

Factores Protectores y Riesgo en Asma Infantil



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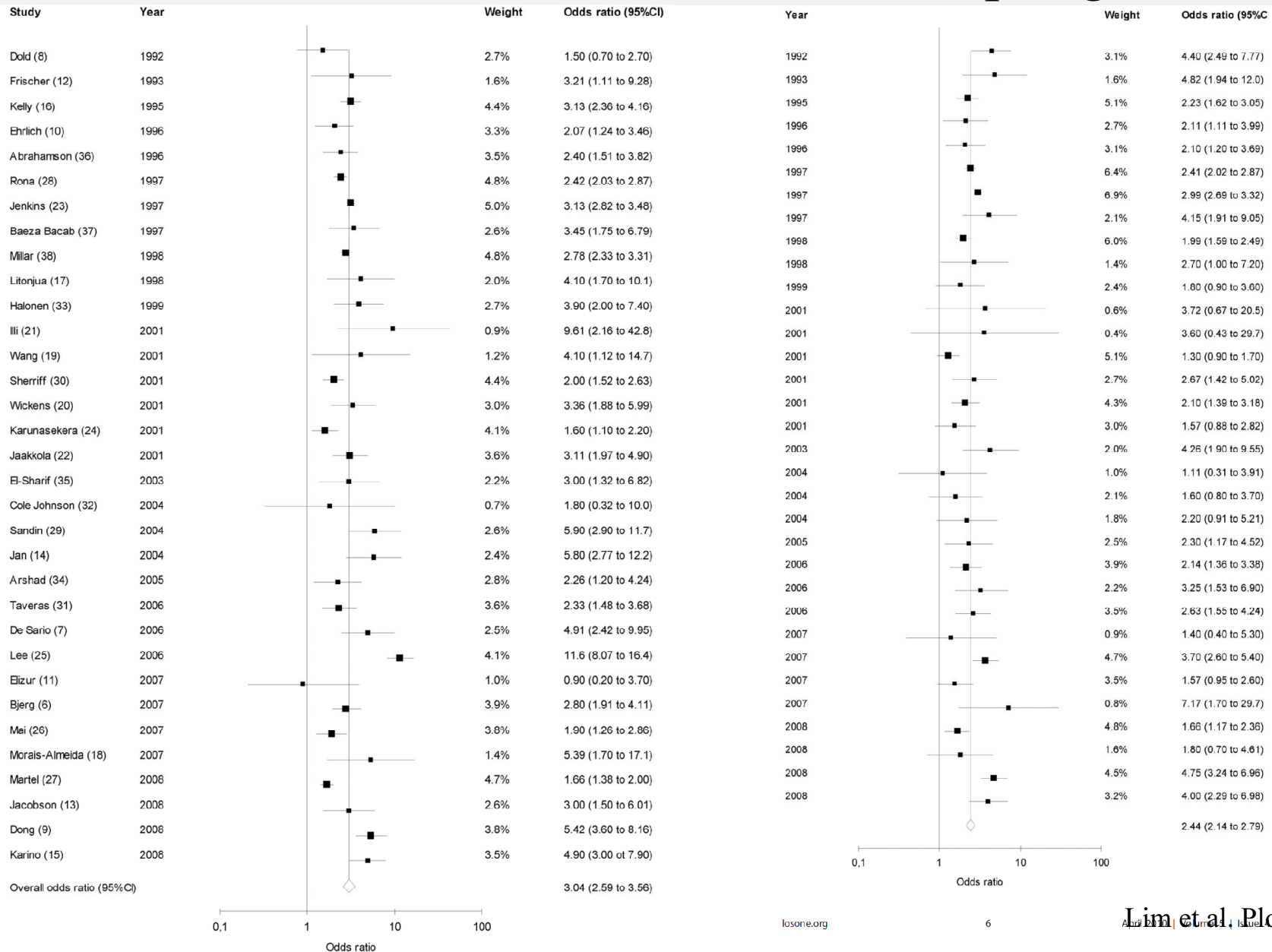
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Pontificia Universidad Católica de Chile

Factores Familiares ó Pre-Natales

Maternal and Paternal Asthma

Increase Asthma Risk in Offspring

N=33 studies



Maternal Nutrition during Pregnancy *Influence* Risk

N=32 studies

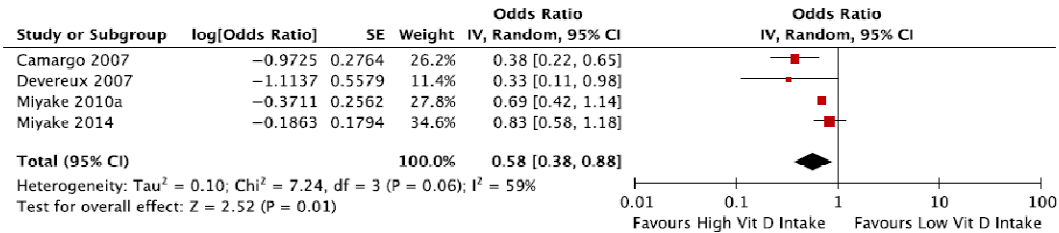


Figure 2 Pooled difference for maternal dietary vitamin D intake during pregnancy and childhood wheeze.

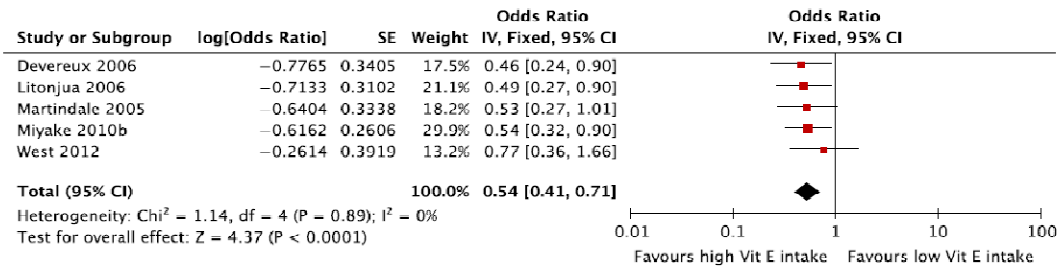


Figure 3 Pooled difference for maternal dietary vitamin E intake during pregnancy and childhood wheeze.

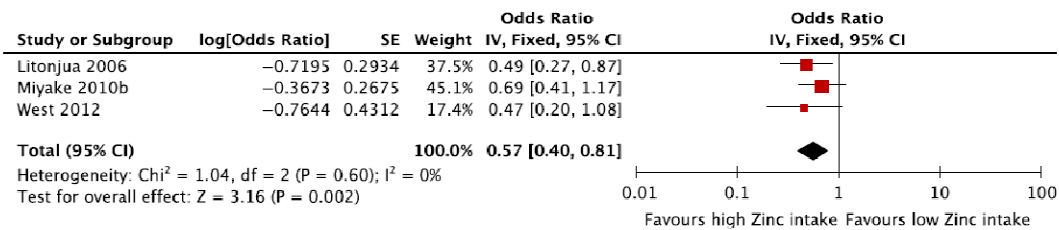
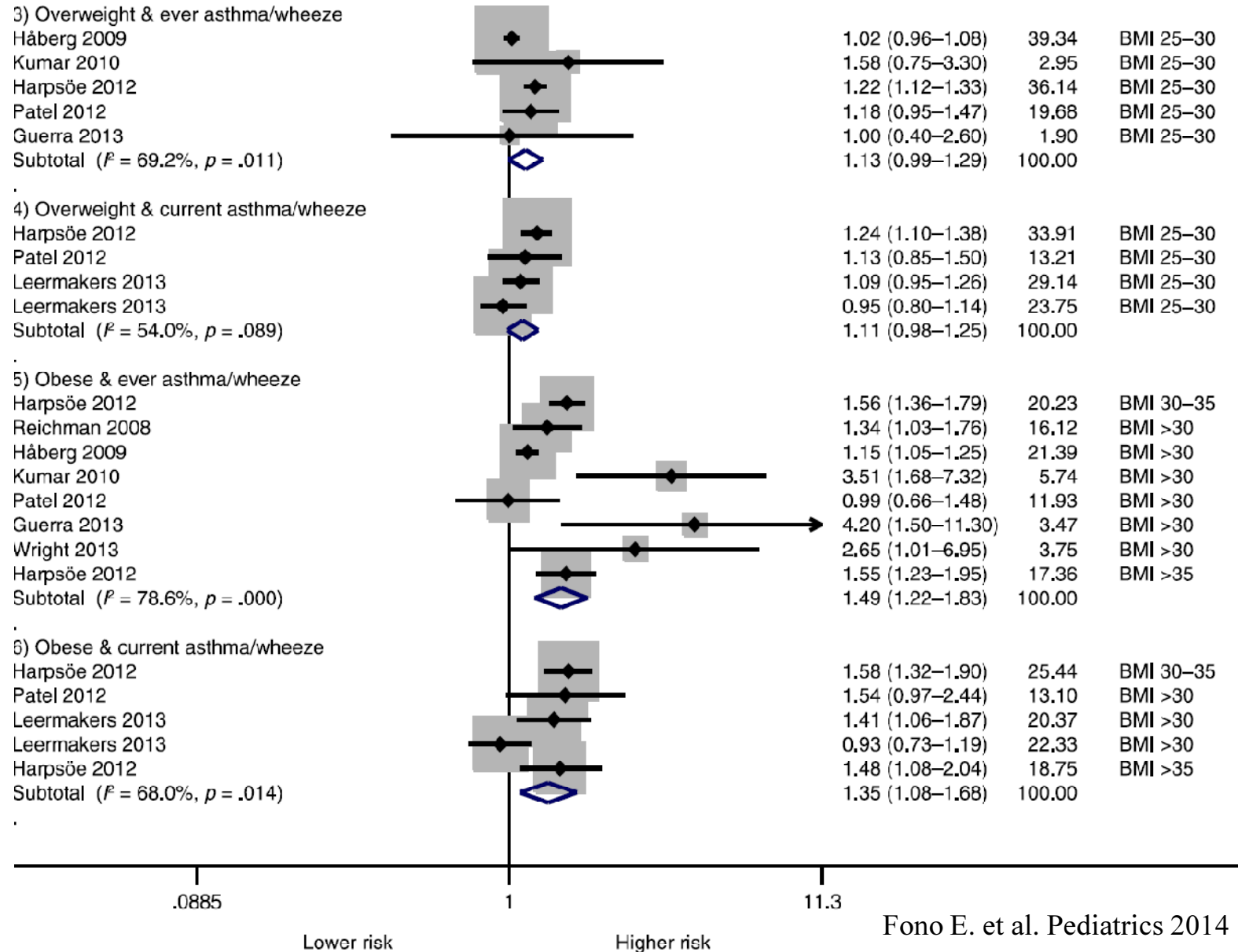


Figure 4 Pooled difference for maternal dietary zinc intake during pregnancy and childhood wheeze.

