Table S1 – Search strategy

Database: PubMed

((("Cannula"[Mesh]) OR ((((((Cannula[Title/Abstract]) OR (Cannulae[Title/Abstract])) OR (Nasal Cannula[Title/Abstract])) OR (Cannula, Nasal[Title/Abstract])) OR (Nasal Cannulae[Title/Abstract])) OR (Cannulae, Nasal[Title/Abstract]))) AND (("COVID-19"[Mesh]) OR ((((((((((((((((((((((((((((((((((((COVID-19[Title/Abstract]) OR (COVID 19[Title/Abstract])) OR (SARS-CoV-2 Infection[Title/Abstract])) OR (Infection, SARS-CoV-2[Title/Abstract])) OR (SARS CoV 2 Infection[Title/Abstract])) OR (SARS-CoV-2 Infections[Title/Abstract])) OR (2019 Novel Coronavirus Disease[Title/Abstract])) OR (2019 Novel Coronavirus Infection[Title/Abstract])) OR (2019-nCoV Disease[Title/Abstract])) OR (2019 nCoV Disease[Title/Abstract])) OR (2019-nCoV Diseases[Title/Abstract])) OR (Disease, 2019-nCoV[Title/Abstract])) OR (COVID-19 Virus Infection[Title/Abstract])) OR (COVID 19 Virus Infection[Title/Abstract])) OR (COVID-19 Virus Infections[Title/Abstract])) OR (Infection, COVID-19 Virus[Title/Abstract])) OR (Virus Infection, COVID-19[Title/Abstract])) OR (Coronavirus Disease 2019[Title/Abstract])) OR (Disease 2019, Coronavirus[Title/Abstract])) OR (Coronavirus Disease-19[Title/Abstract])) OR (Coronavirus Disease 19[Title/Abstract])) OR (Severe Acute Respiratory Syndrome Coronavirus 2 Infection[Title/Abstract])) OR (SARS Coronavirus 2 Infection[Title/Abstract])) OR (COVID-19 Virus Disease[Title/Abstract])) OR (COVID 19 Virus Disease[Title/Abstract])) OR (COVID-19 Virus Diseases[Title/Abstract])) OR (Disease, COVID-19 Virus[Title/Abstract])) OR (Virus Disease, COVID-19[Title/Abstract])) OR (2019-nCoV Infection[Title/Abstract])) OR (2019 nCoV Infection[Title/Abstract])) OR (2019-nCoV Infections[Title/Abstract])) OR (Infection, 2019-nCoV[Title/Abstract])) OR (COVID19[Title/Abstract])) OR (COVID-19 Pandemic[Title/Abstract])) OR (COVID 19 Pandemic[Title/Abstract])) OR (Pandemic, COVID-19[Title/Abstract])) OR (COVID-19 Pandemics[Title/Abstract])))) AND (("Oxygen Inhalation Therapy"[Mesh]) OR ((((((Oxygen Inhalation Therapy[Title/Abstract]) OR (Inhalation Therapy, Oxygen[Title/Abstract])) OR (Inhalation Therapies, Oxygen[Title/Abstract])) OR (Oxygen Inhalation Therapies[Title/Abstract])) OR (Therapies, Oxygen Inhalation[Title/Abstract])) OR (Therapy, Oxygen Inhalation[Title/Abstract])))

Database: Embase

#17. #12 AND #15 AND #16
#16. #3 OR #6 OR #9
#15. #13 OR #14
#14. 'oxygen therapy':ab,ti OR 'o2 administration':ab,ti OR 'o2 therapy':ab,ti OR 'oxygen administration':ab,ti OR 'oxygen inhalation therapy':ab,ti OR 'oxygen insufflation':ab,ti OR 'oxygen treatment':ab,ti
#13. 'oxygen therapy'/exp
#12. #10 OR #11
#11. 'coronavirus disease 2019':ab,ti OR '2019 novelcoronavirus disease':ab,ti OR '2019 novel coronavirus epidemic':ab,ti OR '2019 novel coronavirus infection':ab,ti OR '2019-ncov disease':ab,ti OR '2019-ncov infection':ab,ti OR 'coronavirus disease 2':ab,ti OR 'coronavirus disease 2010':ab,ti OR 'coronavirus disease 2019 pneumonia':ab,ti OR 'coronavirus disease-19':ab,ti OR 'coronavirus infection 2019':ab,ti OR covid:ab,ti OR 'covid 19 induced pneumonia':ab,ti OR 'covid 2019':ab,ti OR 'covid 10':ab,ti OR 'covid 19':ab,ti OR 'covid-19 induced pneumonia':ab,ti OR 'covid-19 pneumonia':ab,ti OR covid19:ab,ti OR 'ncov 2019 disease':ab,ti OR 'ncov 2019 infection':ab,ti OR 'new coronavirus pneumonia':ab,ti OR 'novel coronavirus 2019 disease':ab,ti

OR 'novel coronavirus 2019 infection':ab,ti OR 'novel coronavirus disease 2019':ab,ti OR 'novel coronavirus infected pneumonia':ab,ti OR 'novel coronavirus infection 2019':ab,ti OR 'novel coronavirus pneumonia':ab,ti OR 'paucisymptomatic coronavirus disease 2019':ab,ti OR 'sars coronavirus 2 infection':ab,ti OR 'sars coronavirus 2 pneumonia':ab,ti OR 'sars-cov-2 disease':ab,ti OR 'sars-cov-2 infection':ab,ti OR 'sars-cov-2 pneumonia':ab,ti OR 'sars-cov2 disease':ab,ti OR 'sars-cov2 infection':ab,ti OR 'sarscov2 disease':ab,ti OR 'sarscov2 infection':ab,ti OR 'severe acute respiratory syndrome 2':ab,ti OR 'severe acute respiratory syndrome 2 pneumonia':ab,ti OR 'severe acute respiratory syndrome coronavirus 2 infection':ab,ti OR 'severe acute respiratory syndrome coronavirus 2019 infection':ab,ti OR 'severe acute respiratory syndrome cov-2 infection':ab,ti OR 'wuhan coronavirus disease':ab,ti OR 'wuhan coronavirus infection':ab,ti

