Supplementary Table 3. Characteristics of 81 Studies Included in the Meta-Analysis of Glucocorticoid Treatment on Mortality for COVID-19 and SARS

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Corral-Gudino&Bahamonde et al[1], 2020	Spain	RCT	57.6	Mean of 69 (SD 12)	COVID-19 (NA)	Methylprednisolone; 40-80 mg/day; NA; 6 days	14-day Mortality&Composite outcome (need for non-invasive ventilation, ICU admission or death)	NA	2x2 table
Horby&Lim et al[2], 2020	England	RCT	63.6	Mean of 66.1 (SD 15.7)	COVID-19 (NA)	Dexamethasone; 32 mg/day; NA; Median of 7 (IQR 3-10) days	28-day Mortality&Composite outcome (use of invasive MV or death)	NA	2x2 table
Jeronimo&Farias et al[3], 2020	Brazil	RCT	64.6	Mean of 55 (SD 15)	COVID-19 (NA)	Methylprednisolone; 1 mg/kg/day; NA; 5 days	28-day Mortality	Age	2x2 table, RR
Tomazini&Maia et al[4], 2020	Brazil	RCT	62.5	Mean of 61 (SD 14)	COVID-19 (Severe)	Dexamethasone; 107 mg/day; NA; 10 days	28-day Mortality&Composite outcome (use of invasive MV or death)	Propensity score (factors including onco-hematologic underlying conditions, peptic ulcer disease, LDH and SpO2)	2x2 table, OR, HR
Angus&Derde et al[5], 2020	Australia, Canada, France, Ireland, the Netherlands, New Zealand, the United Kingdom, and the United States.	RCT	71.1	Mean of 60	COVID-19 (Severe)	Hydrocortisone; 40 or 80 mg/day; NA; 7 days	21-day Mortality	NA	2x2 table
Edalatifard&Akhtari et al[6], 2020	Iran	RCT	57.4	Mean of 58.5 (SD 16.6)	COVID-19 (Severe)	Methylprednisolone; 250 mg/day; NA; 3 days	28-day Mortality	Age	2x2 table, RR
NCT04348305 et al[7,8], 2020	Denmark	RCT	79.3	Median of 57 (IQR 52-75) in steroids cohort; Median of 62 (55-71) in control cohort	COVID-19 (Severe)	Hydrocortisone; 40 mg/day; Adult patients with documented COVID-19 receiving at least 10 L/min of oxygen independent of delivery system OR mechanical ventilation.; 7 days	28-day Mortality	NA	2x2 table, OR
NCT04325061 et al[8,9], 2020	Spain	RCT	68.4	Median of 62 (IQR 48-68) in steroids cohort; Median of 60 (IQR 52-69) in control cohort	COVID-19 (Critically severe)	Dexamethasone; 107 mg/day; 20 mg/day from Day 1 of randomization during 5 days, followed by 10 mg/day from Day 6 to 10 of randomization; 10 days	28-day Mortality	NA	2x2 table, OR
NCT04244591 et al[8,10], 2020	China	RCT	74.5	Median of 67 (IQR 61-74) in steroids cohort; Median of 62 (IQR 54-68) in control cohort	COVID-19 (Critically severe)	Methylprednisolone; 80 mg/day; NA; 5 days	30-day Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Dequin&Heming et al[11], 2020	France	RCT	69.8	Mean of 62.2	COVID-19 (Critically severe)	Hydrocortisone; 40 mg/day; within 24 hours of the onset of the first severity criterion or within 48 hours for patients referred from another hospital; 8-14 days	21-day Mortality&Composite outcome (use of invasive MV/high-flow oxygen therapy or death)	Age, SpO2/FiO2, and lymphocytes or propensity score (factors including variables included in the final model by step-wise backward elimination with P <0.20)	2x2 table, OR
Cruz&Ruiz-Antoran et al[12], 2020	Spain	Observational	68.5	Mean of 65.4 (SD 12.9) in steroids cohort; Mean of 68.1 (SD 15.7) in control cohort.	COVID-19 (NA)	Methylprednisolone; 1 mg/kg/day; In a median of 10 days after onset of symptoms, presumably during the inflammatory phase of the disease; Median of 3 (IQR 2-4) pulses	30-day Mortality	NA	2x2 table