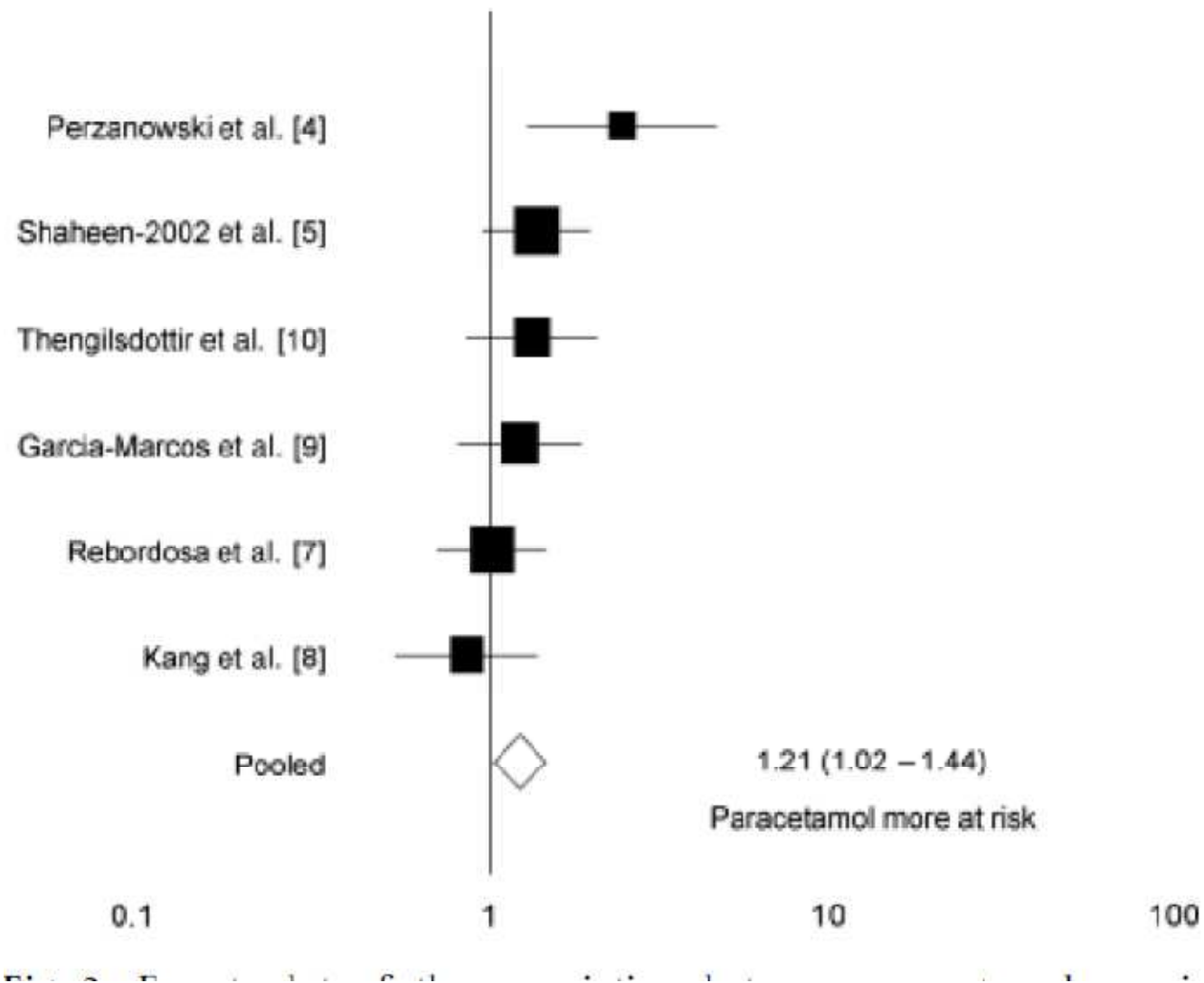
Obesity during Pregnancy *Increase* Asthma Risk

N=14 studies (n=108,321 children)

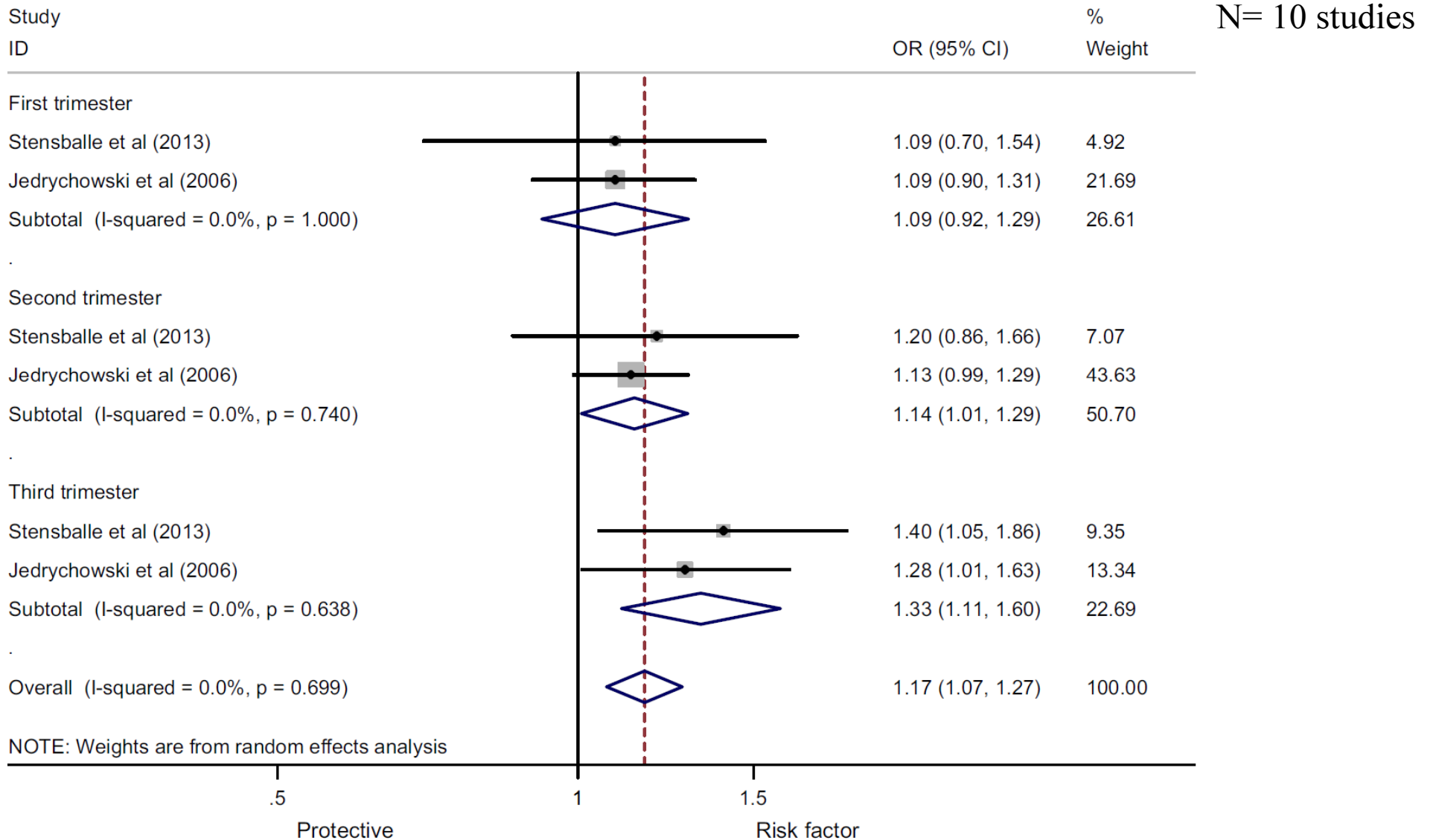


Paracetamol Use during Pregnancy *Increase* Asthma Risk

N=6 studies



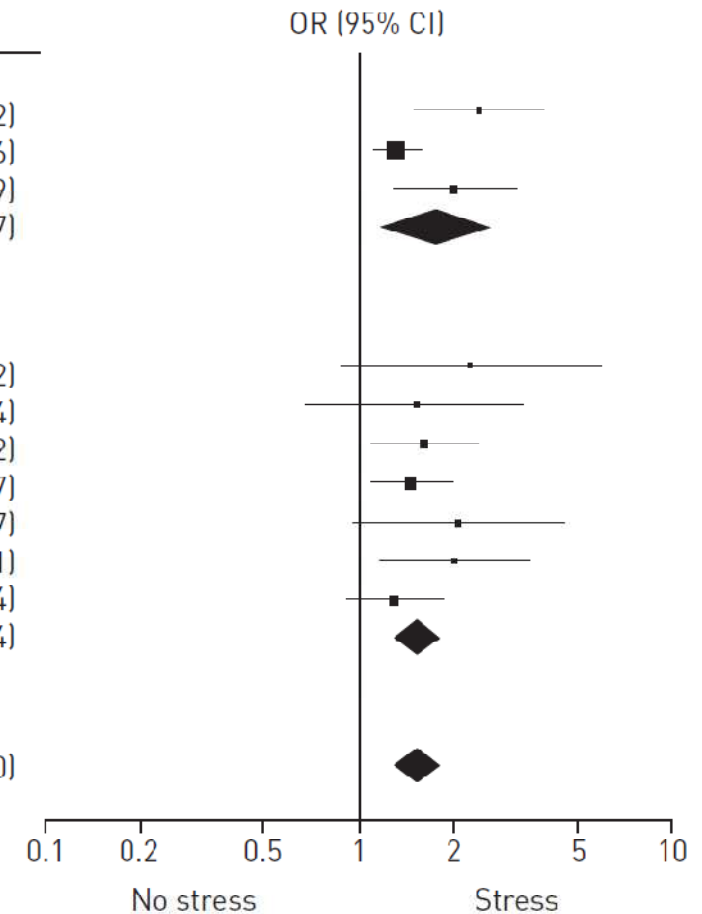
Antibiotics Use during Pregnancy *Increase* Asthma Risk



Prenatal Maternal Psychological Stress Increase Asthma Risk in Offspring

N=10 studies

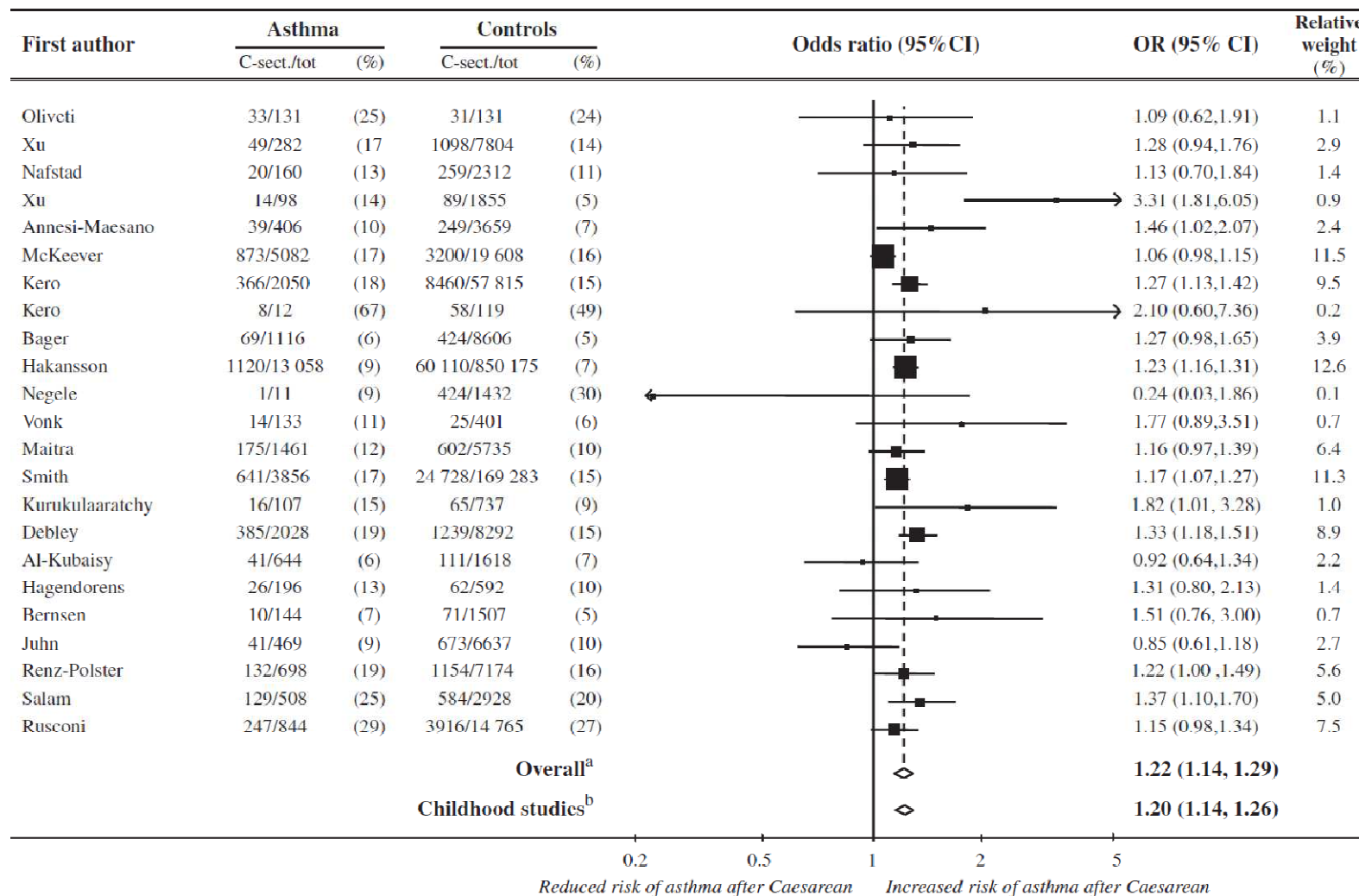
Study or subgroup	Stress		No Stress		Weight %	OR (95% CI)
	Events	Total	Events	Total		
High quality#						
CHIU [32]	49	275	31	378	7.5	2.43 (1.50-3.92)
COOKSON [33]	232	1546	503	4264	32.0	1.32 (1.12-1.56)
GUXENS [35]	23	212	178	3126	8.1	2.02 (1.27-3.19)
Subtotal		2033		7768	47.6	1.77 (1.18-2.67)
Total events	304		712			
Moderate quality¶						
ALTON [30]	5	33	56	758	1.9	2.24 (0.83-6.02)
BEIJERS [31]	31	116	10	51	2.9	1.50 (0.67-3.34)
DE MARCO [34]	30	330	196	3370	10.1	1.62 (1.08-2.42)
KHASHAN [27]	45	1467	67375	3191566	16.2	1.47 (1.09-1.97)
LEFEVRE [36]	24	34	114	213	3.0	2.08 (0.95-4.57)
REYES [37]	57	81	107	198	5.8	2.02 (1.16-3.51)
WOOD [38]	108	203	146	312	12.4	1.29 (0.91-1.84)
Subtotal		2264		3196468	52.4	1.54 (1.30-1.84)
Total events	300		68004			
Total		4297		3204236	100.0	1.56 (1.36-1.80)
Total events+	604		68716			