#10. 'coronavirus disease 2019'/exp

#9. #7 OR #8

#8. ((('high flow nasal cannula therapy':ab,ti OR 'hfoxygen therapy':ab,ti OR hfnc:ab,ti) AND 'high flow nasal cannula':ab,ti OR 'hfnc assisted ventilation':ab,ti OR 'hfnc therapy':ab,ti OR 'hfnc ventilation':ab,ti OR hfnct:ab,ti) AND 'high flow nasal cannula therapy':ab,ti OR 'high flow nasal cannula':ab,ti OR 'high flow nasal cannula respiratory support':ab,ti OR 'high flow nasal canula':ab,ti OR 'high flow nasal prong therapy':ab,ti OR 'high flow nasal therapy':ab,ti OR 'high flow oxygenation therapy':ab,ti OR 'high flow':ab,ti) AND hf:ab,ti AND 'oxygen therapy':ab,ti OR 'high-flow oxygen therapy':ab,ti OR 'high-flow oxygen treatment':ab,ti OR 'highflow nasal cannula':ab,ti OR 'highflow nasal cannula therapy':ab,ti OR 'nasal high flow':ab,ti

#7. 'high flow nasal cannula therapy'/exp

#6. #4 OR #5

#5. 'oxygen nasal cannula':ab,ti OR 'acucarehfnc':ab,ti OR 'basic nasal oxygen cannula':ab,ti OR 'basic nasal oxygen delivery catheter':ab,ti OR 'basic oxygen nasal cannula':ab,ti OR 'carbon dioxide sampling cannula':ab,ti OR 'carbon dioxide sampling nasal oxygen cannula':ab,ti OR 'carbon-dioxide-sampling nasal oxygen cannula':ab,ti OR 'cpap nasal oxygen cannula':ab,ti OR 'dispo med':ab,ti OR 'kentron capnography':ab,ti OR 'nasal oxygen cannulae':ab,ti OR 'nasal oxygen delivery catheter':ab,ti OR 'niv linemicrostream':ab,ti OR 'oxygen delivery nasal catheter':ab,ti

#4. 'oxygen nasal cannula'/exp

#3. #1 OR #2

#2. 'nasal cannula':ab,ti OR filterline:ab,ti OR'nasal canula':ab,ti OR 'nasal tube':ab,ti OR 'nose cannula':ab,ti OR 'nose tube':ab,ti OR 'optiflow nasal cannula':ab,ti OR 'pro-flow nasal cannula':ab,ti OR 'smart capnoline':ab,ti

Database: Web of Science

#1 TS=(Cannula) 20941

#2 AB=(Cannula OR Cannulae OR (Nasal Cannula) OR (Cannula, Nasal) OR (Nasal Cannulae) OR (Cannulae, Nasal)) 16968

#3 #1 OR #2 20941

#4 TS=(COVID-19) 272414

#5 AB=((COVID-19) OR (COVID 19) OR (SARS-CoV-2 Infection) OR (Infection, SARS-CoV-2) OR (SARS CoV 2 Infection) OR (SARS-CoV-2 Infections) OR (2019 Novel Coronavirus Disease) OR (2019 Novel Coronavirus Infection) OR (2019-nCoV Disease) OR (2019 nCoV Disease) OR (2019-nCoV Diseases) OR (Disease, 2019-nCoV) OR (COVID-19 Virus Infection) OR (COVID 19 Virus Infection) OR (COVID-19 Virus Infections) OR (Infection, COVID-19 Virus) OR (Virus Infection, COVID-19) OR (Coronavirus Disease 2019) OR (Disease 2019, Coronavirus) OR (Coronavirus Disease-19) OR (Coronavirus Disease 19) OR (Severe

Acute Respiratory Syndrome Coronavirus 2 Infection) OR (SARS Coronavirus 2 Infection) OR (COVID-19 Virus Disease) OR (COVID 19 Virus Disease) OR (COVID-19 Virus Diseases) OR (Disease, COVID-19 Virus) OR (Virus Disease, COVID-19) OR (2019-nCoV Infection) OR (2019 nCoV Infection) OR (2019-nCoV Infections) OR (Infection, 2019-nCoV) OR (COVID19) OR (COVID-19 Pandemic) OR (COVID 19 Pandemic) OR (Pandemic, COVID-19) OR (COVID-19 Pandemics)) 198041

#6 #4 OR #5 278439

#7 TS=(Oxygen Inhalation Therapy) 1367

#8 AB=((Oxygen Inhalation Therapy) OR (Inhalation Therapy, Oxygen) OR (Inhalation Therapies, Oxygen) OR (Oxygen Inhalation Therapies) OR (Therapies, Oxygen Inhalation) OR (Therapy, Oxygen Inhalation)) 613

#9 #7 OR #8 1367

#10 #3 AND #6 AND #9 5

Database: Cochrane Library

#1 MeSH descriptor: [Cannula] explode all trees

#2 (Cannula or Cannulae or Nasal Cannula or Cannula, Nasal or Nasal Cannulae or Cannulae, Nasal):ti,ab,kw (Word variations have been searched)

