (Wuhan, China) | 0.92 (0.89, 0.94) |
| Shi et al. (N=81) (Wuhan, China) | 0.73 (0.62, 0.81) |
| Yang et al. (N=52) (Wuhan, China) | 0.98 (0.90, 1.00) |
| Overall (I^2 = 90.67%, p = 0.00) | 0.84 (0.80, 0.88) |
53. Cough / Dry Cough

Meta-analysis of the prevalence of clinical symptom (Cough) in COVID-19 infected patients

| Study                                      | ES (95% CI)     |
|--------------------------------------------|-----------------|
| Wan et al. (N=135) (Chongqing, China)      | 0.76 (0.68, 0.83) |
| Zhang et al. (N=140) (Wuhan, China)        | 0.64 (0.56, 0.72) |
| Xu et al. (N=62) (Zhejiang, China)         | 0.81 (0.69, 0.89) |
| Zhu et al. (N=32) (Anhui, China)           | 0.66 (0.48, 0.80) |
| Chen et al. (N=21) (Wuhan, China)          | 0.81 (0.60, 0.92) |
| Liu et al. (N=12) (Shenzhen, China)        | 0.92 (0.65, 0.99) |
| Chen et al. (N=274) (Wuhan, China)         | 0.68 (0.62, 0.73) |
| Mo et al. (N=155) (Wuhan, China)           | 0.63 (0.55, 0.70) |
| Liu et al. (N=137) (Hubei, China)          | 0.48 (0.40, 0.56) |
| Jin et al. (N=651) (Zhejiang, China)       | 0.67 (0.63, 0.70) |
| Wang et al. (N=138) (Wuhan, China)         | 0.59 (0.51, 0.67) |
| Yuan et al. (N=27) (Hubei, China)          | 0.59 (0.41, 0.75) |
| Guan et al. (N=1099) (30 provinces, China) | 0.68 (0.65, 0.71) |
| Liu et al. (N=56) (Hainan, China)          | 0.36 (0.24, 0.49) |
| Zhou et al. (N=254) (Wuhan, China)         | 0.39 (0.33, 0.45) |
| Huang et al. (N=41) (Hainan, China)        | 0.76 (0.61, 0.86) |
| Chen et al. (N=99) (Wuhan, China)          | 0.82 (0.73, 0.88) |
| Du et al. (N=85) (Wuhan, China)            | 0.22 (0.15, 0.32) |
| Xu et al. (N=90) (Guangzhou, China)        | 0.63 (0.53, 0.73) |
| Goyal et al. (N=393) (New York, USA)       | 0.79 (0.75, 0.83) |
| Barrasa et al. (N=48) (Vitoria, Spain)     | 0.73 (0.59, 0.83) |
| Yan et al. (N=59) (USA)                    | 0.66 (0.53, 0.77) |
| Gupta et al. (N=21) (New Delhi, India)     | 0.43 (0.24, 0.63) |
| Yang et al. (N=149) (Wenzhou, China)       | 0.58 (0.50, 0.65) |
| Han et al. (N=206) (Wuhan, China)          | 0.26 (0.21, 0.33) |
| Kim et al. (N=28) (South Korea)            | 0.29 (0.15, 0.47) |
| Wang et al. (N=539) (Wuhan, China)         | 0.53 (0.48, 0.58) |
| Shi et al. (N=81) (Wuhan, China)           | 0.59 (0.48, 0.69) |
| Yang et al. (N=52) (Wuhan, China)          | 0.77 (0.64, 0.86) |
| Overall (*2 = 93.40%, p = 0.00)            | 0.61 (0.55, 0.67) |
## S4. Fatigue/Weakness

Meta-analysis of the prevalence of clinical symptom (Fatigue) in COVID-19 infected patients

| Study                          | ES (95% CI) |
|--------------------------------|-------------|
| Wan et al. (N=135) (Chongqing, China) | 0.33 (0.26, 0.42) |
| Zhang et al. (N=140) (Wuhan, China)  | 0.64 (0.56, 0.72) |
| Xu et al. (N=62) (Zhejiang, China)  | 0.52 (0.39, 0.64) |
| Zhu et al. (N=32) (Anhui, China)    | 0.18 (0.07, 0.32) |
| Chen et al. (N=21) (Wuhan, China)   | 0.86 (0.65, 0.95) |
| Chen et al. (N=274) (Wuhan, China)  | 0.50 (0.44, 0.56) |
| Mo et al. (N=155) (Wuhan, China)    | 0.73 (0.65, 0.79) |
| Liu et al. (N=137) (Hubei, China)   | 0.32 (0.25, 0.40) |
| Jin et al. (N=651) (Zhejiang, China) | 0.18 (0.15, 0.21) |
| Wang et al. (N=138) (Wuhan, China)  | 0.70 (0.62, 0.77) |
| Guan et al. (N=1099) (30 provinices, China) | 0.38 (0.36, 0.41) |
| Liu et al. (N=56) (Hainan, China)   | 0.09 (0.04, 0.19) |
| Zhou et al. (N=254) (Wuhan, China)  | 0.52 (0.46, 0.58) |
| Huang et al. (N=41) (Wuhan, China)  | 0.44 (0.30, 0.59) |
| Du et al. (N=85) (Wuhan, China)     | 0.59 (0.48, 0.69) |
| Xu et al. (N=90) (Guangzhou, China) | 0.21 (0.14, 0.31) |
| Yan et al. (N=59) (USA)            | 0.81 (0.70, 0.89) |
| Han et al. (N=206) (Wuhan, China)  | 0.43 (0.39, 0.52) |
| Kim et al. (N=289) (South korea)   | 0.11 (0.04, 0.27) |
| Wang et al. (N=339) (Wuhan, China) | 0.40 (0.35, 0.45) |
| Shi et al. (N=81) (Wuhan, China)   | 0.09 (0.04, 0.17) |
| Overall (I^2 = 96.32%, p = 0.00)   | 0.42 (0.34, 0.51) |
55. Dyspnea/Shortness of breath