Salton&Confalonieri et al[13], 2020	Italy	Observational	69.4	Mean of 64.4 (SD 10.7) in steroids cohort; Mean of 67.1 (SD 8.2) in control cohort.	COVID-19 (NA)	Methylprednisolone; 80 mg/day; NA; Mean of 9.11 (SD 2.4) days	28-day Mortality&Composite outcome (need for invasive MV, ICU admission or death)	Sex, age, baseline SOFA score and baseline PaO2	2x2 table, OR, HR
Zha&Li et al[14], 2020	China	Observational	64.5	Median of 39 (IQR 32-54)	COVID-19 (NA)	Methylprednisolone; 40-80 mg/day; NA; NA	Mortality	NA	2x2 table, RR
Mikulska&Nicolini et al[15], 2020	Italy	Observational	67.3	Mean of 67.5 (SD 13.7); Median of 67.9 (IQR 32-100)	COVID-19 (NA)	Methylprednisolone; 1 mg/kg/day; within 3 days from hospital admission; 5 days	30-day Mortality&Composite outcome (use of invasive MV or death)	NA	2x2 table
Rodriguez-Bano&Pachon et al[16], 2020	Spain	Observational	29	Range of median age from 65-71	COVID-19 (NA)	NA; NA (medium-high dose); with hyperinflammatory state; NA	21-day Mortality&Composite outcome (use of invasive MV or death)	NA	2x2 table
Wang&Yang et al[17], 2020	China	Observational	46.4	42.0(IQR 35.0-62.0)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Ma&Zeng et al[18], 2020	China	Observational	50.7	Mean of 46.2 (SD 15.1)	COVID-19 (NA)	Multiple types; Median of 56.6 (IQR 40.0-78.4) mg/day; Median of 9.0 days (IQR 6.0–11.0) days from illness onset to corticosteroid therapy; Median of 2.0 days (IQR 1–5) days from admission to corticosteroid therapy; Median of 5.0 (IQR 3.0–7.0) days	Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Keller&Kitsis et al[19], 2020	America	Observational	53.4	Mean of 62.2 (SD 17.8)	COVID-19 (NA)	Multiple types; NA; Within the first 48 hours of admission; NA	Mortality&Composite outcome (use of MV or death)	NA	2x2 table, HR
Brenner&Ungaro et al[20], 2020	International organization (including 33 countries)	Observational	52.6	Mean of 42.9 (SD 18.2)	COVID-19 (NA)	NA; NA; NA; NA	Mortality&Composite outcome (use of invasive MV, ICU admission or death)	NA	2x2 table
Kevorkian&Rivelin et al[21], 2020	France	Observational	72.3	Median of 75 (IQR 63–83)	COVID-19 (NA)	NA; Median of 1 mg/kg/day (IQR 0.68-1.50) mg/kg/day; NA; NA	28-day Mortality&Composite outcome (need for invasive MV or death)	NA	2x2 table
Huang&Zhu et al[22], 2020	China	Observational	54	Median of 45.0 (IQR 33.0-55.0)	COVID-19 (NA)	Methylprednisolone; 40-160 mg/day; NA; NA	Mortality	NA	2x2 table
Ji&Zhang et al[23], 2020	China	Observational	48	Median of 61.0 (IQR 49.0-70.0)	COVID-19 (NA)	Multiple types; 1-2 mg/kg/day; NA; 3-5 days	Mortality	NA	2x2 table
Liu&Li et al[24], 2020	China	Observational	NA	57.0 (IQR 47.0-67.0)	COVID-19 (NA)	Multiple types; Median of 80 (IQR 40-80) mg/day; 13 days (IQR 11-17) days from illness onset; 3 days (IQR 2-5) days from admission; Median of 5 (IQR 3-8) days	28-day Mortality	NA	2x2 table
