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Citation for final published version:

Alkodaymi, Mohamad Salim, Omrani, Osama Ali, Fawzy, Nader A., Shaar, Bader Abou, Almamlouk, Raghed, Riaz, Muhammad, Obeidat, Mustafa, Obeidat, Yasin, Gerberi, Dana, Taha, Rand M., Kashour, Zakaria, Kashour, Tarek, Berbari, Elie F., Alkattan, Khaled and Tleyjeh, Imad M. 2022. Prevalence of post-acute COVID-19 syndrome symptoms at different follow-up periods: A systematic review and meta-analysis. *Clinical Microbiology and Infection* 28 (5), pp. 657-666.  
10.1016/j.cmi.2022.01.014

Publishers page: <http://dx.doi.org/10.1016/j.cmi.2022.01.014>

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## Supplement 1: Search strategy

### Embase:

((exp coronavirinae/ or ((corona-vir\* or coronavir\* or covid\* or ncov\* or hcov\* or cov19 or cov-19 or cov2019 or cov-2019) adj3 ("19" or "2019" or novel or new or nuevo or nouveau or wuhan or hubei or china or chinese or pneumon\* or pandemic\* or outbreak\* or quarantin\* or shut-down\* or shutdown\* or lockdown\* or lock-down\* or "stay-at-home" or "shelter-in-place")).ab,hw,kw,od,ti. or (corona-virinae19 or corona-virinae2019 or coronavirus19 or corona-virus2019 or coronavirinae19 or coronavirinae2019 or coronavirus19 or coronavirus2019 or covid19 or covid2019 or ncov19 or ncov2019 or hcov19 or hcov2019).ab,hw,kw,ox,ti. or (sars\* adj1 (corona-vir\* or coronavir\* or cov\* or hcov\* or ncov\*)).ab,hw,kw,od,ti,tw. or (severe-acute-respiratory-syndrome adj1 (corona-vir\* or coronavir\* or cov\* or hcov\* or ncov\*)).ab,hw,kw,od,ti. or (betacoronavirus or sarscov\* or covid).ab,hw,kw,ox,ti. or (Worldwide-Acute-Respiratory-Syndrome or World-wide-Acute-Respiratory-Syndrome).ab,kw,ox,ti.) AND (survivor/ or exp aftercare/ or convalescence/ or (long-term or long-haul\* or chronic-covid\* or long-covid\* or post-acute or postacute or post-discharge or post-covid\* or post-ICU or post-intensive or post-critical or followup or follow-up or survivor\* or post-hospitali\* or after-care or aftercare or convalesc\* or recovery or rehospitali\* or re-hospitali\* or readmi\* or re-admi\* or return-to-work).kw,ti. or ((persist\* or residual or linger\* or lasting) adj2 (symptom\* or sequelae or issues or effects or complication\* or outcome\* or manifest\* or consequence\*)).kw,ti.) not (convalescent-plasma or convalescent-blood or convalescent-serum or long-term-care).kw,ti. or (post-covid\* adj5 (world or era or pandemic or econom\* or financ\* or market\* or pandemic or epidemic or aftermath)).ti. or postpandemic.ti. or post-pandemic.ti.

### Medline:

((exp Coronavirus/ or exp Coronavirus Infections/ or ((corona-vir\* or coronavir\* or covid\* or ncov\* or hcov\* or cov19 or cov-19 or cov2019 or cov-2019) adj3 ("19" or "2019" or novel or new or nuevo or nouveau or wuhan or hubei or china or chinese or pneumon\* or pandemic\* or outbreak\* or quarantin\* or shut-down\* or shutdown\* or lockdown\* or lock-down\* or "stay-at-home" or "shelter-in-place")).ab,hw,kf,ti. or (corona-virinae19 or coronavirus19 or corona-virus2019 or coronavirinae19 or coronavirinae2019 or coronavirus19 or coronavirus2019 or covid19 or covid2019 or ncov19 or ncov2019 or hcov19 or hcov2019).ab,hw,kw,ti. or (sars\* adj1 (corona-vir\* or coronavir\* or cov\* or hcov\* or ncov\*)).ab,hw,kf,ti. or (severe-acute-respiratory-syndrome adj1 (corona-vir\* or coronavir\* or cov\* or hcov\* or ncov\*)).ab,hw,kw,ti. or (betacoronavirus or sarscov\* or covid).ab,hw,kw,ti. or (Worldwide-Acute-Respiratory-Syndrome or World-wide-Acute-Respiratory-Syndrome).ab,kw,ti.) AND (Survivors/ or Follow-Up Studies/ or "Recovery of Function"/ or (long-term or long-haul\* or chronic-covid\* or long-covid\* or post-acute or postacute or post-discharge or post-covid\* or post-ICU or post-intensive or post-critical or followup or follow-up or survivor\* or post-hospitali\* or after-care or aftercare or convalesc\* or recovery or rehospitali\* or re-hospitali\* or readmi\* or re-admi\* or return-to-work).kw,ti. or ((persist\* or residual or linger\* or lasting) adj2 (symptom\* or sequelae or issues or effects or complication\* or outcome\* or manifest\* or consequence\*)).kf,ti.) not (convalescent-plasma or convalescent-blood or convalescent-serum or long-term-care).kw,ti. or (post-covid\* adj5 (world or era or pandemic or econom\* or financ\* or market\* or pandemic or epidemic or aftermath)).ti. or postpandemic.ti. or post-pandemic.ti.

## **Supplement 2: Data collation variables**

Number of COVID cases

Geographical location

Sample hospitalization and ICU admission status

Setting of acute COVID-19 illness

Day 0 definition

Type of follow up

Sample mean/median age

Time at follow up

Sample baseline characteristics:

Mean/median age, gender, BMI, smoking status.

Comorbid conditions:

Diabetes mellitus, arterial hypertension, heart failure, coronary artery disease, dyslipidemia, immunosuppressive conditions, autoimmune conditions, asthma, chronic obstructive pulmonary disease, obstructive sleep apnea, thyroid disease, chronic kidney disease cancer, mental health conditions.

Reported symptoms:

Fatigue, dyspnea, cough, sleep disorder, depression, anxiety, cognitive disorder, difficulty concentrating, chest pain, headache, loss of smell, loss of taste, joint pain, myalgia, diarrhoea, nausea, hair loss, palpitations, effort intolerance.

## **Supplement 3: Variables considered for meta-regression**

Geographical location

Percentage admitted to hospital

Percentage admitted to ICU

Follow up determination (median, mean, set time interval)

Type of follow up

COVID-19 severity

Single center vs multicenter or national study design

Baseline characteristics:

Mean/median age, gender, BMI, Smoking status.

Comorbid conditions: Diabetes mellitus, arterial hypertension, heart failure, coronary artery disease, dyslipidemia, immunosuppressive conditions, autoimmune conditions, asthma, chronic obstructive pulmonary disease, obstructive sleep apnea, thyroid disease, chronic kidney disease cancer, mental health conditions.

JBI quality assessment score



Qin et al.	1	1	1	1	1	1	1	1	1	9
Maestre-Muñiz et al.	1	1	1	1	1	1	1	1	1	9
Qu et al.	1	1	1	1	1	1	1	1	1	9
Knut Stavem et al.	1	0	1	1	1	1	1	1	0	7
Menges et al.	1	1	0	1	1	1	1	1	1	8
Shoucri et al.	1	0	1	1	1	1	1	1	0	7
Zayet et al.	1	1	1	1	1	0	1	1	1	8
Augustin et al.	1	1	1	1	1	1	1	1	1	9
Yin et al.	1	1	1	0	1	1	1	1	1	8
Sigfrid et al.	1	1	1	1	1	1	1	1	1	9
Boscolo-Rizzo et al.	1	1	1	1	1	1	1	1	1	9
DM Lombrado et al.	1	1	1	1	1	1	1	1	1	9
Sathyamurthy P et al.	1	1	1	0	1	1	1	1	1	8
Blomberg et al.	1	1	1	1	1	1	1	1	1	9
Clavario et al.	1	1	0	1	1	1	1	1	1	8
Darcis et al.	1	1	1	1	1	1	1	1	1	9
Riestra-Ayora et al.	0	0	0	1	1	1	1	1	1	6

Jennifer A. Frontera t al.	1	0	1	1	1	1	1	1	1	8
Pablo Parente-Arias et al	1	1	1	0	1	1	1	1	1	8
Han et al.	1	1	1	1	1	1	1	1	1	9
Sonnweber et al.	1	1	0	1	1	1	1	1	1	8
Froidure et al.	1	1	1	0	1	1	1	1	1	8
Suárez-Robles et al.	0	0	1	1	1	1	1	1	1	7
González-Hermosillo et al.	1	1	1	1	1	1	1	1	1	9
Nguyen et al.	1	1	1	0	1	1	1	1	1	8
Garrigues et al.	1	1	1	1	0	1	1	1	0	7
Mattioli et al.	1	1	0	1	0	1	1	1	1	7
Tawfik et al.	0	0	1	0	1	1	1	1	1	6
Leila Simani et al.	1	1	1	1	1	1	1	1	1	9
Jacobson et al.	1	1	0	1	1	1	1	1	1	8
Caruso et al.	1	0	1	1	1	1	1	1	1	8
Motiejunaite et al.	1	1	1	0	1	1	1	1	1	8
Schandl et al.	1	1	1	1	1	1	1	1	1	9
Aranda et al.	1	1	0	1	0	1	1	1	1	7

Mechi et al.	1	1	0	0	1	1	1	1	1	7
Skala et al.	1	0	1	1	1	1	1	1	1	8
T. J. M. Wallis et al.	1	1	1	1	1	1	1	1	1	9
Lindahl et al.	1	1	1	1	1	1	1	1	1	9
Biadsee et al.	1	0	0	0	1	1	1	1	1	6
Seeßle et al.	1	1	0	1	1	1	1	1	1	8
Boari et al.	1	1	0	1	1	1	1	1	0	7
Taboada et al.	1	1	1	1	1	1	1	1	1	9
Mumoli et al.	1	1	0	1	0	1	1	1	1	7
Parry et al.	1	1	0	0	0	1	1	1	1	6
Wong et al.	1	1	1	1	0	1	1	1	1	8
Dieter Munker et al.	1	0	0	1	1	1	1	1	1	7
Liang et al.	1	1	1	1	0	1	1	1	0	7
Noel-Savina et al.	1	1	0	1	1	1	1	1	1	8
Elkan et al.	1	1	0	1	1	1	1	1	1	8
Jessica González et al.	1	1	1	0	1	1	1	1	1	8
Yiping Lu et al.	1	1	1	1	1	1	1	1	1	9



Fortini et al.	1	1	0	1	1	1	1	1	0	7
Wu et al.	1	1	0	1	0	1	1	1	1	7
Seyed Mohammad Hossein Tabatabaei et al.	1	1	1	1	1	1	1	1	1	9

**Table S2:** Newcastle Ottawa Scale (NOS) for studies with a comparator group

Authors	Study Design	Selection	Comparability	Exposure/Outcome	Overall
Huang et al.	Ambidirectional cohort	3/4*	2/2	2/3**	7/9
Taquet et al.	Retrospective cohort	4/4	2/2	3/3	9/9
Riestra-Ayora et al.	Prospective cohort <sup>†</sup>	2/4***	1/2 <sup>‡</sup>	2/3	5/9
Mattioli et al.	Prospective cohort	2/4***	0/2	3/3	5/9
Elkan et al.	Retrospective cohort <sup>†</sup>	4/4*	1/2 <sup>‡</sup>	1/3**	6/9
Søraas et al.	Prospective cohort	4/4*	2/2	3/3	9/9

\*We accepted both community and inpatient cases as representative of COVID-19 cases, with comparator group drawn from the same source.

\*\*Adequate follow-up was defined as  $\geq 70\%$  attendance at all follow-up intervals.

\*\*\*Selected samples such as healthcare workers were not accepted as representative of COVID-19 cases.

<sup>†</sup>Study design was derived from the manuscript method section and not author description.

<sup>‡</sup>Samples were considered comparable if matched or adjusted for age and co-morbidities.

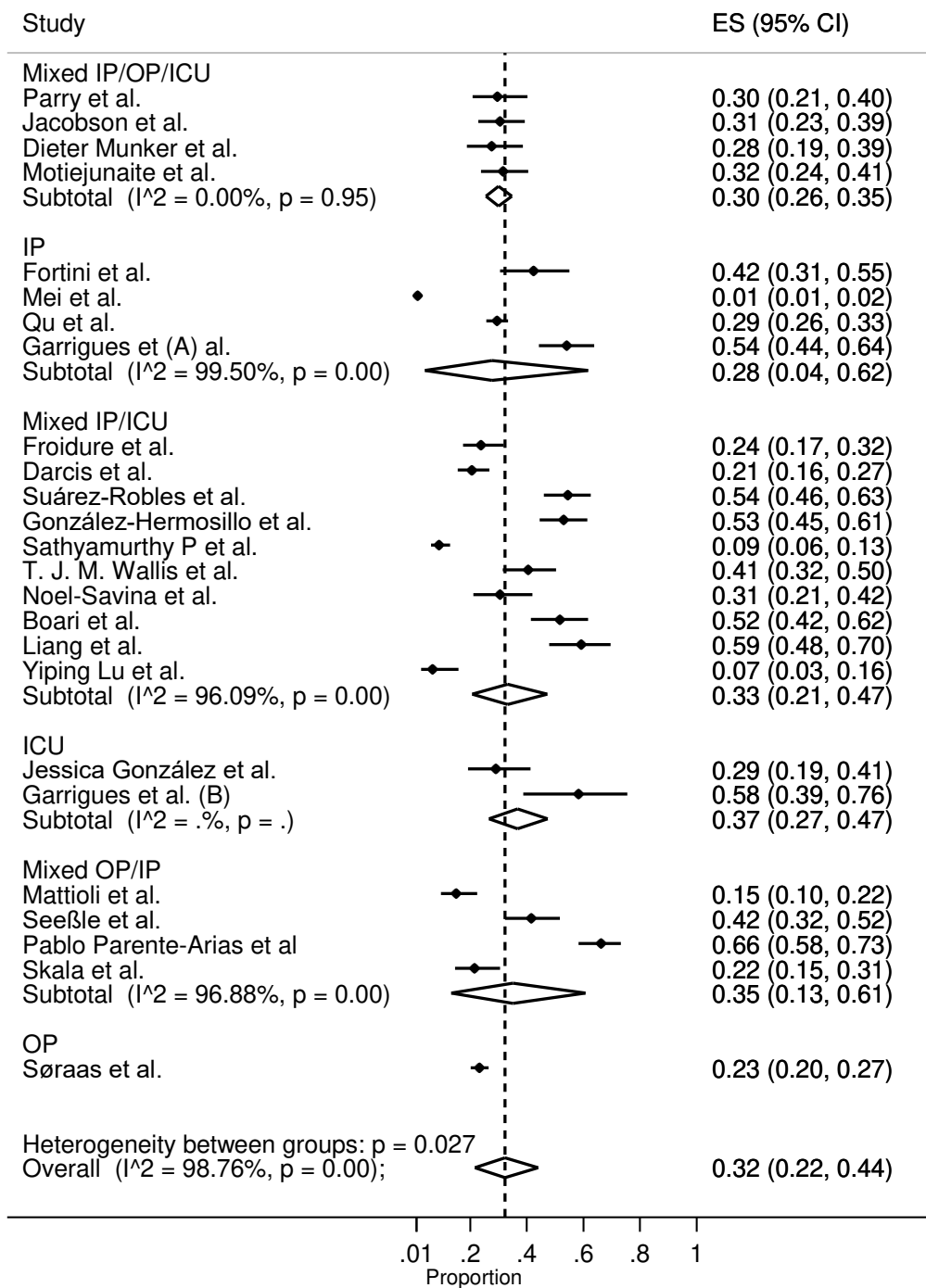
## Supplement 5: Meta-analysis Forrest plots

ES = effect size or symptom prevalence

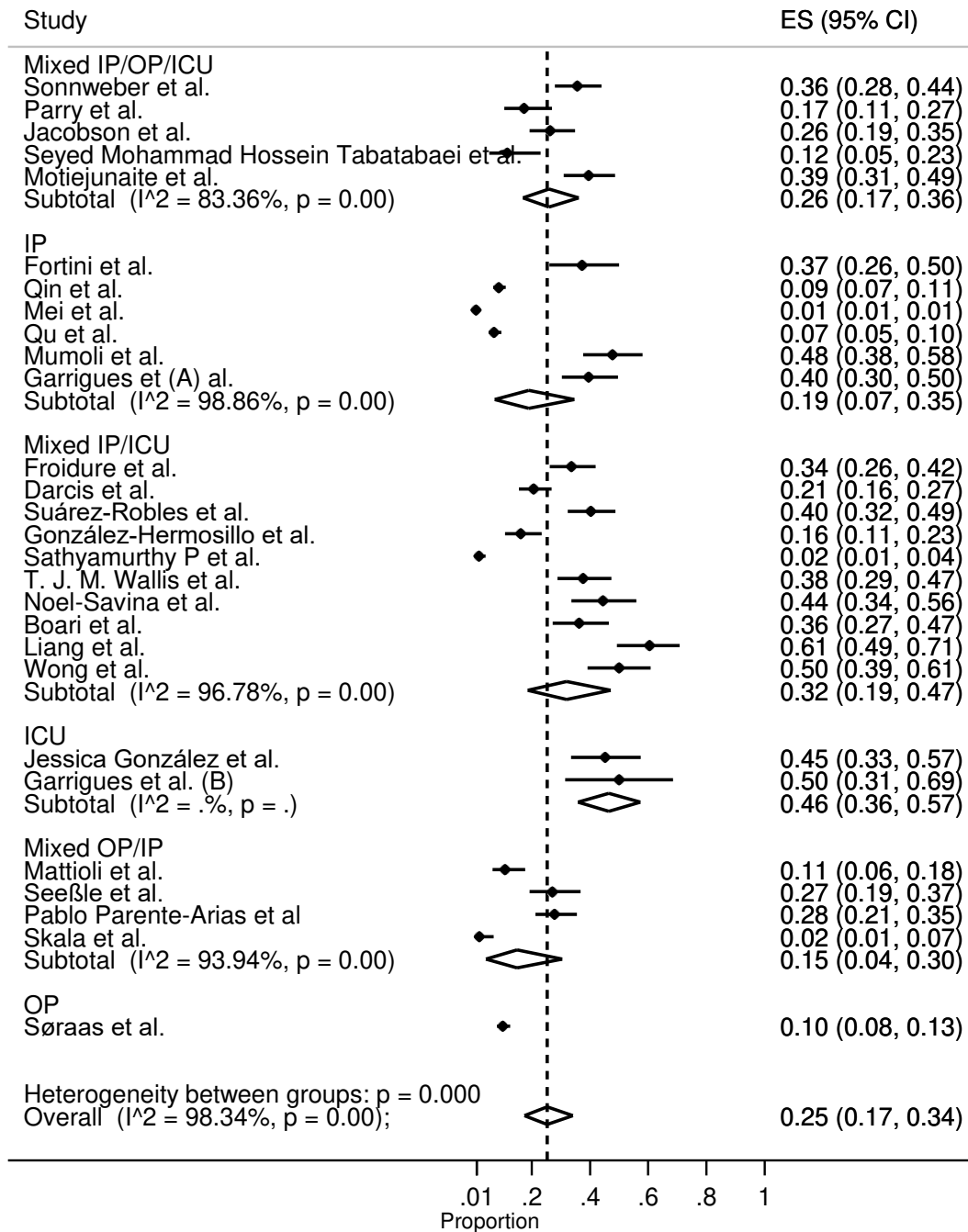
Overall = Pooled symptom prevalence across all subgroups

### Meta-analysis for the long term COVID19 symptoms: (duration 3-<6 months):

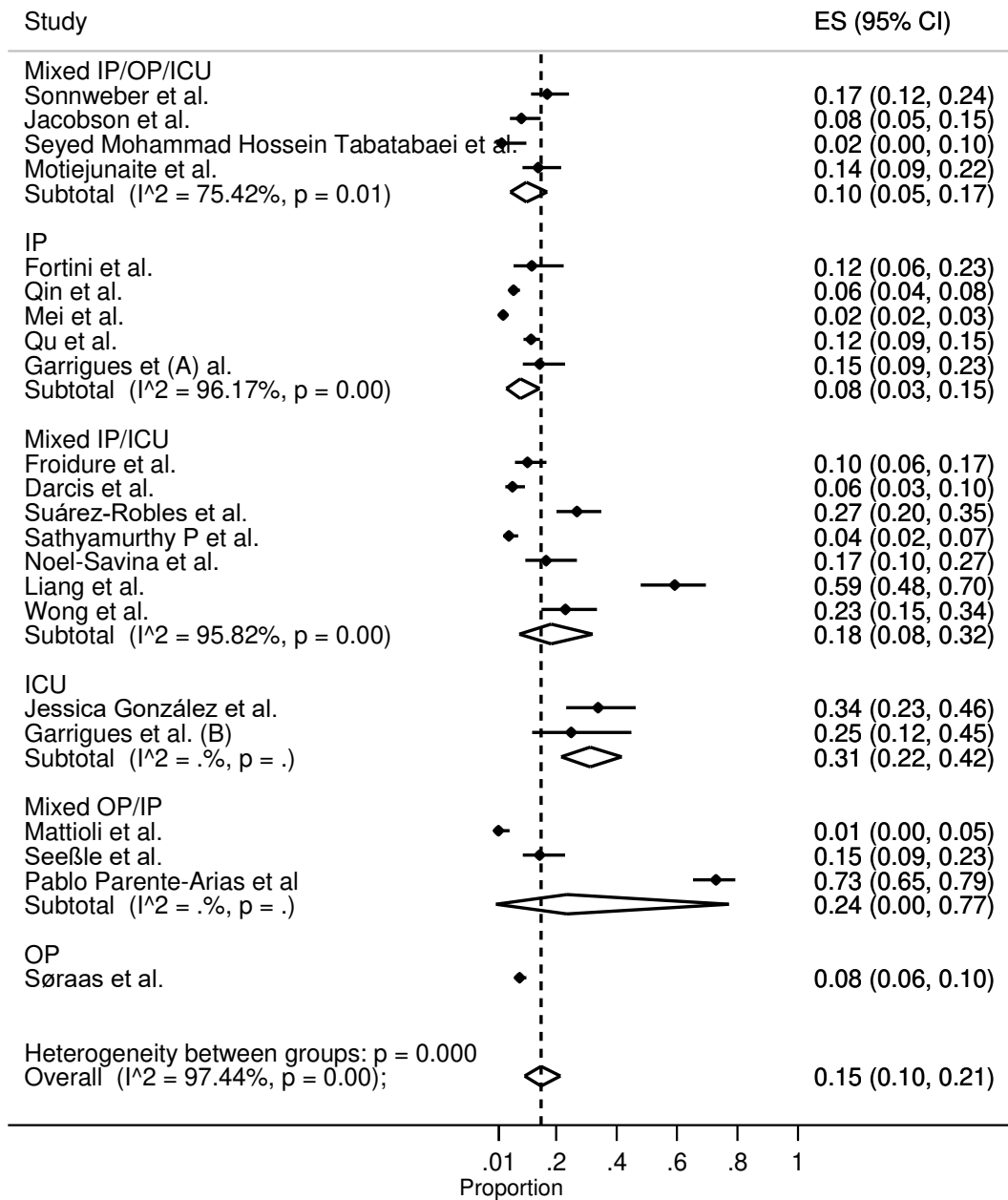
#### Fatigue (3-<6 months)