#3 #1 or #2

#4 MeSH descriptor: [COVID-19] explode all trees

#5 (COVID-19 or COVID 19 or SARS-CoV-2 Infection or Infection, SARS-CoV-2 or SARS CoV 2 Infection or SARS-CoV-2 Infections or 2019 Novel Coronavirus Disease or 2019 Novel Coronavirus Infection or 2019 nCoV Disease or COVID-19 Virus Infection or COVID 19 Virus Infection or COVID-19 Virus Infections or Infection, COVID-19 Virus or Virus Infection, COVID-19 or Coronavirus Disease 2019 or Disease 2019, Coronavirus or Coronavirus Disease-19 or Coronavirus Disease 19 or Severe Acute Respiratory Syndrome Coronavirus 2 Infection or SARS Coronavirus 2 Infection or COVID-19 Virus Disease or COVID 19 Virus Disease or COVID-19 Virus Diseases or Disease, COVID-19 Virus or Virus Disease, COVID-19 or 2019 nCoV Infection or COVID19 or COVID-19 Pandemic or COVID 19 Pandemic or Pandemic, COVID-19 or COVID-19 Pandemics):ti,ab,kw (Word variations have been searched)

#6 #4 or #5

#7 MeSH descriptor: [Oxygen Inhalation Therapy] explode all trees

#8 (Oxygen Inhalation Therapy or Inhalation Therapy, Oxygen or Inhalation Therapies, Oxygen or Oxygen Inhalation Therapies or Therapies, Oxygen Inhalation or Therapy, Oxygen Inhalation):ti,ab,kw (Word variations have been searched)

#9 #7 or #8

#10 #3 and #6 and #9

Table S2 Methodological quality (cohort studies)

Dear Dr./Prof. ***,

Hope this e-mail finds you well.

My name is Yang Li and I'm a researcher from Jiangsu Provincial Key Laboratory of Critical Care Medicine, Department of Critical Care Medicine, Zhongda Hospital, School of Medicine, Southeast University, Nanjing, Jiangsu, China.

Recently our group are performing a systematic review and meta-analysis to investigate the effect of high-flow nasal cannula therapy (HFNC) versus conventional oxygen therapy (COT) on intubation rate, 28-day ICU mortality, 28-day ventilator-free days (VFDs) and ICU length of stay (ICU LOS) in adult patients with acute respiratory failure (ARF) by COVID-19. Your paper entitled "***" is of significant importance in this topic. Of course, your excellent work will be included into the meta-analysis. However, some important information and data have not been reported in the paper. We would appreciate it if you could provide us the following data: ___. By the way, on behalf of our group, we will add your contribution in the acknowledgement part of the article. We believe that this paper will result in a good publication.

Your help is of great importance, and the results of the meta-analysis may be useful for future studies.

We are looking forward to hearing from you.

Kindest regards

Table S3 Methodological quality (cohort studies)

Study	Selection				Comparability	Outcome			Overall quality assessment
	Representativeof exposed cohort	Selection of non-exposed cohort	Ascertainment of exposure	Demonstration that outcome was not present at start of study	Comparability of cohorts based on design and analysis	Assessment of outcome	Timing of follow-up	Adequate follow-up	
Bonnet, 2021	★	★	★	★	★	★	★	★	8
COVID-ICU group, 2021	★	★	★	★	★	★	★	★	8
Demoule, 2020	★	★	★	★	★	★	★	★	8
Hansen, 2021	★	★	★	★	★	★	★	★	8
Sayan, 2021	★	★	★	★	★	★	★	★	8
Wendel Garcia, 2021	★	★	★	★	★	★	★	★	8
Wendel Garcia, 2022	★	★	★	★	★	★	★	★	8

Table S4 GRADE evidence profile for the studies in the meta-analysis

Outcomes	No. of studies	Study design	Quality assessment					No. of patients		Effect		Evidence quality	Importance
			Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	HFNC	COT	Relative (95% CI)	Absolute (95% CI)		
IR	7	1 RCT, 6 Cohort	Not serious	Serious [a]	Not serious	Not serious	NA [b]	762/1438	1202/1818	OR 0.44 (0.28, 0.71)	199 fewer per 1,000 (from 80 fewer to 308 fewer)	Low	CRITICAL
M	6	1RCT, 5 Cohort	Not serious	Not serious	Not serious	Not serious	NA [b]	174/942	265/1241	OR 0.54 (0.30, 0.97)	86 fewer per 1,000 (from 5 fewer to 138 fewer)	Moderate	CRITICAL
VFD	4	1 RCT, 3 Cohort	Not serious	Not serious	Not serious	Not serious	NA [b]	229	242	_	MD 2.58 higher (1.7 to 3.45 higher)	Moderate	IMPORTANT
LOS	8	2 RCT, 6 Cohort	Not serious	Serious [c]	Not serious	Serious [d]	NA [b]	1334	1656	_	MD 0.52 higher (1.01 lower to 2.06 higher)	Very low	IMPORTANT

HFNC: high flow nasal cannula, COT: conventional oxygen therapy, CI: confidence interval, OR: odds ratio, MD: mean difference