Wang&Wang et al[25], 2020	China	Observational	50.4	Median of 59 (IQR 40-67)	COVID-19 (NA)	Methylprednisolone; Common: 1-3 mg/kg/day, Pulse: 500-1000 mg/day; NA; pulses: 2-3 days, common: 3-10 days	Composite outcome (ICU admission or mortality)	An overlap weight propensity score for treatment allocation (factors including age, sex, PaO2/FiO2, lactate, C reactive protein, platelets, ICU admission and treatment with enoxaparin, azithromycin or hydroxychloroquine)	2x2 table, OR
Cao&Tu et al[26], 2020	China	Observational	52	Median of 54 (IQR 37-67)	COVID-19 (NA)	Methylprednisolone; NA; NA; NA	Mortality	NA	2x2 table
Chen&Zhong et al[27], 2020	China	Observational	53.2	Median of 65 (IQR 54-72)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Giacomelli&Ridolfo et al[28], 2020	Italy	Observational	69.1	Median of 61 years (IQR 50-72)	COVID-19 (NA)	NA; NA; NA; NA	30-day Mortality	NA	2x2 table
Liu&Zhang et al[29], 2020	China	Observational	53.4	Median of 57 (IQR 47-67)	COVID-19 (NA)	NA; NA; NA; NA	40-day Mortality	NA	2x2 table
Liu&Sun et al[30], 2020	China	Observational	54.1	Mean of 55 (IQR 43-66)	COVID-19 (NA)	NA; NA; NA; NA	30-day Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Shang&Du et al[31], 2020	China	Observational	47.4	Median of 49 (IQR 36-61)	COVID-19 (NA)	Multiple types; 40-80 mg/day; NA; Median of 6 (IQR 4-9) days for common survivors, Median of 8 (IQR 5·5-11) days for severe/critical survivors, Median of 7 (IQR 4·0-9·5) days for deaths	30-day Mortality	NA	2x2 table
Tu&Cao et al[32], 2020	China	Observational	45.4	Median of 70 (IQR 64-80) in non-survivors; Median of 51 (IQR 37-62) in Survivors.	COVID-19 (NA)	Methylprednisolone; NA; NA; NA	Mortality	NA	2x2 table
Wang&Zhang et al[33], 2020	China	Observational	50.9	Median of 67(IQR 61.8-78) in non-survivors; Median of 58(IQR 46-67) in survivors.	COVID-19 (NA)	NA; NA; NA; NA	15-day Mortality	NA	2x2 table
Wu&Chen et al[34], 2020	China	Observational	63.7	Median of 51 (IQR 43-60)	COVID-19 (NA)	Methylprednisolone; NA; NA; NA	40-day Mortality	NA	2x2 table
Yao&Wang et al[35], 2020	China	Observational	39.8	Median of 52 (IQR 37-58)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	Age, sex, SpO2/FiO2, chronic lung disease, WBCs, platelet count, tocilizumab, and therapeutic dose of enoxaparin	2x2 table, OR, HR
Zhou&Yu et al[36], 2020	China	Observational	62.3	Median of 56 (IQR 46-67)	COVID-19 (NA)	NA; NA; Time from illness onset to corticosteroids treatment, days 12·0 (IQR 10·0–16·0); NA	25-day Mortality	NA	2x2 table
Chen&Sun et al[37], 2020	China	Observational	44.7	Median of 55.0 (IQR 34.0-68.0)	COVID-19 (NA)	NA; NA; NA; NA	60-day Mortality	Propensity score (factors including all measured potential predictors for treatment)	2x2 table, HR
Chen&Yu et al[38], 2020	China	Observational	50.2	Median of 59 (IQR 45-68)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Chen&Wu et al[39], 2020	China	Observational	62.4	Median of 62.0 (IQR 44.0-70.0)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	Age and baseline at PaO2/FIO2 with random intercept by site	2x2 table, OR, HR
Deng&Liu et al[40], 2020	China	Observational	55.1	Range of 22-94	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Li&Yang et al[41], 2020	China	Observational	44.1	Mean of 51.0 (SD17.5)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Shi&Zhang et al[42], 2020	China	Observational	49	Median of 64.0 (IQR 56.0-72.0)	COVID-19 (NA)	NA; NA; NA; NA	55-day Mortality	NA	2x2 table