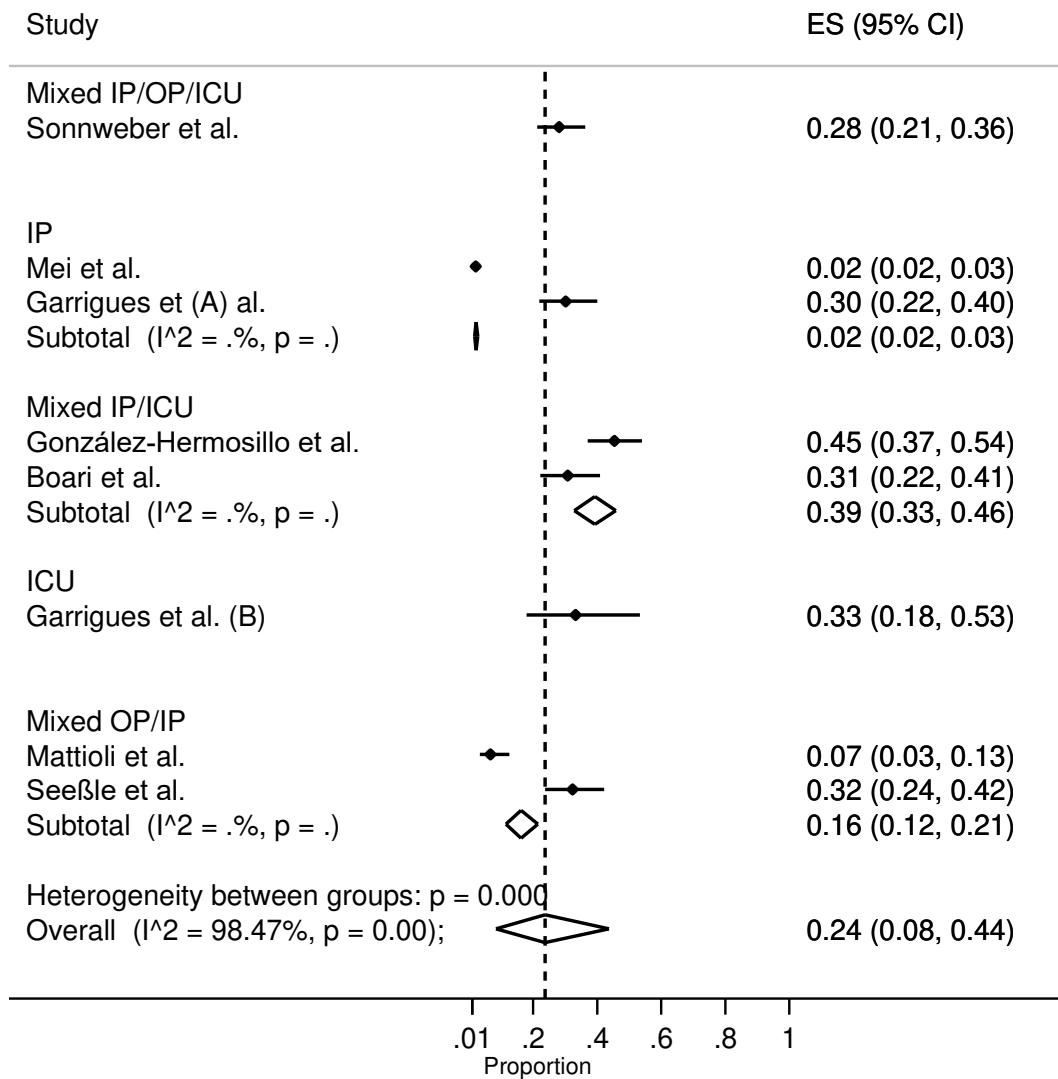
### Dyspnea (3-<6 months)



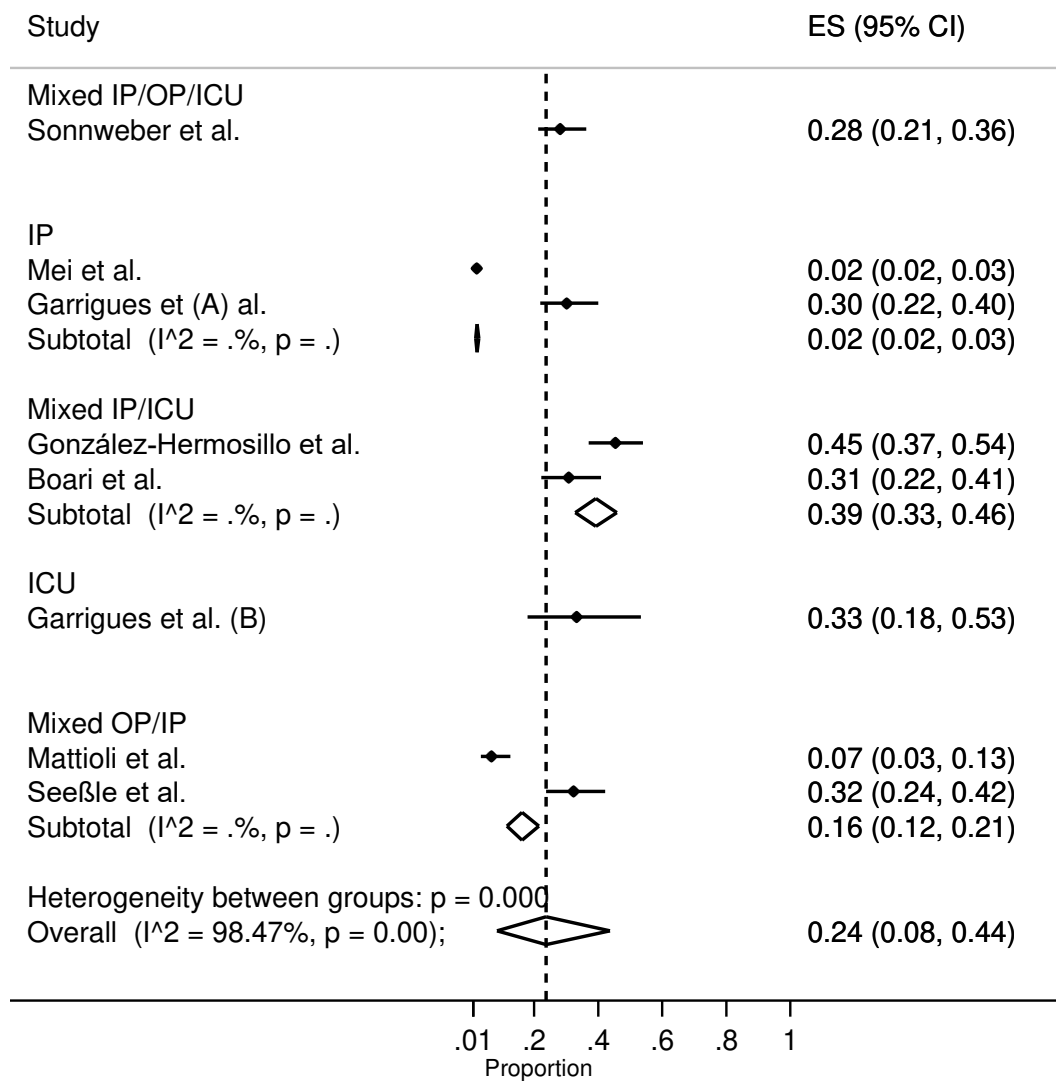
### Cough (3-<6 months)



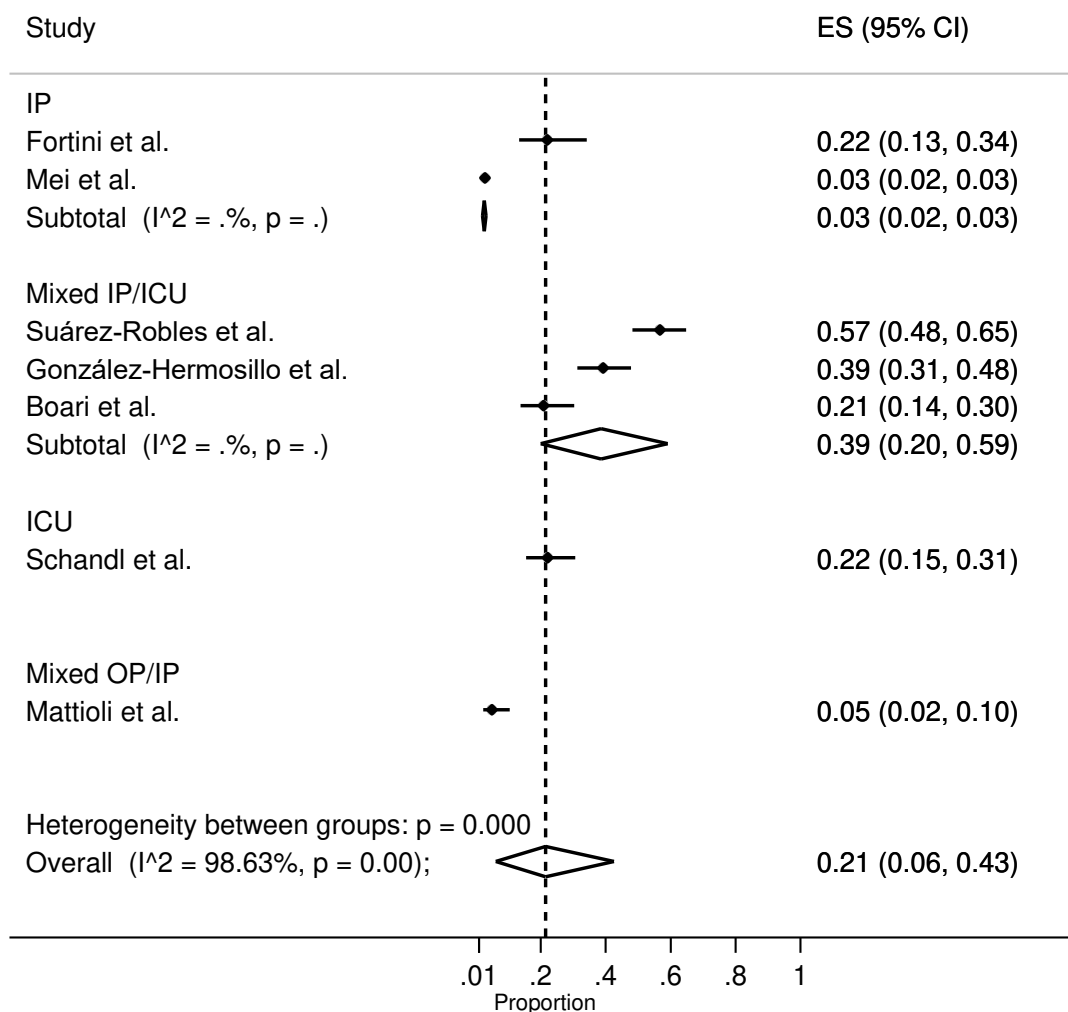
**Sleep disorder (3-<6 months)**



**Depression (3-<6 months)**

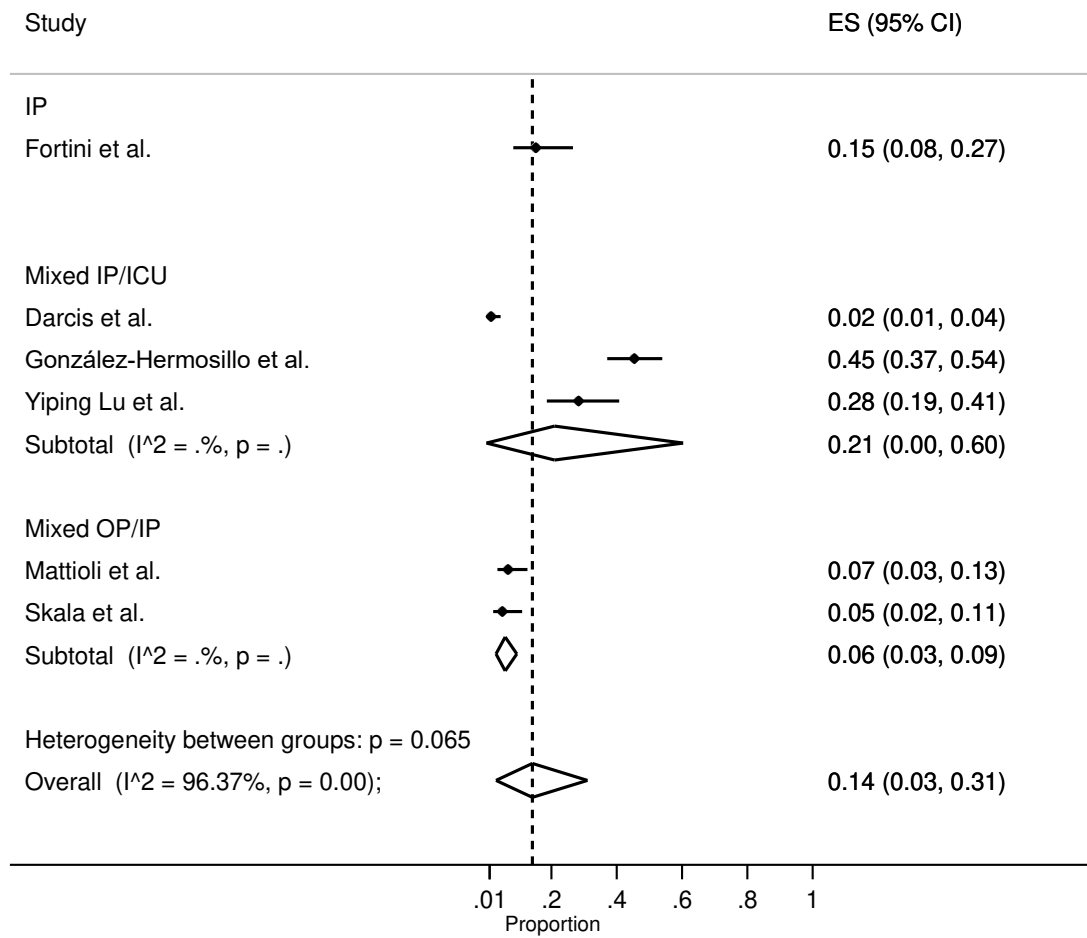


**Anxiety (3-<6 months)**

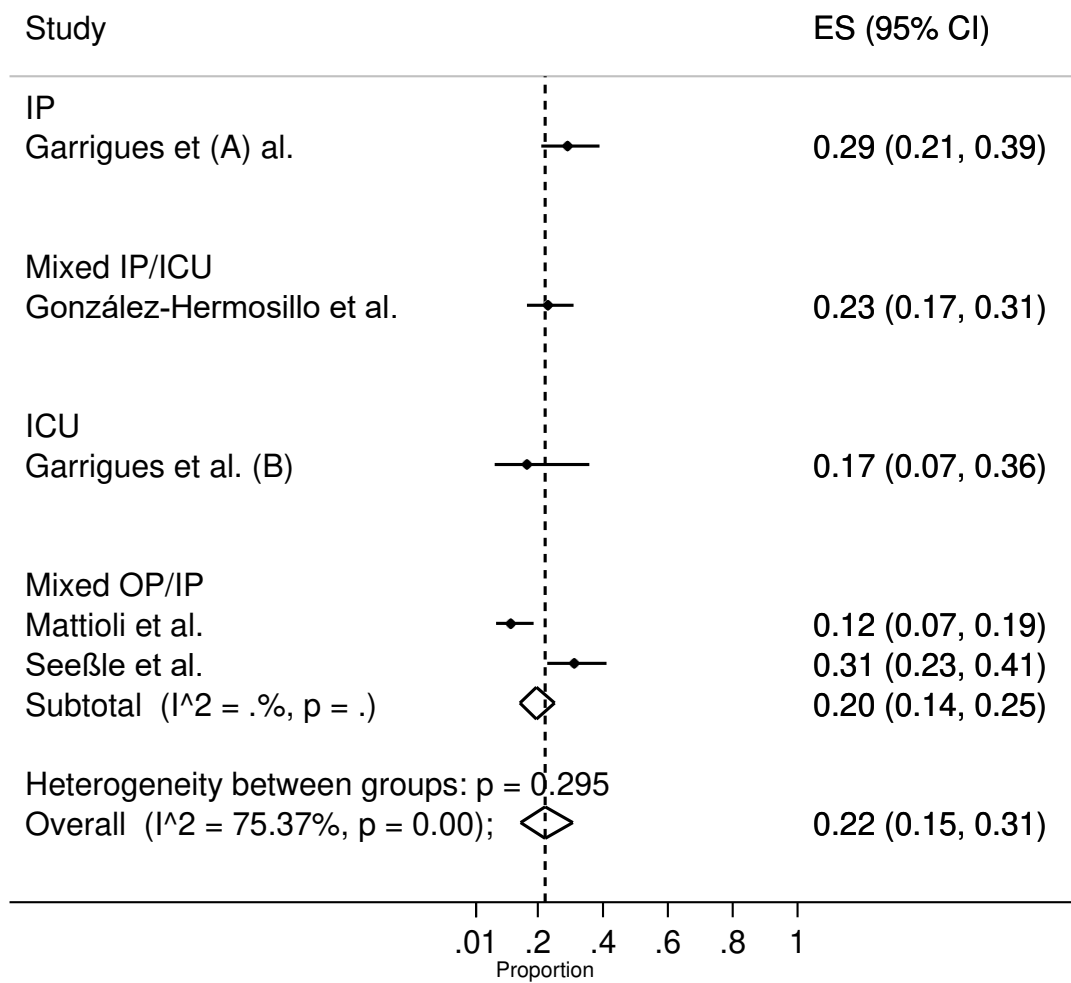




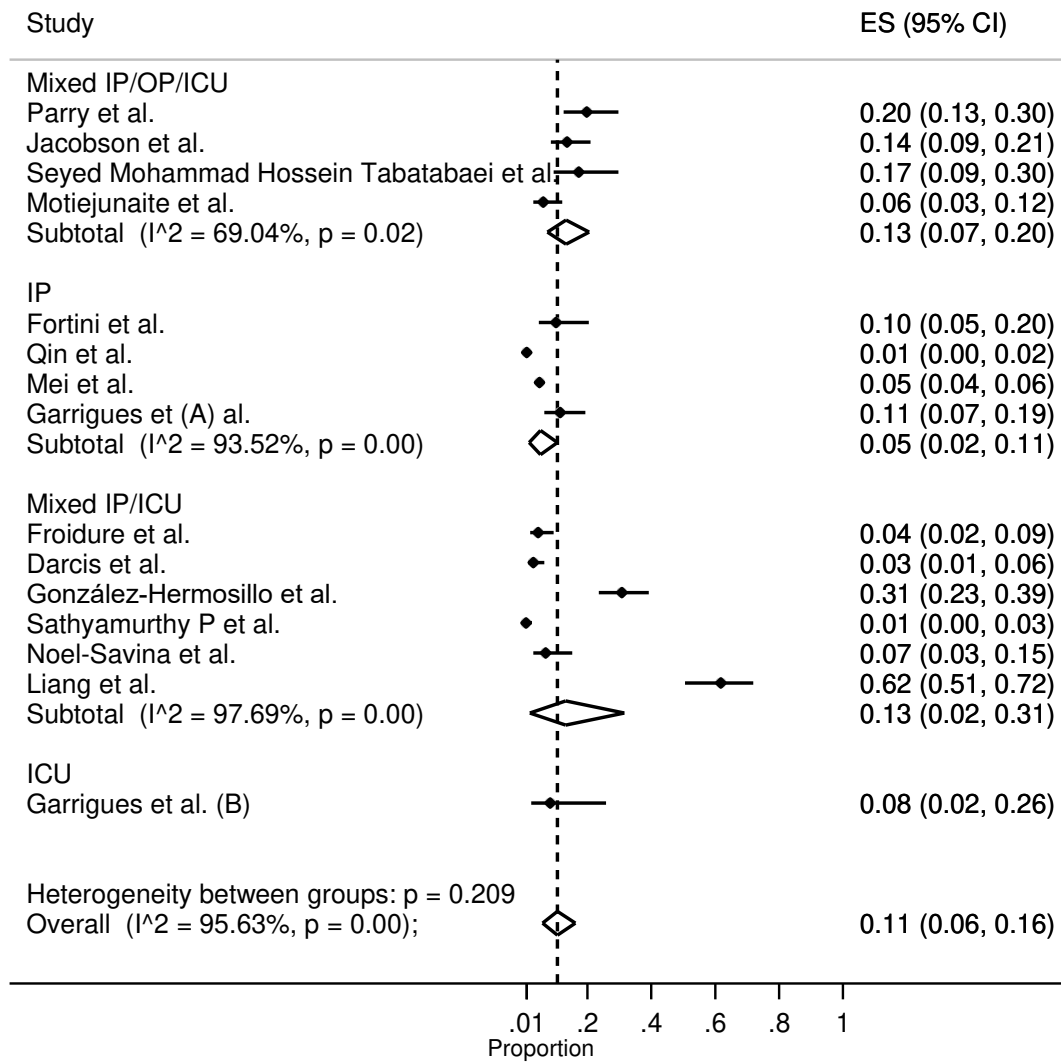
**Cognitive disorder (3-<6 months)**



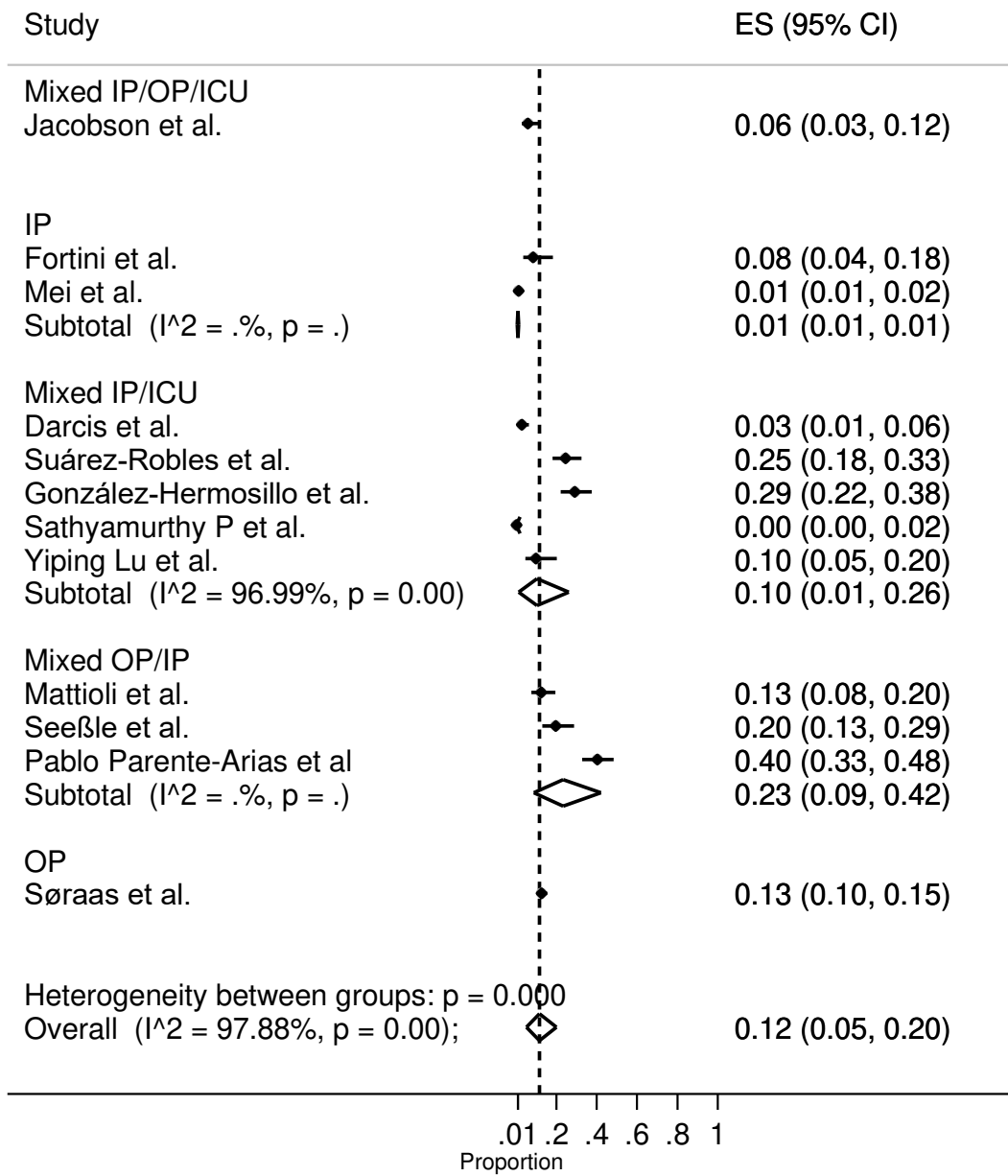
**Difficulty Concentrating (3-<6 months)**