Factores Peri-Natales

C-section *Increase* Asthma Risk

N=23 studies



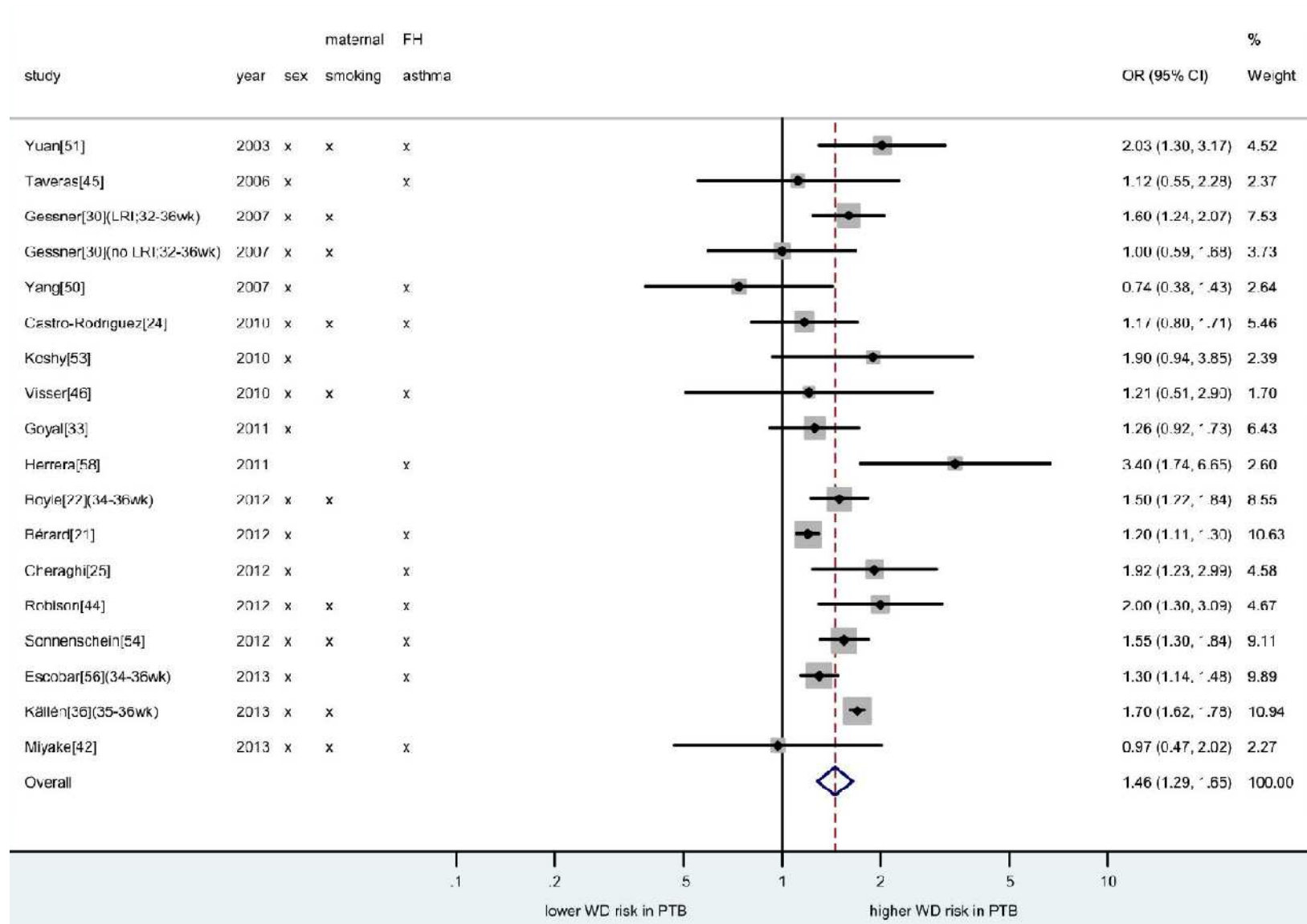
§. 1. Meta-analysis of studies of asthma and Caesarean section using the random-effects model, studies ordered by publication date.

test for heterogeneity $\chi^2 = 40.36$, $df = 22$, $P = 0.01$; I^2 [95% confidence interval (CI)] = 46% (11%, 67%); test for overall effect $Z = 6.36$, $P < 0.001$.

excludes studies [16, 28, 29]; test for heterogeneity $\chi^2 = 28.01$, $df = 19$, $P = 0.08$; I^2 (95% CI) = 32% (0%, 61%); test for overall effect $Z = 6.76$, $P < 0.001$.

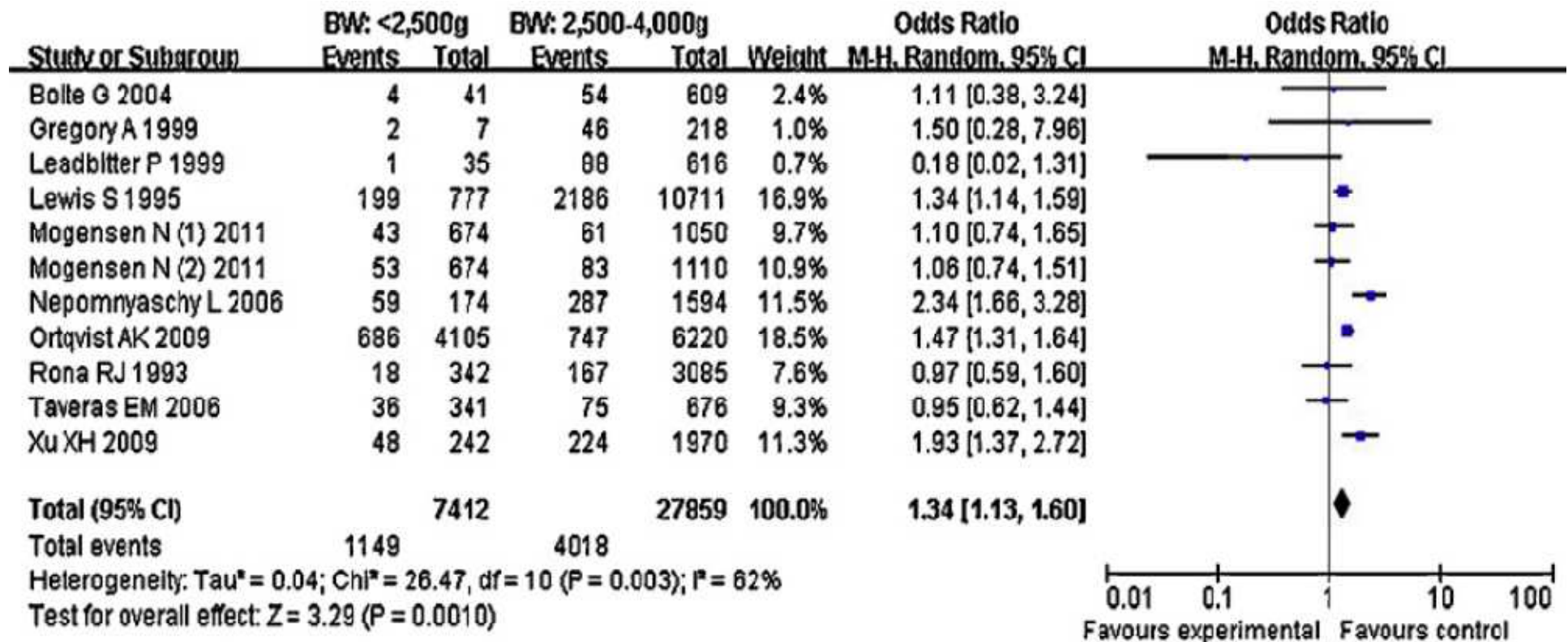
Prematurity *Increase* Wheezing Risk

N=30 studies



Low Weight (<2,500 gr) at Birth *Increase* Asthma Risk

N=18 studies



Hyperbilirubinemia & Phototherapy *Increase* Asthma

N=7 studies (n=101,499)

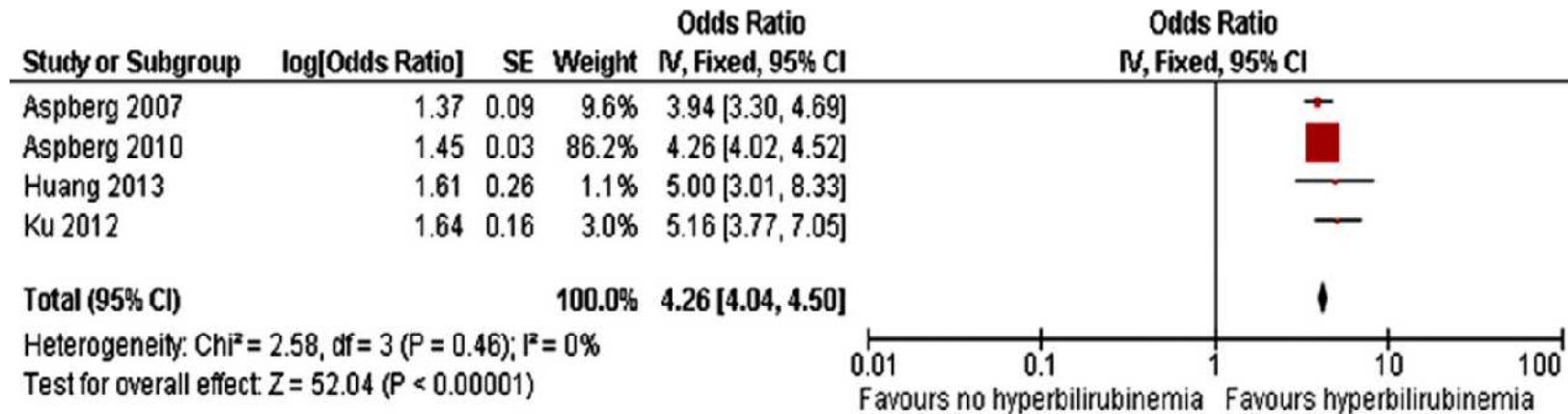


Figure 2 Rate of childhood asthma after neonatal hyperbilirubinemia.