Wang&Yin et al[43], 2020	China	Observational	53.3	Median of 51.0 (IQR 36.0–65.0)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	Age (categorized into 6 groups), sex, location (site, nested within country) and	2x2 table, OR

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
								period (2-week epochs)	
Lee&Kim et al[44], 2020	Korea	Observational	44.9	Median of 71.0 (IQR 67.0-78.0) in survival patients; Median of 77.0 (IQR 73.0–83.5) in dead patients	COVID-19 (NA)	NA; NA; NA; NA	25-day Mortality	Age, sex, admission laboratory indexes (including lymphocyte, neutrophil granulocyte, platelet, hemoglobin, glucose, CRP, LDH, creatinine, AST, ALT, blood urea nitrogen, SpO2, hypertension, diabetes, cancer, COPD, chronic kidney disease and smoking history	2x2 table, HR
Yang&Sheng et al[45], 2020	China	Observational	46.8	Median of 63 (IQR 56–70)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table
Poblador-Plou&Carmona-Pirez et al[46], 2020	Spain	Observational	41.3	Mean of 67.7 (SD 20.7)	COVID-19 (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table, OR
Li&Xu(a) et al[47], 2020	China	Observational	38.3	Median of 60 (IQR 48-69)	COVID-19 (NA)	NA; NA (low dose); NA; Median of 4 (IQR 0-11) days	Mortality	NA	2x2 table
Rubio-Rivas&Ronda et al[48], 2020	Spain	Observational	69.4	Mean of 64.3 (SD 13)	COVID-19 (NA)	Methylprednisolone; 125 mg/day (as the most cases); NA; NA	Mortality	NA	2x2 table, HR
Aggarwal&Garcia-Telles et al[49], 2020	America	Observational	75	Median of 67 (Range 38-95)	COVID-19 (NA)	NA; NA; NA; NA	Composite outcome (use of MV, use of inotrope support, ICU admission, or death)	NA	2x2 table
Guan&Ni et al[50], 2020	China	Observational	58	Median of 47 (IQR 35-58)	COVID-19 (NA)	NA; NA; NA; NA	Composite outcome (use of MV, ICU admission or death)	Age, race/ethnicity, low oxygen saturation, body mass index, Charlson score, hypertension, COPD, diabetes mellitus, coronary artery disease, asthma, rheumatologic disease, human immunodeficiency virus, previous dialysis, do not resuscitate/do not intubate order, previous glucocorticoids use, WBCs, platelets, sodium, C-reactive protein, D-dimer, creatinine, troponin T, lactose dehydrogenase, ferritin, creatine kinase, AST, glucose lymphocyte count, and procalcitonin	OR

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Liu&Tao et al[51], 2020	China	Observational	50	Median of 38 (IQR 33-57)	COVID-19 (NA)	NA; NA; NA; NA	Composite outcome (progression common-type progressed to severe- or critical-type, or death; severe-type progressed to critical-type or death; critical-type progressed to death).	Age	OR
Nguyen&Corre et al[52], 2020	France	Observational	65.6	Mean of 64.8 (SD 16.1)	COVID-19 (NA)	NA; NA; NA; NA	14-day Composite outcome (use of invasive MV or death)	Age, sex, blood leukocyte count, LDH, cardiac injury, hyperglycemia, lopinavir/ritonavir, and umifenovir	HR
Albani&Fusina et al[53], 2020	Italy	Observational	66.1	Mean of 68.7 (SD 11.5) in steroids cohort; Mean of 68.5 (SD 15.1) in control cohort	COVID-19 (Mild or moderate)	Multiple types; Median of 43 (21.3-85.9) mg/day; Before admission to ICU; IQR 4.5-20 days	Mortality	Age, sex, chronic disease (ulcerative colitis/inflammatory bowel disease unspecified), disease severity, tumor necrosis factor antagonist, current smoker, body mass index ≥30, comorbidities, 5-aminosalicylate/sulfasalazine	OR