Meta-analysis of the prevalence of clinical symptom (Dyspnea) in COVID-19 infected patients

| Study                                           | ES (95% CI) |
|------------------------------------------------|-------------|
| Wan et al. (N=135) (Chongqing, China)          | 0.13 (0.09, 0.20) |
| Zhang et al. (N=140) (Wuhan, China)            | 0.31 (0.24, 0.40) |
| Chen et al. (N=21) (Wuhan, China)              | 0.52 (0.32, 0.72) |
| Chen et al. (N=274) (Wuhan, China)             | 0.44 (0.38, 0.50) |
| Mo et al. (N=155) (Wuhan, China)               | 0.32 (0.25, 0.40) |
| Liu et al. (N=137) (Hubei, China)              | 0.19 (0.13, 0.26) |
| Wang et al. (N=138) (Wuhan, China)             | 0.31 (0.24, 0.39) |
| Yuan et al. (N=27) (Hubei, China)              | 0.41 (0.25, 0.59) |
| Zhou et al. (N=254) (Wuhan, China)             | 0.04 (0.02, 0.07) |
| Huang et al. (N=41) (Wuhan, China)             | 0.56 (0.41, 0.70) |
| Du et al. (N=85) (Wuhan, China)                | 0.71 (0.60, 0.79) |
| Goyal et al. (N=393) (New York, USA)           | 0.56 (0.52, 0.61) |
| Barrasa et al. (N=48) (Vitoria, Spain)         | 0.88 (0.75, 0.94) |
| Yan et al. (N=59) (USA)                        | 0.54 (0.42, 0.66) |
| Yang et al. (N=149) (Wenzhou, China)           | 0.01 (0.00, 0.04) |
| Wang et al. (N=339) (Wuhan, China)             | 0.41 (0.36, 0.46) |
| Shi et al. (N=81) (Wuhan, China)               | 0.42 (0.32, 0.53) |
| Yang et al. (N=52) (Wuhan, China)              | 0.63 (0.50, 0.75) |
| Overall (*2 = 97.37%, p = 0.00)                | 0.39 (0.27, 0.51) |
6. Headache

Meta-analysis of the prevalence of clinical symptom (Headache) in COVID-19 infected patients

| Study                               | ES (95% CI)     |
|-------------------------------------|-----------------|
| Yan et al. (N=155) (Chongqing, China) | 0.33 (0.25, 0.41) |
| Xu et al. (N=62) (Zhejiang, China)  | 0.34 (0.23, 0.46) |
| Zhu et al. (N=132) (Anhui, China)   | 0.03 (0.01, 0.16) |
| Chen et al. (N=21) (Wuhan, China)   | 0.10 (0.03, 0.29) |
| Chen et al. (N=274) (Wuhan, China)  | 0.11 (0.08, 0.15) |
| Mo et al. (N=155) (Wuhan, China)    | 0.10 (0.06, 0.16) |
| Liu et al. (N=137) (Hubei, China)   | 0.09 (0.06, 0.16) |
| Jin et al. (N=651) (Zhejiang, China)| 0.10 (0.08, 0.13) |
| Wang et al. (N=138) (Wuhan, China)  | 0.07 (0.03, 0.12) |
| Guan et al. (N=1099) (30 provinces, China) | 0.14 (0.12, 0.16) |
| Zhou et al. (N=254) (Wuhan, China)  | 0.11 (0.08, 0.15) |
| Huang et al. (N=41) (Wuhan, China)  | 0.07 (0.03, 0.19) |
| Chen et al. (N=99) (Wuhan, China)   | 0.08 (0.04, 0.15) |
| Du et al. (N=85) (Wuhan, China)     | 0.06 (0.02, 0.11) |
| Xu et al. (N=90) (Guangzhou, China) | 0.04 (0.02, 0.11) |
| Yan et al. (N=59) (USA)             | 0.66 (0.53, 0.77) |
| Gupta et al. (N=21) (New Delhi, India) | 0.14 (0.05, 0.35) |
| Yang et al. (N=149) (Wenzhou, China) | 0.09 (0.05, 0.14) |
| Kim et al. (N=28) (South Korea)     | 0.26 (0.13, 0.43) |
| Wang et al. (N=339) (Wuhan, China)  | 0.04 (0.02, 0.06) |
| Shi et al. (N=81) (Wuhan, China)    | 0.06 (0.03, 0.14) |
| Xiaobo Hong (N=52) (Wuhan, China)   | 0.06 (0.02, 0.16) |
| Overall (I² = 89.98%, p = 0.00)     | 0.12 (0.09, 0.16) |
### Meta-analysis of the prevalence of clinical symptom (Diarrhea) in COVID-19 infected patients

| Study                                      | ES (95% CI)   |
|--------------------------------------------|---------------|
| Wan et al. (N=136) (Chongqing, China)      | 0.13 (0.09, 0.20) |
| Zhang et al. (N=140) (Wuhan, China)        | 0.13 (0.08, 0.19) |
| Xu et al. (N=62) (Zhejiang, China)         | 0.08 (0.03, 0.18) |
| Zhu et al. (N=32) (Anhui, China)           | 0.03 (0.01, 0.16) |
| Chen et al. (N=21) (Wuhan, China)          | 0.19 (0.08, 0.40) |
| Liu et al. (N=12) (Shenzhen, China)        | 0.17 (0.05, 0.46) |
| Chen et al. (N=274) (Wuhan, China)         | 0.28 (0.23, 0.34) |
| Mo et al. (N=155) (Wuhan, China)           | 0.05 (0.02, 0.09) |
| Liu et al. (N=137) (Hubei, China)          | 0.08 (0.05, 0.14) |
| Wang et al. (N=138) (Wuhan, China)         | 0.10 (0.06, 0.18) |
| Guan et al. (N=1099) (30 provinces, China) | 0.04 (0.03, 0.05) |
| Huang et al. (N=41) (Wuhan, China)         | 0.02 (0.00, 0.13) |
| Chen et al. (N=99) (Wuhan, China)          | 0.02 (0.01, 0.07) |
| Du et al. (N=85) (Wuhan, China)            | 0.19 (0.12, 0.28) |
| Xu et al. (N=90) (Guangzhou, China)        | 0.06 (0.02, 0.12) |
| Goyal et al. (N=393) (New York, USA)       | 0.24 (0.20, 0.28) |
| Yan et al. (N=69) (USA)                    | 0.47 (0.35, 0.60) |
| Yang et al. (N=149) (Wenzhou, China)       | 0.07 (0.04, 0.12) |
| Han et al. (N=206) (Wuhan, China)          | 0.33 (0.26, 0.39) |
| Kim et al. (N=28) (South Korea)            | 0.11 (0.04, 0.27) |
| Wang et al. (N=339) (Wuhan, China)         | 0.13 (0.10, 0.17) |
| Shi et al. (N=81) (Wuhan, China)           | 0.04 (0.01, 0.10) |
| Overall (I² = 93.72%, p = 0.00)            | 0.12 (0.08, 0.17) |
**S8. Sore Throat**