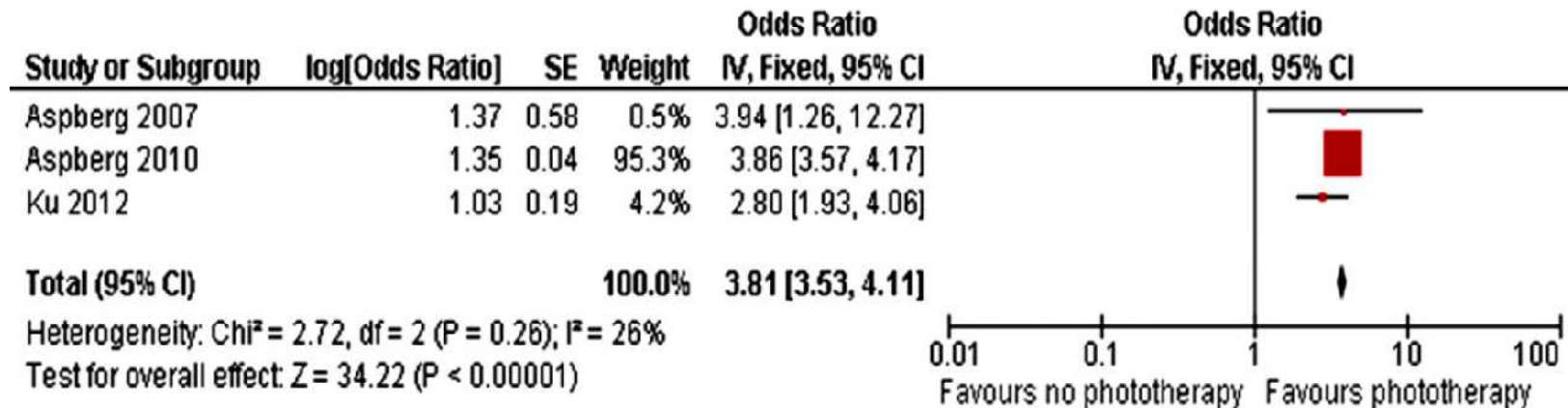
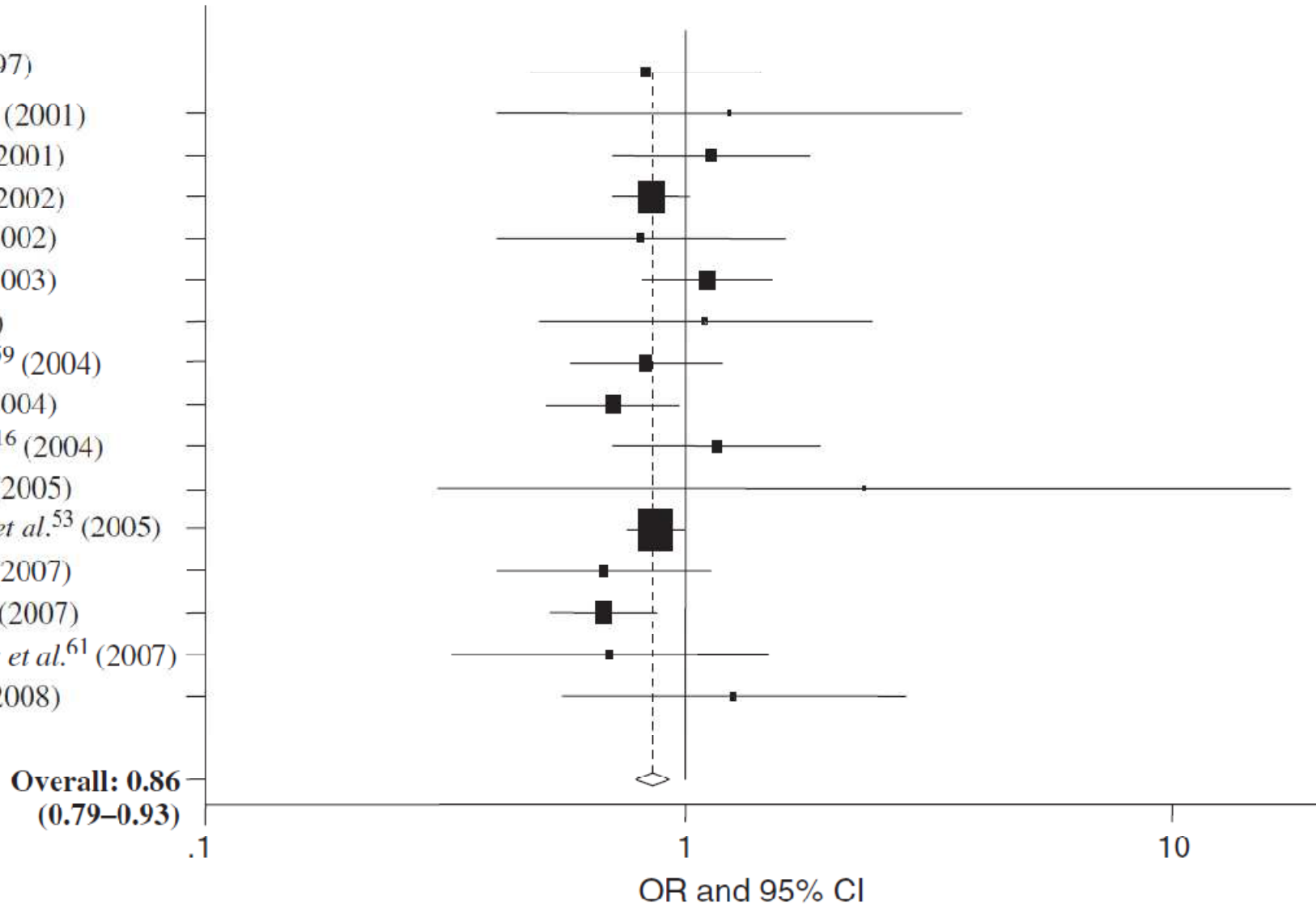


Figure 3 Rate of childhood asthma after phototherapy.

BCG-vaccination *Decrease* Asthma Risk

References

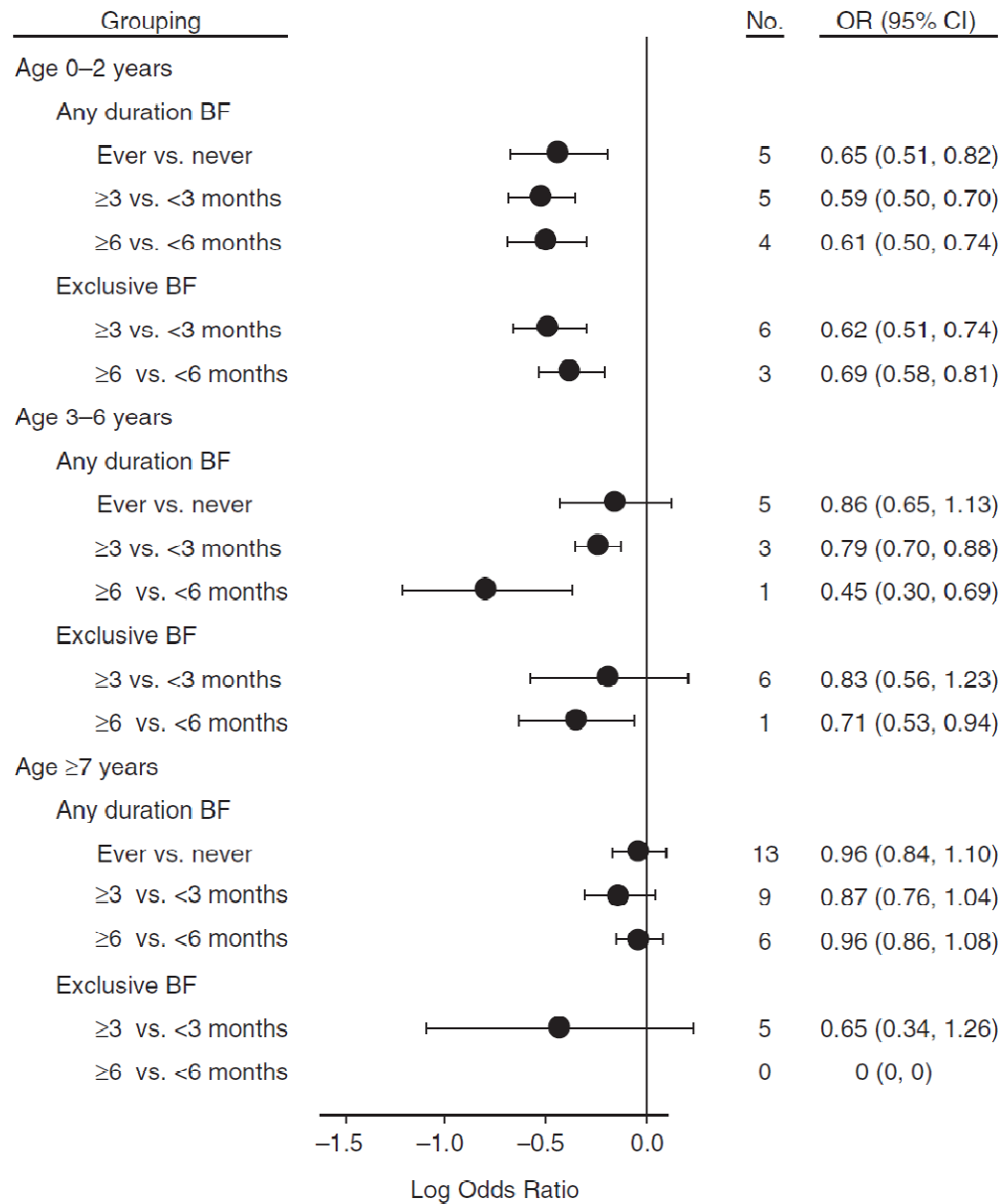
- Alm *et al.*²⁰ (1997)
- Wickens *et al.*⁵⁷ (2001)
- Gruber *et al.*²⁶ (2001)
- Gruber *et al.*⁵² (2002)
- Pahari *et al.*²¹ (2002)
- Marks *et al.*²⁴ (2003)
- Samuel⁵¹ (2004)
- Da Cunha *et al.*⁵⁹ (2004)
- Benke *et al.*¹⁵ (2004)
- Mommers *et al.*¹⁶ (2004)
- Bibakis *et al.*²² (2005)
- Garcia-Marcos *et al.*⁵³ (2005)
- Miyake *et al.*⁵⁵ (2007)
- Linehan *et al.*⁵⁴ (2007)
- Mohrenschlager *et al.*⁶¹ (2007)
- Soysal *et al.*⁶² (2008)