Majmundar&Kansara et al[54], 2020	America	Observational	74.6	Mean of 57.61 (SD 15.86)	COVID-19 (Mild or moderate)	Multiple types; Median of 80 (IQR 60-107) mg/day; Commenced at a median of 2 days (IQR 1-5) days following admission; 5 (IQR 4-7) days	30-day Mortality&Composite outcome (use of invasive MV, ICU admission or death)	All variables with significance <0.05 in the univariate study plus age and sex (including age, sex, chronic heart failure, chronic liver disease, SatO2/FiO2 at day 0)	2x2 table, HR
Ding&Feng et al[55], 2020	China	Observational	48.8	Median of 49 (IQR 36–61)	COVID-19 (Mild or moderate)	NA; NA; NA; NA	Mortality	NA	2x2 table
Li&Li et al[56], 2020	China	Observational	54.3	Median of 42 (IQR 32-58)	COVID-19 (Mild or moderate)	Multiple types; 20 or 40 mg/day; Median of 2 days (IQR 1–5) days from hospital admission; NA	Mortality	Age, sex, body mass index and comorbidities	2x2 table, OR
Lu&Chen et al[57], 2020	China	Observational	52.5	Median of 62 (IQR 50–71)	COVID-19 (Severe)	NA; Median of 40 (IQR 20-160) mg/day; NA; Median of 8 (IQR 4–12) days	28-day Mortality	Propensity score (factors including age, study site, calendar month into the pandemic, CRP, days since symptoms onset (as cubic splines)	2x2 table, OR
Sanz-Herrero&Puchades-Gimeno et al[58], 2020	Spain	Observational	62.5	Median of 67.5 (IQR 61-76.7)	COVID-19 (Severe)	Methylprednisolone; 80 mg/day; NA; More than 4 days	40-day Mortality	NA	2x2 table, HR
Wang&Jiang et al[59], 2020	China	Observational	56.5	Median of 54 (IQR 48-64)	COVID-19 (Severe)	Methylprednisolone; 1-2 mg/kg/day; NA; 5-7 days	14-day Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Bartoletti&Marconi et al[60], 2020	Italy	Observational	65.7	Mean of 71 (SD 15)	COVID-19 (Severe)	Multiple types; Median of 80 or 107 mg/day; Within 24 or 48 hours from admission; Median of 4 (4-6) days	30-day mortality	NA	2x2 table
Ruiz-Irastorza&Pijoan et al[61], 2020	Spain	Observational	62	Mean of 64.4 (SD 14.3)	COVID-19 (Severe)	Methylprednisolone; NA (low dose); At week 1, 2 or 3; NA	Mortality&Composite (death or intubation)	Propensity score (factors including age, comorbidities, lymphocyte, and LDH)	2x2 table
Yan&Yang et al[62], 2020	China	Observational	59.1	Median of 64 (IQR 49-73)	COVID-19 (Severe)	NA; NA; NA; NA	30-day Mortality	NA	2x2 table
Feng&Li et al[63], 2020	China	Observational	62.3	Mean of 63.96 (SD 13.41)	COVID-19 (Severe)	NA; NA; NA; NA	28-day Composite outcome (need for invasive MV or death)	Age, diabetes, hypertension, antiviral, glucocorticoids*time from admission to glucocorticoids treatment	2x2 table, HR
Krishnan&Patel et al[64], 2020	America	Observational	62.5	Median of 68 (IQR 58-75)	COVID-19 (Critically severe)	NA; NA; NA; NA	Mortality	Age, sex, previous diagnosis of diabetes mellitus, obesity, arterial hypertension, chronic pulmonary disease, active neoplastic, neurodegenerative disease or systemic autoimmune disease and immunosuppressive therapy	2x2 table, HR