Meta-analysis of the prevalence of clinical symptom (Sore Throat) in COVID-19 infected patients

| Study                          | ES (95% CI) |
|-------------------------------|-------------|
| Jin et al. (N=710) (Zhejiang, China) | 0.18 (0.13, 0.18) |
| Gao et al. (N=1031) (36 provinces, China) | 0.14 (0.12, 0.16) |
| Zhou et al. (N=95) (Shanghai, China) | 0.08 (0.04, 0.11) |
| Chen et al. (N=99) (Wuhan, China) | 0.29 (0.22, 0.37) |
| Su et al. (N=48) (Shanghai, China) | 0.26 (0.19, 0.30) |
| Tam et al. (N=32) (Singapore) | 0.32 (0.30, 0.34) |
| Gupta et al. (N=78) (New Delhi, India) | 0.24 (0.17, 0.30) |
| Yang et al. (N=176) (Shenzhen, China) | 0.14 (0.09, 0.19) |
| Wu et al. (N=200) (South Korea) | 0.20 (0.16, 0.24) |
| Overall (70.4% WLL, p < 0.05) | 0.18 (0.11, 0.26) |
### Meta-analysis of the prevalence of clinical symptom (Myalgia) in COVID-19 infected patients

| Study                                | ES (95% CI)   |
|--------------------------------------|---------------|
| Wan et al. (N=135) (Chongqing, China) | 0.33 (0.25, 0.41) |
| Xu et al. (N=62) (Zhejiang, China)   | 0.52 (0.39, 0.64) |
| Zhu et al. (N=32) (Anhui, China)     | 0.16 (0.07, 0.32) |
| Chen et al. (N=21) (Wuhan, China)    | 0.38 (0.21, 0.59) |
| Liu et al. (N=12) (Shenzhen, China)  | 0.33 (0.14, 0.51) |
| Chen et al. (N=274) (Wuhan, China)   | 0.22 (0.17, 0.27) |
| Mo et al. (N=155) (Wuhan, China)     | 0.61 (0.53, 0.69) |
| Liu et al. (N=137) (Hubei, China)    | 0.32 (0.25, 0.40) |
| Jin et al. (N=651) (Zhejiang, China) | 0.11 (0.09, 0.14) |
| Wang et al. (N=138) (Wuhan, China)   | 0.35 (0.27, 0.43) |
| Yuan et al. (N=27) (Hubei, China)    | 0.11 (0.04, 0.28) |
| Guan et al. (N=1099) (30 provinces, China) | 0.15 (0.13, 0.17) |
| Zhou et al. (N=254) (Wuhan, China)   | 0.34 (0.28, 0.40) |
| Huang et al. (N=41) (Wuhan, China)   | 0.44 (0.30, 0.59) |
| Chen et al. (N=99) (Wuhan, China)    | 0.11 (0.06, 0.19) |
| Du et al. (N=85) (Wuhan, China)      | 0.16 (0.10, 0.26) |
| Xu et al. (N=90) (Guangzhou, China)  | 0.28 (0.20, 0.38) |
| Goyal et al. (N=303) (New york, USA) | 0.19 (0.16, 0.23) |
| Barrasa et al. (N=48) (Vitoria, Spain) | 0.04 (0.01, 0.14) |
| Yan et al. (N=59) (USA)              | 0.63 (0.50, 0.74) |
| Yang et al. (N=149) (Wenzhou, China) | 0.03 (0.01, 0.07) |
| Han et al. (N=200) (Wuhan, China)    | 0.21 (0.16, 0.27) |
| Kim et al. (N=28) (South korea)      | 0.25 (0.13, 0.43) |
| Wang et al. (N=339) (Wuhan, China)   | 0.05 (0.03, 0.08) |
| Yang et al. (N=52) (Wuhan, China)    | 0.12 (0.05, 0.23) |
| Overall ($\chi^2 = 95.00\%, \ p = 0.00$) | 0.24 (0.18, 0.30) |

**Overall Proportion: 0.23 (0.18, 0.28)**
# S10. Rhinorrhea

Meta-analysis of the prevalence of clinical symptom (Rhinorrhea) in COVID-19 infected patients

| Study                                      | ES (95% CI)     |
|-------------------------------------------|-----------------|
| Chen et al. (2020) (Wuhan, China)         | 0.04 (0.02, 0.08) |
| Han et al. (2020) (China)                 | 0.01 (0.00, 0.03) |
| Kim et al. (2020) (South Korea)           | 0.02 (0.00, 0.04) |
| Shi et al. (2020) (Wuhan, China)          | 0.06 (0.03, 0.08) |
| Yang et al. (2020) (Wuhan, China)         | 0.08 (0.05, 0.10) |
| Overall (I² = 88.01%, p = 0.00)           | 0.13 (0.04, 0.26) |
### Meta-analysis of the prevalence of clinical symptom (Sputum Production) in COVID-19 infected patients