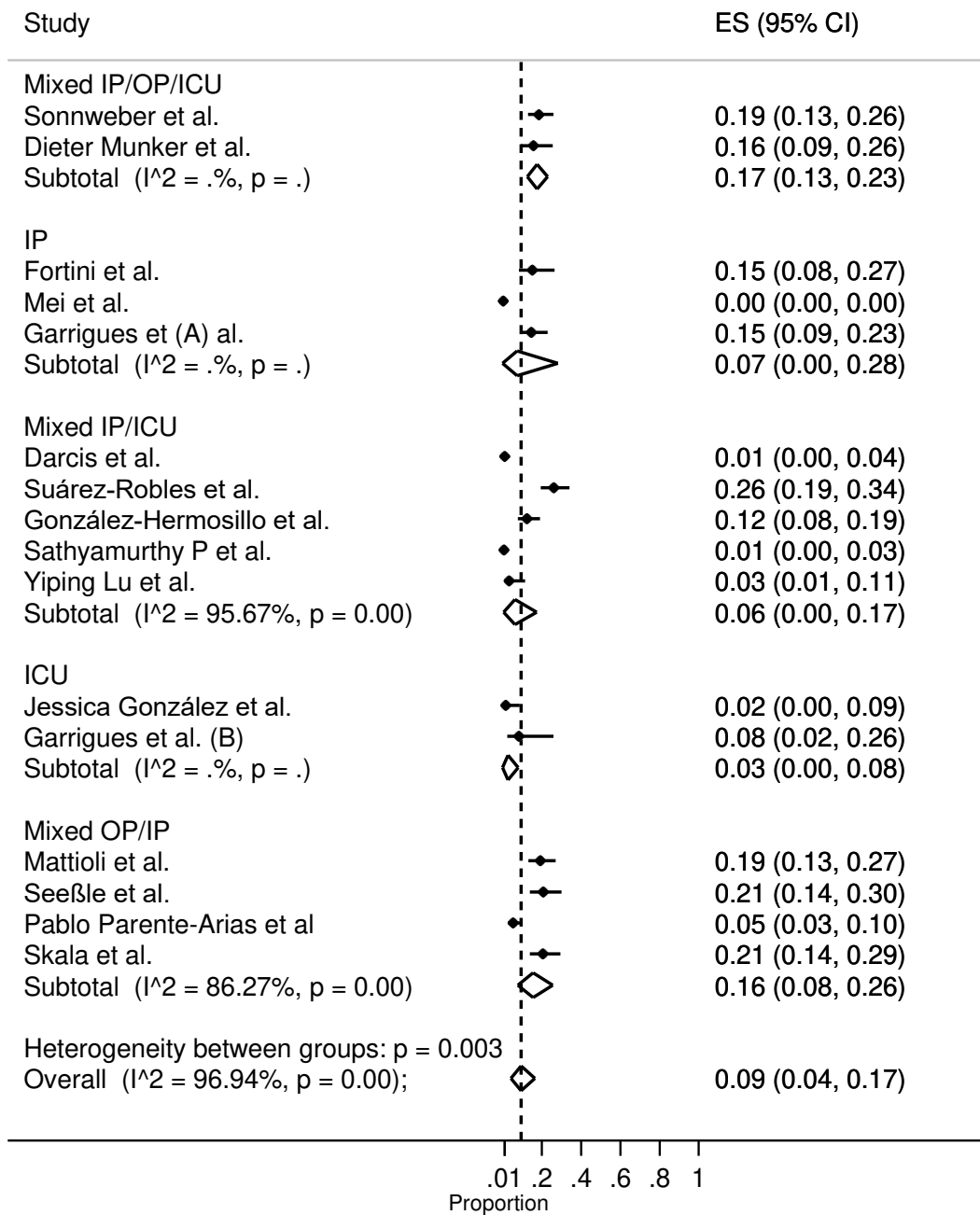
**Chest pain (3-<6 months)**



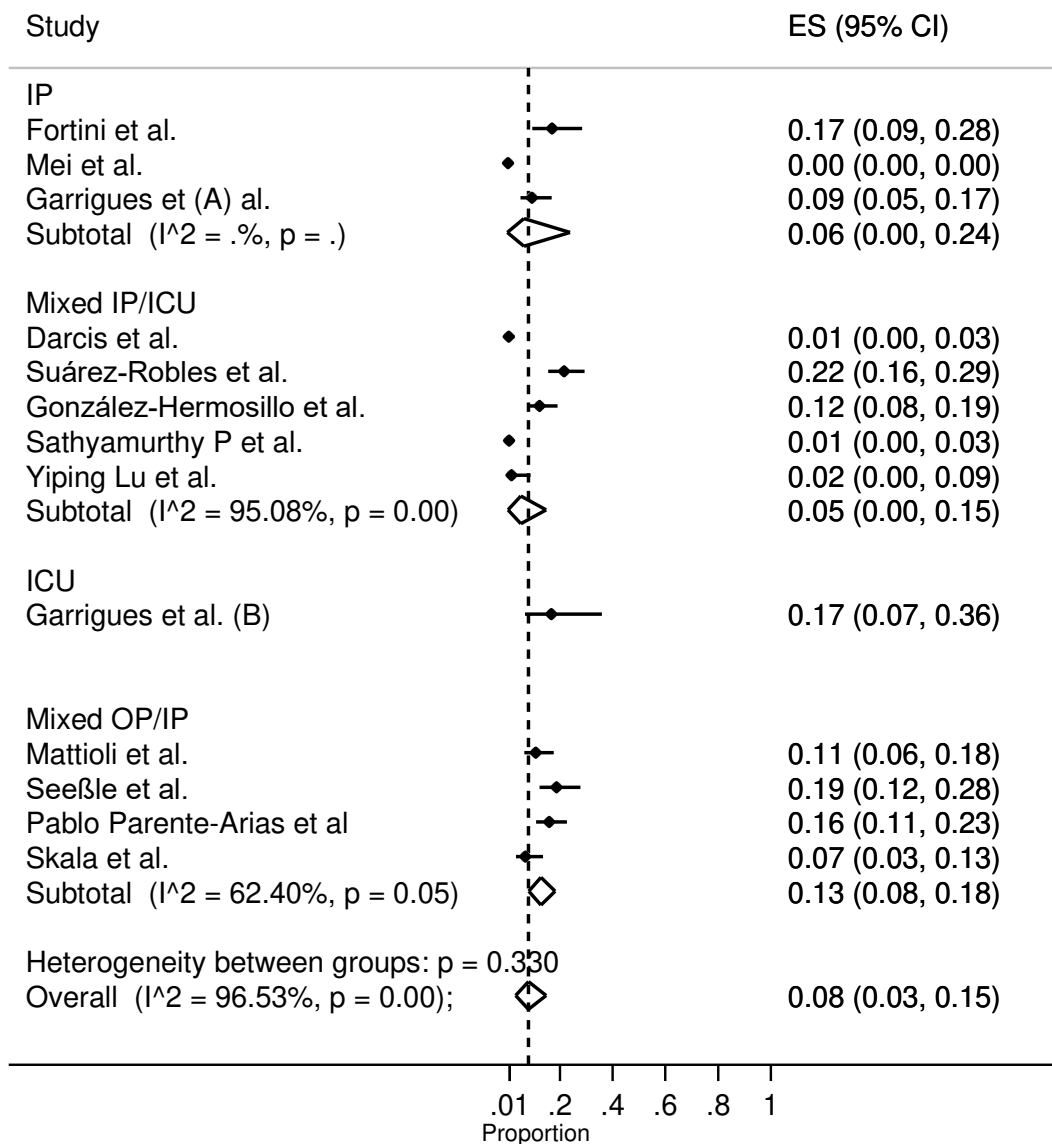
**Headache (3-<6 months)**



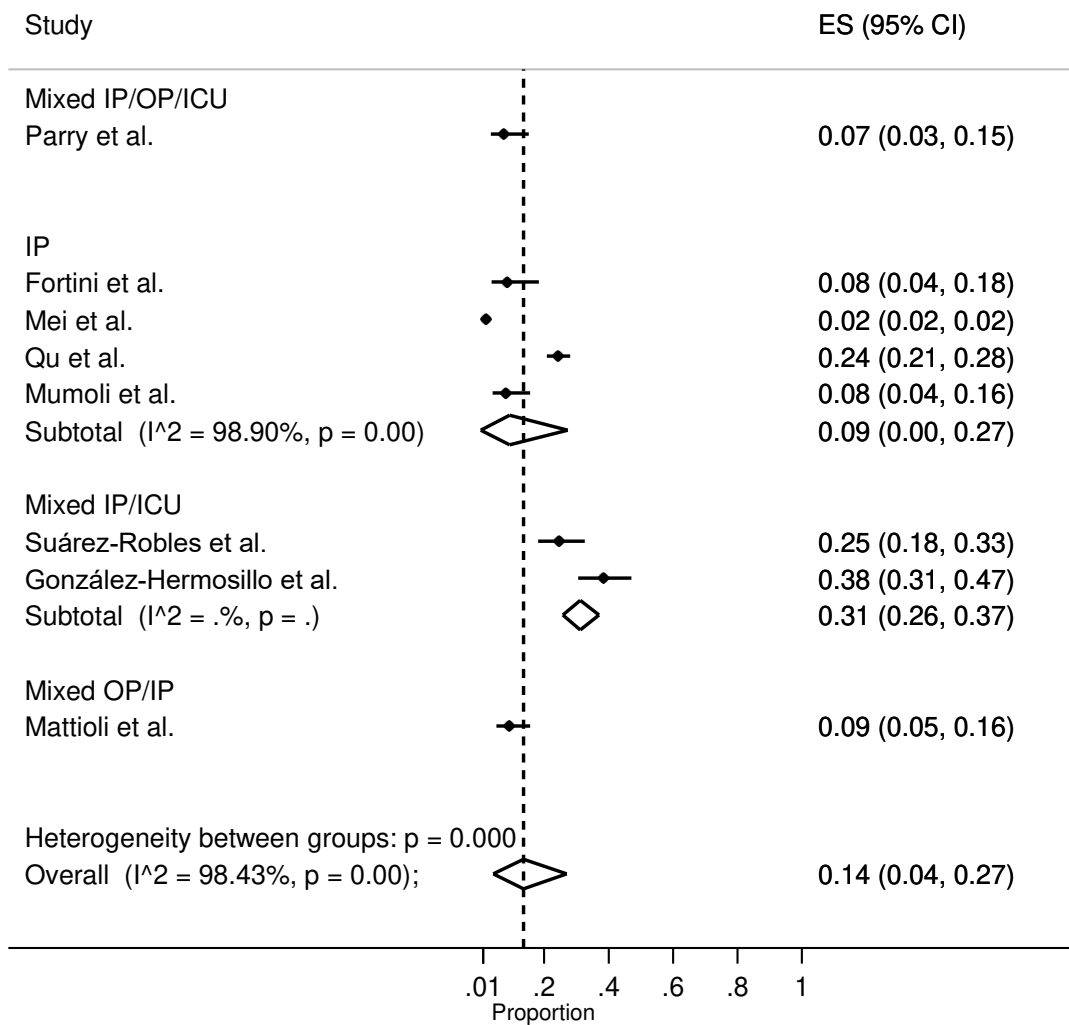
**Loss of smell (3-<6 months)**



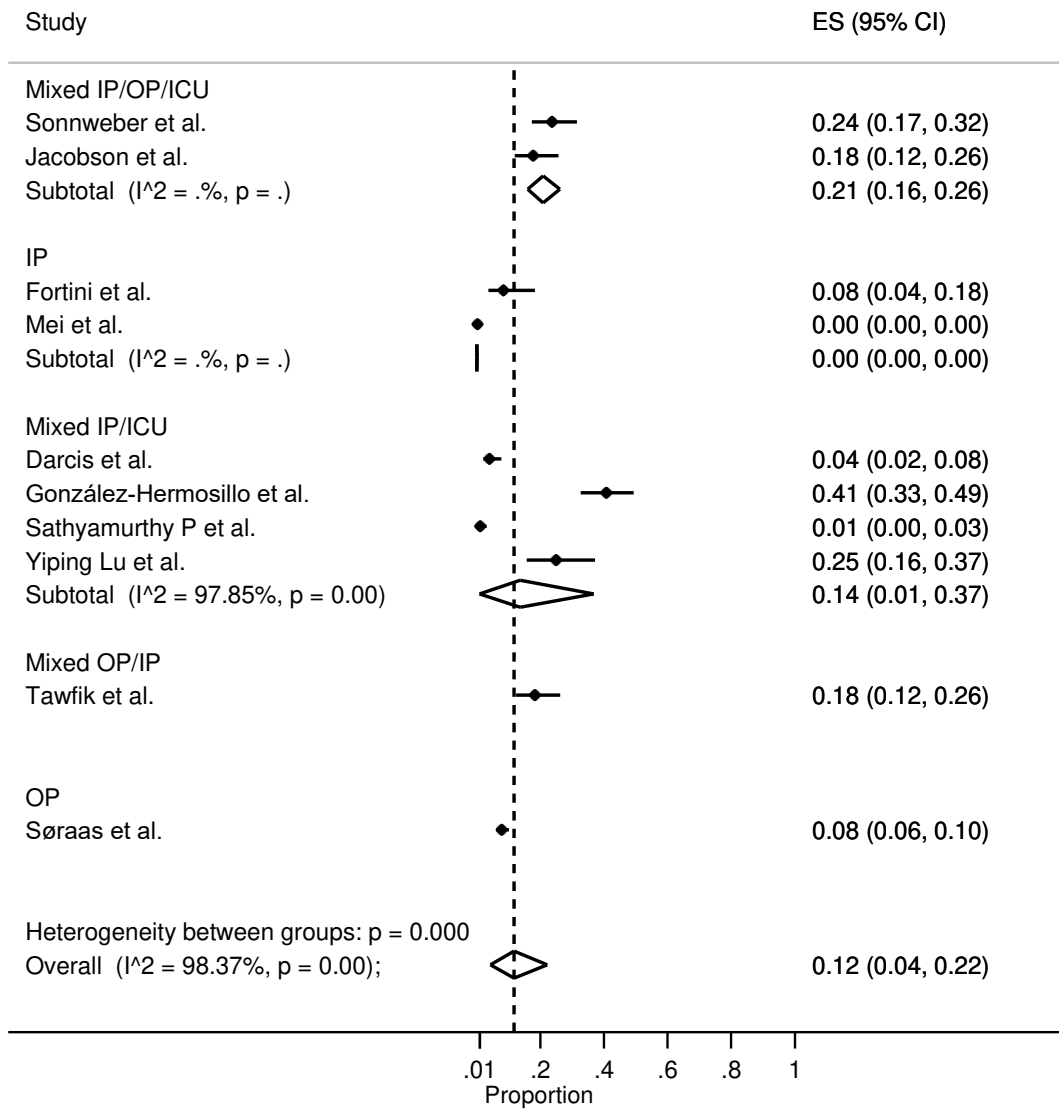
**Loss of taste (3-<6 months)**



**Joint pain (3-<6 months)**

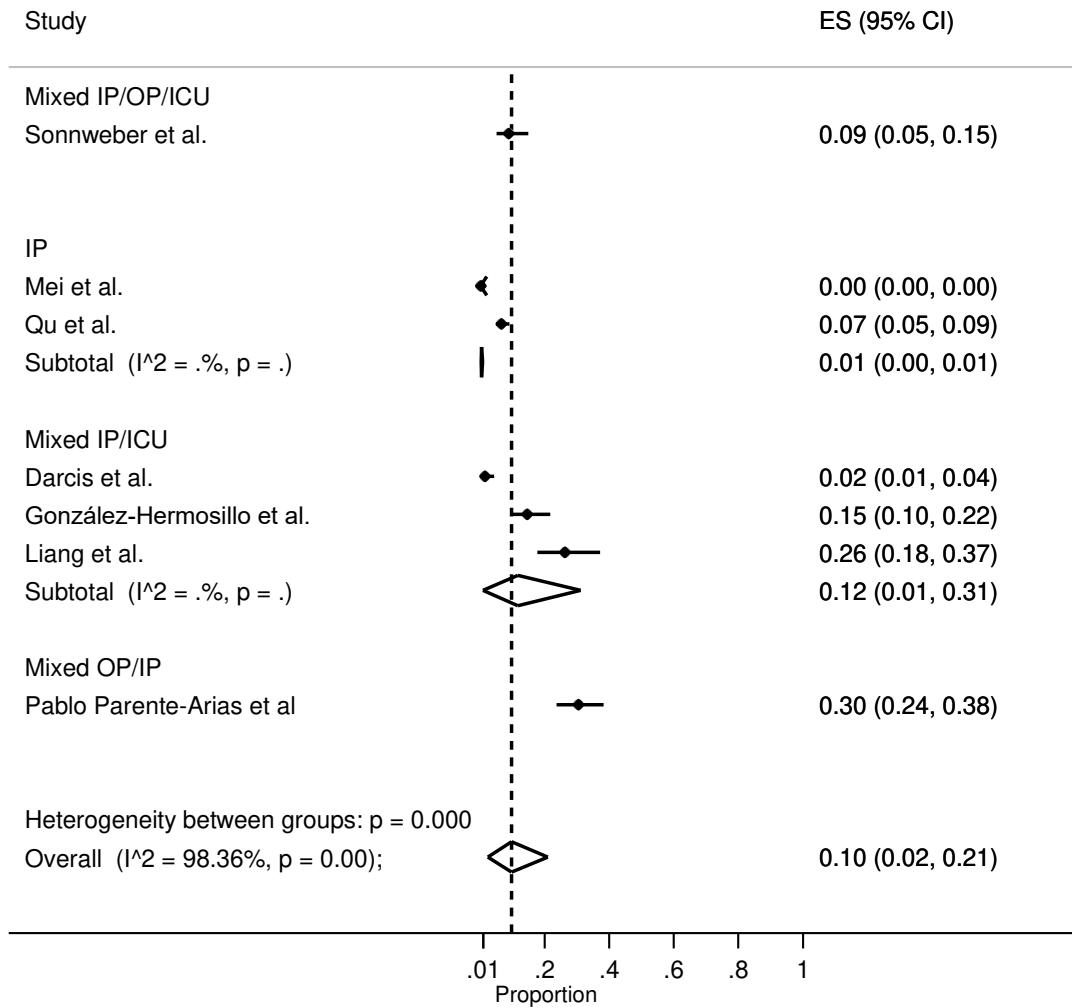


### Myalgia (3-<6 months)

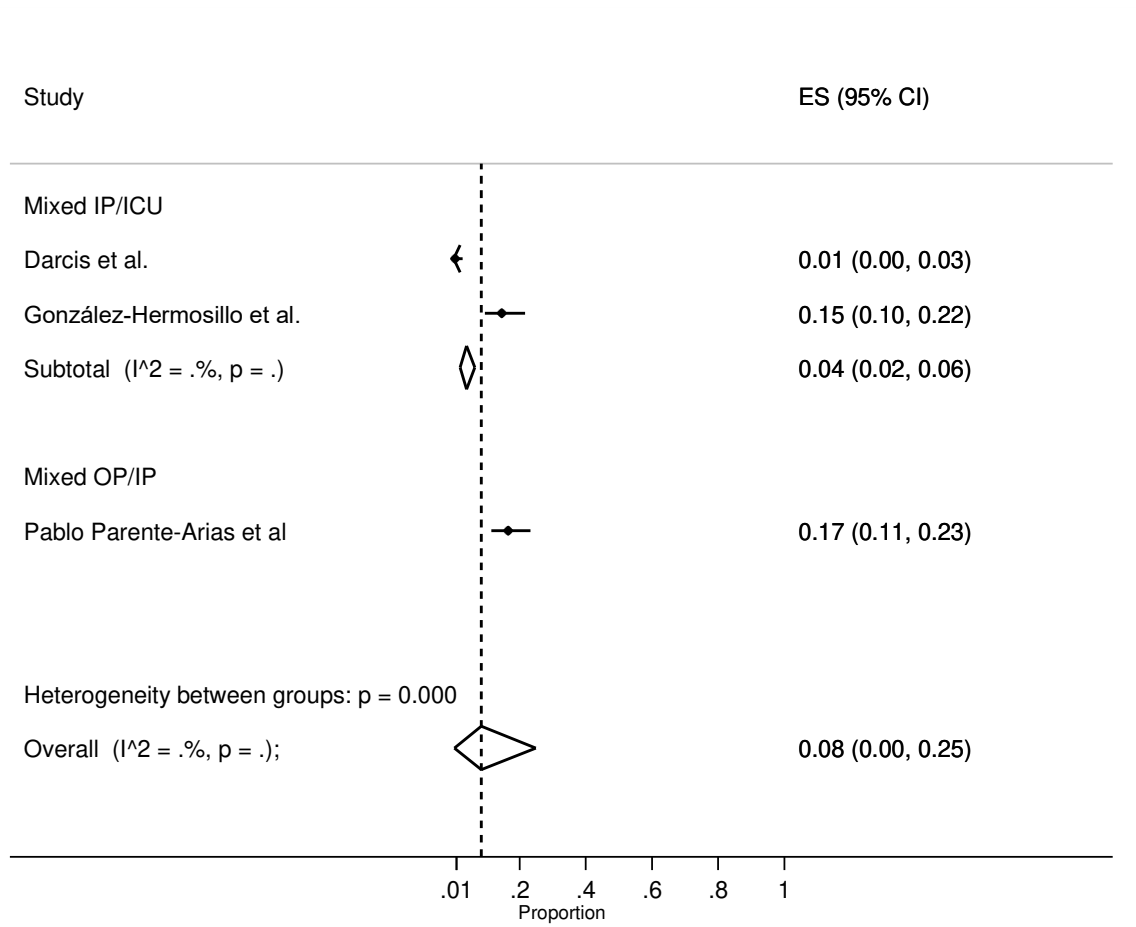




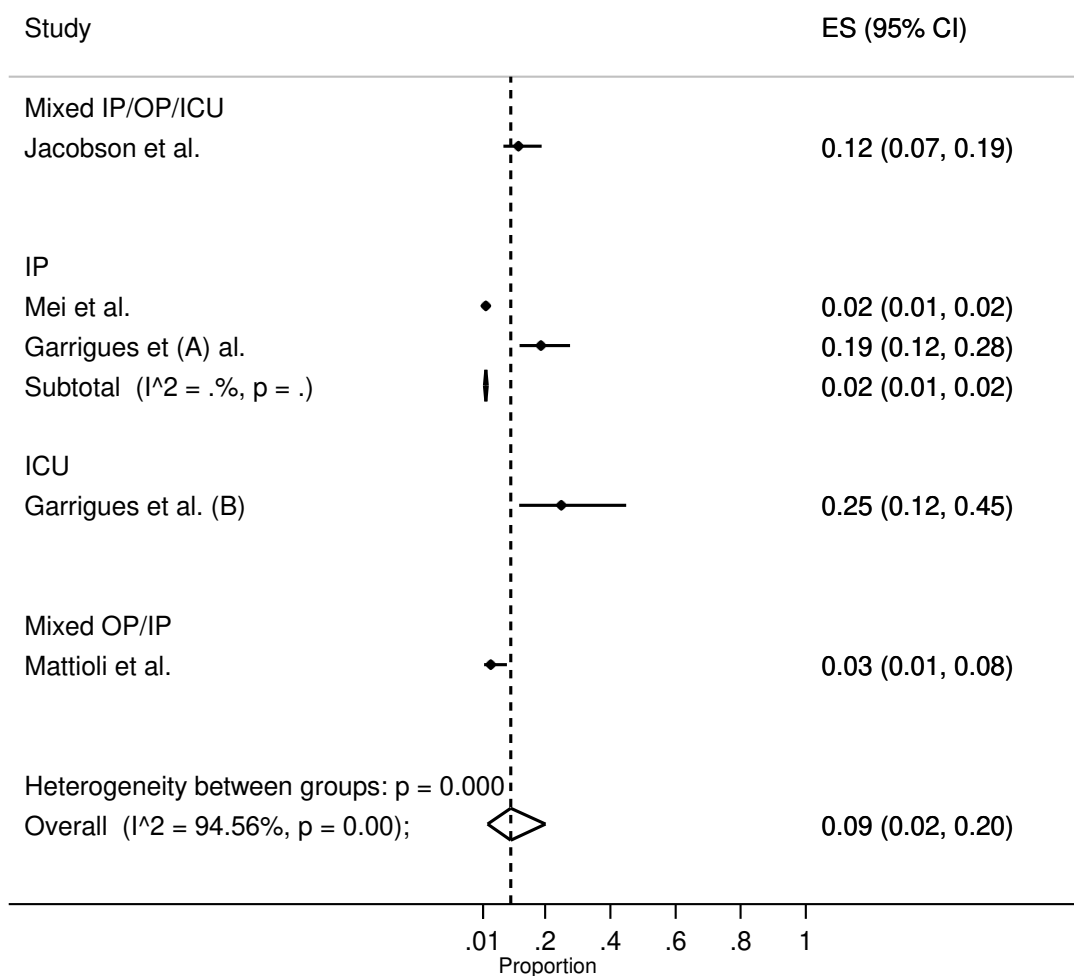
### Diarrhoea (3-<6 months)