Yang&Yu et al[65], 2020	China	Observational	67.3	Mean of 59.7 (SD 13.3)	COVID-19 (Critically severe)	NA; NA; NA; NA	28-day Mortality	NA	2x2 table
Wang&Shu et al[66], 2020	China	Observational	64.4	Mean 67.4 (SD 11.3)	COVID-19 (Critically severe)	NA; NA; NA; NA	70-day Mortality	NA	2x2 table
Xu&Yang et al[67], 2020	China	Observational	59.8	Mean od 62.5 (SD 13.3)	COVID-19 (Critically severe)	Methylprednisolone; Mean of 60.9 (SD 21.7) mg/day; NA; Median of 6 (IQR 4–10) days	60-day Mortality	Age, sex, presence of comorbidities, D-dimer, LDH, CRP, lymphocyte count, serum potassium and albumin	2x2 table, OR
Ma&Qi et al[68], 2020	China	Observational	55.6	Mean of 60 (SD13.8)	COVID-19 (Severe or critically severe)	Methylprednisolone; 40 or 80 mg/day; NA; 3 days	28-day Mortality	NA	2x2 table
Wu&Huang et al[69], 2020	China	Observational	49.4	Median of 61.0 (IQR 51.0-70.0) in severe patients; Median of 68.0 (IQR 58.0-78.0) in critical patients	COVID-19 (Severe or critically severe)	NA; 40 mg/day; within 24 hours of the diagnosis of the severe or critical state; Median of 6.0 (IQR 3.0-10.0) days for severe patients, Median of 5.0 (3.0, 7.0) days for critical patients	28-day Mortality	NA	2x2 table
Li&Xu(b) et al[70], 2020	China	Observational	59.5	Median of 66 (IQR 55-72)	COVID-19 (Severe or critically severe)	NA; NA; NA; NA	07-day Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Meng&Dong et al[71], 2003	China	Observational	25.7	Mean of 33 (SD 15)	SARS (NA)	Methylprednisolone; Low dose: 40-80 mg/day, Medium dose: 120-240 mg/day, High dose: 320-640 mg/day; NA; NA	Mortality	NA	2x2 table
Peng&Hou et al[72], 2004	China	Observational	49.5	Mean of 38.2 (Range 4-81)	SARS (NA)	Multiple types; 53 or 80 mg/day; 70% of the patients started from the 3rd to 7th day of the disease and 30% from the 8th to 14th day of the disease; Mean of 4.1 (SD 1.55 days)	Mortality	NA	2x2 table
Wang&Zhou et al[73], 2004	China	Observational	55.7	Range of median age: 21-40	SARS (NA)	Methylprednisolone; NA; NA; NA	Mortality	NA	2x2 table
Wang&Li et al[74], 2004	China	Observational	48.1	Mean of 37 (SD 16)	SARS (NA)	NA; 80-160 mg/day; The risk of death was the lowest among the patients who started from 5th to 7th day after admission.; NA	40-day Mortality	Age, basic disease, time of admission after onset, body temperature of the first visit, respiratory rate of the first visit, lesion scope shown by chest X-ray, body temperature of the day when glucocorticoids began to use, respiratory rate of the day when glucocorticoids began to use, pulse rate of the day when glucocorticoids began to use, whether glucocorticoids was severe before use, and whether mechanical ventilation was used before glucocorticoids use.	2x2 table, RR
Wang&Li et al[75], 2005	China	Observational	50.3	Mean of 36 (SD 14)	SARS (NA)	NA; NA; NA; NA	Mortality	NA	2x2 table

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