| Study                                              | ES (95% CI)     |
|----------------------------------------------------|-----------------|
| Wan et al. (N=135) (Chongqing, China)              | 0.29 (0.25, 0.33) |
| Zhu et al. (N=32) (Anhui, China)                   | 0.15 (0.07, 0.32) |
| Chen et al. (N=274) (Wuhan, China)                 | 0.30 (0.25, 0.36) |
| Liu et al. (N=137) (Kunbi, China)                  | 0.04 (0.02, 0.06) |
| Jin et al. (N=651) (Zhejiang, China)               | 0.35 (0.31, 0.39) |
| Wang et al. (N=126) (Wuhan, China)                 | 0.27 (0.20, 0.35) |
| Guan et al. (N=1099) (26 provinces, China)         | 0.34 (0.31, 0.37) |
| Zhou et al. (N=256) (Wuhan, China)                 | 0.42 (0.36, 0.48) |
| Huang et al. (N=41) (Wuhan, China)                 | 0.27 (0.19, 0.35) |
| Du et al. (N=45) (Wuhan, China)                    | 0.28 (0.20, 0.40) |
| Xu et al. (N=96) (Guangdong, China)                | 0.12 (0.07, 0.21) |
| Yang et al. (N=149) (Wenzhou, China)               | 0.32 (0.26, 0.45) |
| Kim et al. (N=28) (South Korea)                    | 0.21 (0.10, 0.40) |
| Wang et al. (N=339) (Wuhan, China)                 | 0.27 (0.23, 0.32) |
| Shi et al. (N=85) (Wuhan, China)                   | 0.19 (0.12, 0.28) |
| Overall (I² = 92.31%, p = 0.02)                    | 0.24 (0.19, 0.30) |
Meta-analysis of the prevalence of clinical symptom (Chest Tightness) in COVID-19 infected patients

| Study                                      | ES (95% CI) |
|--------------------------------------------|-------------|
| Zhang et al. (N=140) (Wuhan, China)        | 0.31 (0.24, 0.36) |
| Zhu et al. (N=32) (Anhui, China)           | 0.09 (0.03, 0.24) |
| Chen et al. (N=21) (Wuhan, China)          | 0.57 (0.37, 0.78) |
| Chen et al. (N=274) (Wuhan, China)         | 0.38 (0.30, 0.44) |
| Mo et al. (N=155) (Wuhan, China)           | 0.39 (0.31, 0.47) |
| Liu et al. (N=50) (Hunan, China)           | 0.07 (0.03, 0.17) |
| Zhou et al. (N=204) (Wuhan, China)         | 0.28 (0.21, 0.32) |
| Yang et al. (N=149) (Wenzhou, China)       | 0.10 (0.06, 0.16) |
| Han et al. (N=206) (Wuhan, China)          | 0.24 (0.18, 0.30) |
| Wang et al. (N=120) (Wuhan, China)         | 0.36 (0.22, 0.31) |
| Shi et al. (N=61) (Wuhan, China)           | 0.22 (0.15, 0.30) |
| Overall (I² = 88.44%, p = 0.00)            | 0.25 (0.19, 0.31) |
### Meta-analysis of the prevalence of clinical symptom (Chest Pain) in COVID-19 infected patients

| Study                          | ES (95% CI)          |
|-------------------------------|----------------------|
| Mo et al. (N=155) (Wuhan, China) | 0.03 (0.01, 0.04) |
| Chen et al. (N=99) (Wuhan, China) | 0.04 (0.02, 0.08) |
| Du et al. (N=85) (Wuhan, China) | 0.02 (0.01, 0.07) |
| Yang et al. (N=149) (Wenzhou, China) | 0.02 (0.01, 0.08) |
| Yang et al. (N=52) (Wuhan, China) | 0.03 (0.01, 0.07) |
| Overall (I² = 0.00%, p = 0.95) | 0.02 (0.00, 0.10) |
### Meta-analysis of the prevalence of clinical symptom (Nausea) in COVID-19 infected patients

| Study                                      | ES (95% CI) |
|--------------------------------------------|-------------|
| Zhang et al. (N=140) (Wuhan, China)        | 0.17 (0.10, 0.24) |
| Liu et al. (N=12) (Shenzhen, China)        | 0.17 (0.08, 0.48) |
| Chen et al. (N=274) (Wuhan, China)         | 0.06 (0.06, 0.13) |
| Mo et al. (N=136) (Wuhan, China)           | 0.04 (0.02, 0.08) |
| Wang et al. (N=138) (Wuhan, China)         | 0.10 (0.06, 0.16) |
| Guan et al. (N=1099) (30 provinces, China) | 0.04 (0.03, 0.06) |
| Chen et al. (N=99) (Wuhan, China)          | 0.01 (0.06, 0.06) |
| Xu et al. (N=96) (Wuhan, China)             | 0.06 (0.06, 0.13) |
| Goyal et al. (N=393) (New York, USA)       | 0.19 (0.16, 0.23) |
| Yan et al. (N=53) (USA)                    | 0.25 (0.17, 0.46) |
| Yang et al. (N=143) (Shenzhen, China)      | 0.05 (0.04, 0.06) |
| Wang et al. (N=138) (Wuhan, China)         | 0.04 (0.02, 0.07) |
| Overall (I^2 = 91.78%, p = 0.00)           | 0.08 (0.04, 0.13) |
**5.15. Vomiting**

Meta-analysis of the prevalence of clinical symptom (Vomiting) in COVID-19 infected patients

| Study | ES (95% CI) |
|-------|-------------|
| Liu et al. (N=12) (Shenzhen, China) | 0.17 (0.05, 0.45) |
| Chen et al. (N=274) (Wuhan, China) | 0.05 (0.02, 0.09) |
| Mo et al. (N=103) (Wuhan, China) | 0.04 (0.02, 0.08) |
| Wang et al. (N=138) (Wuhan, China) | 0.04 (0.02, 0.09) |
| Guan et al. (N=1099) (30 provinces, China) | 0.05 (0.04, 0.06) |
| Liu et al. (N=96) (Hainan, China) | 0.18 (0.10, 0.30) |
| Chen et al. (N=96) (Wuhan, China) | 0.01 (0.00, 0.06) |
| Du et al. (N=63) (Wuhan, China) | 0.05 (0.02, 0.11) |
| Xu et al. (N=96) (Guangzhou, China) | 0.02 (0.01, 0.08) |
| Goyal et al. (N=393) (New york, USA) | 0.19 (0.16, 0.23) |
| Yang et al. (N=149) (Wenzhou, China) | 0.01 (0.00, 0.04) |
| Han et al. (N=959) (Wuhan, China) | 0.12 (0.08, 0.17) |
| Shi et al. (N=181) (Wuhan, China) | 0.05 (0.02, 0.12) |
| Yang et al. (N=72) (Wuhan, China) | 0.04 (0.01, 0.13) |
| Overall (I² = 88.33%, p = 0.00) | 0.06 (0.03, 0.09) |
Meta-analysis of the prevalence of clinical symptom (Abdominal Pain) in COVID-19 infected patients