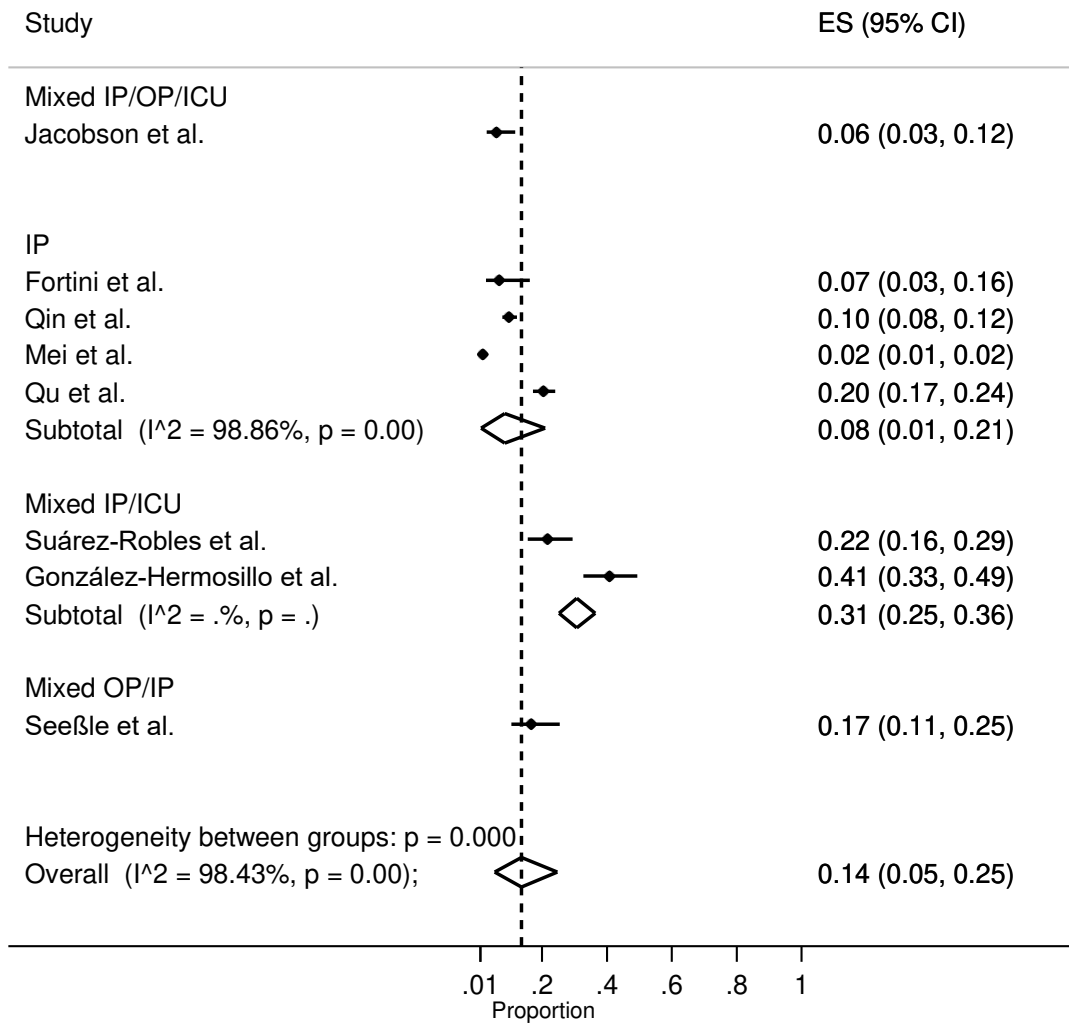
### Nausea (3-<6 months)



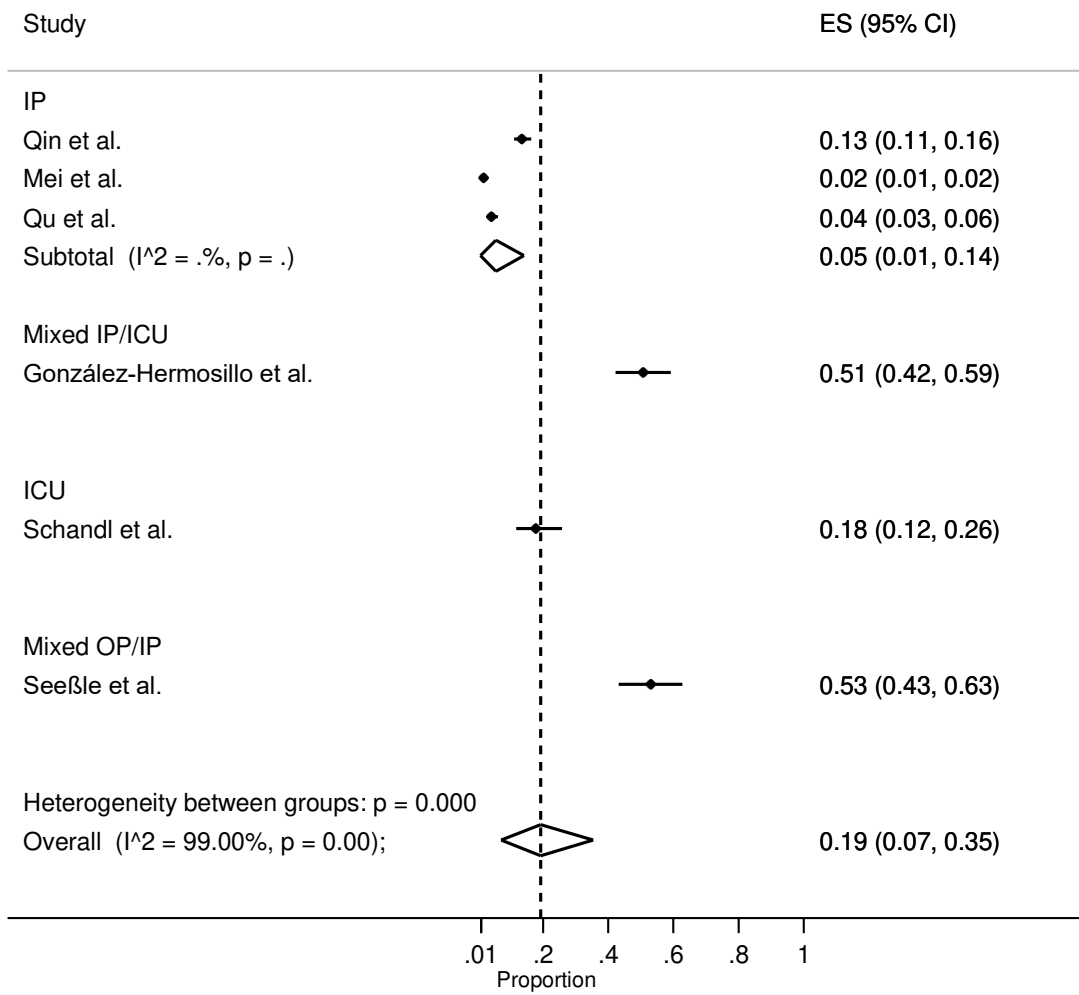
**Hair loss (3-<6 months)**



**Palpitations (3-<6 months)**

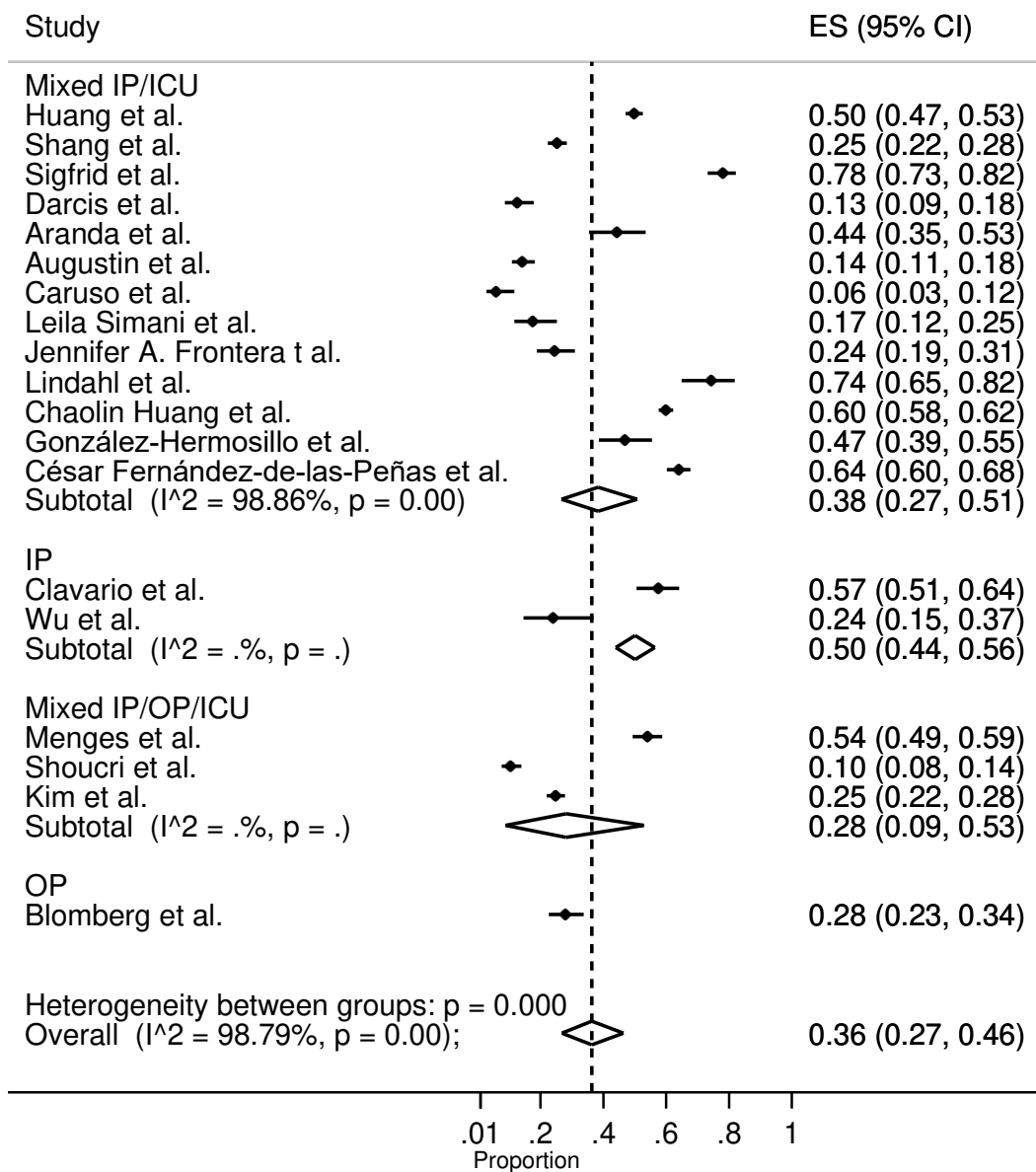


**Effort intolerance (3-<6 months)**

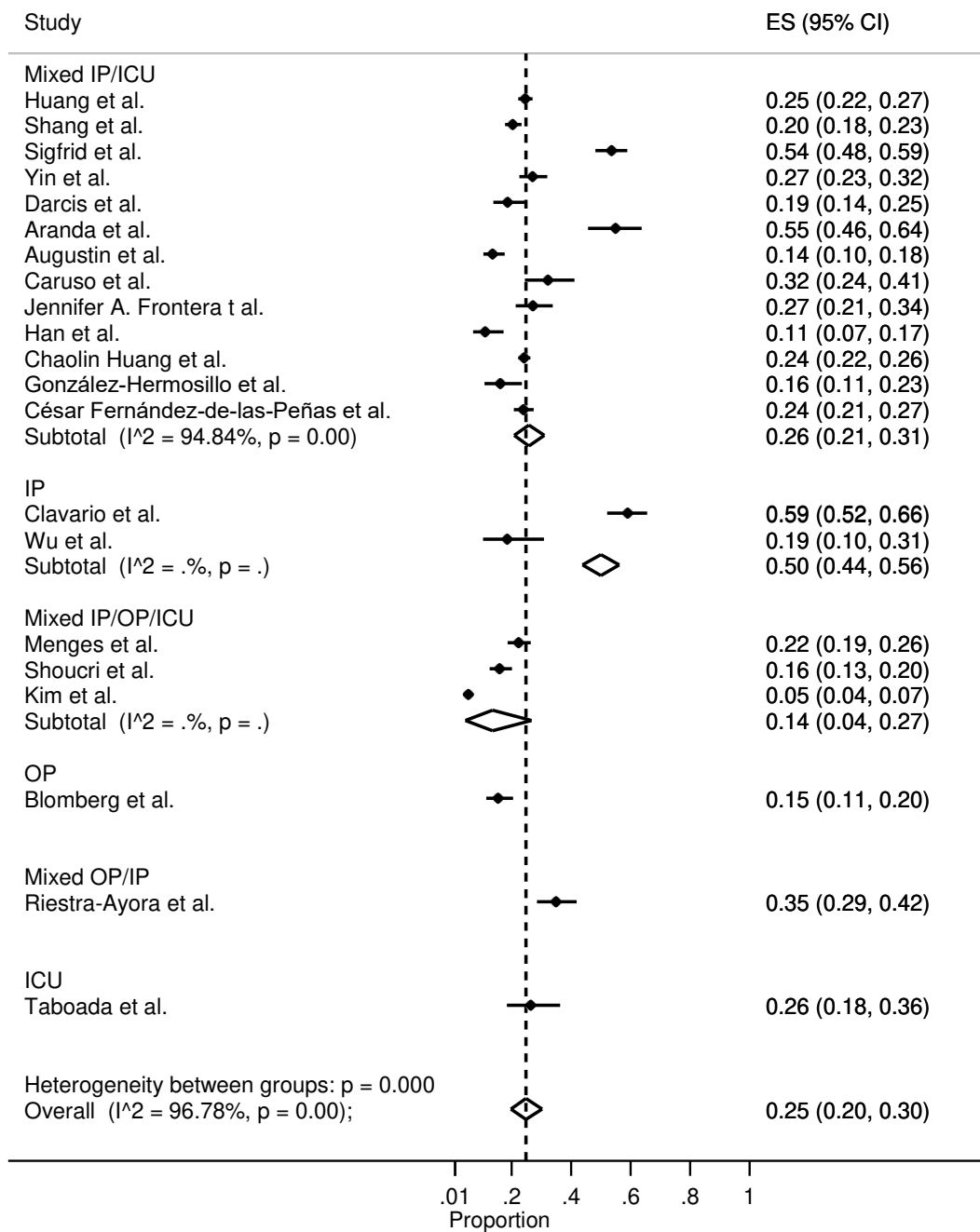


Meta-analysis for the long term COVID19 symptoms: (duration 6-<9 months):

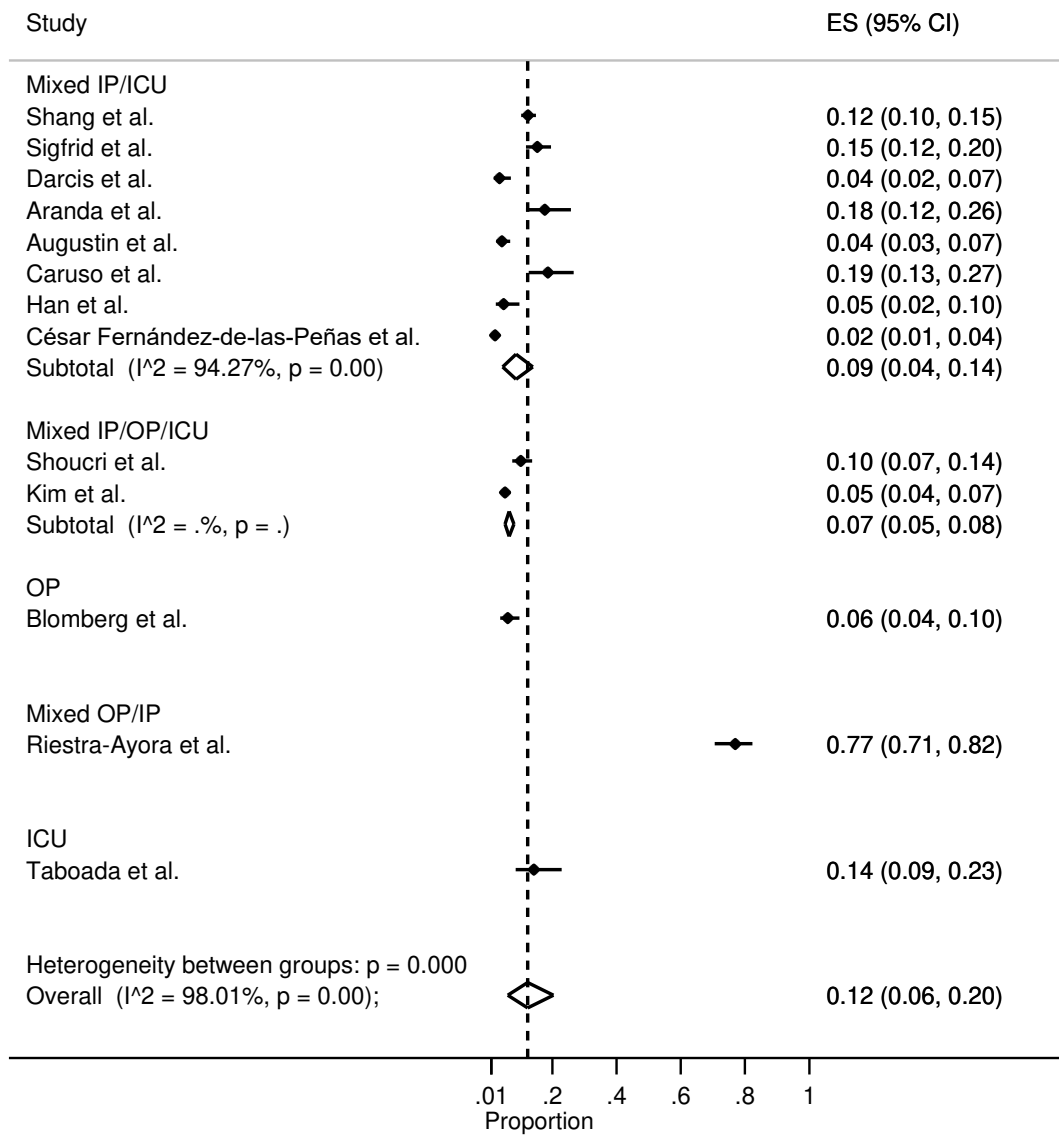
Fatigue (6-<9 months)