NA: not applicable

a. I2=85%, the heterogeneity was high

b. Publication bias could not be determined as the number of studies was less than 10

c. I2=80%, the heterogeneity was high

d. Wide confidence interval including benefits and harms

Figure S1 Risk of bias graph

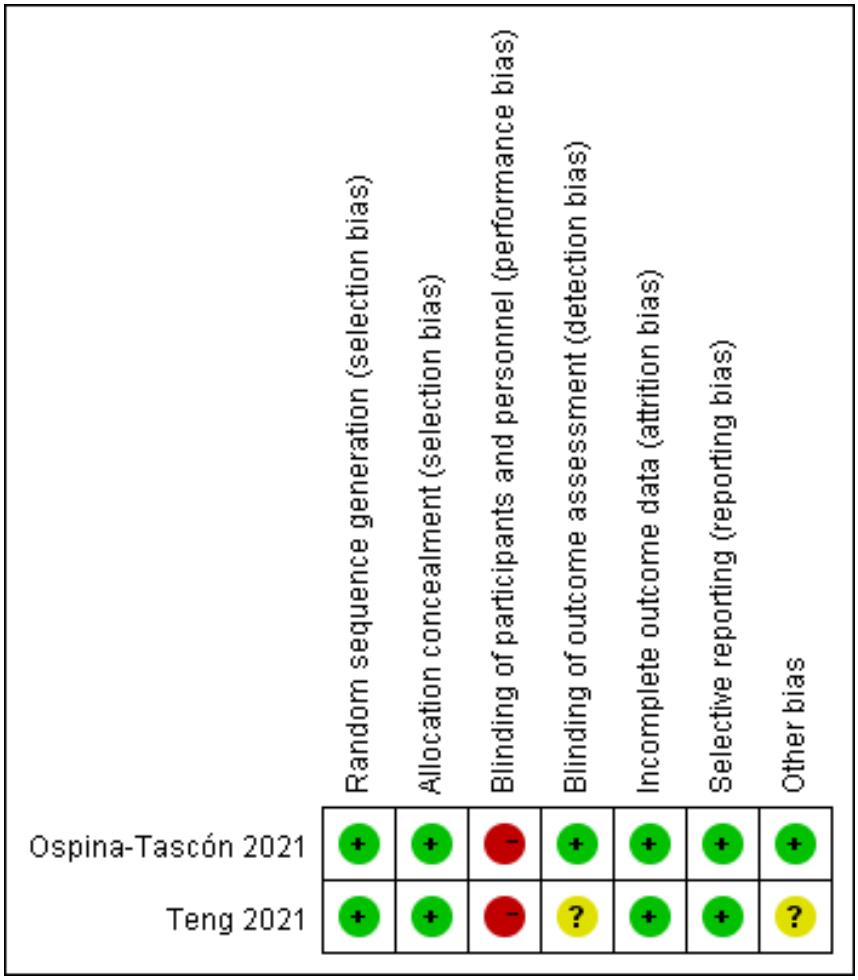

Figure S2 Risk of bias summary