| Study                                      | ES (95% CI)       |
|-------------------------------------------|-------------------|
| Chen et al. (N=274) (Wuhan, China)        | 0.04 (0.03, 0.06) |
| Han et al. (N=206) (Wuhan, China)         | 0.07 (0.04, 0.11) |
| Zhang et al. (N=140) (Wuhan, China)       | 0.04 (0.02, 0.07) |
| Du et al. (N=85) (Wuhan, China)           | 0.06 (0.03, 0.11) |
| Mo et al. (N=155) (Wuhan, China)          | 0.04 (0.01, 0.10) |
| Kim et al. (N=28) (South Korea)           | 0.02 (0.01, 0.06) |
| Overall [I^2 = 22.89%, p = 0.26]          | 0.04 (0.03, 0.06) |
### Meta-analysis of the prevalence of clinical symptom (Dizziness) in COVID-19 infected patients

| Study                                 | ES (95% CI) |
|---------------------------------------|-------------|
| Chen et al. (N=278) (Wuhan, China)    | 0.06 [0.0, 0.12] |
| Wu et al. (N=450) (Wuhan, China)      | 0.08 [0.06, 0.11] |
| Wang et al. (N=478) (Wuhan, China)    | 0.08 [0.05, 0.12] |
| Zhao et al. (N=380) (Wuhan, China)    | 0.06 [0.03, 0.12] |
| Goyal et al. (N=331) (Wuhan, China)   | 0.02 [0.01, 0.05] |
| Shi et al. (N=67) (Wuhan, China)      | 0.02 [0.01, 0.04] |
| Overall (I² = 98.27%, p < 0.001)      | 0.02 [0.01, 0.04] |
### Meta-analysis of the prevalence of clinical symptom (Anorexia) in COVID-19 infected patients

| Study                          | ES (95% CI) |
|-------------------------------|-------------|
| Zhang et al. (N=106) (Wuhan, China) | 0.17 (0.12, 0.24) |
| Chen et al. (N=107) (Wuhan, China)  | 0.24 (0.19, 0.29) |
| Mo et al. (N=150) (Wuhan, China)  | 0.32 (0.25, 0.40) |
| Wang et al. (N=138) (Wuhan, China) | 0.26 (0.21, 0.32) |
| Du et al. (N=96) (Wuhan, China)   | 0.24 (0.18, 0.30) |
| Goyal et al. (N=185) (Wuhan, China) | 0.28 (0.22, 0.34) |
| Shi et al. (N=160) (Wuhan, China)  | 0.21 (0.16, 0.26) |
| Overall (I² = 94.47%, p = 0.00)   | 0.26 (0.16, 0.38) |
Meta-analysis of the prevalence of clinical symptom (Pharyngalgia) in COVID-19 infected patients

| Study | ES (95% CI) |
|-------|-------------|
| Shen et al. (Shanghai, China) | 0.10 (0.09, 0.12) |
| Chen et al. (Shanghai, China) | 0.64 (0.63, 0.65) |
| Wang et al. (Shanghai, China) | 0.77 (0.71, 0.84) |
| Du et al. (Shanghai, China) | 0.69 (0.67, 0.71) |
| Wan et al. (Shanghai, China) | 0.68 (0.63, 0.73) |
| Wang et al. (Shanghai, China) | 0.66 (0.62, 0.67) |
| Overall (I² = 60.2%, p = 0.01) | 0.67 (0.64, 0.71) |
Meta-analysis of the prevalence of clinical symptom (Haemoptysis) in COVID-19 infected patients

| Study | ES (95% CI) |
|-------|-------------|
| Huang et al. (N=41) (Wuhan, China) | 0.02 (0.01, 0.04) |
| Guan et al. (N=1099) (30 provinces, China) | 0.05 (0.01, 0.16) |
| Chen et al. (N=274) (Wuhan, China) | 0.01 (0.01, 0.02) |
| Liu et al. (N=137) (Hubei, China) | 0.03 (0.01, 0.06) |
| Jin et al. (N=651) (Zhejiang, China) | 0.05 (0.02, 0.10) |
| Xu et al. (N=62) (Zhejiang, China) | 0.02 (0.01, 0.03) |
| Wan et al. (N=135) (Chongqing, China) | 0.03 (0.01, 0.11) |
| Overall (I^2 = 63.48%, p = 0.01) | 0.03 (0.01, 0.07) |
### Comorbidity

Meta-analysis of the prevalence of clinical comorbidity (Diabetes) in COVID-19 infected patients

| Study                                      | ES (95% CI)          |
|-------------------------------------------|----------------------|
| Wan et al. (N=135) (Chongqing, China)     | 0.09 (0.05, 0.15)    |
| Zhang et al. (N=140) (Wuhan, China)       | 0.12 (0.08, 0.19)    |
| Xu et al. (N=62) (Zhejiang, China)        | 0.02 (0.00, 0.09)    |
| Zhu et al. (N=32) (Anhui, China)          | 0.13 (0.05, 0.28)    |
| Chen et al. (N=21) (Wuhan, China)         | 0.14 (0.05, 0.35)    |
| Liu et al. (N=12) (Shenzhen, China)       | 0.08 (0.01, 0.35)    |
| Chen et al. (N=274) (Wuhan, China)        | 0.17 (0.13, 0.22)    |
| Mo et al. (N=155) (Wuhan, China)          | 0.10 (0.06, 0.16)    |
| Jin et al. (N=651) (Zhejiang, China)      | 0.07 (0.05, 0.09)    |
| Wang et al. (N=138) (Wuhan, China)        | 0.10 (0.06, 0.16)    |
| Yuan et al. (N=27) (Hubei, China)         | 0.22 (0.11, 0.41)    |
| Guan et al. (N=1099) (30 provinces, China)| 0.07 (0.06, 0.09)    |
| Liu et al. (N=56) (Hainan, China)         | 0.07 (0.03, 0.17)    |
| Zhou et al. (N=254) (Wuhan, China)        | 0.10 (0.07, 0.14)    |
| Huang et al. (N=41) (Wuhan, China)        | 0.20 (0.10, 0.34)    |
| Du et al. (N=85) (Wuhan, China)           | 0.22 (0.15, 0.32)    |
| Xu et al. (N=90) (Guangzhou, China)       | 0.06 (0.02, 0.12)    |
| Goyal et al. (N=393) (New york, USA)      | 0.25 (0.21, 0.29)    |
| Barrasa et al. (N=48) (Vitoria, Spain)    | 0.19 (0.15, 0.32)    |
| Yan et al. (N=159) (USA)                  | 0.08 (0.04, 0.18)    |
| Gupta et al. (N=21) (New Delhi, India)    | 0.14 (0.06, 0.35)    |
| Han et al. (N=206) (Wuhan, China)         | 0.10 (0.07, 0.15)    |
| Kim et al. (N=28) (South korea)           | 0.07 (0.02, 0.23)    |
| Wang et al. (N=339) (Wuhan, China)        | 0.16 (0.12, 0.20)    |
| Shi et al. (N=81) (Wuhan, China)          | 0.12 (0.07, 0.21)    |
| Yang et al. (N=52) (Wuhan, China)         | 0.35 (0.23, 0.48)    |
| Overall *(I^2 = 83.99%, p = 0.00)*        | 0.12 (0.09, 0.15)    |
### Meta-analysis of the prevalence of clinical comorbidity (Hypertension) in COVID-19 infected patients