## Dyspnea (6-<9 months)

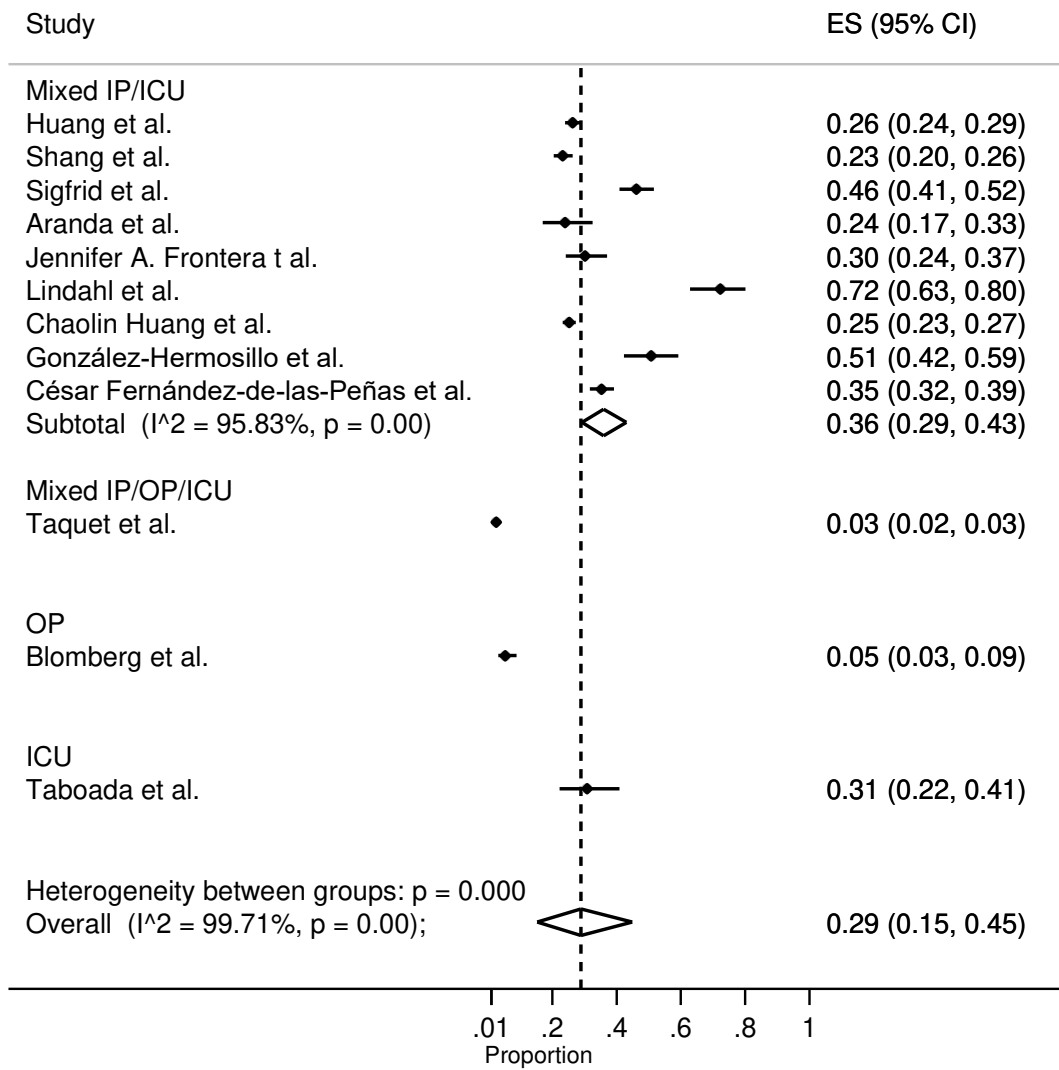


### Cough (6-<9 months)

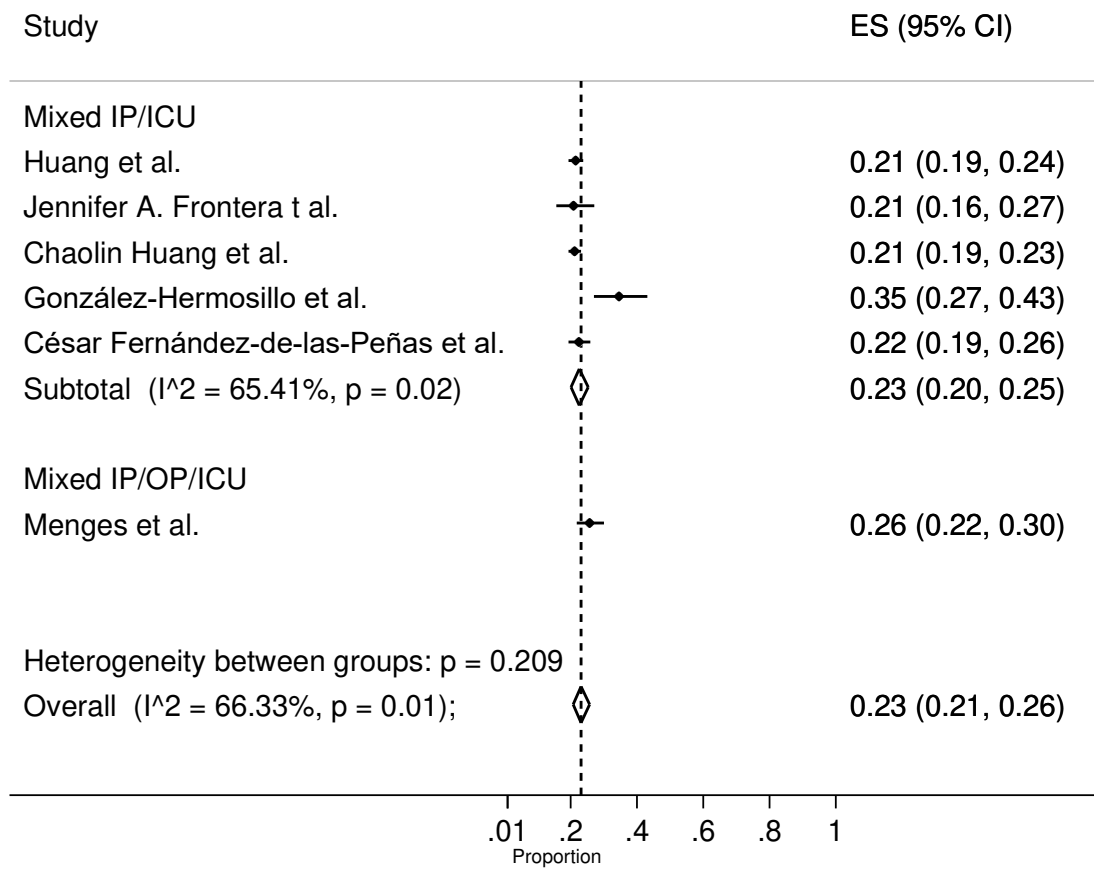




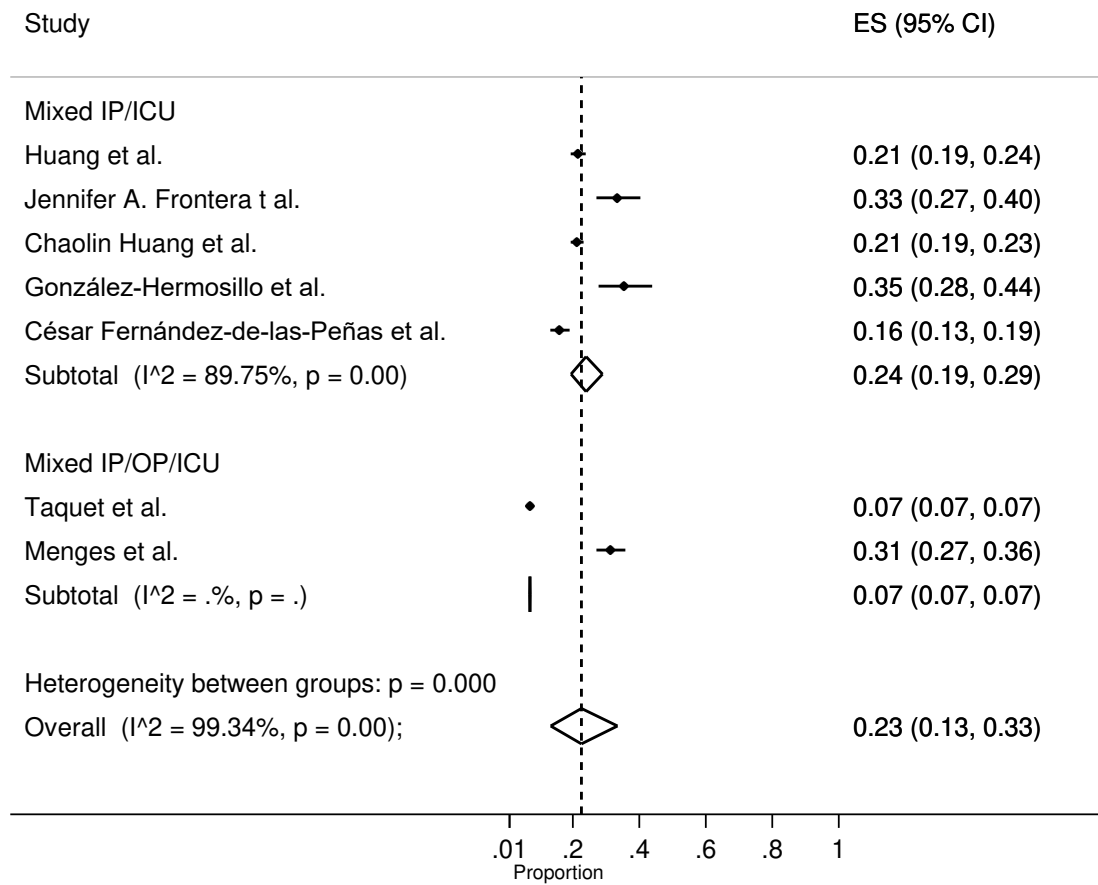
**Sleep disorder (6-<9 months)**



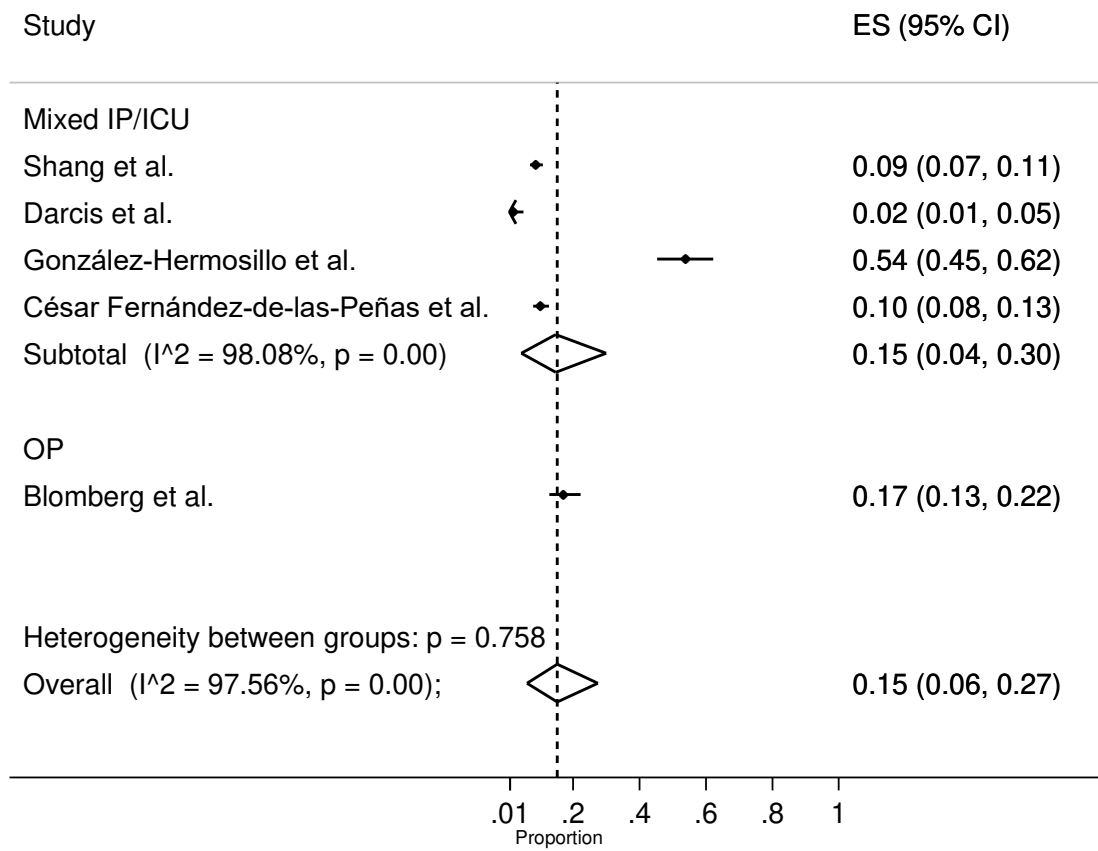
**Depression (6-<9 months)**



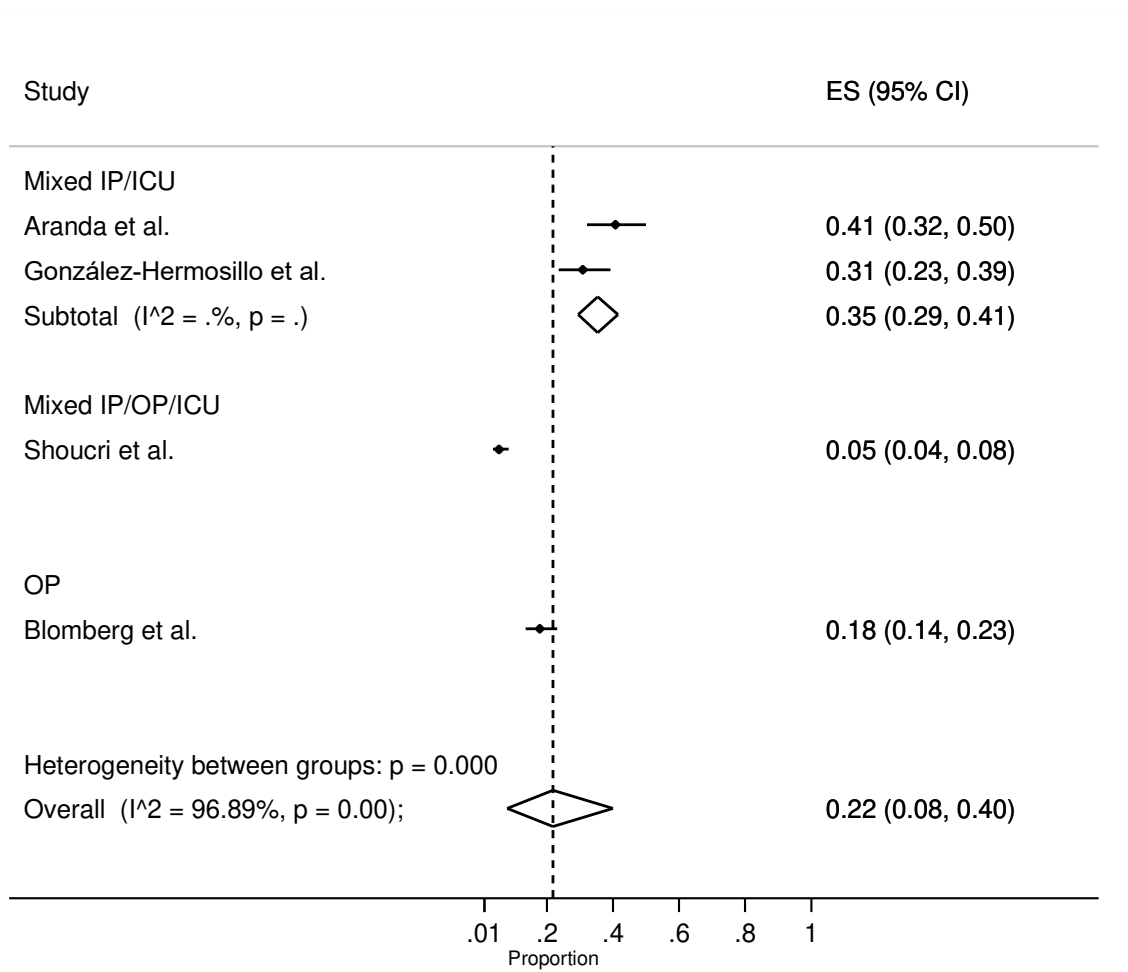
### Anxiety (6-<9 months)



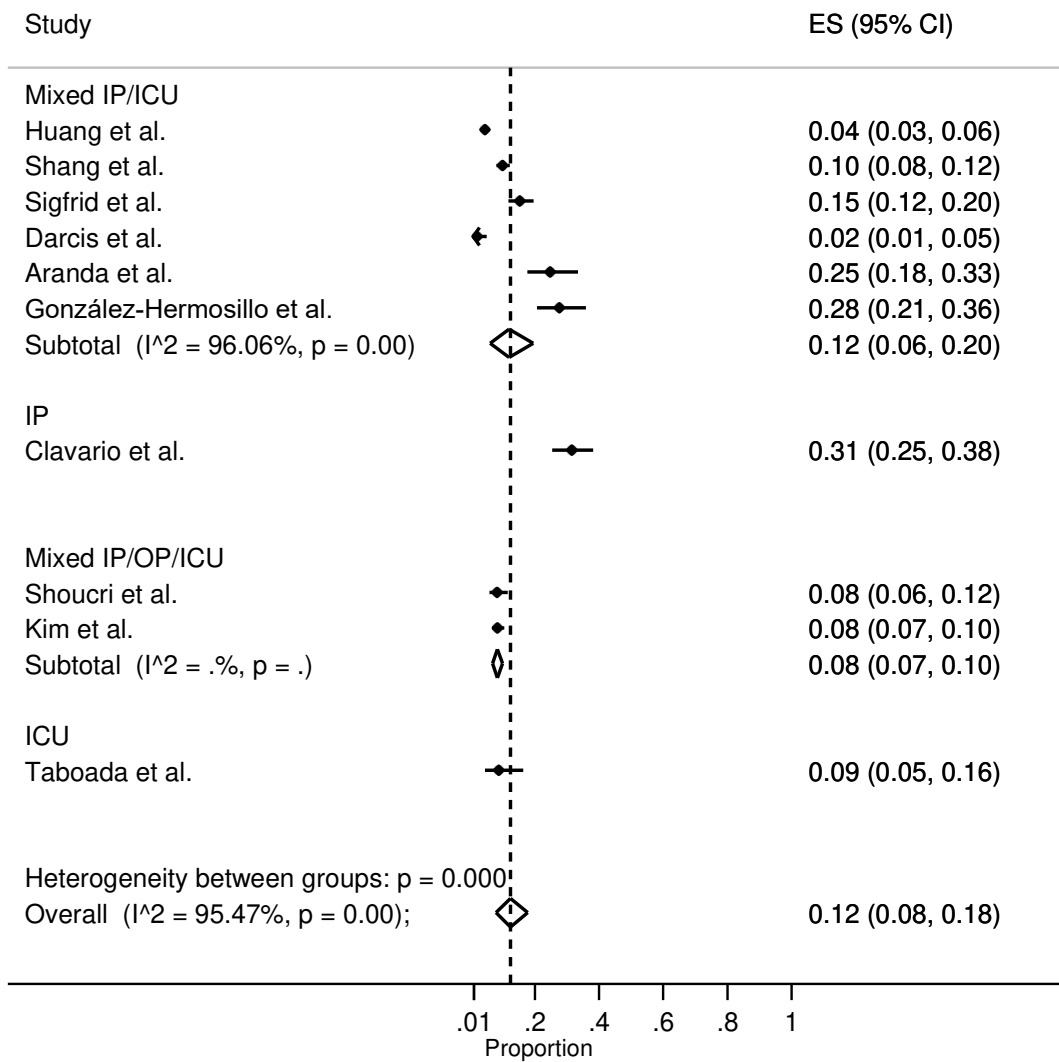
**Cognitive Disorder (6-<9 months)**



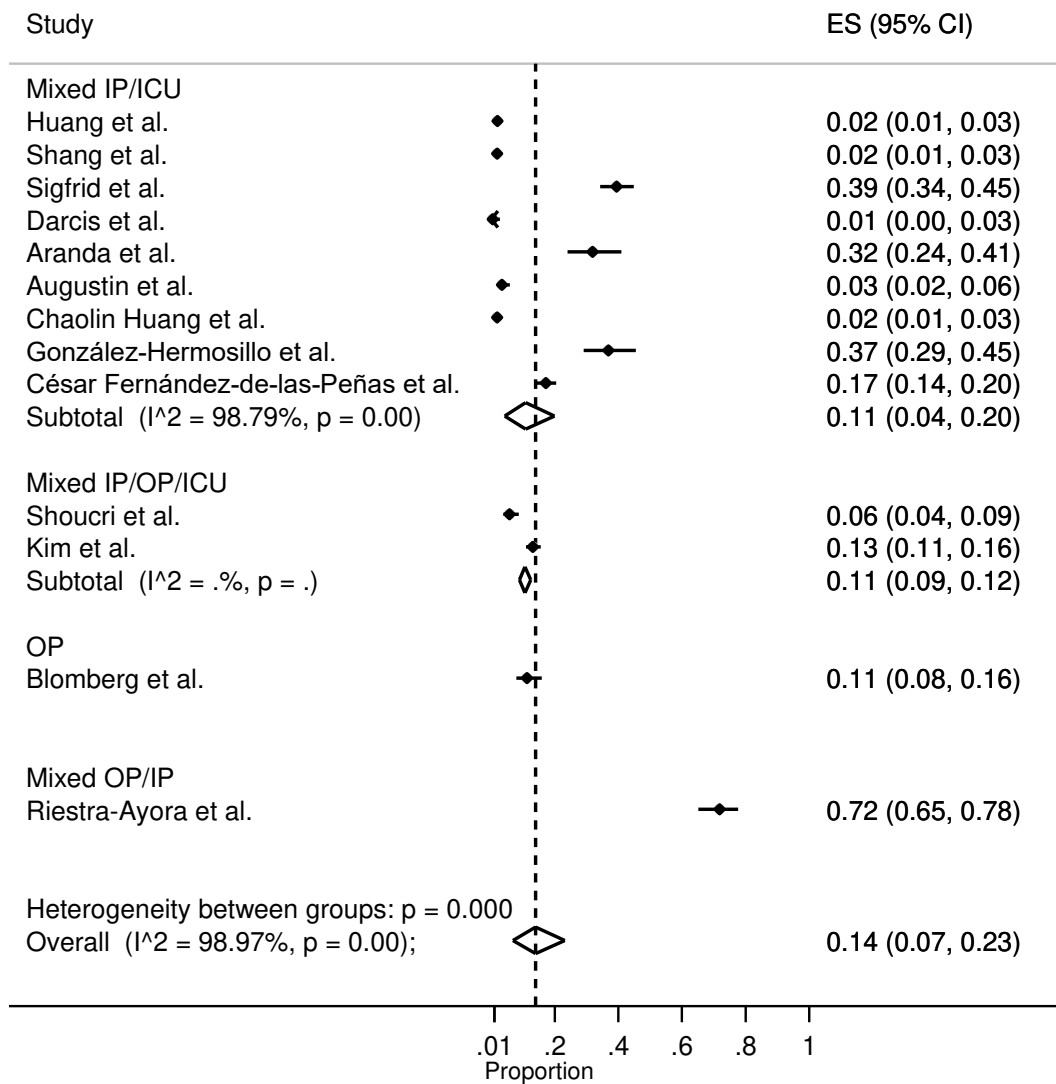
### Difficulty concentrating (6-<9 months)