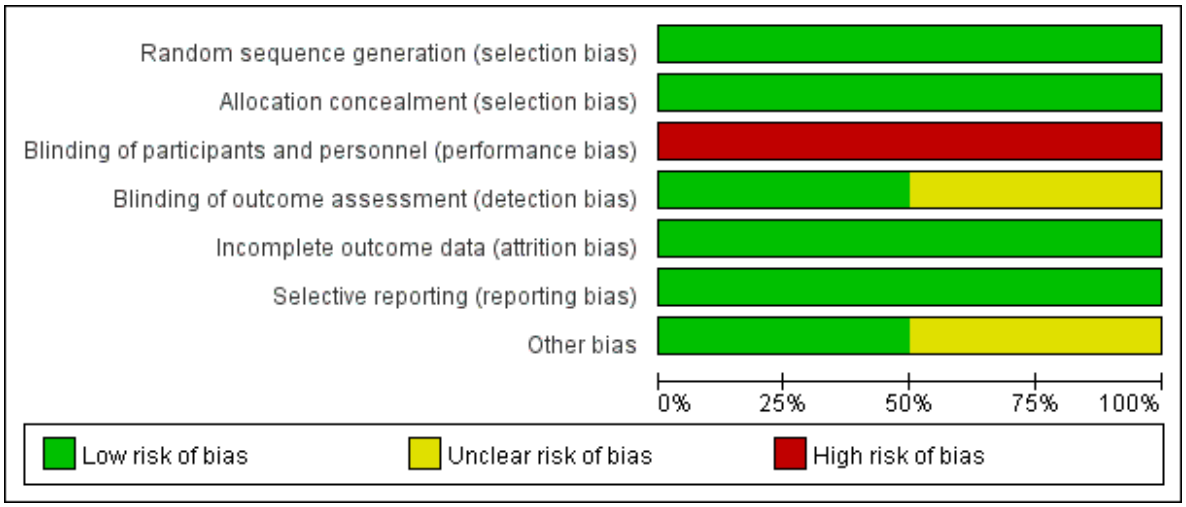

Figure S3 Funnel plot for intubation rate

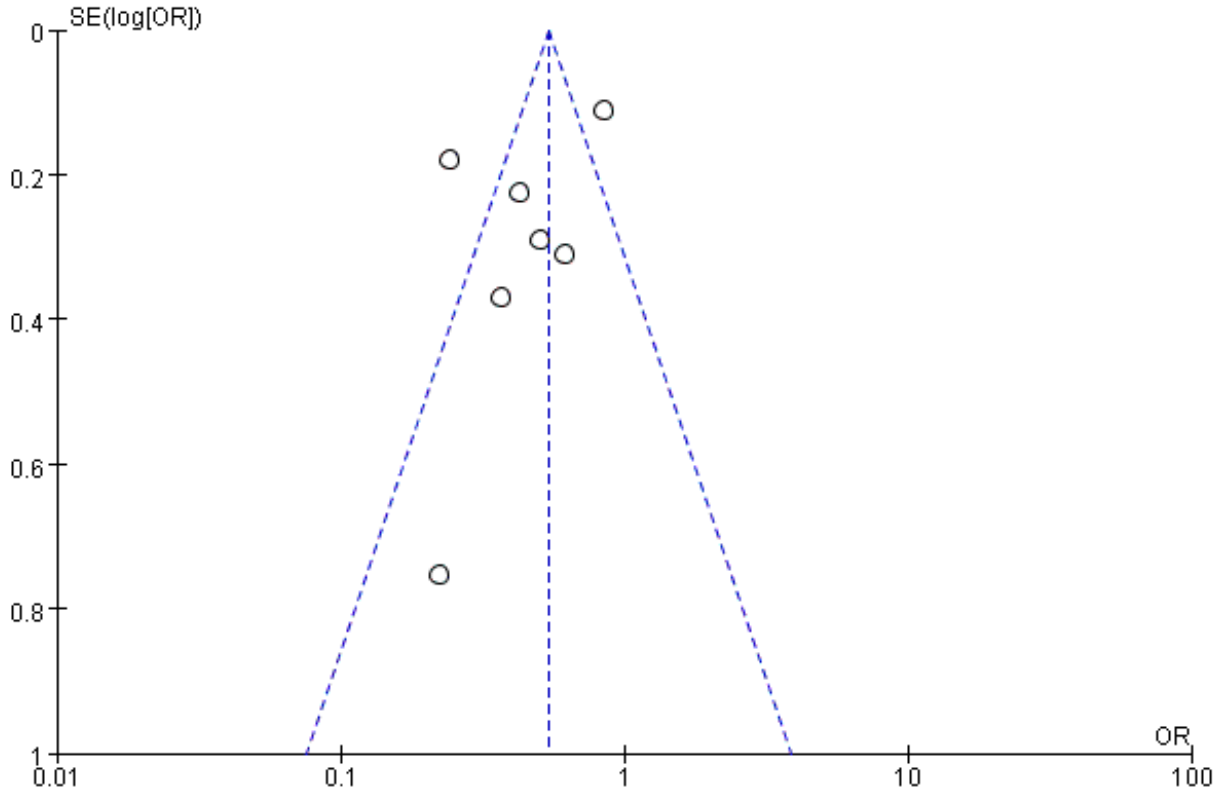

Figure S4 Trial sequential analysis of weaning success

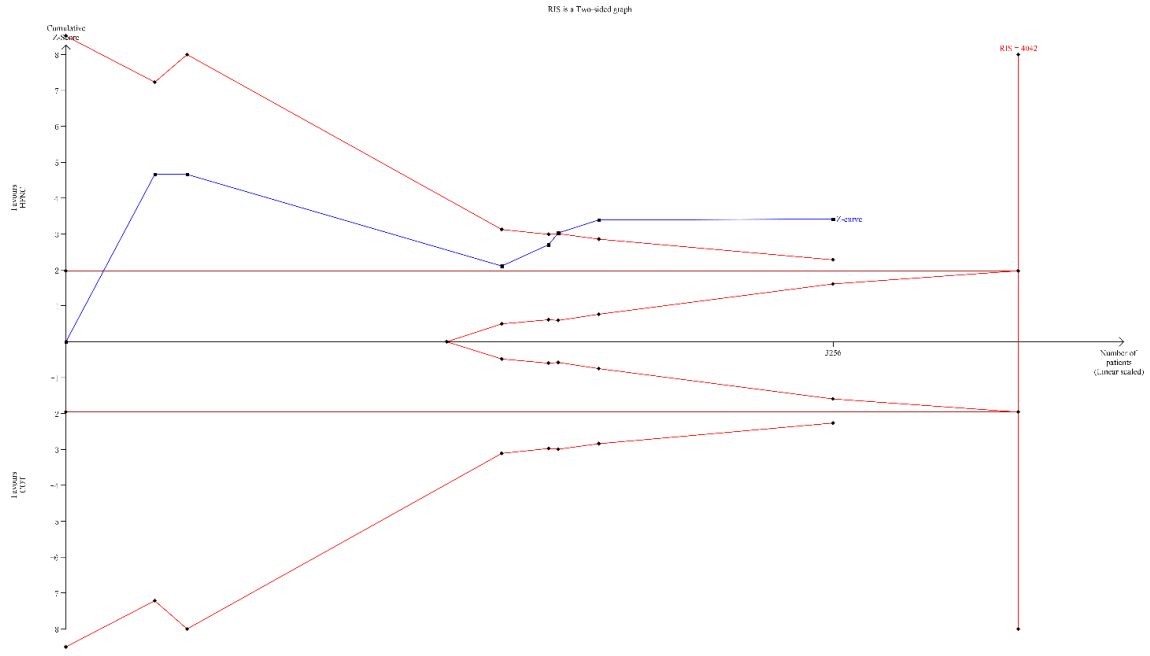

Figure S5 Subgroup analysis of intubation rate between the two groups with regard to type of ARF