Factores Post-Natales

Breastfeeding *Reduce* Asthma Risk

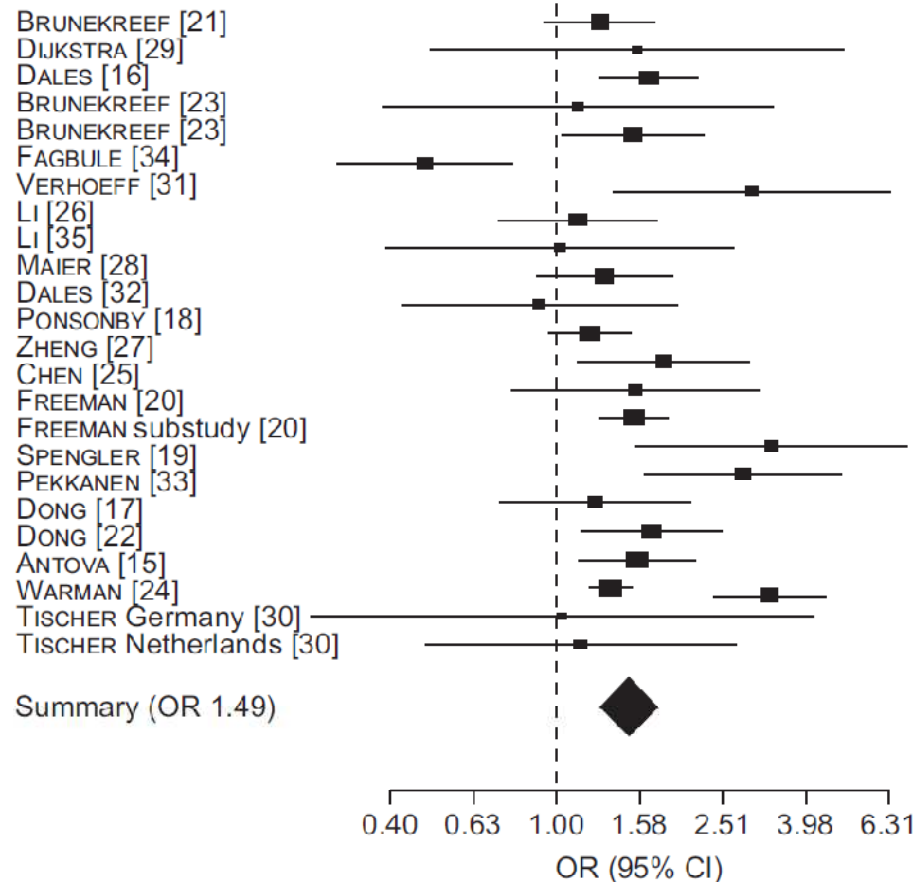
N=23 studies



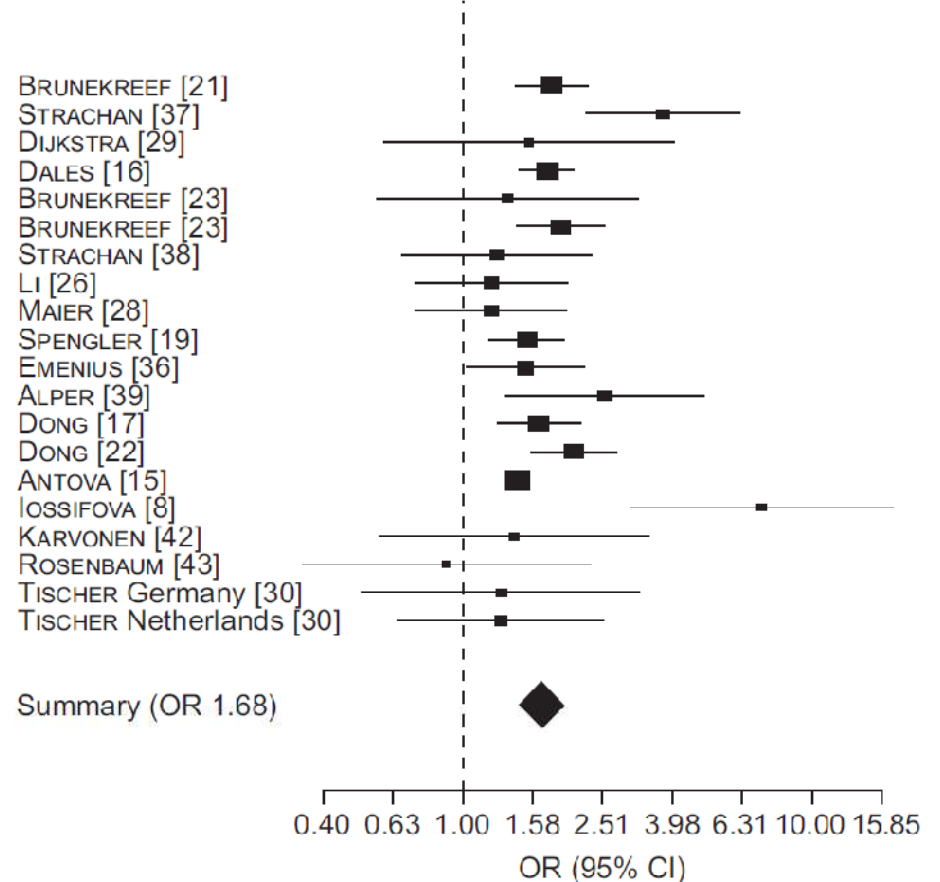
Domestic Mould *Increase* Asthma Risk

N=61 studies

a) Asthma



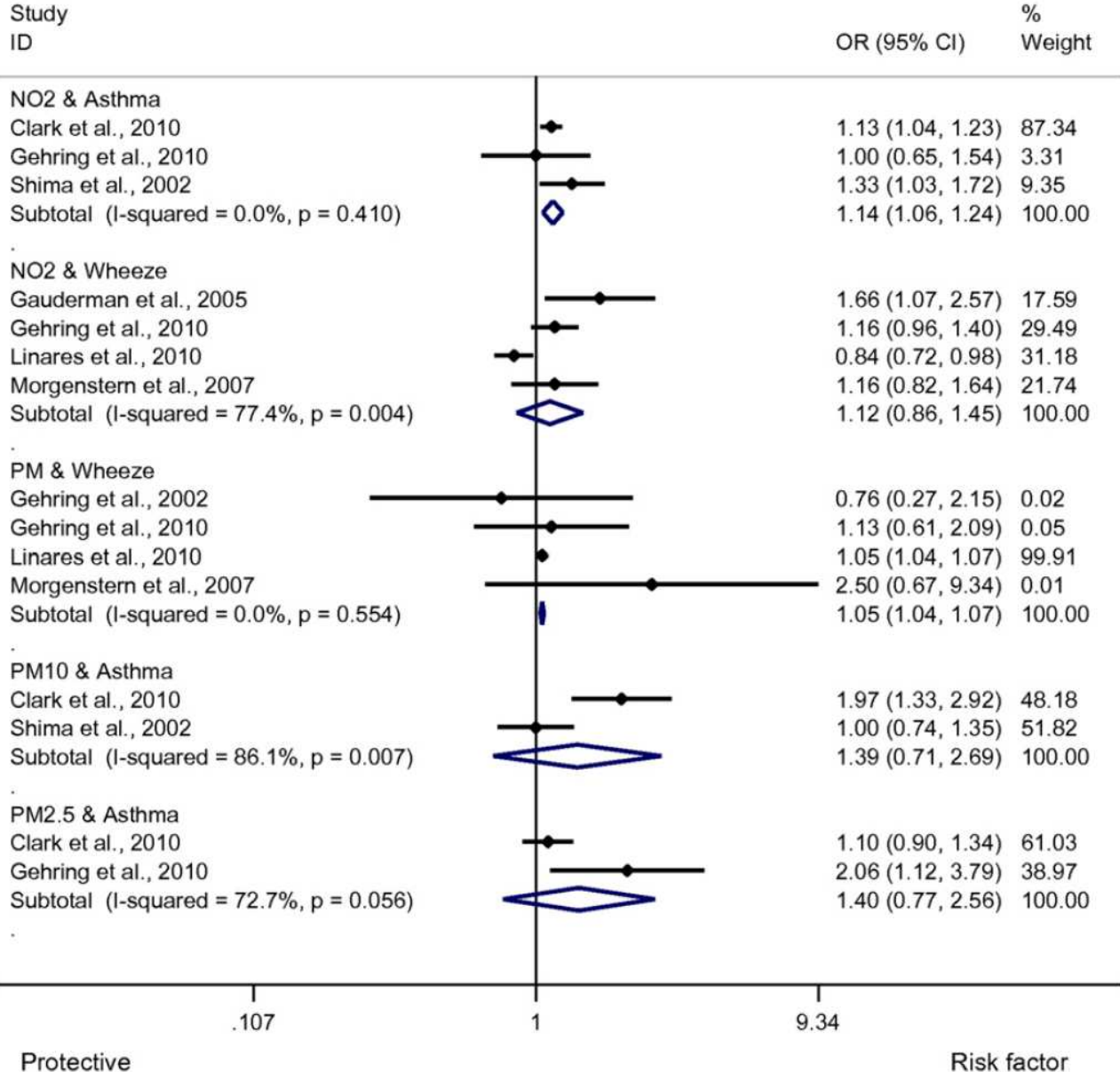
b) Wheeze



Motor Vehicle Air Pollution *Increase Risk*

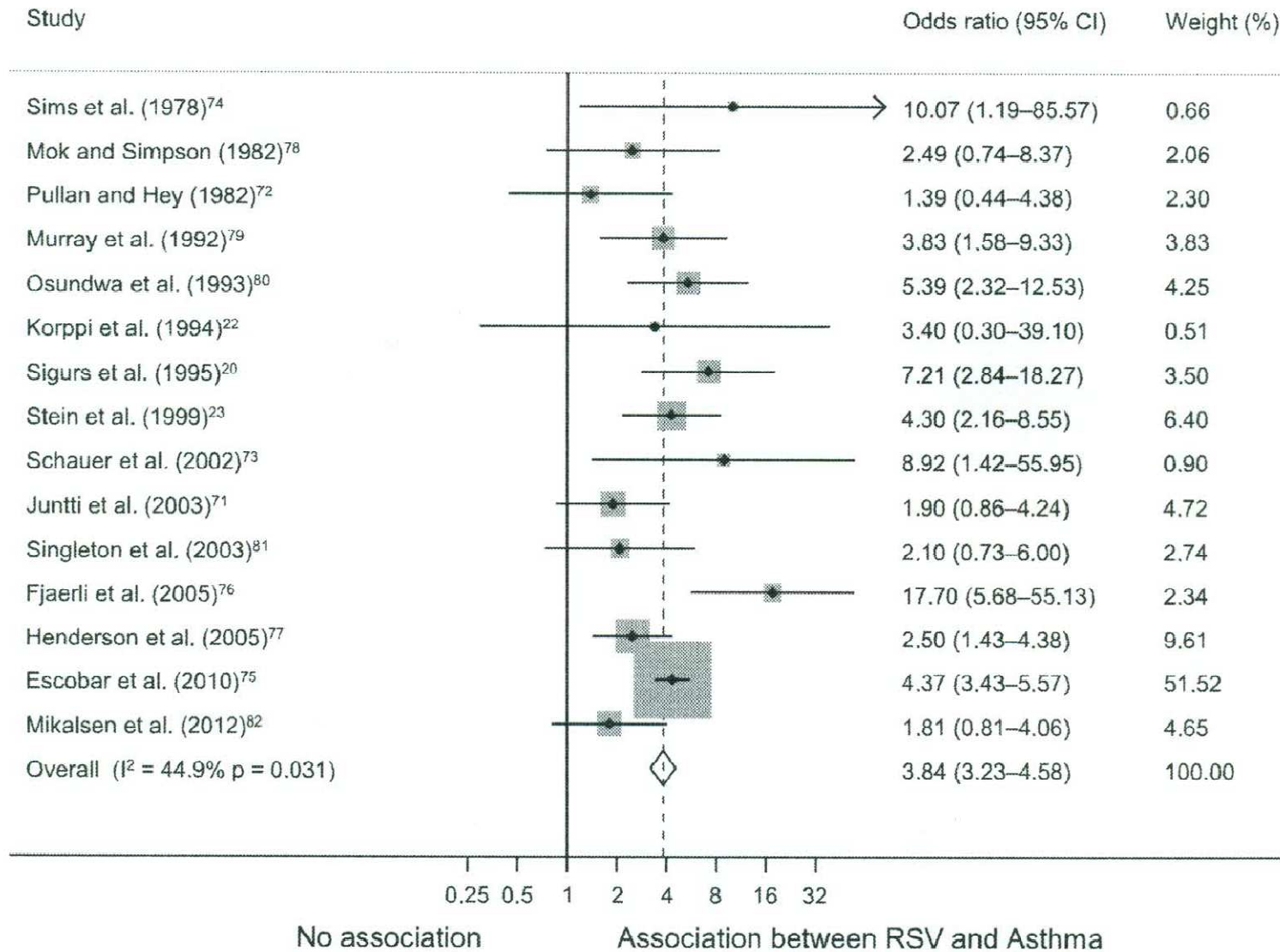
N=19 studies

Incidence of Asthma

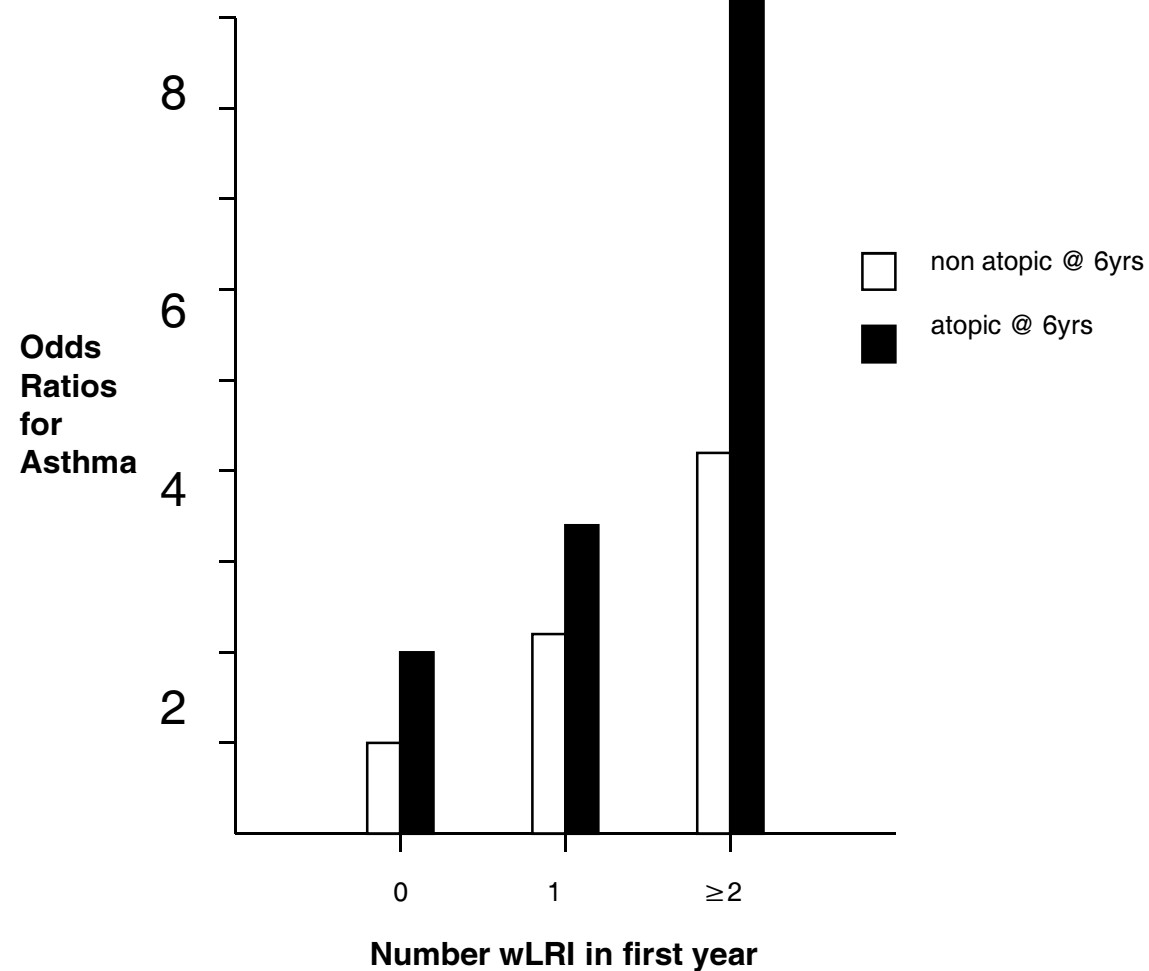


RSV at Infancy *Increase* Asthma Risk

N=15 studies



The Double-hit Hypothesis



Early Life Respiratory Viral Infections and Timing of Atopic Sensitization in Relation to Asthma