| Study                                      | ES (95% CI) |
|--------------------------------------------|-------------|
| Wan et al. (N=135) (Chongqing, China)      | 0.10 (0.06, 0.16) |
| Zhang et al. (N=140) (Wuhan, China)        | 0.30 (0.23, 0.38) |
| Xu et al. (N=62) (Zhejiang, China)         | 0.08 (0.03, 0.18) |
| Zhu et al. (N=32) (Anhui, China)           | 0.22 (0.11, 0.39) |
| Chen et al. (N=21) (Wuhan, China)          | 0.24 (0.11, 0.45) |
| Liu et al. (N=12) (Shenzhen, China)         | 0.25 (0.09, 0.53) |
| Chen et al. (N=274) (Wuhan, China)         | 0.34 (0.29, 0.40) |
| Mo et al. (N=155) (Wuhan, China)            | 0.24 (0.18, 0.31) |
| Liu et al. (N=137) (Hubei, China)          | 0.09 (0.06, 0.16) |
| Jin et al. (N=651) (Zhejiang, China)       | 0.15 (0.13, 0.18) |
| Wang et al. (N=138) (Wuhan, China)         | 0.31 (0.24, 0.39) |
| Yuan et al. (N=27) (Hubei, China)          | 0.19 (0.08, 0.37) |
| Guan et al. (N=1099) (30 provincees, China)| 0.15 (0.13, 0.17) |
| Liu et al. (N=56) (Hainan, China)          | 0.18 (0.10, 0.30) |
| Zhou et al. (N=254) (Wuhan, China)         | 0.25 (0.20, 0.31) |
| Huang et al. (N=41) (Wuhan, China)         | 0.15 (0.07, 0.28) |
| Du et al. (N=85) (Wuhan, China)             | 0.38 (0.28, 0.48) |
| Xu et al. (N=90) (Guangzhou, China)        | 0.19 (0.12, 0.28) |
| Goyal et al. (N=383) (New york, USA)       | 0.50 (0.45, 0.55) |
| Barrasa et al. (N=48) (Vitoria, Spain)     | 0.44 (0.31, 0.58) |
| Yan et al. (N=56) (USA)                    | 0.14 (0.07, 0.25) |
| Gupta et al. (N=21) (New Delhi, India)     | 0.24 (0.11, 0.45) |
| Han et al. (N=206) (Wuhan, China)          | 0.27 (0.22, 0.34) |
| Wang et al. (N=339) (Wuhan, China)         | 0.41 (0.36, 0.46) |
| Shi et al. (N=81) (Wuhan, China)            | 0.15 (0.09, 0.24) |
| Overall (I^2 = 93.24%, p = 0.00)           | 0.23 (0.18, 0.28) |
### Cardiovascular Disease

Meta-analysis of the prevalence of clinical comorbidity (Cardiovascular Disease) in COVID-19 infected patients

| Study                                      | ES (95% CI) |
|--------------------------------------------|-------------|
| Wan et al. (N=135) (Chongqing, China)      | 0.05 (0.03, 0.10) |
| Chen et al. (N=274) (Wuhan, China)         | 0.08 (0.05, 0.12) |
| Mo et al. (N=155) (Wuhan, China)           | 0.10 (0.06, 0.16) |
| Liu et al. (N=137) (Hubei, China)          | 0.07 (0.04, 0.13) |
| Wang et al. (N=138) (Wuhan, China)         | 0.14 (0.10, 0.21) |
| Yuan et al. (N=27) (Hubei, China)          | 0.11 (0.04, 0.28) |
| Zhou et al. (N=254) (Wuhan, China)         | 0.05 (0.03, 0.09) |
| Huang et al. (N=41) (Wuhan, China)         | 0.15 (0.07, 0.28) |
| Du et al. (N=85) (Wuhan, China)            | 0.08 (0.04, 0.16) |
| Du et al. (N=85) (Guangzhou, China)        | 0.03 (0.01, 0.09) |
| Yan et al. (N=59) (USA)                    | 0.05 (0.02, 0.14) |
| Yang et al. (N=149) (Wenzhou, China)       | 0.19 (0.13, 0.26) |
| Wang et al. (N=339) (Wuhan, China)         | 0.16 (0.12, 0.20) |
| Shi et al. (N=81) (Wuhan, China)           | 0.10 (0.05, 0.18) |
| Yang et al. (N=52) (Wuhan, China)          | 0.23 (0.14, 0.36) |
| Overall (I^2 = 73.96%, p = 0.00)           | 0.10 (0.07, 0.13) |
Meta-analysis of the prevalence of clinical comorbidity (Coronary Heart Disease) in COVID-19 infected patients