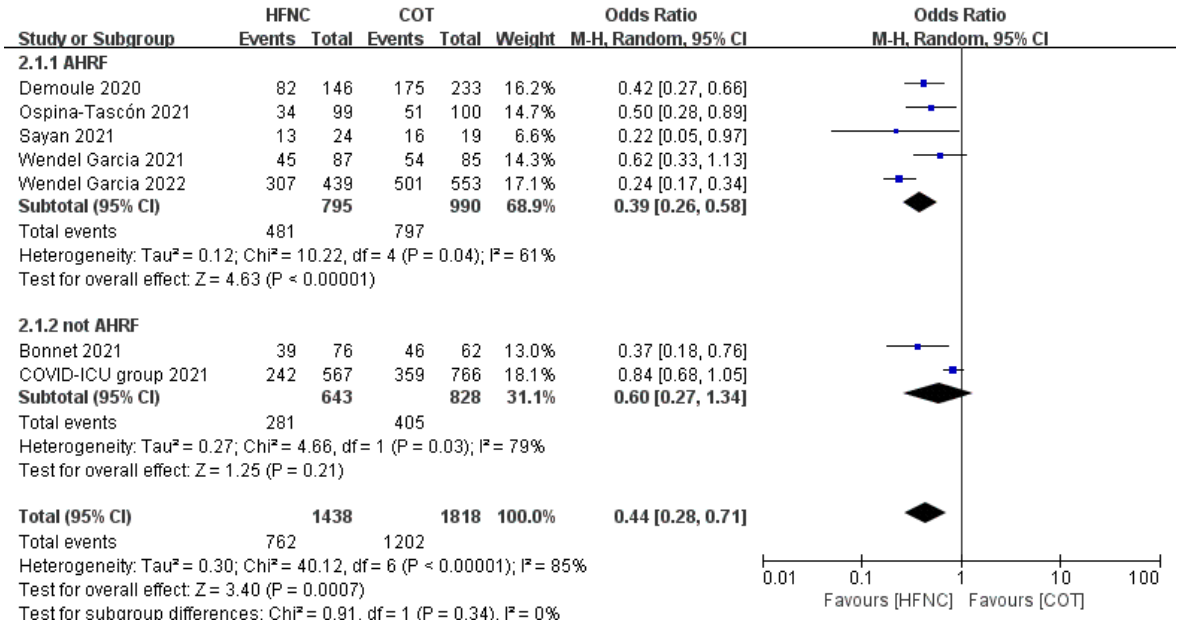

Figure S6 Subgroup analysis of mortality between the two groups with regard to type of ARF

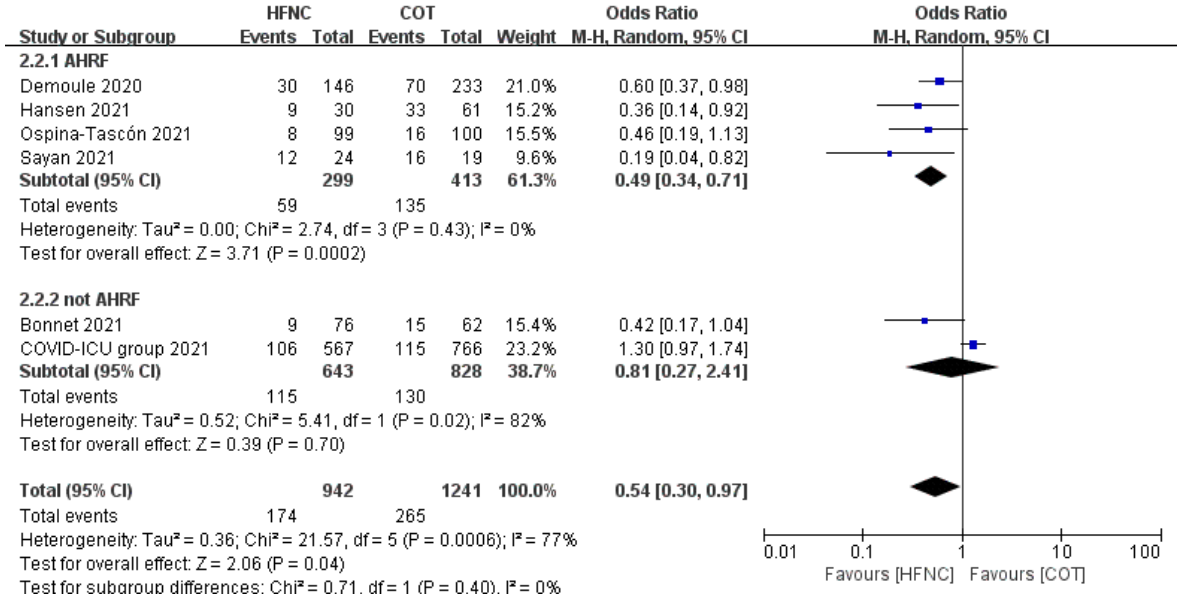

Figure S7 Subgroup analysis of VFDs between the two groups with regard to type of ARF

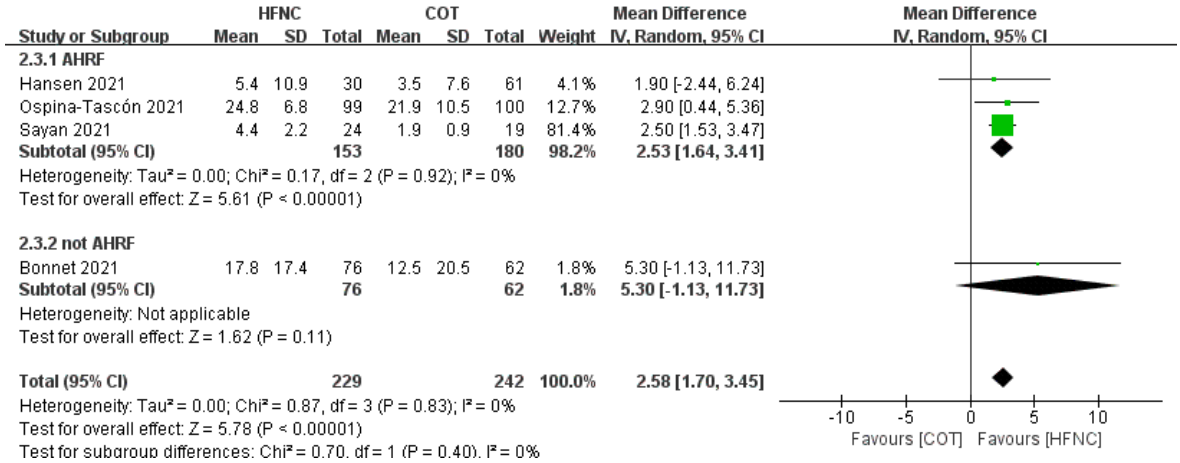

Figure S8 Subgroup analysis of LOS between the two groups with regard to type of ARF