TABLE III. Predictors of current wheeze at 5 years of age in relation to time of atopic sensitization

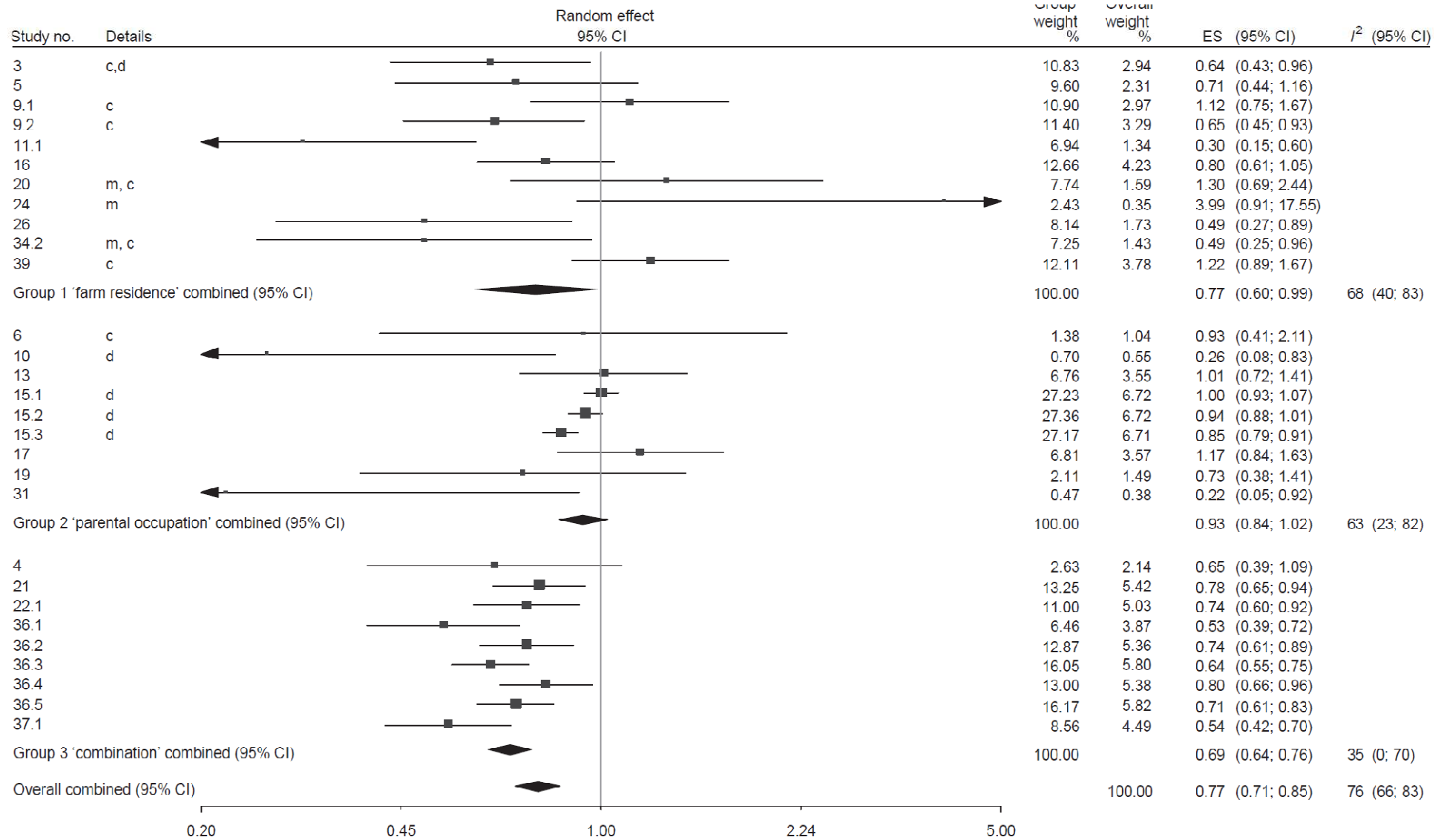
Type of ARI	Never atopic		Atopic by age of 2 years		Atopic after 2 years	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Whole population regardless of ARI history	0.4 (0.2-0.8)	0.006*	3.1 (1.5-6.4)	0.05	2.9 (1.4-5.8)	0.05
Any wheezy LRI in first year	1.4 (0.4-5.1)	0.6	3.4 (1.2-9.7)	0.02	0.5 (0.1-3.5)	0.5
No. of wheezy LRI (<i>linear model</i>)	1.1 (0.5-2.8)	0.8	2.4 (1.2-4.7)	0.01	0.9 (0.2-4.1)	0.9
0	Comparison group		Comparison group		Comparison group	
1	1.6 (0.4-6.9)	0.5	1.9 (0.7-5.5)	0.2	(≥1) 0.5 (0.1-3.4)	0.5
≥2	1.0 (0.1-9.1)	1.0	7.1 (1.3-38.4)	0.02	NA	
Any febrile infections in first year	1.2 (0.4-3.8)	0.8	1.2 (0.8-1.8)	0.4	1.8 (0.3-9.6)	0.5
Any febrile URI	1.3 (0.4-4.1)	0.7	0.9 (0.5-1.5)	0.9	1.4 (0.3-7.1)	0.7
Any febrile LRI	1.0 (0.2-3.8)	1.0	4.2 (1.5-11.8)	0.006	1.3 (0.2-9.9)	0.8
Any wheezy or febrile LRI	1.0 (0.3-3.4)	1.0	3.9 (1.4-10.5)	0.007	0.7 (0.1-3.9)	0.7
Any wLRI associated with rhinovirus or RSV	0.8 (0.2-4.0)	0.8	4.1 (1.3-12.6)	0.02	0.9 (0.1-6.4)	0.9
Any wLRI associated with rhinovirus	1.6 (0.3-8.7)	0.6	3.2 (1.1-9.5)	0.03	2.1 (0.3-18.5)	0.5
Any wLRI associated with RSV	1.6 (0.3-8.7)	0.6	3.6 (1.0-13.3)	0.06	Insufficient number	

NA, Not applicable.

*Data in boldface are statistically significant at the .05 level.

Farming Environmental *Reduce* Asthma Risk

N=39 studies



Farming Environmental in Argentina

Reduce Asthma Risk

n=143 preschoolers
Rafaela, Santa Fe

Table 2. Multivariate logistic regression model to predict asthma diagnosis (positive API).*

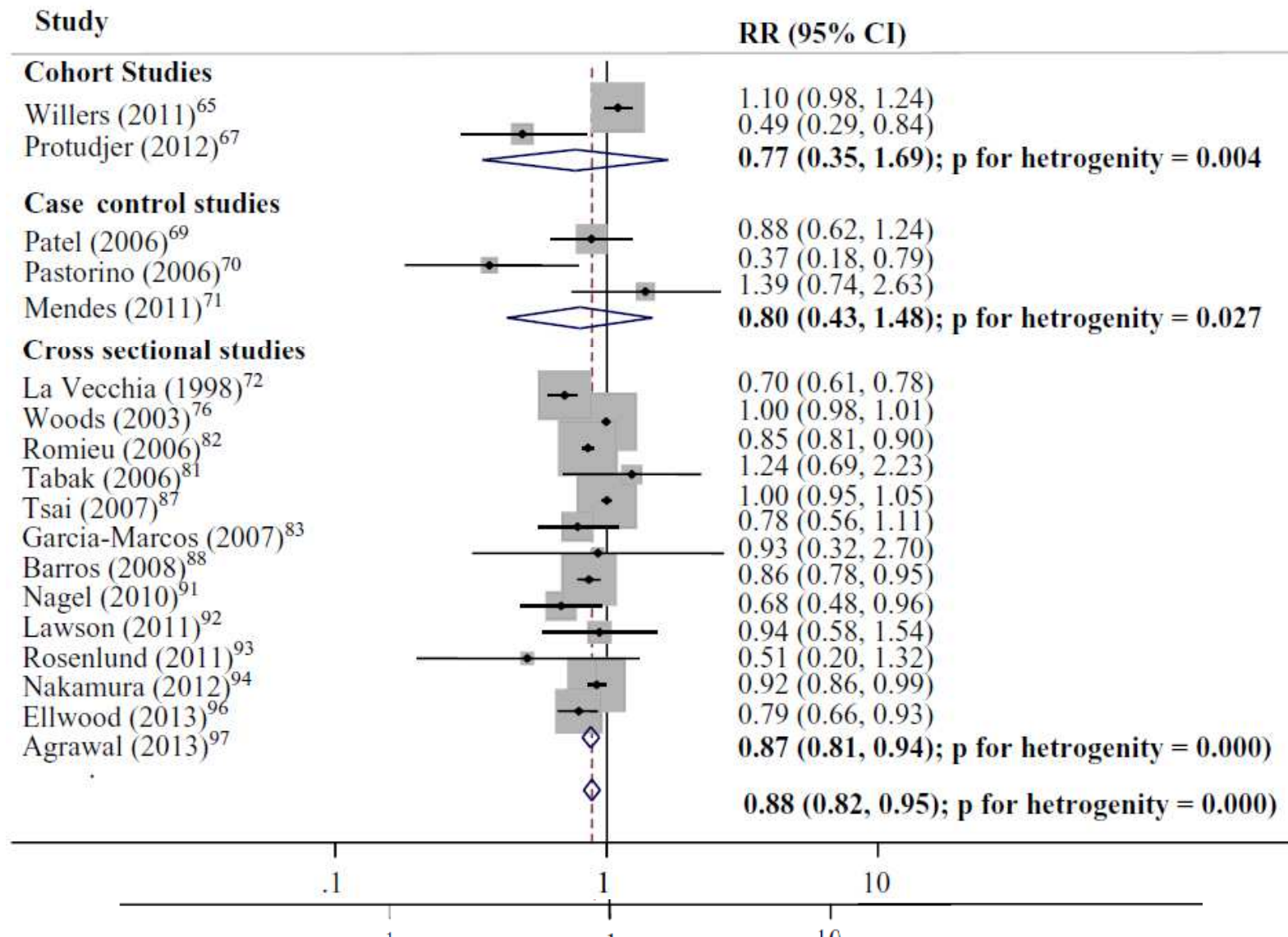
Variable	Coefficient	SE	p	aOR	95% CI
Maternal smoking	1.23	0.62	<0.05	3.44	1.02 to 11.11
Rural setting	-3.11	0.60	<0.01	0.04	0.01 to 0.14
Siblings	-0.67	0.24	<0.01	0.51	0.31 to 0.83
Positive skin prick test	1.72	0.70	<0.01	5.57	1.40 to 22.23
Constant	-1.02				

*In order to avoid collinearity, parental history of asthma, atopic dermatitis, allergic rhinitis and % of eosinophils in peripheral blood counts were excluded from the model. Other factors associated with rural settings (fumigation, contact with farm animals, and unpasteurized milk consumption) were not introduced into the model to avoid confounding effects.