| Study                        | ES (95% CI) |
|------------------------------|-------------|
| Zhang et al. (N=140) (Wuhan, China) | 0.08 (0.05, 0.11) |
| Zhou et al. (N=152) (Anhui, China) | 0.06 (0.05, 0.20) |
| Lu et al. (N=112) (Shenzhen, China) | 0.33 (0.14, 0.53) |
| Ji et al. (N=967) (Zhejiang, China) | 0.13 (0.01, 0.26) |
| Guan et al. (N=1099) (30 provinces, China) | 0.07 (0.03, 0.09) |
| Liu et al. (N=698) (Hebei, China) | 0.17 (0.06, 0.31) |
| Zuo et al. (N=944) (Nanjing, China) | 0.07 (0.06, 0.11) |
| Du et al. (N=85) (Nanjing, China) | 0.12 (0.07, 0.32) |
| Goyal et al. (N=393) (New York, USA) | 0.14 (0.11, 0.18) |
| Ronse et al. (N=100) (Catalonia, Spain) | 0.19 (0.14, 0.25) |
| Overall (I² = 92.21%, p = 0.00) | 0.10 (0.09, 0.12) |
### Meta-analysis of the prevalence of clinical comorbidity (Cerebrovascular Disease) in COVID-19 infected patients

| Study                        | ES (95% CI) |
|------------------------------|-------------|
| Xu et al. (N=142) (Zhujiaojiao, China) | 0.02 (0.00, 0.08) |
| Zhu et al. (N=142) (Wuhan, China)       | 0.03 (0.01, 0.05) |
| Chen et al. (N=142) (Wuhan, China)      | 0.04 (0.02, 0.08) |
| Wei et al. (N=159) (Wuhan, China)       | 0.05 (0.03, 0.08) |
| Wang et al. (N=150) (Wuhan, China)      | 0.06 (0.03, 0.15) |
| Guan et al. (N=1099) (30 provinces, China) | 0.04 (0.01, 0.07) |
| Yang et al. (N=128) (Wuhan, China)      | 0.08 (0.05, 0.12) |
| Zhao et al. (N=14) (Wuhan, China)       | 0.10 (0.04, 0.12) |
| Shi et al. (N=32) (Anhui, China)       | 0.15 (0.01, 0.16) |
| Xu et al. (N=62) (Zhejiang, China)      | 0.19 (0.01, 0.09) |

Overall: (I² = 90.77%, p = 0.00)
S26. COPD/Lung disease

Meta-analysis of the prevalence of clinical comorbidity (COPD) in COVID-19 infected patients

| Study                          | ES (95% CI)       |
|-------------------------------|-------------------|
| Wan et al. (N=135) (Chongqing, China) | 0.01 (0.00, 0.04) |
| Zhang et al. (N=140) (Wuhan, China) | 0.01 (0.00, 0.05) |
| Xu et al. (N=62) (Zhejiang, China) | 0.02 (0.00, 0.09) |
| Zhu et al. (N=32) (Anhui, China) | 0.06 (0.02, 0.30) |
| Liu et al. (N=12) (Shenzhen, China) | 0.06 (0.01, 0.35) |
| Chen et al. (N=274) (Wuhan, China) | 0.07 (0.04, 0.11) |
| Mo et al. (N=155) (Wuhan, China) | 0.03 (0.01, 0.07) |
| Liu et al. (N=137) (Hubei, China) | 0.01 (0.00, 0.05) |
| Jin et al. (N=651) (Zhejiang, China) | 0.00 (0.00, 0.01) |
| Wang et al. (N=138) (Wuhan, China) | 0.03 (0.01, 0.07) |
| Guan et al. (N=1099) (30 provinces, China) | 0.01 (0.01, 0.02) |
| Zhou et al. (N=254) (Wuhan, China) | 0.02 (0.01, 0.06) |
| Huang et al. (N=41) (Wuhan, China) | 0.02 (0.00, 0.13) |
| Du et al. (N=85) (Wuhan, China) | 0.02 (0.01, 0.08) |
| Xu et al. (N=90) (Guangzhou, China) | 0.01 (0.00, 0.06) |
| Goyal et al. (N=303) (New York, USA) | 0.05 (0.03, 0.08) |
| Barrasa et al. (N=48) (Vitoria, Spain) | 0.38 (0.25, 0.52) |
| Yan et al. (N=59) (USA) | 0.05 (0.02, 0.14) |
| Han et al. (N=206) (Wuhan, China) | 0.04 (0.02, 0.07) |
| Wang et al. (N=1339) (Wuhan, China) | 0.06 (0.04, 0.09) |
| Shi et al. (N=81) (Wuhan, China) | 0.11 (0.08, 0.20) |
| Overall (I² = 86.67%, p = 0.00) | 0.03 (0.02, 0.05) |

Proportion
527. Chronic liver disease

Meta-analysis of the prevalence of clinical comorbidity (Chronic Liver Disease) in COVID-19 infected patients

| Study                                    | ES (95% CI)          |
|------------------------------------------|----------------------|
| Wan et al. (N=135) (Chongqing, China)   | 0.02 (0.01, 0.06)    |
| Zhang et al. (N=140) (Wuhan, China)     | 0.06 (0.03, 0.11)    |
| Xu et al. (N=62) (Zhejiang, China)      | 0.09 (0.04, 0.17)    |
| Zhu et al. (N=82) (Anhui, China)        | 0.29 (0.18, 0.42)    |
| Mo et al. (N=155) (Wuhan, China)        | 0.05 (0.03, 0.10)    |
| Jin et al. (N=651) (Zhejiang, China)    | 0.04 (0.03, 0.06)    |
| Wang et al. (N=138) (Wuhan, China)      | 0.06 (0.03, 0.13)    |
| Liu et al. (N=54) (Hainan, China)       | 0.06 (0.03, 0.13)    |
| Zhou et al. (N=254) (Wuhan, China)      | 0.02 (0.00, 0.03)    |
| Huang et al. (N=41) (Wuhan, China)      | 0.02 (0.00, 0.13)    |
| Du et al. (N=8) (Wuhan, China)           | 0.06 (0.03, 0.13)    |
| Kim et al. (N=28) (South Korea)         | 0.04 (0.01, 0.18)    |
| Kim et al. (N=28) (Wuhan, China)        | 0.01 (0.00, 0.03)    |
| Shi et al. (N=81) (Wuhan, China)        | 0.09 (0.04, 0.17)    |
| Yang et al. (N=52) (Wuhan, China)       | 0.29 (0.18, 0.42)    |
| Overall (I² = 78.23%, p = 0.00)         | 0.05 (0.03, 0.07)    |
Meta-analysis of the prevalence of clinical comorbidity (Chronic Renal Disease) in COVID-19 infected patients