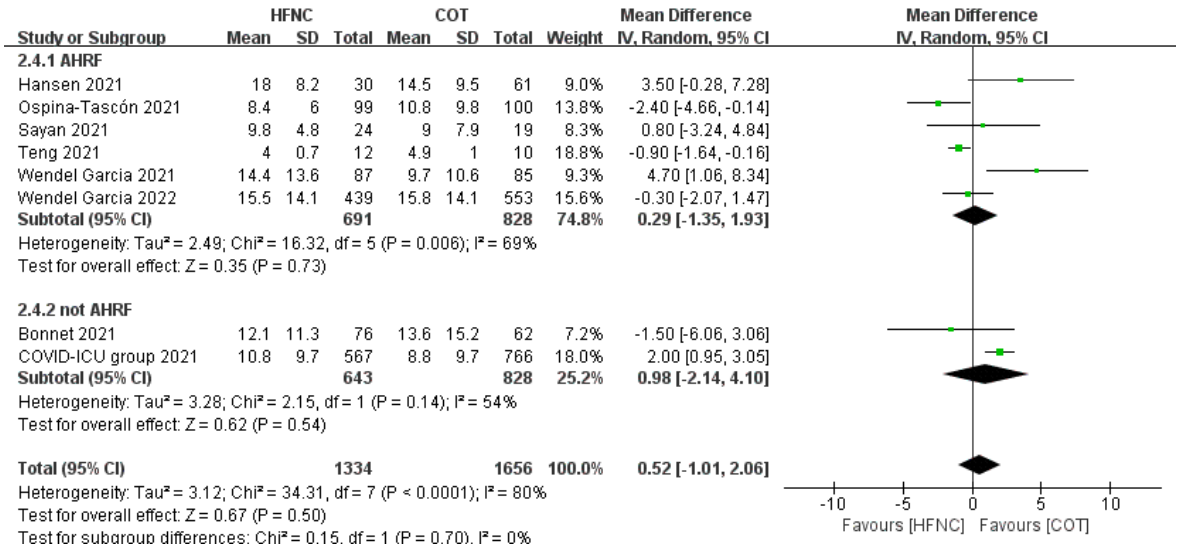

Figure S9 Subgroup analysis of intubation rate between the two groups with regard to OI

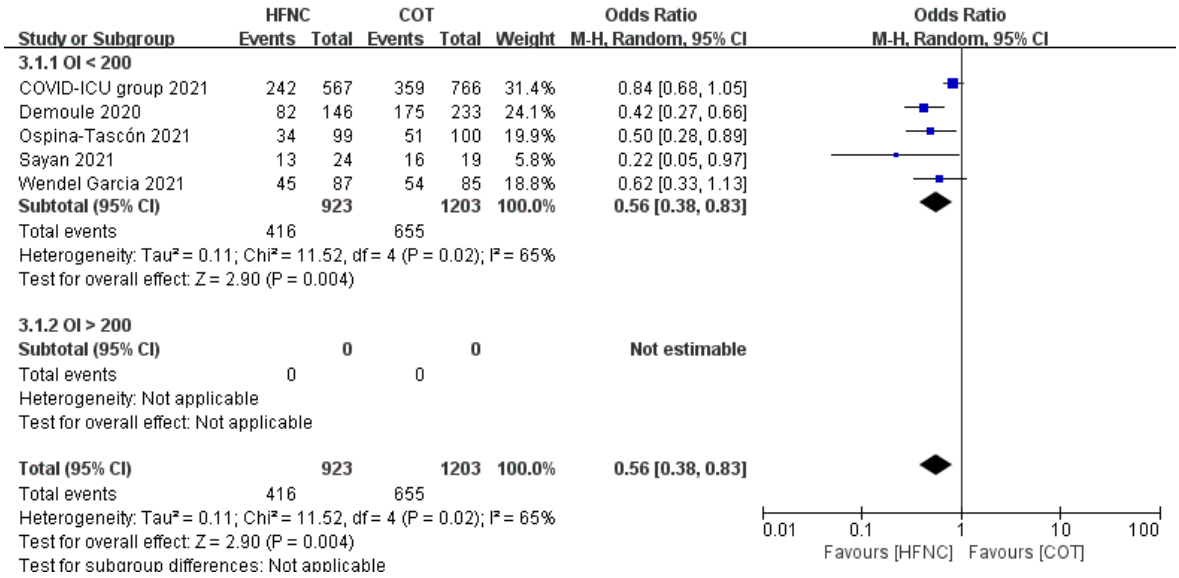

Figure S10 Subgroup analysis of mortality between the two groups with regard to OI