Jia et al[76], 2006	China	Observational	41.8	Mean of 40.67(SD 16.88)	SARS (NA)	NA; Mean of 96.9 (SD 88.1) mg/day; NA; Range of mean days from 8 to 10 days	Mortality	Age, median of accumulative dose, median of mean daily dose, use of invasive ventilation, temperature, duration of fever, Cough and expectoration, respiratory rate, peripheral counts of WBCs, neutrophils/WBCs, serum lactate dehydrogenase, heart rate, PaO2, PaCO2, Inhaled oxygen concentration, rigor at onset, pulmonary rales, underlying disease, complications, mediastinal emphysema, shock, disseminated intravascular coagulation, renal dysfunction, myocardial injury, arrhythmias, pulmonary infection, extrapulmonary infection, multiple organ dysfunction syndrome, gastrointestinal hemorrhage	2x2 table, OR
Yam&Lau et al[77], 2007	China	Observational	42.7	Range of median age: 34-61	SARS (NA)	Hydrocortisone; NA; Median of 5 days (IQR 3-8 days) from symptom onset of the disease; 15-19 days	Mortality	NA	2x2 table
Lau&Cowling et al[78], 2009	China and Canada	Observational	43.8	Range of median age: ≤39	SARS (NA)	NA; NA; Within 2 days of admission; NA	Mortality	Age, sex, comorbidity, worst respiratory status at days 8 to 10, LDH ratio, WBCs, lymphocyte, neutrophil, worst X-ray, ever treated with glucocorticoids	2x2 table, RR
Ma et al[79], 2008	China	Observational	48.6	Mean of 37.08 (SD 15.91)	SARS (NA)	Multiple types; < 80 mg/day; Days after onset of symptoms: < 8day, 8-15 days, 15-22 days, or ≥ 22 days; NA	120-day Mortality	Age, sex, occupation, preexisting comorbid conditions, calendar date of symptom onset, delay between symptom onset and admission, LDH, chest radiograph findings, neutrophil count, platelet count, lymphocyte count, and oxygen saturation, calendar date of onset, onset-to admission delay, and admitting	2x2 table, OR

Study	Country	Design	Male, %	Age, years	Diseases (severity of illness)	Administration of glucocorticoids: types; doses; timing; duration)	Outcome	Adjusted factors besides glucocorticoids	Primary data type
								hospital	
Auyeung&S. W. Lee et al[80], 2005	China	Observational	42.3	Median of 44 (Range 18-95)	SARS (NA)	Multiple types; NA; NA; NA	Composite outcome (ICU admission or death)	NA	2x2 table
Chen&Tang et al[81], 2006	China	Observational	32.2	Mean of 34.7 (SD 13.3)	SARS (NA)	Methylprednisolone; NA (medium-high dose); Mean of 5.01 days (SD 3.48 days) from onset of the disease; NA	60-day Mortality	Age, sex, onset time, cumulative hormone dose, initial hormone dose, daily average hormone dose, medication timing, disease condition, underlying diseases	2x2 table, OR, HR
Lew&Kwek et al[82], 2003	Singapore	Observational	52.2	Median of 51 (IQR 20-78)	SARS (Severe or critically severe)	NA; NA; NA; NA	28-day Mortality	Age, presence of comorbidities and high LDH levels	2x2 table, OR

Abbreviations: OR, odds ratio; HR, hazard ratio; RR, risk ratio; IQR, interquartile range; SD, standard deviation; NA: not available; RCT, randomized controlled trial; ALT, alanine aminotransferase; AST, aspartate aminotransferase; COPD, chronic obstructive pulmonary disease; CRP, C-reactive protein; FiO2, fraction of inspiration oxygen; ICU, intensive care unit; MV, mechanical ventilation; LDH, lactate dehydrogenase; PaCO2, partial pressure of carbon dioxide in artery; PaO2, partial pressure of oxygen in artery; SatO2, tissue oxygen saturation; SOFA, sequential organ failure assessment; SpO2, pulse oxygen saturation; WBC, white blood cell; COVID-19, coronavirus disease 2019; SARS, severe acute respiratory syndrome.

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