| Study | ES (95% CI) |
|-------|-------------|
| Zhang et al. (N=140) (Wuhan, China) | 0.01 (0.00, 0.03) |
| Xu et al. (N=482) (Zhejiang, China) | 0.02 (0.01, 0.05) |
| Zhu et al. (N=3) (Anhui, China) | 0.03 (0.01, 0.16) |
| Lu et al. (N=102) (Shanghai, China) | 0.02 (0.00, 0.09) |
| Mao et al. (N=158) (Shanghai, China) | 0.04 (0.02, 0.08) |
| Jin et al. (N=155) (Wuhan, China) | 0.02 (0.00, 0.09) |
| Xu et al. (N=62) (Zhejiang, China) | 0.04 (0.01, 0.08) |
| Shi et al. (N=81) (Wuhan, China) | 0.01 (0.00, 0.01) |
| Guan et al. (N=1099) (30 provinces, China) | 0.01 (0.00, 0.02) |
| Overall (I² = 86.69%, p = 0.00) | 0.04 (0.01, 0.10) |

Proportion

S28. Chronic Renal Disease
### Meta-analysis of the prevalence of clinical comorbidity (Chronic Kidney Disease) in COVID-19 infected patients

| Study                                      | ES (95% CI)     |
|-------------------------------------------|-----------------|
| Tao et al. (2020) (Wuhan, China)          | 0.01 (0.00, 0.03) |
| Guan et al. (2020) (Wuhan, China)         | 0.01 (0.00, 0.05) |
| Xue et al. (2020) (Wuhan, China)          | 0.03 (0.01, 0.16) |
| Xu et al. (2020) (Shenzhen, China)        | 0.03 (0.01, 0.09) |
| Chen et al. (2020) (Wuhan, China)         | 0.02 (0.00, 0.09) |
| Mo et al. (2020) (Wuhan, China)           | 0.04 (0.02, 0.08) |
| Zhu et al. (2020) (Anhui, China)          | 0.08 (0.01, 0.35) |
| Zhang et al. (2020) (Wuhan, China)        | 0.01 (0.00, 0.01) |
| Shi et al. (2020) (Wuhan, China)          | 0.04 (0.01, 0.10) |
| Jin et al. (2020) (Zhejiang, China)       | 0.01 (0.01, 0.02) |
| Guan et al. (2020) (30 provinces, China)   | 0.01 (0.00, 0.01) |
| Overall (I^2 = 54.63%, p = 0.02)          | 0.01 (0.00, 0.03) |

### Meta-analysis of the prevalence of clinical comorbidity (Chronic Renal Disease) in COVID-19 infected patients

| Study                                      | ES (95% CI)     |
|-------------------------------------------|-----------------|
| Tao et al. (2020) (Wuhan, China)          | 0.05 (0.02, 0.10) |
| Guan et al. (2020) (Wuhan, China)         | 0.04 (0.01, 0.10) |
| Xue et al. (2020) (Wuhan, China)          | 0.03 (0.01, 0.07) |
| Xu et al. (2020) (Shenzhen, China)        | 0.04 (0.02, 0.07) |
| Chen et al. (2020) (Wuhan, China)         | 0.01 (0.00, 0.03) |
| Yang et al. (2020) (Wuhan, China)         | 0.29 (0.18, 0.42) |
| Kai Liu et al. (2020) (Hainan, China)     | 0.04 (0.01, 0.12) |
| Overall (I^2 = 86.69%, p = 0.00)          | 0.05 (0.02, 0.10) |

Proportion
Meta-analysis of the prevalence of clinical comorbidity (Malignancy) in COVID-19 infected patients

| Study                                      | ES (95% CI)   |
|--------------------------------------------|---------------|
| Wan et al. (N=130) (Chongqing, China)     | 0.03 (0.01, 0.07) |
| Chen et al. (N=274) (Wuhan, China)        | 0.02 (0.01, 0.06) |
| Mo et al. (N=155) (Wuhan, China)          | 0.05 (0.02, 0.09) |
| Liu et al. (N=137) (Hubei, China)         | 0.01 (0.00, 0.05) |
| Jin et al. (N=651) (Zhejiang, China)      | 0.01 (0.01, 0.02) |
| Wang et al. (N=138) (Wuhan, China)        | 0.07 (0.04, 0.13) |
| Guan et al. (N=1069) (30 provinces, China)| 0.01 (0.01, 0.02) |
| Zhou et al. (N=254) (Wuhan, China)        | 0.01 (0.00, 0.03) |
| Huang et al. (N=41) (Wuhan, China)        | 0.02 (0.00, 0.13) |
| Du et al. (N=85) (Wuhan, China)           | 0.07 (0.02, 0.15) |
| Xu et al. (N=90) (Guangzhou, China)       | 0.02 (0.01, 0.08) |
| Yan et al. (N=98) (USA)                   | 0.03 (0.01, 0.12) |
| Kim et al. (N=38) (South Korea)           | 0.04 (0.01, 0.18) |
| Wang et al. (N=339) (Wuhan, China)        | 0.04 (0.02, 0.07) |
| Shi et al. (N=81) (Wuhan, China)          | 0.08 (0.02, 0.15) |
| Overall (I² = 68.06%, p = 0.00)           | 0.03 (0.02, 0.04) |
Meta-analysis of the prevalence of clinical comorbidity (ARDS) in COVID-19 infected patients

| Study                          | ES (95% CI) |
|-------------------------------|-------------|
| Yuan et al. (N=27) (Hubei, China) | 0.44 (0.25, 0.59) |
| Chen et al. (N=99) (Wuhan, China) | 0.17 (0.11, 0.26) |
| Barrasa et al. (N=48) (Vitoria, Spain) | 1.00 (0.93, 1.00) |
| Yang et al. (N=52) (Wuhan, China) | 0.67 (0.54, 0.78) |
| Overall (I² = 98.07%, p = 0.00) | 0.61 (0.15, 0.97) |

Proportion