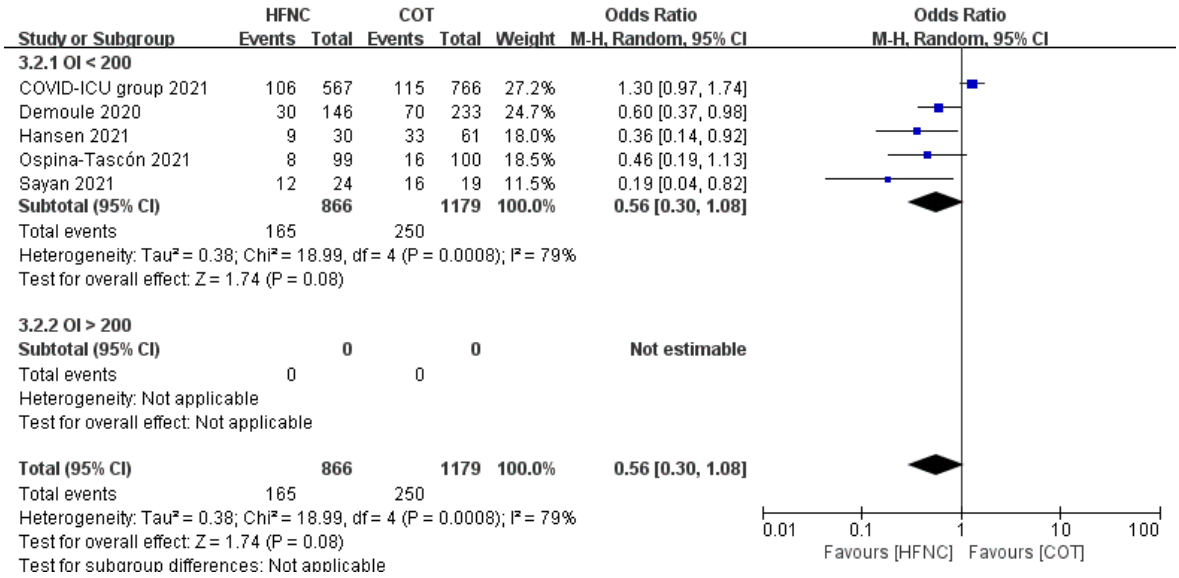

Figure S11 Subgroup analysis of VFDs between the two groups with regard to OI

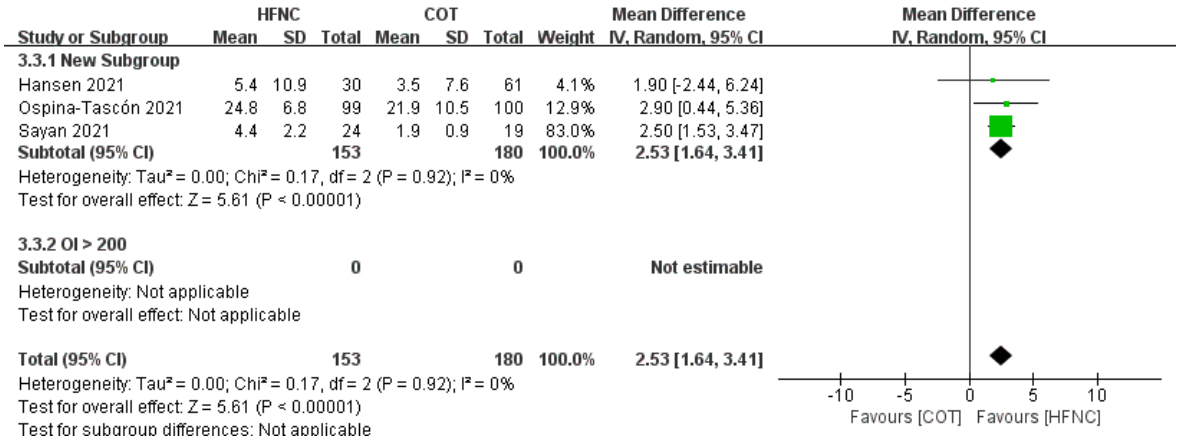

Figure S12 Subgroup analysis of LOS between the two groups with regard to OI

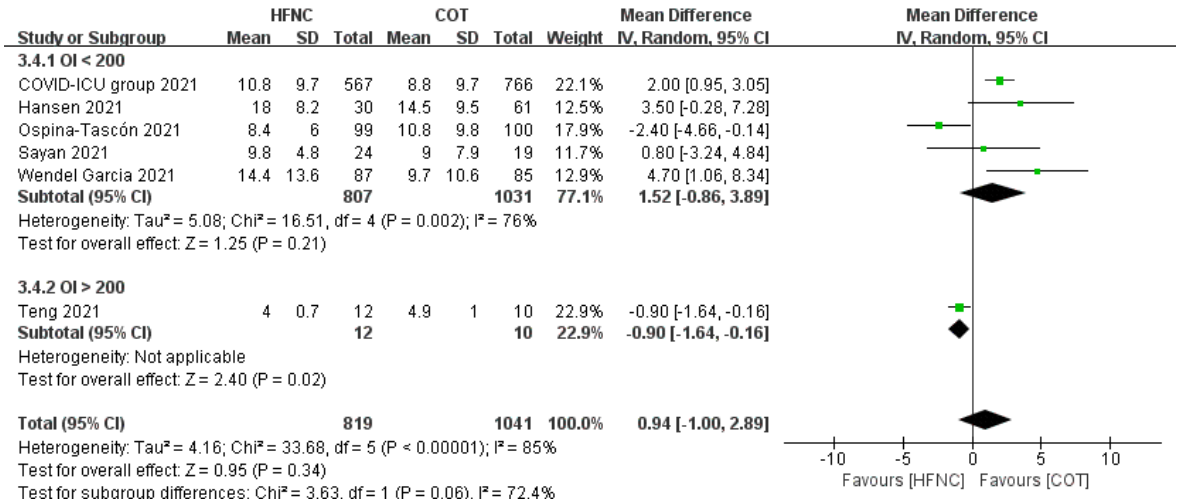

Figure S13 Subgroup analysis of IR between the two groups with regard to type of research