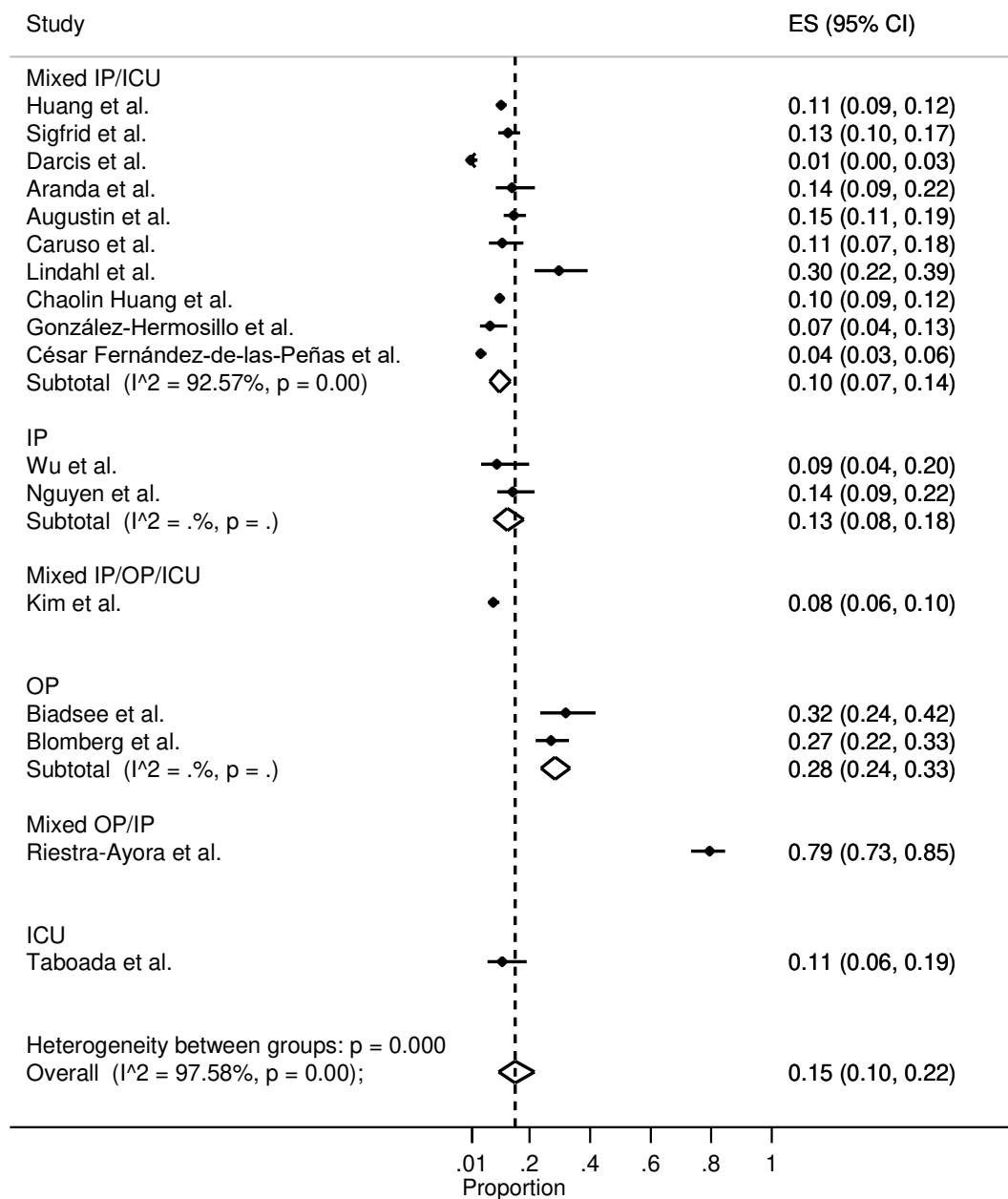
**Chest pain (6-<9 months)**



### Headache (6-<9 months)

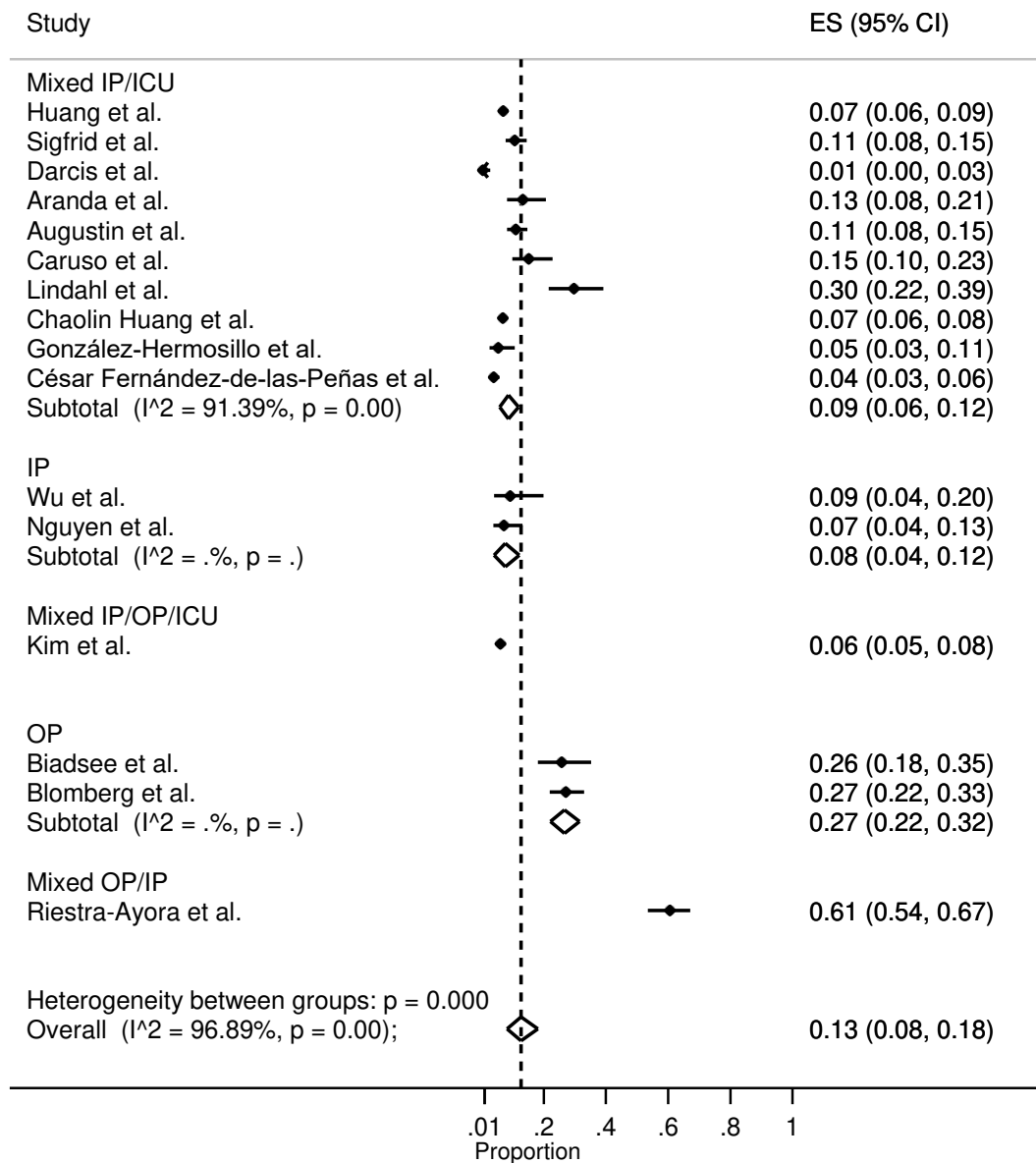


### Loss of smell (6-<9 months)

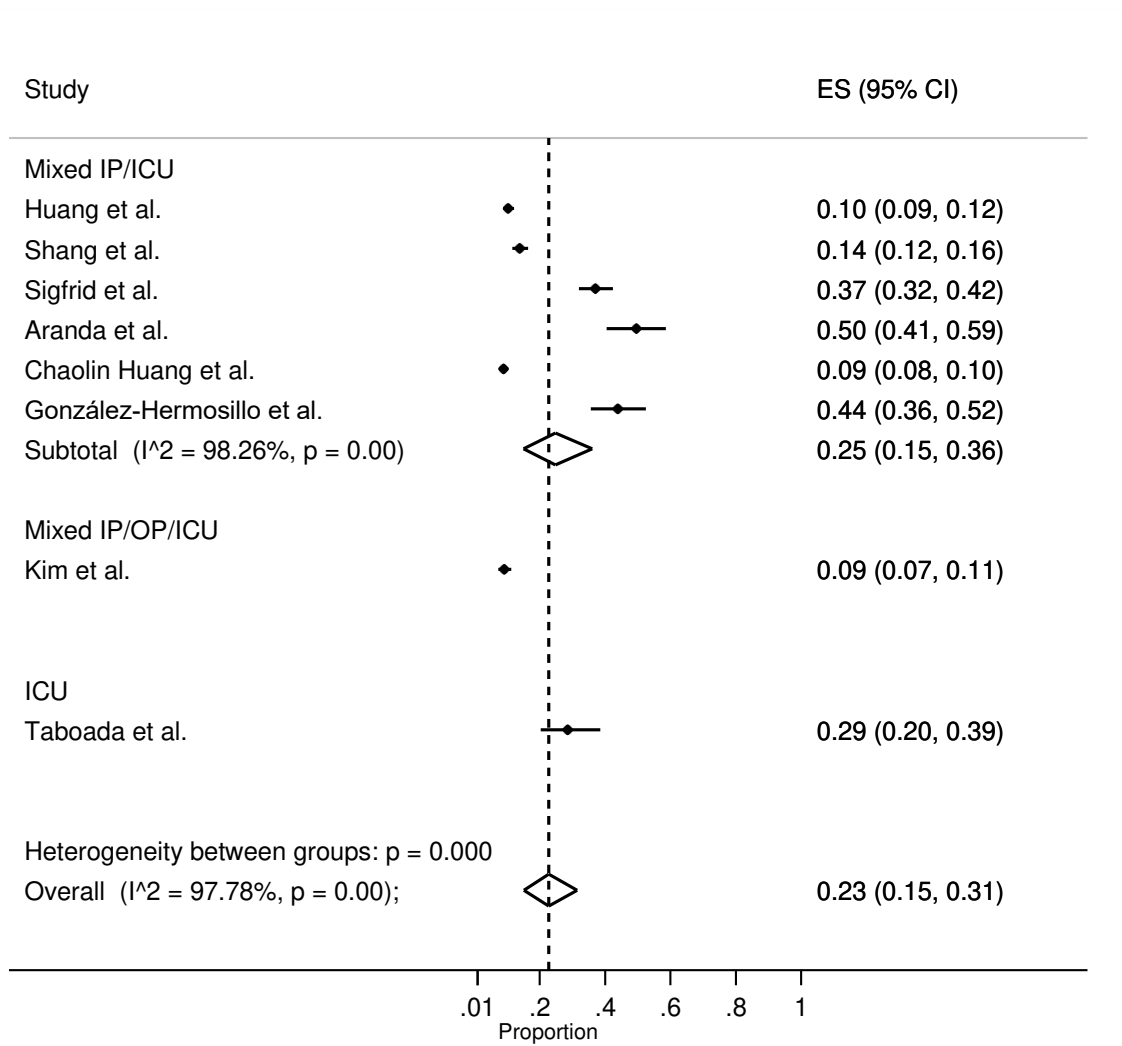




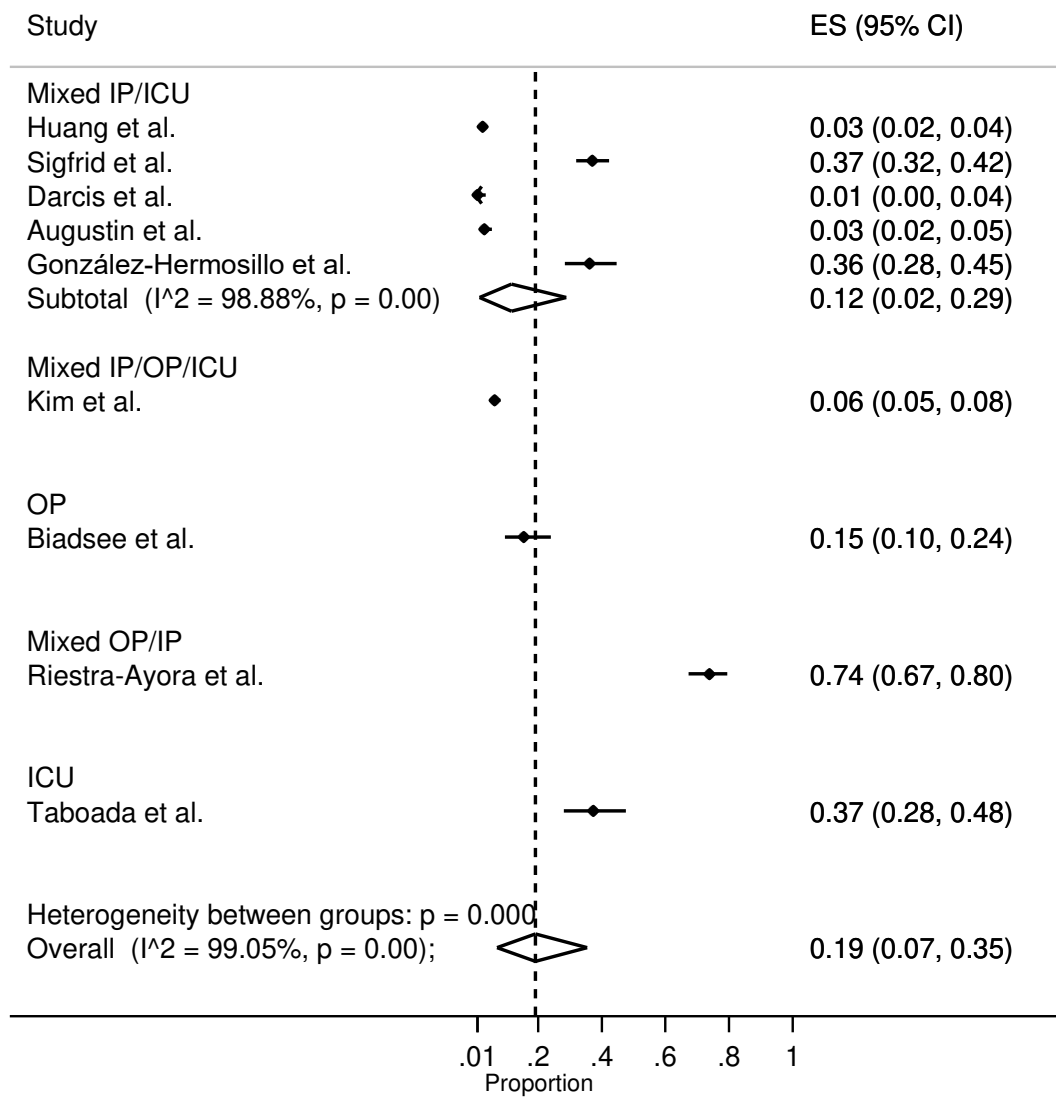
**Loss of taste (6-<9 months)**



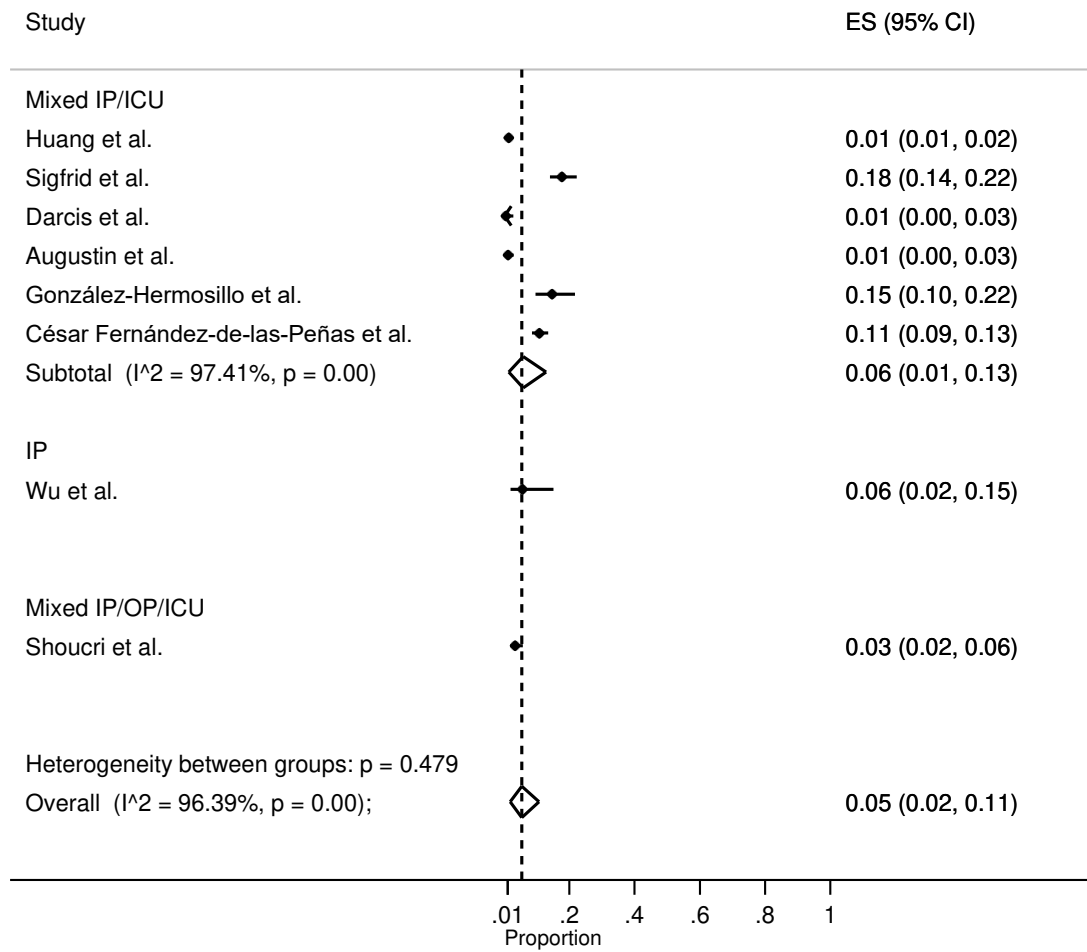
### Joint pain (6-<9 months)



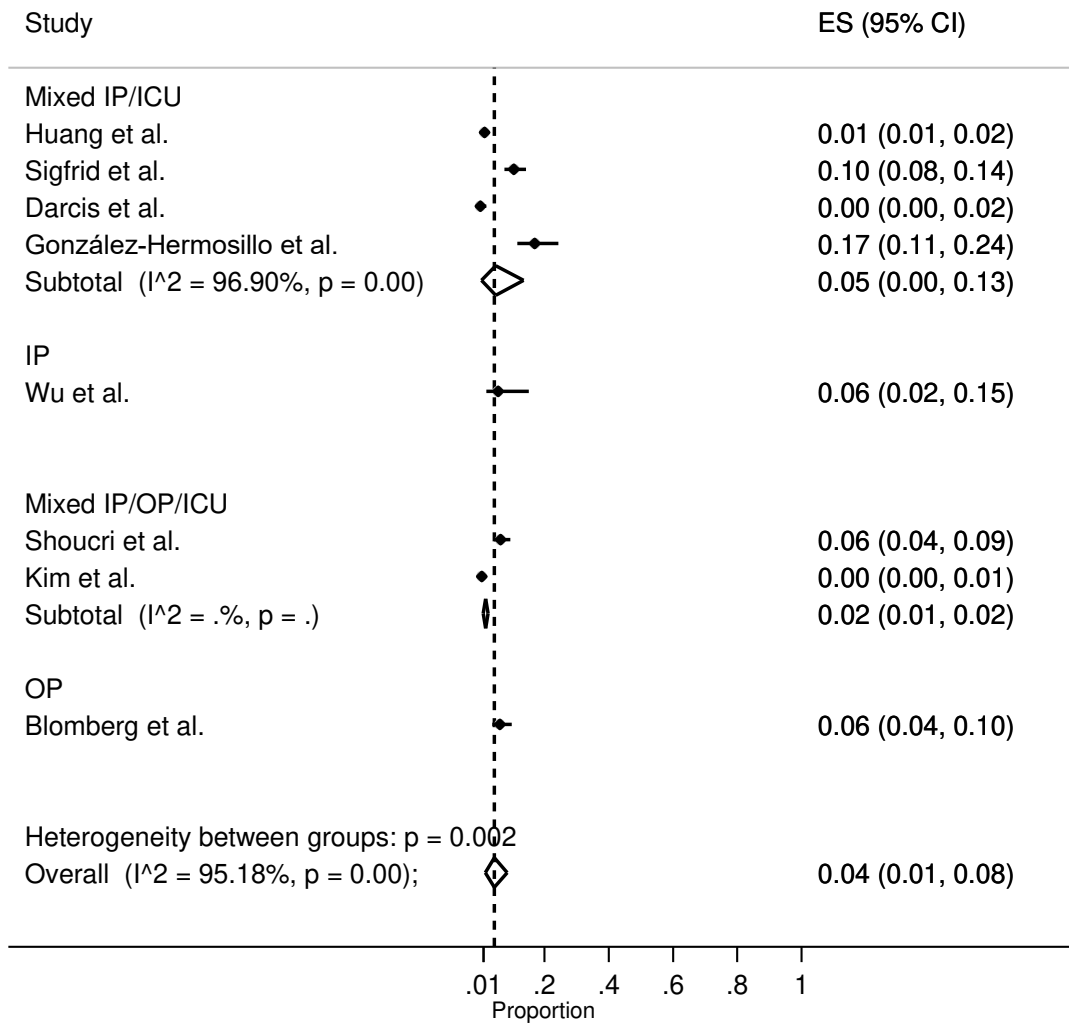
### Myalgia (6-<9 months)



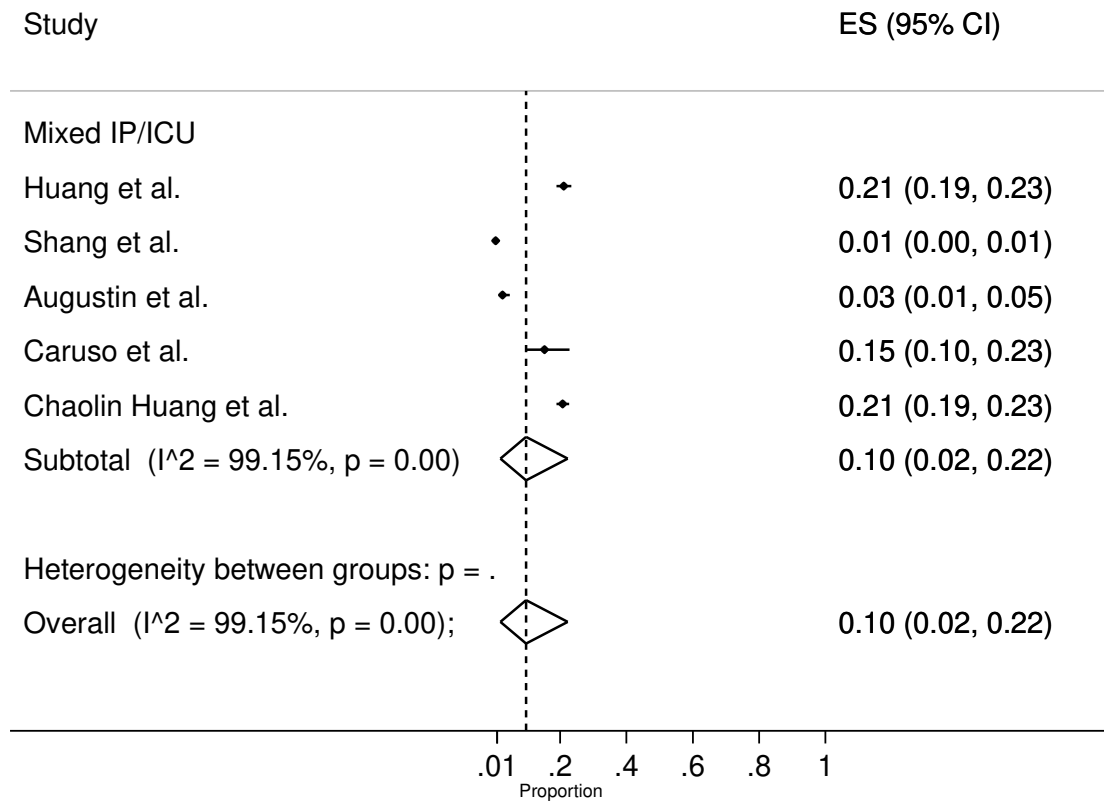
### Diarrhea (6-<9 months)



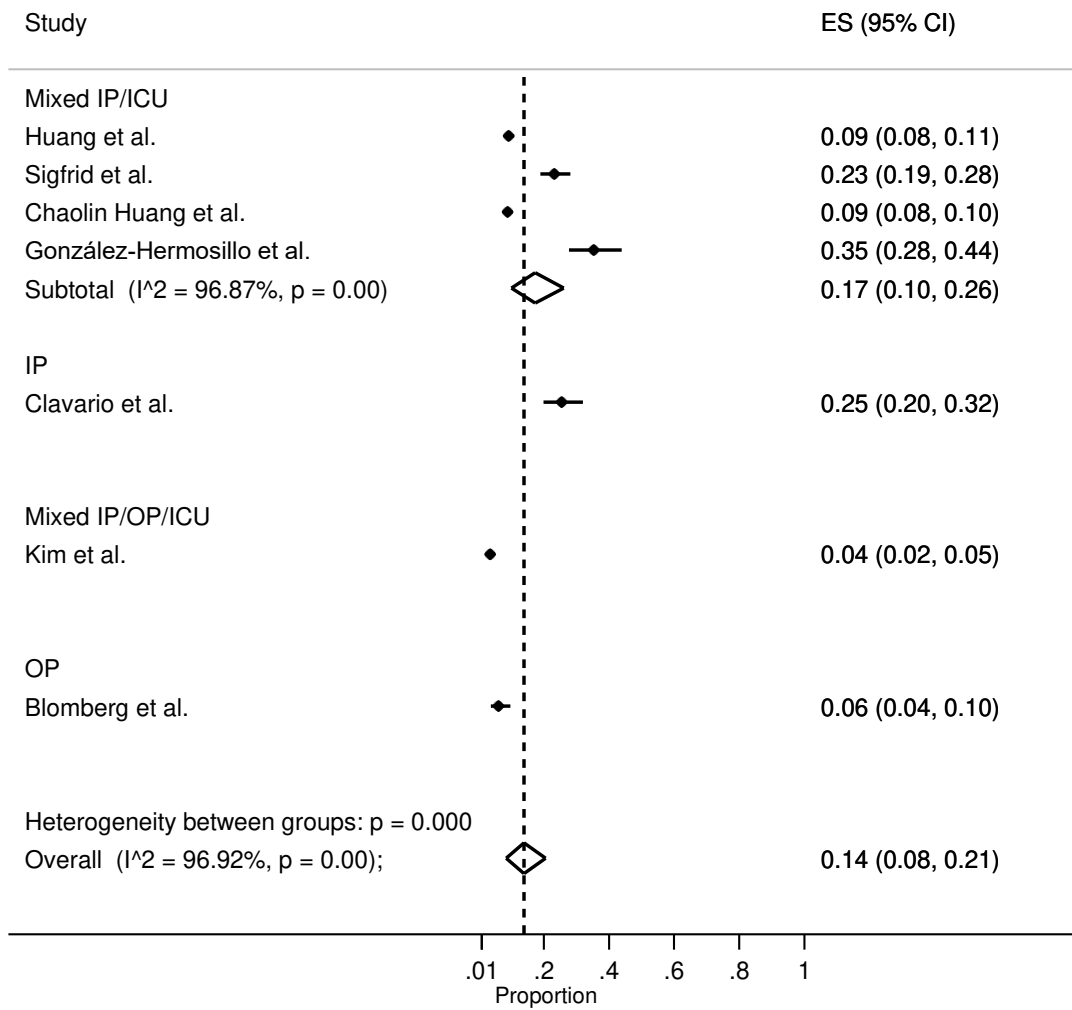
**Nausea (6-<9 months)**



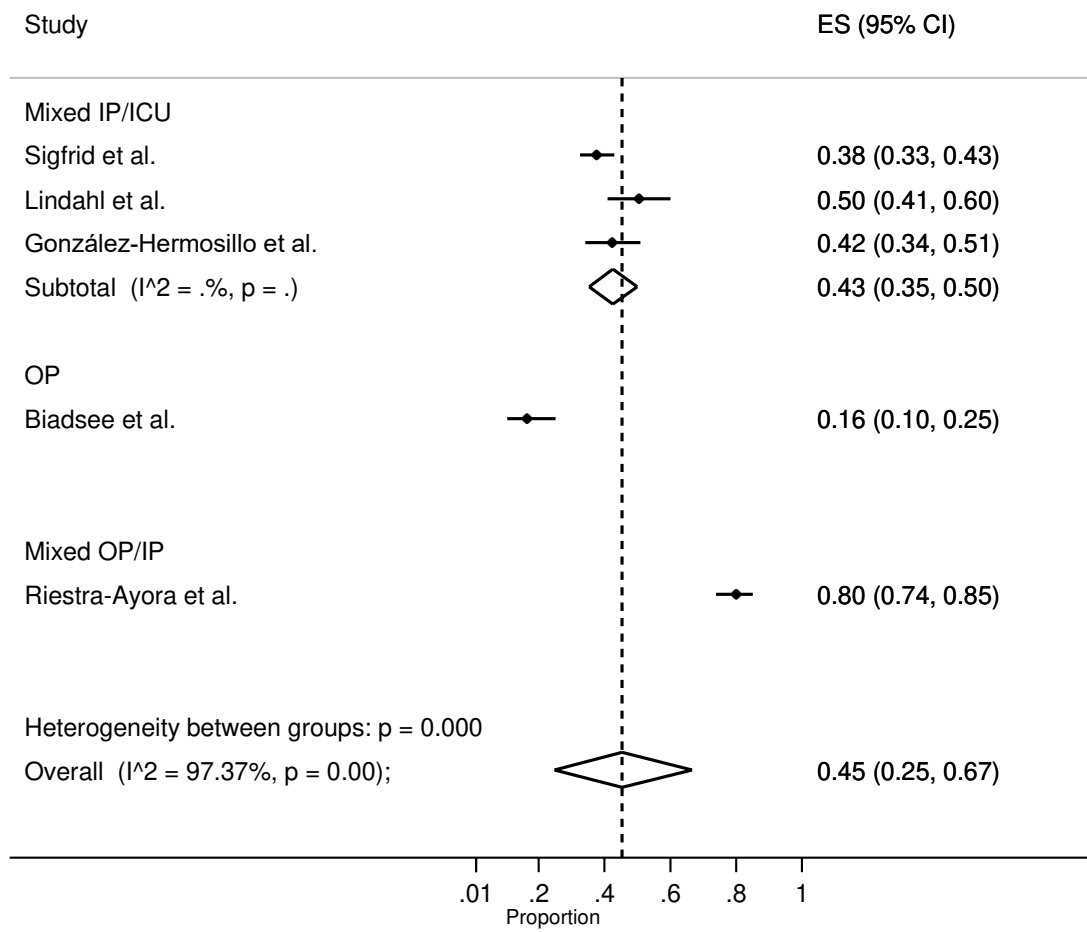
**Hair loss (6-<9 months)**



### Palpitations (6-<9 months)



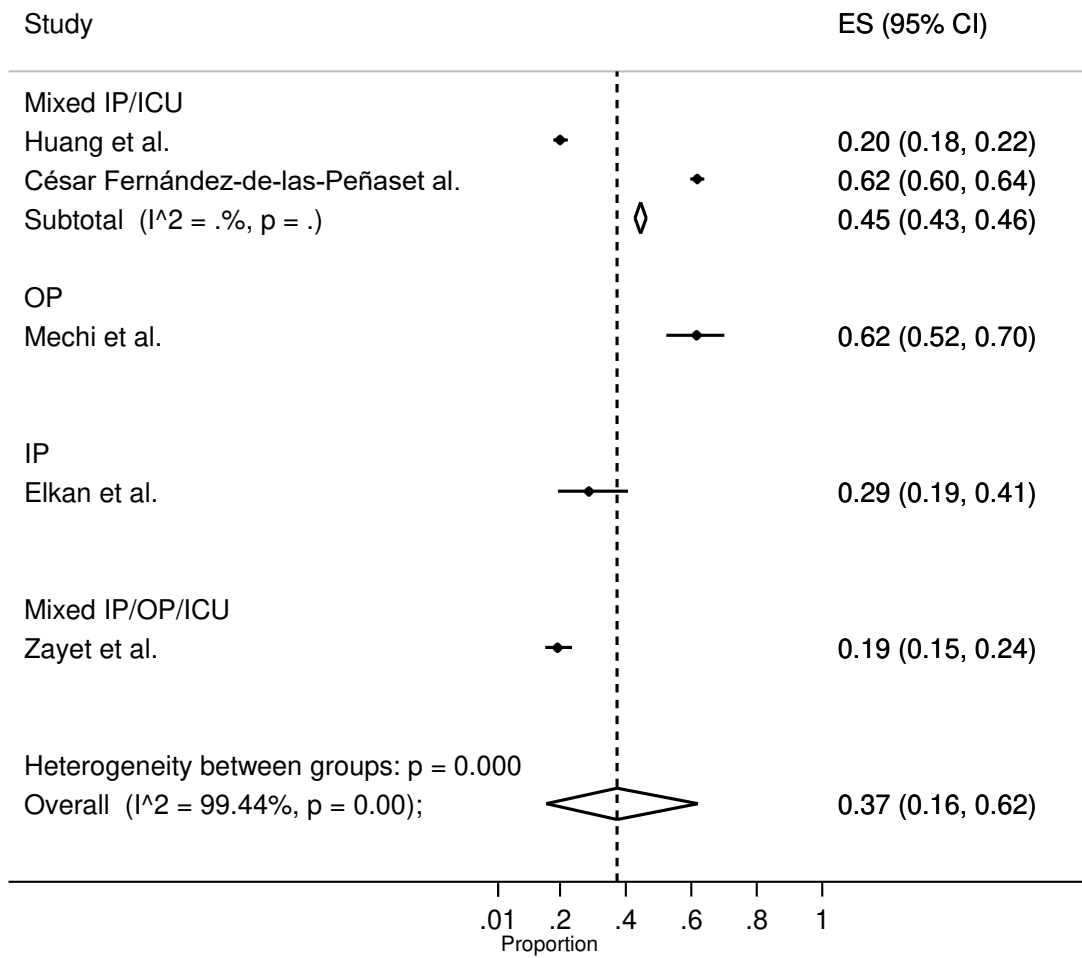
### Effort intolerance (6-<9 months)