Fruit & Vegetable *Decrease* Asthma Risk

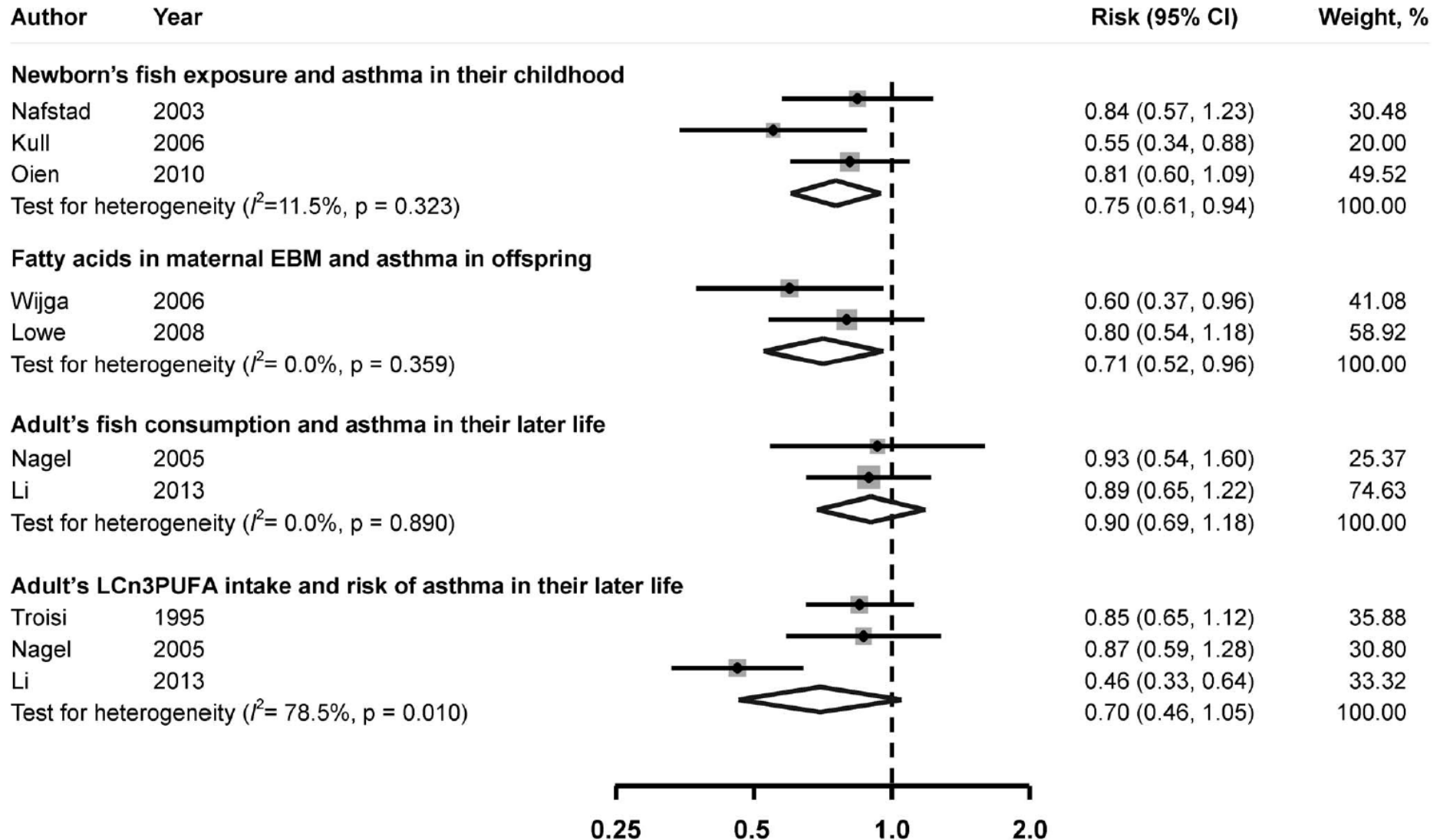
Seyedrezazadeh et al. Nutr Rev 2014

b) Vegetable intake and risk of asthma



Fish and Fish-Oil *Decrease* Asthma Risk

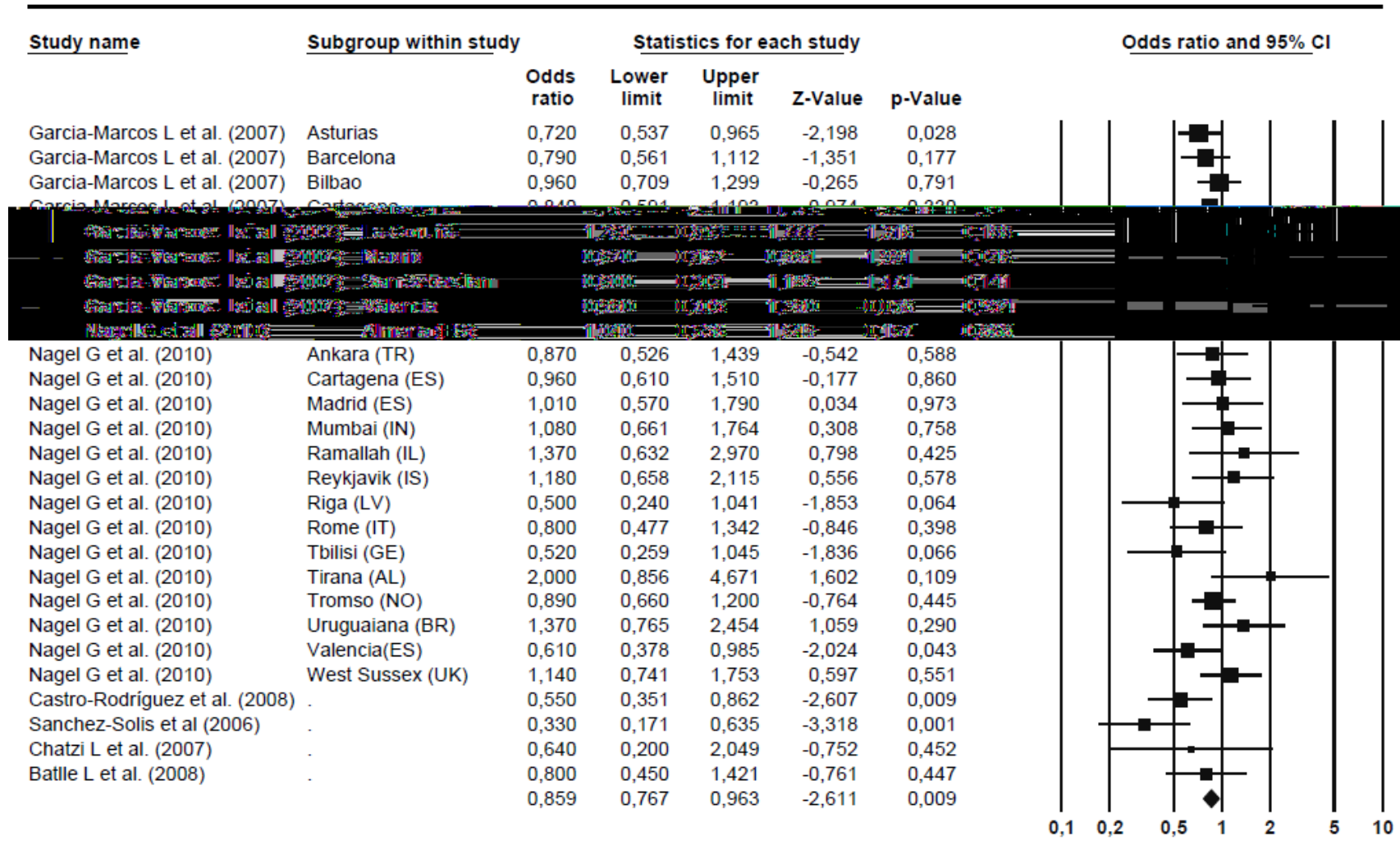
N=23 studies



Mediterranean Diet *Reduce* Asthma/Wheeze

Current wheeze

N= 7 (38,804)



Probiotics Do *Not* Reduce Asthma Risk

N=25 studies (n=4031)

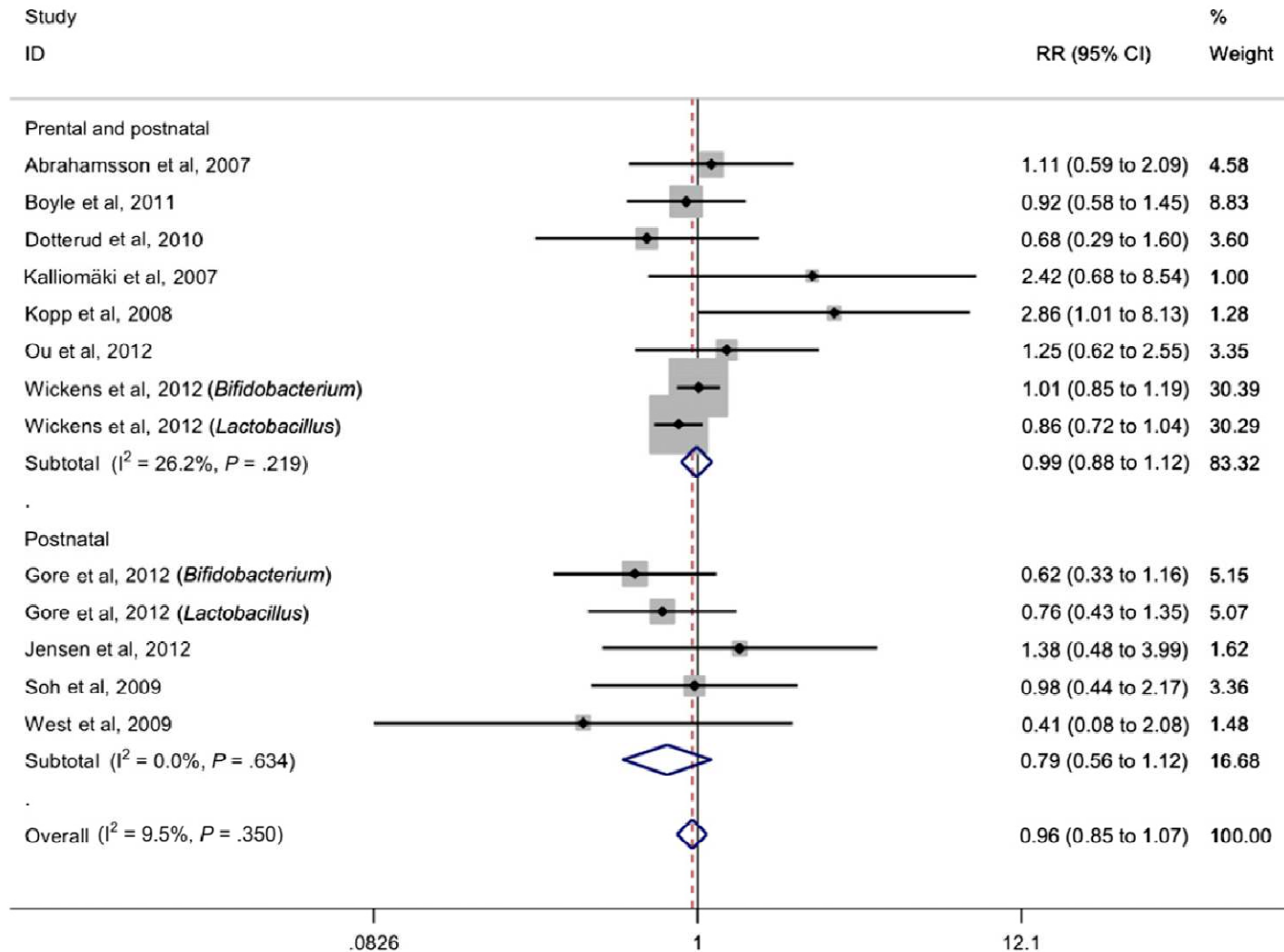


FIGURE 6

Probiotics and risk of asthma/wheeze. Forest plot for the association of probiotic administration and asthma/wheeze according to period of administration. Identification.

Conclusiones

Risk and Protective Factors for Childhood Asthma: What Is the Evidence?



Jose A. Castro-Rodriguez, MD, PhD^a, Erick Forno, MD, MPH^b, Carlos E. Rodriguez-Martinez, MD, MSc^{c,d,e}, and Juan C. Celedón, MD, DrPH^b *Santiago, Chile; Pittsburgh, Pa; and Bogotá, Colombia*