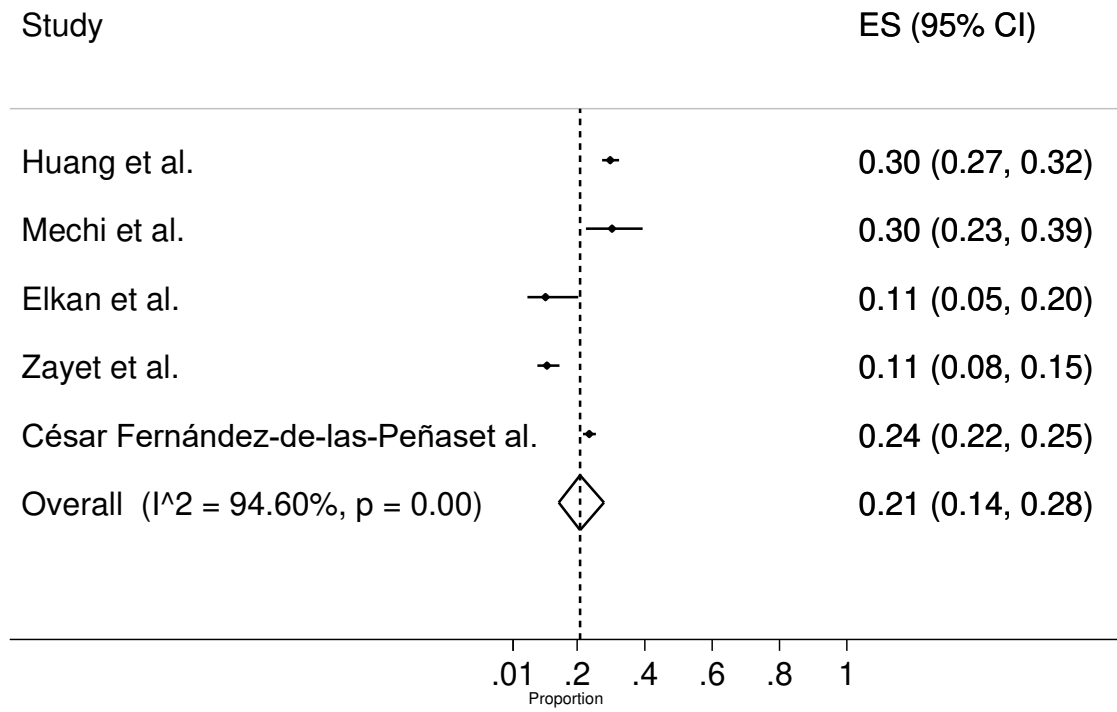


**Meta-analysis for the long term COVID19 symptoms: (duration 9-12 months):**

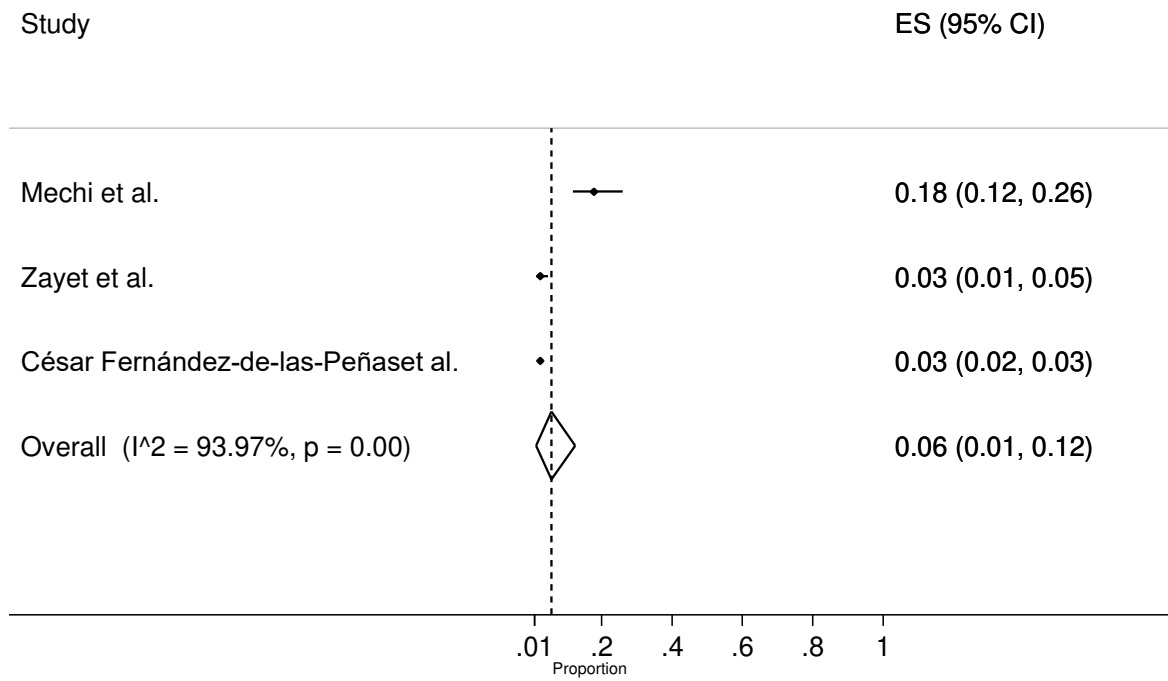
**Fatigue (9-<12 months)**



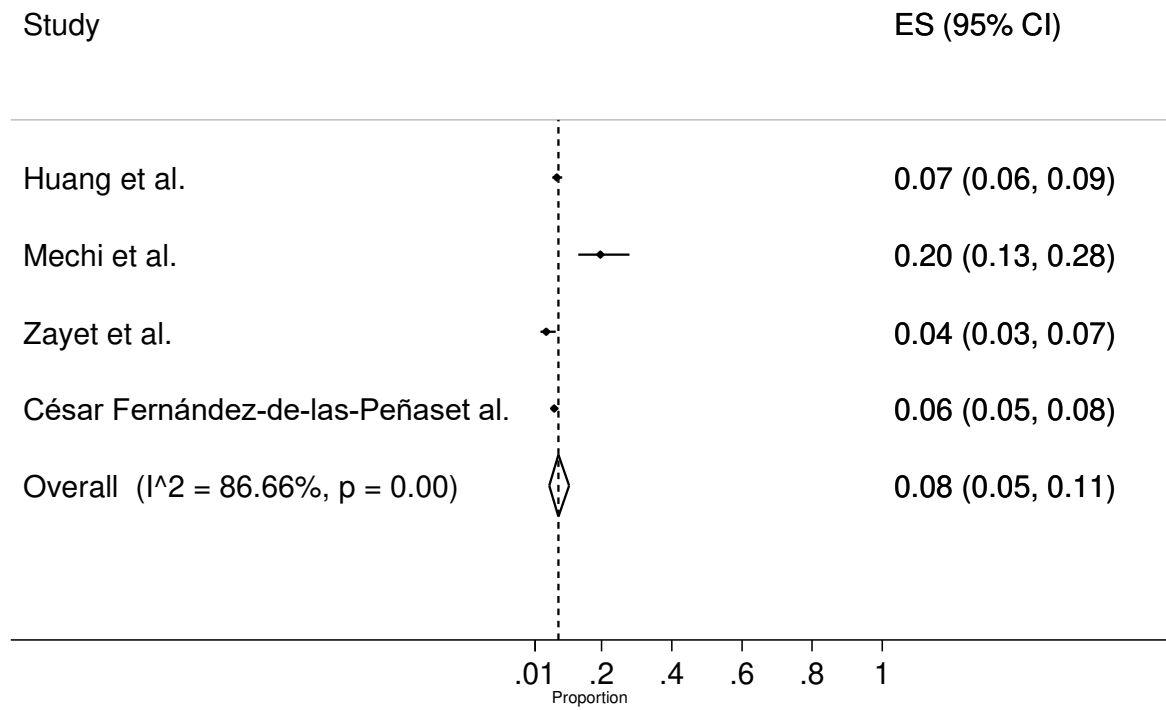
**Dyspnea (9-<12 months)**



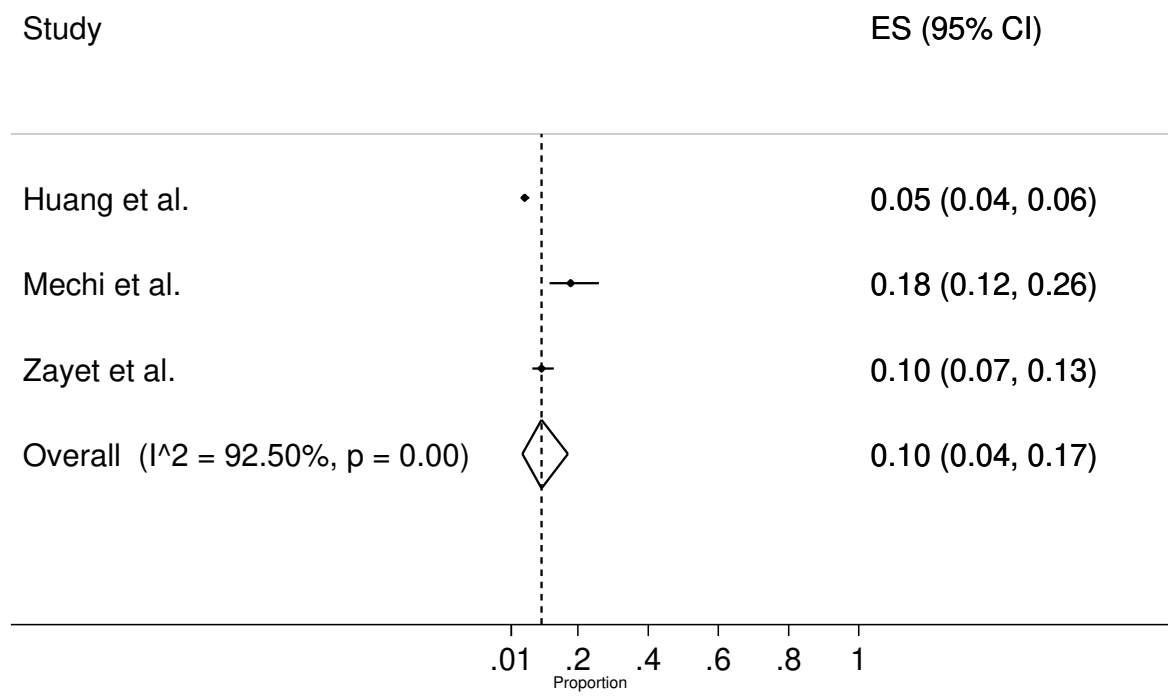
**Cough (9-<12 months)**



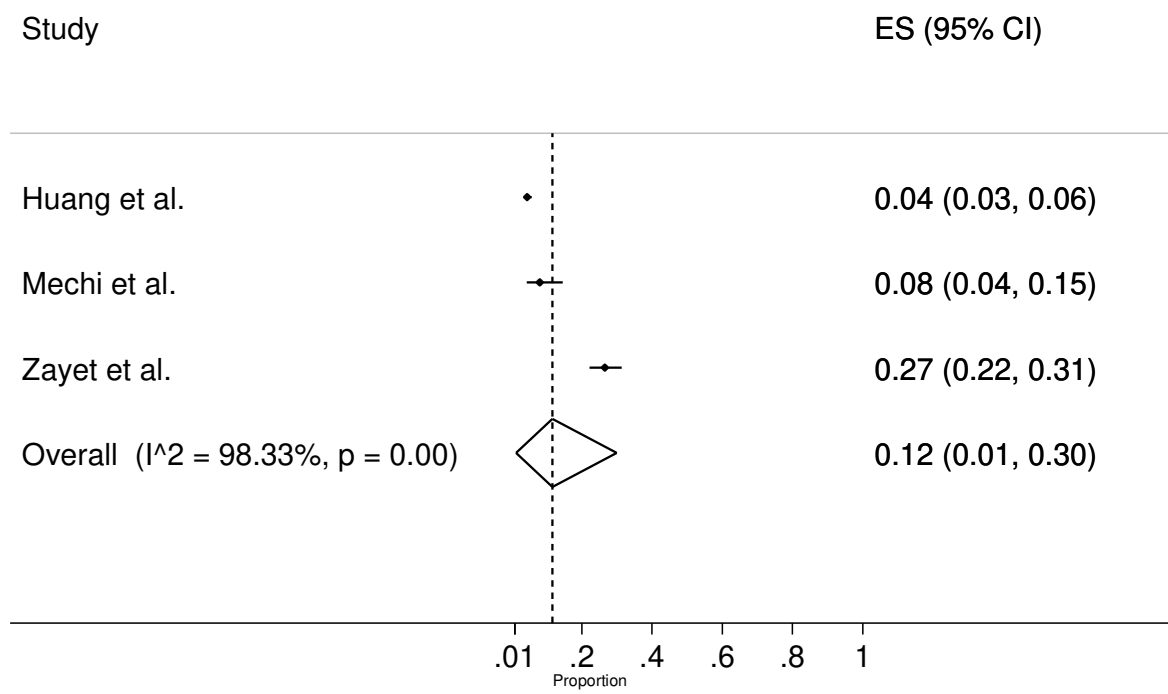
**Chest Pain (9-<12 months)**



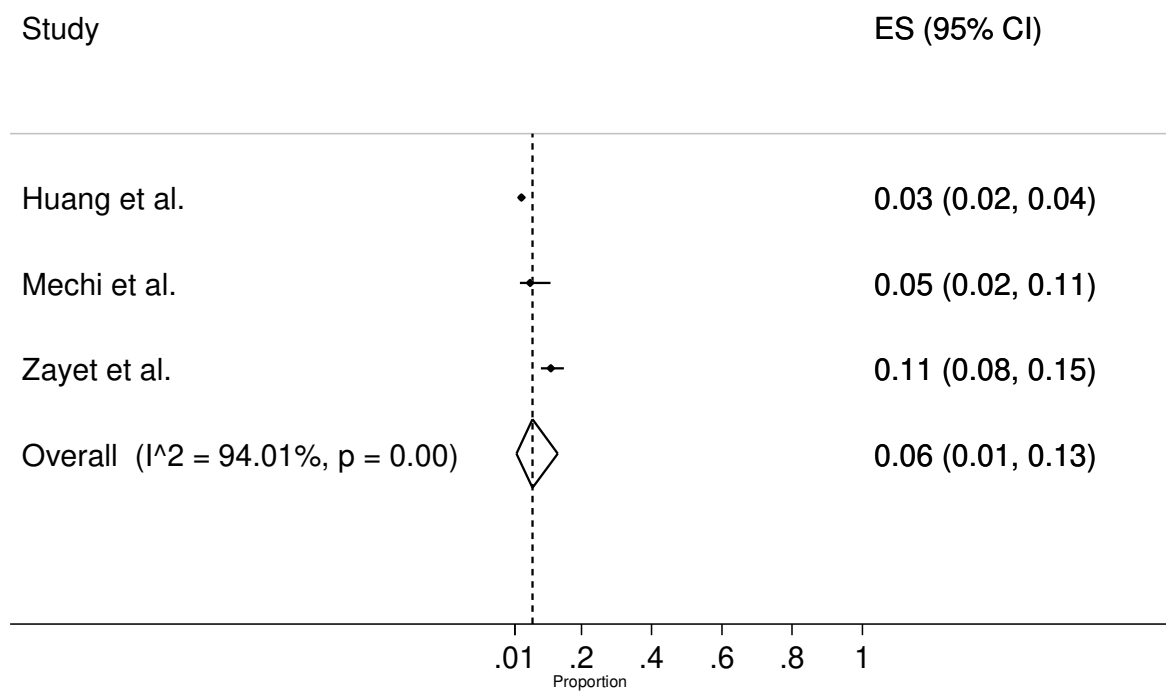
Headache (9-<12 months)



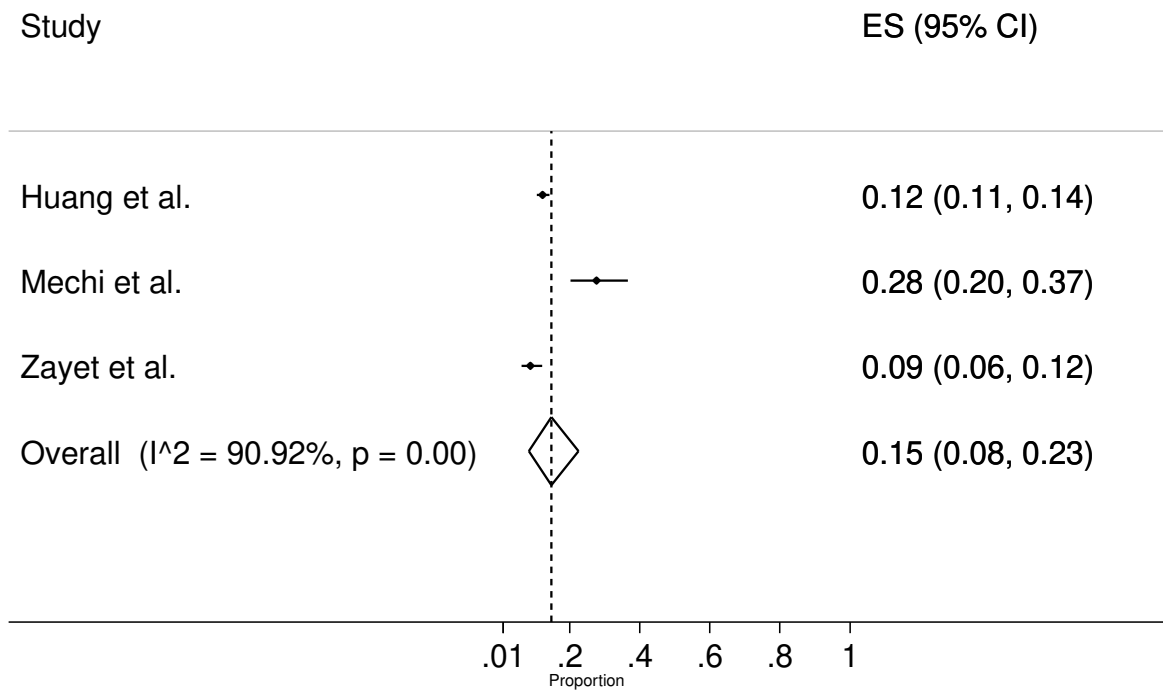
### Loss of smell (9-<12 months)



**Loss of taste (9-<12 months)**

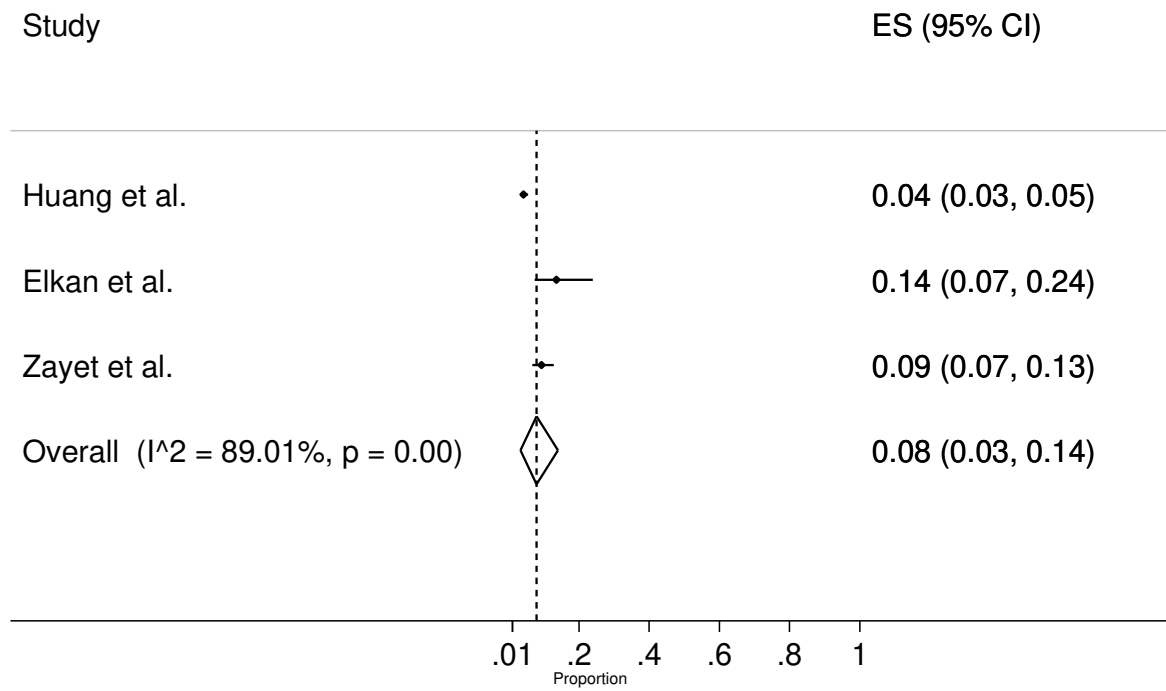


Joint pain (9-<12 months)



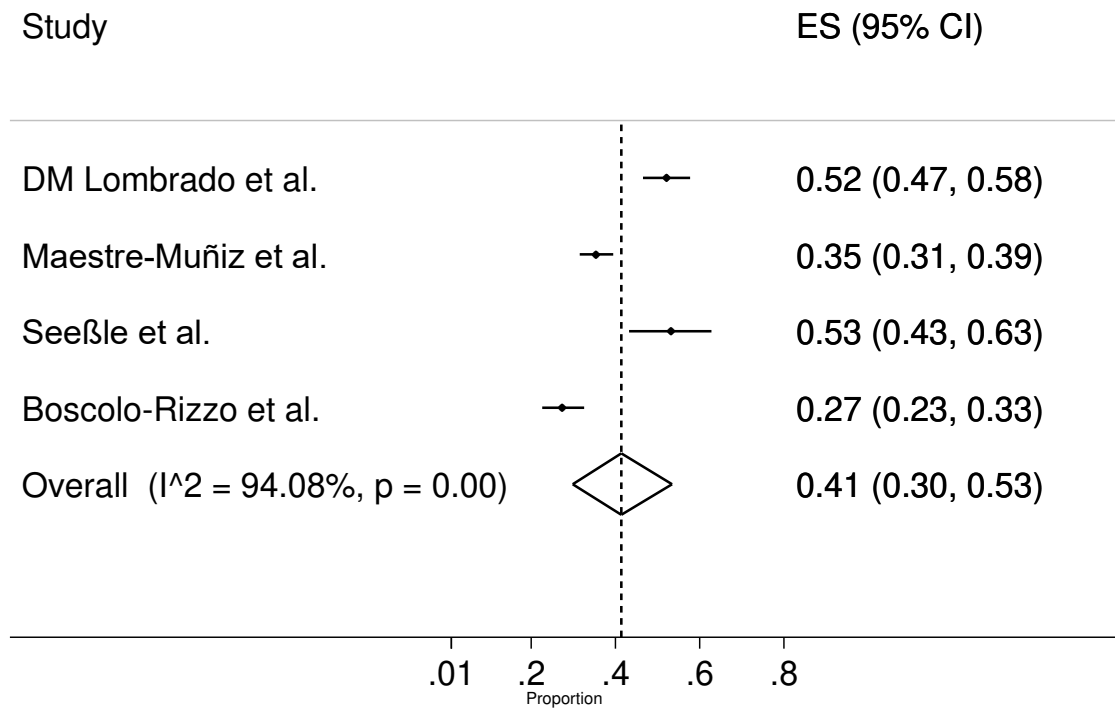


**Myalgia (9-<12 months)**

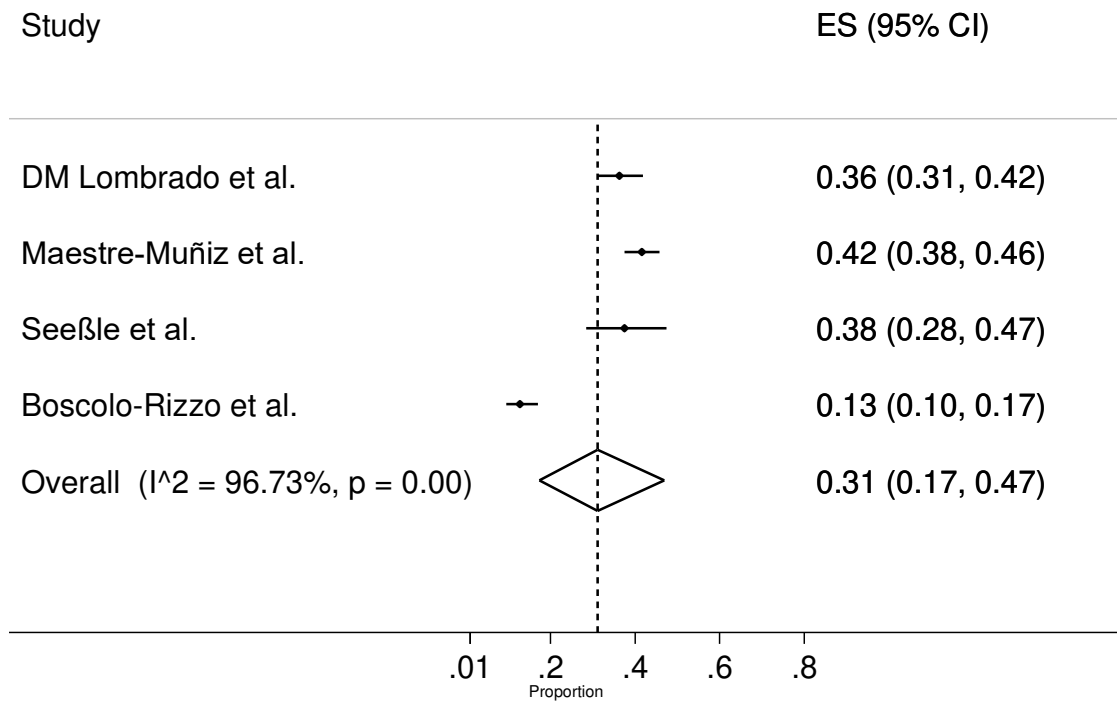


Meta-analysis for the long term COVID19 symptoms: (duration  $\geq 12$  months):

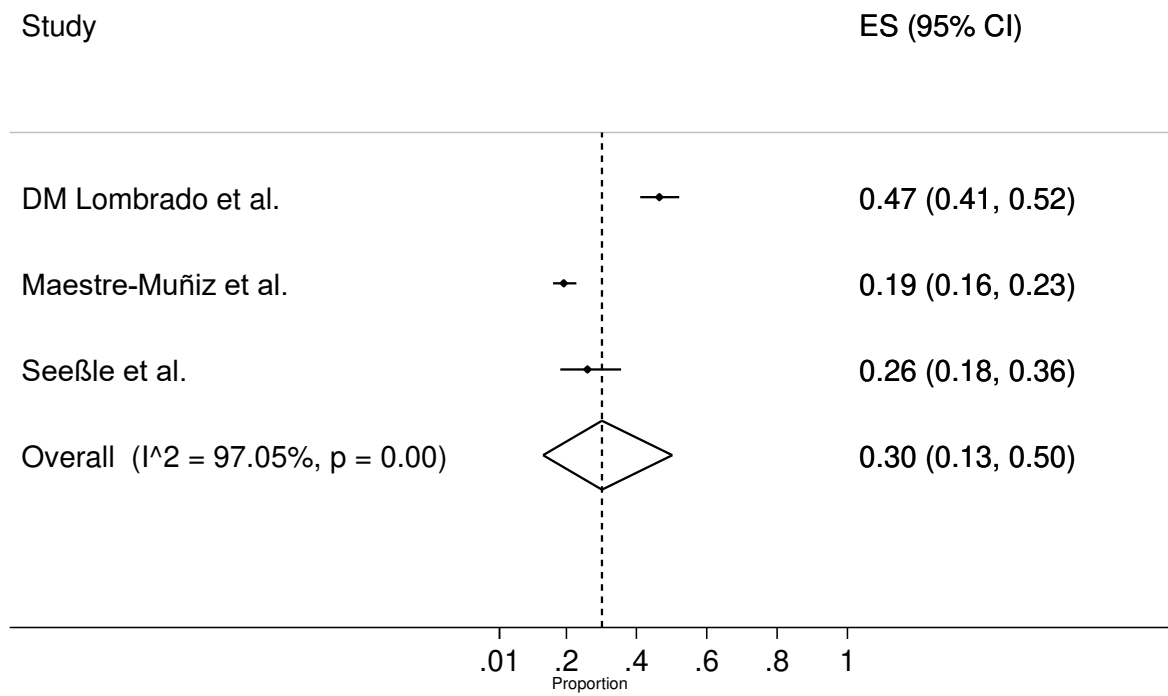
Fatigue ( $\geq 12$  months)



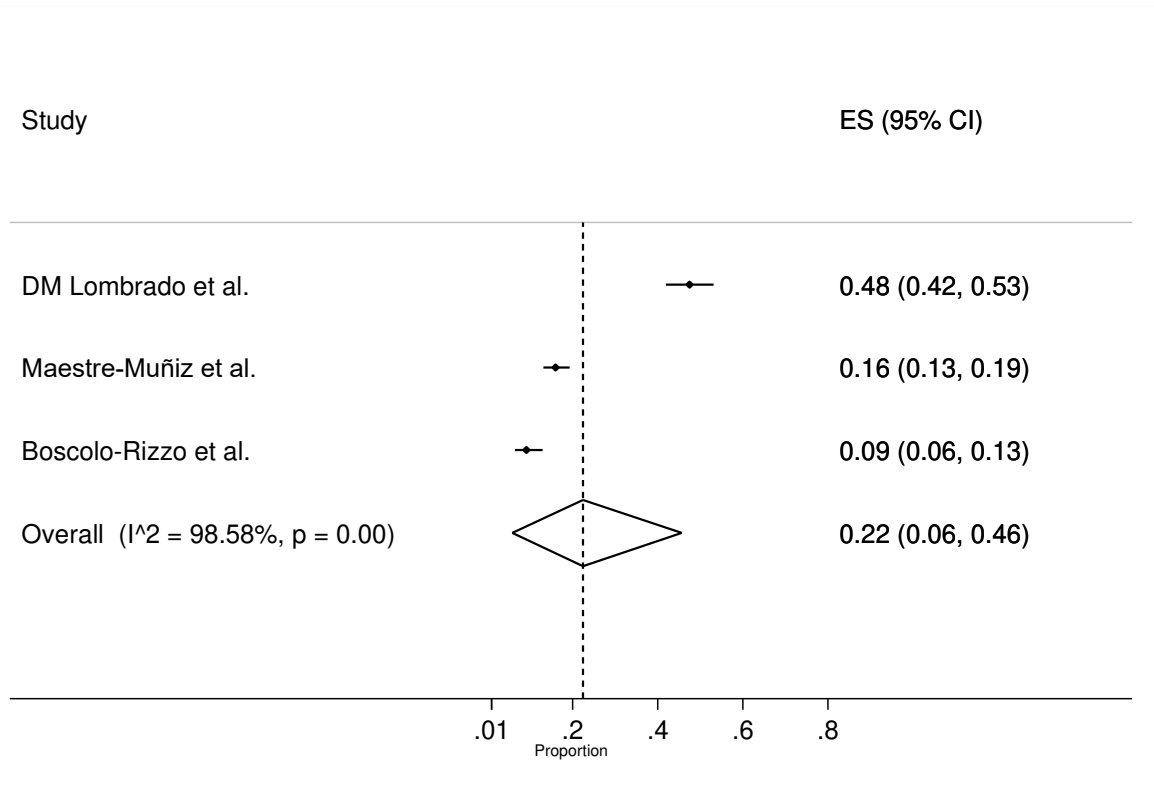
**Dyspnea ( $\geq 12$  months)**



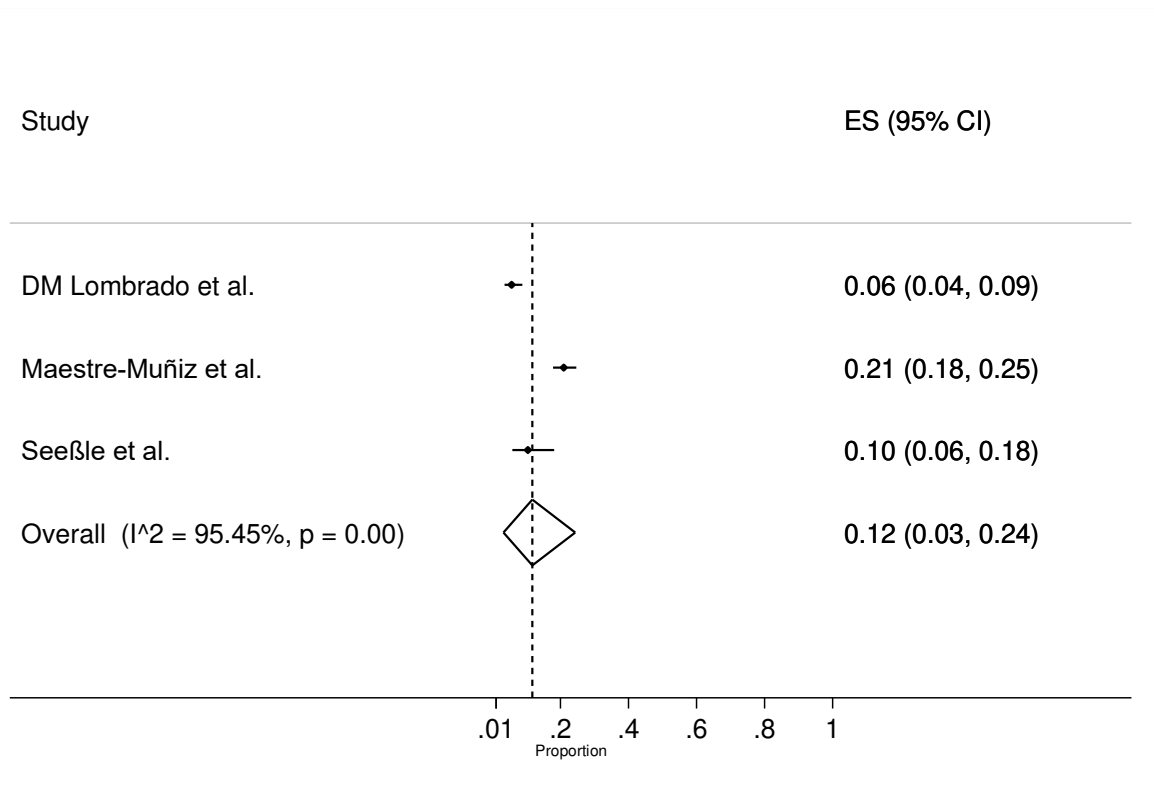
**Sleep disorder (≥12 months)**



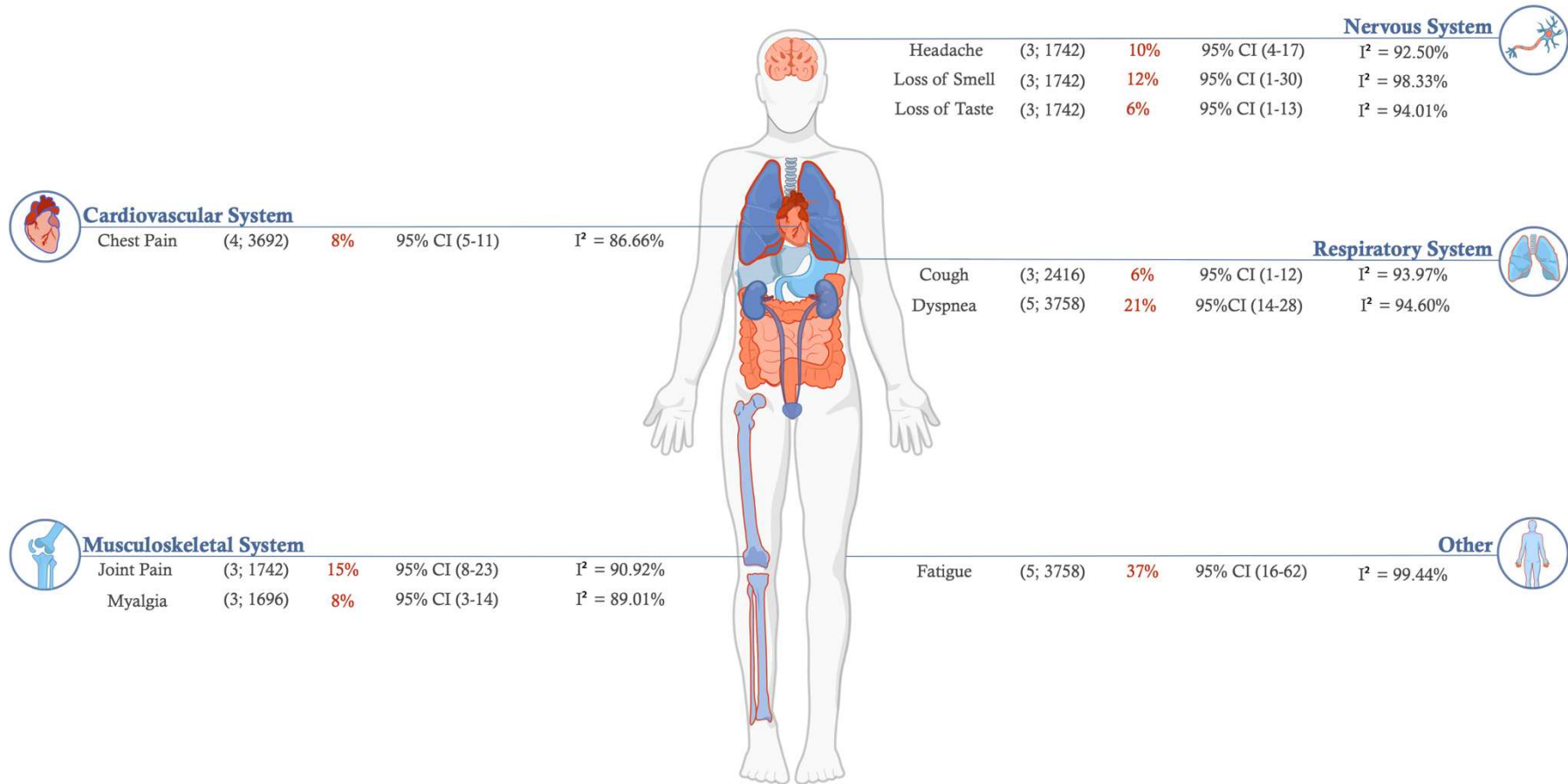
### Myalgia (≥12 months)



### Hair loss (≥12 months)



**Supplement 6:** Illustration of meta-analysis results with estimated prevalence of symptoms following acute COVID-19 infection across follow-up intervals of (C) 9-<12 months and (D) ≥12 months. (Number of studies, size of population used to calculate point estimate).

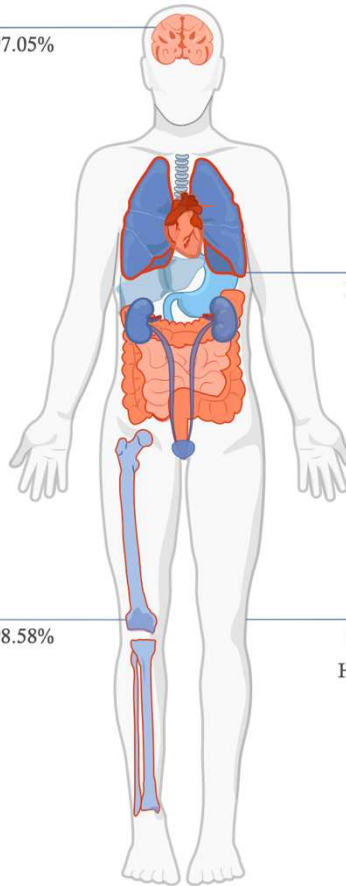


**Panel C**



### Mental Health

Sleep Disorder (3; 942) **30%** 95% CI (13-50)  $I^2 = 97.05\%$



### Respiratory System



Dyspnea (4; 1246) **31%** 95%CI (17-47)  $I^2 = 96.73\%$



### Musculoskeletal System

Myalgia (3; 1150) **22%** 95% CI (6-46)  $I^2 = 98.58\%$

### Other



Fatigue (4; 1246) **41%** 95% CI (30-53)  $I^2 = 94.08\%$   
 Hair Loss (3; 942) **12%** 95% CI (3-24)  $I^2 = 95.45\%$

**Panel D**

**Supplement 6: Meta-regression summary table**

Variable	Co-efficient	P value	Proportion of between-study variance explained Adjusted R <sup>2</sup>
<b>Fatigue (3-6 months)</b>			
World Regions	-	-	15.50%
EU	Reference	-	-
Asia	-0.155	0.064	-
USA	0.057	0.660	-
<b>Dyspnea (3-6 months)</b>			
Quality Assessment Score	-0.062	0.080	12.48%
World Regions	-	-	26.54%
EU	Reference	-	-
Asia	-0.181	0.014	-
USA	-0.009	0.928	-
Other	0.050	0.756	-
Site description	-	-	12.30%
Single center	Reference	-	-
Multicenter or nationwide	-0.125	0.083	-
Studied population severity	-	-	7.80%
OP	Reference	-	-
IP	0.096	0.553	-
ICU	0.369	0.092	-
OP/IP	0.071	0.680	-
IP/ICU	0.224	0.314	-
OP/IP/ICU	0.171	0.314	-
<b>Headache (3-6 months)</b>			
World Regions	-	-	37.36%
EU	Reference	-	-
Asia	-0.148	0.076	-
USA	0.007	0.941	-
<b>Chest pain (3-6 months)</b>			
Average age	-0.0125	0.005	40.75%
Hypertension	-0.004	0.097	60.36%
<b>Loss of smell (3-6 months)</b>			
Diabetes	-0.003	0.068	100.00%
World Regions	-	-	100.00%
EU	Reference	-	-
Asia	-0.128	0.003	-
USA	-0.008	0.930	-
Other	0.054	0.565	-
<b>Loss of taste (3-6 months)</b>			
Diabetes	-0.003	0.096	100.00%
World Regions	-	-	100.00%
EU	Reference	-	-
Asia	-0.114	0.009	-
USA	0.006	0.952	-
<b>Joint pain (3-6 months)</b>			



Average follow up	-0.004	0.001	100.00%
Symptom assessment tools at follow-up	-	-	100.00%
Online	Reference	-	-
Telephone	0.087	0.289	-
In-person	-0.203	0.006	-
Follow up determination	-	-	100%
Set follow up interval	Reference	-	-
Median or mean follow up	-0.224	0.001	-
Myalgia (3-6 months)			
World Regions	-	-	100.00%
EU	Reference	-	-
Asia	-0.064	0.162	-
USA	0.228	0.028	-
Other	0.141	0.121	-
Diarrhea (3-6 months)			
Diabetes	0.003	0.085	100.00%
Palpitations (3-6 months)			
Follow up determination	-	-	49.99%
Set follow up interval	Reference	-	-
Median or mean follow up	-0.166	0.054	-
Fatigue (6-9 months)			
Average follow up	0.005	0.069	15.79%
Chronic kidney disease	-0.030	0.057	33.09%
Dyspnea (6-9 months)			
Average age	0.006	0.035	23.38%
Proportion admitted to ICU	0.005	0.010	43.40%
World Regions	-	-	12.43%
EU	Reference	-	-
Asia	-0.126	0.063	-
USA	-0.119	0.193	-
Cough (6-9 months)			
Male	-0.007	0.067	22.07%
Quality Assessment (JBI) score	-0.086	0.077	19.54%
Studied population severity	-	-	97.61%
OP	Reference	-	-
ICU	0.082	0.541	-
OP/IP	0.708	0.000	-
IP/ICU	0.027	0.718	-
OP/IP/ICU	0.009	0.408	-
Sleep disorder (6-9 months)			
Proportion admitted to ICU	0.007	0.039	37.59%

Symptom assessment tools at follow-up	-	-	62.1%
Online	Reference	-	-
Telephone	-0.387	0.039	-
In-person	-0.544	0.007	-
Mixed follow-up (telephone, EMR and/or in-person)	-0.261	0.202	-
Headache (6-9 months)			
Studied population severity	-	-	50.02%
OP	Reference	-	-
OP/IP	0.605	0.025	-
IP/ICU	0.026	0.881	-
OP/IP/ICU	0.113	0.490	-
Loss of smell (6-9 months)			
Male sex	-0.008	0.017	30.60%
Diabetes	-0.009	0.075	18.61%
Quality Assessment (JBI) score	-0.068	0.095	13.32%
Studied population severity	-	-	100.00%
OP	Reference	-	-
IP	-0.156	0.117	-
ICU	-0.175	0.165	-
OP/IP	0.510	0.000	-
IP/ICU	-0.185	0.007	-
OP/IP/ICU	-0.205	0.009	-
Loss of taste (6-9 months)			
Male sex	-0.006	0.040	24.04%
Diabetes	-0.007	0.086	19.44%
Studied population severity	-	-	15.93%
OP	Reference	-	-
IP	-0.189	0.064	-
OP/IP	0.338	0.003	-
IP/ICU	-0.191	0.006	-
OP/IP/ICU	-0.267	0.008	-
Myalgia (6-9 months)			
Follow up determination	-	-	50.96%
Set follow up interval	Reference	-	-
Median or mean follow up	-0.184	0.015	-