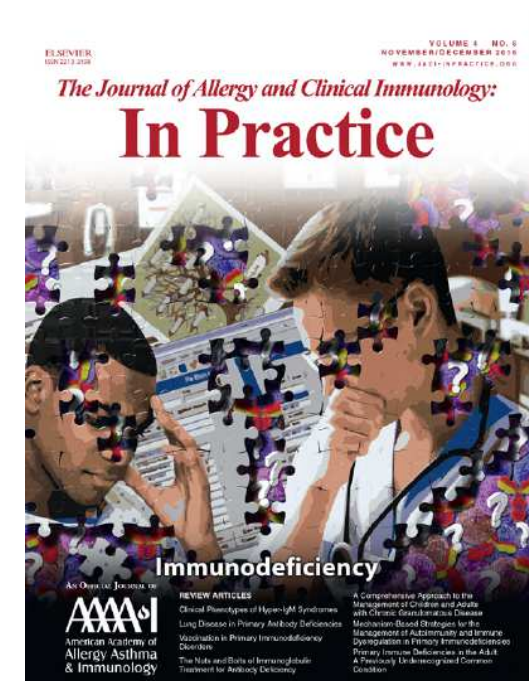
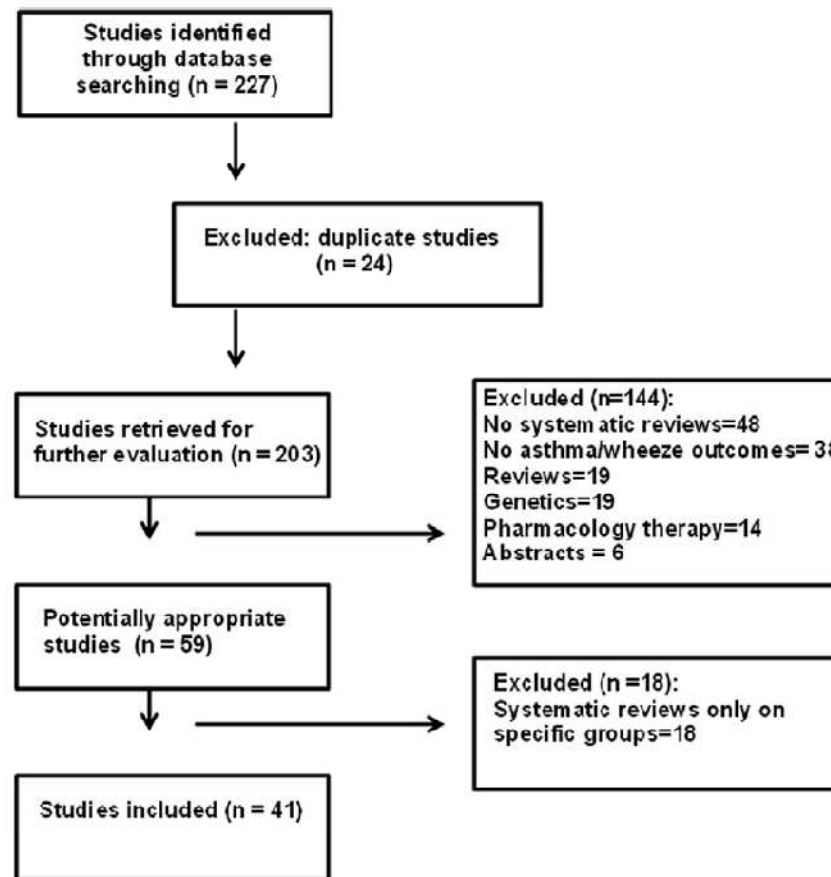
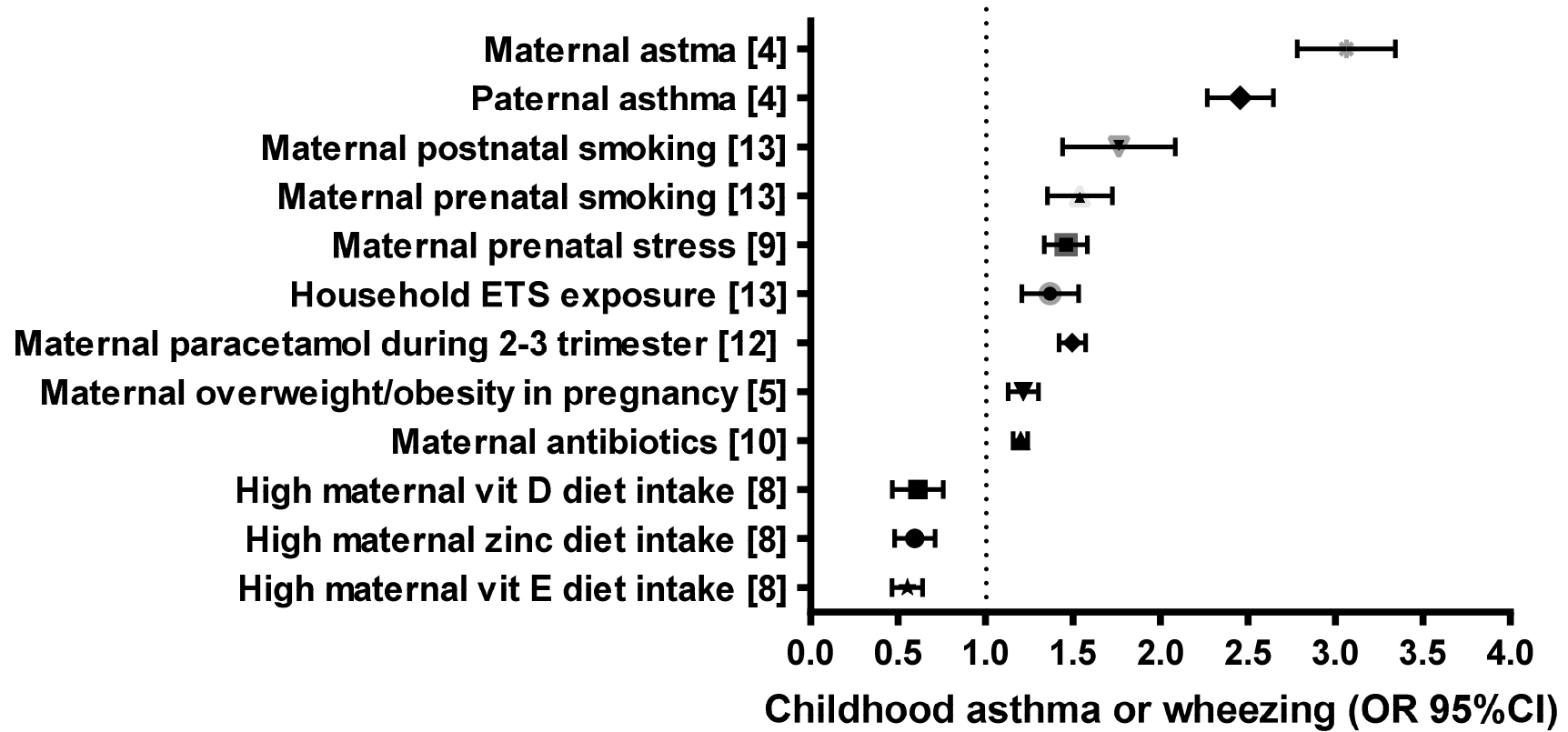
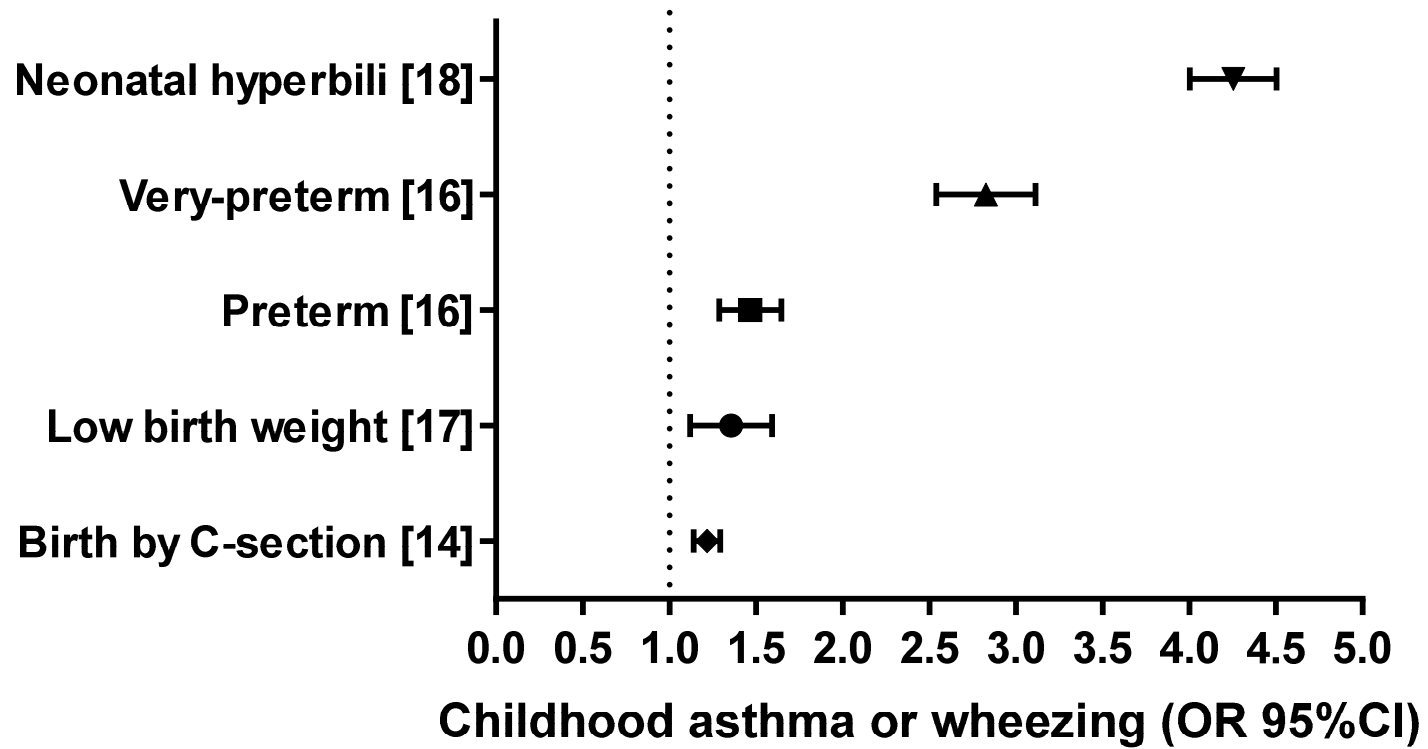


FIGURE 1. Study selection flowchart.

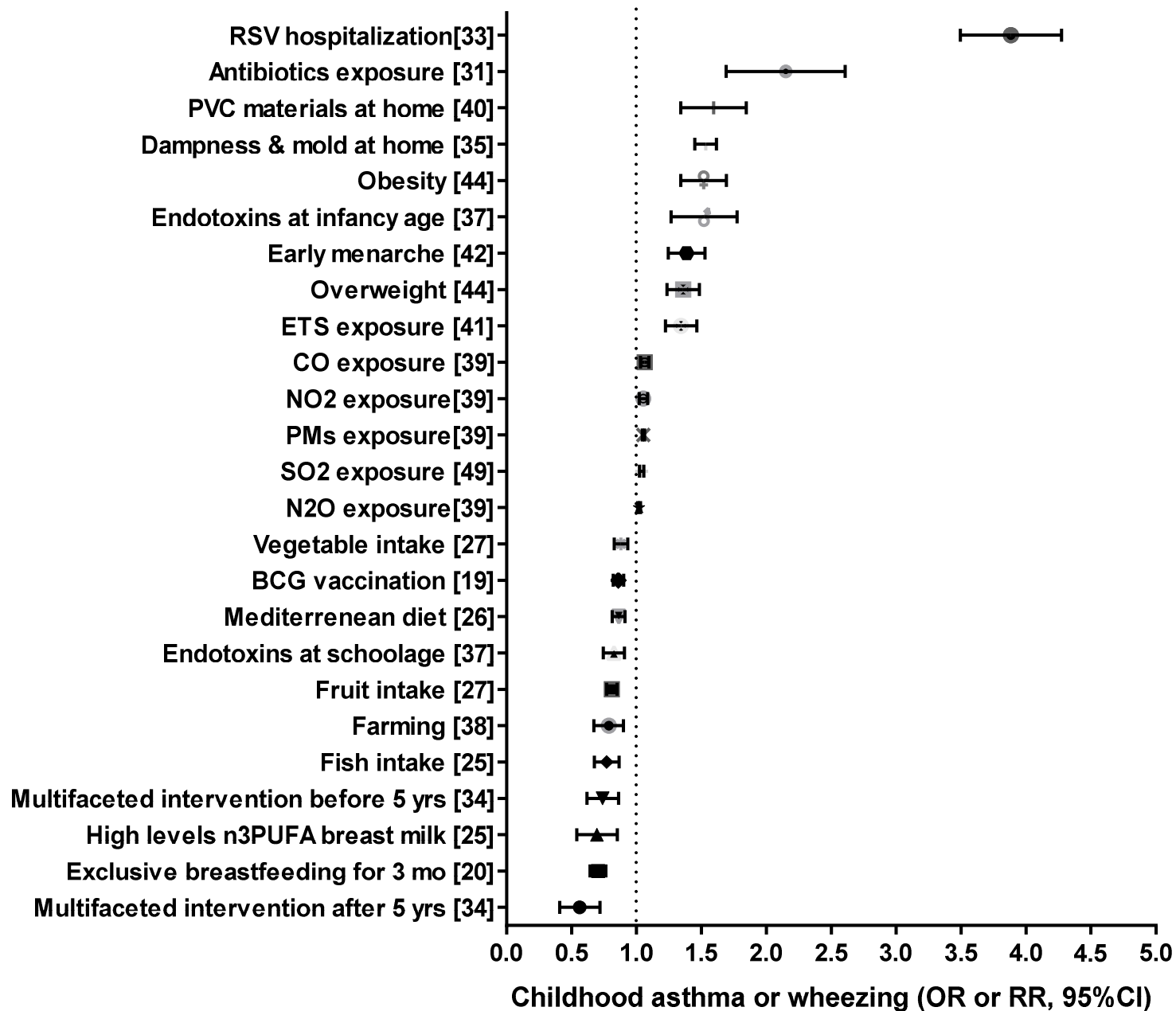
a) Family or prenatal factors



b) Perinatal risk factors



c) Postnatal risk factors





Thanks for your
attention !!

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