

# S1 Forest plots

## Forest plots of the association between different risk factors and death from ALRI, and results from studies that could not be meta-analysed

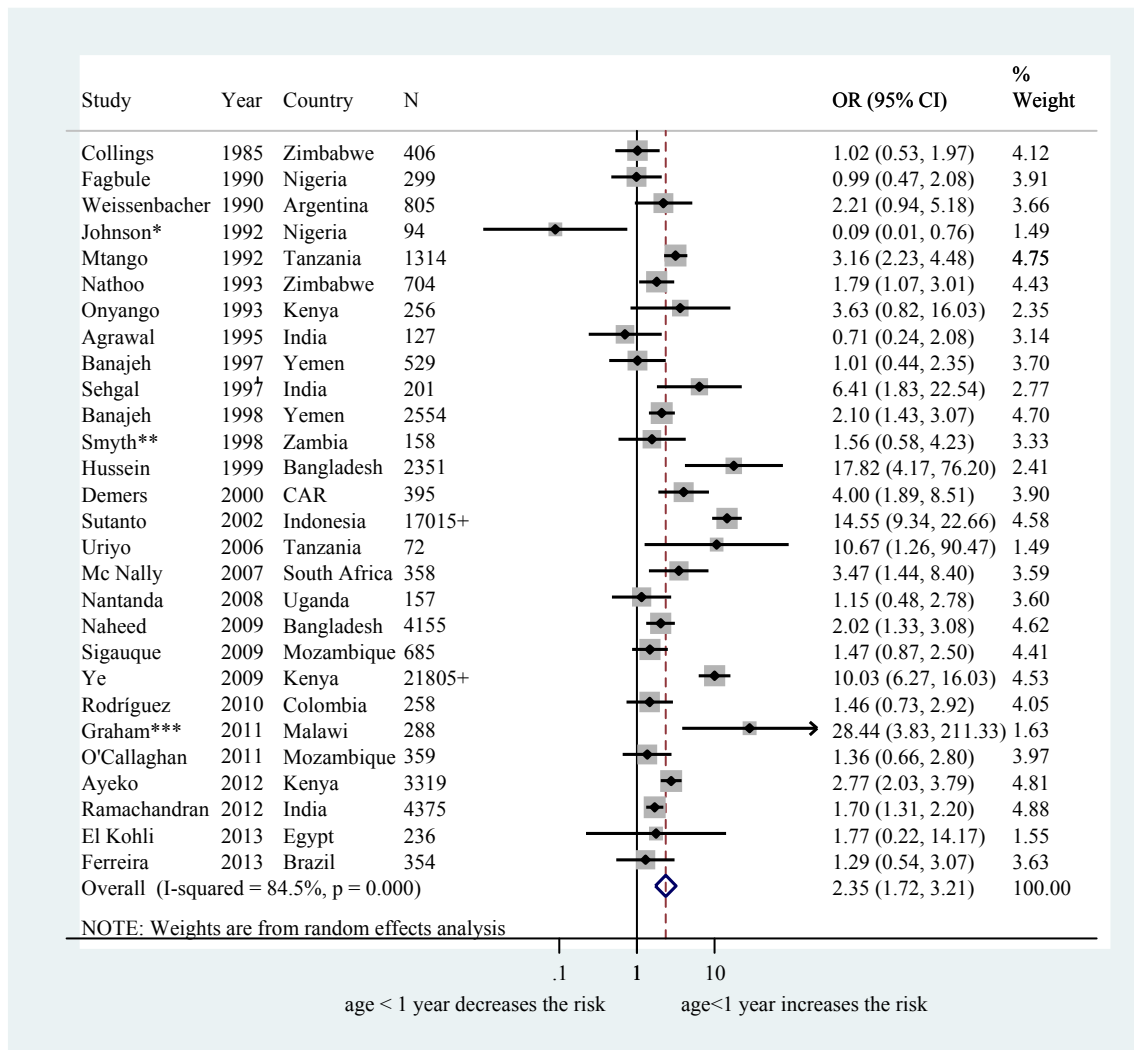
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## List of abbreviations

ALRI	=	Acute Lower Respiratory Disease
CAR	=	Central African Republic
DRC	=	Democratic Republic of Congo
PNG	=	Papua New Guinea
WHO	=	World Health Organization
OR	=	Odds Ratio
aOR	=	adjusted Odds Ratio
HR	=	Hazard Ratio
RR	=	Risk Ratio
SD	=	Standard Deviation
IQR	=	Interquantile Range

**Figure 1 Association between age less than one year and death from ALRI (28 studies; 63,629 children)**

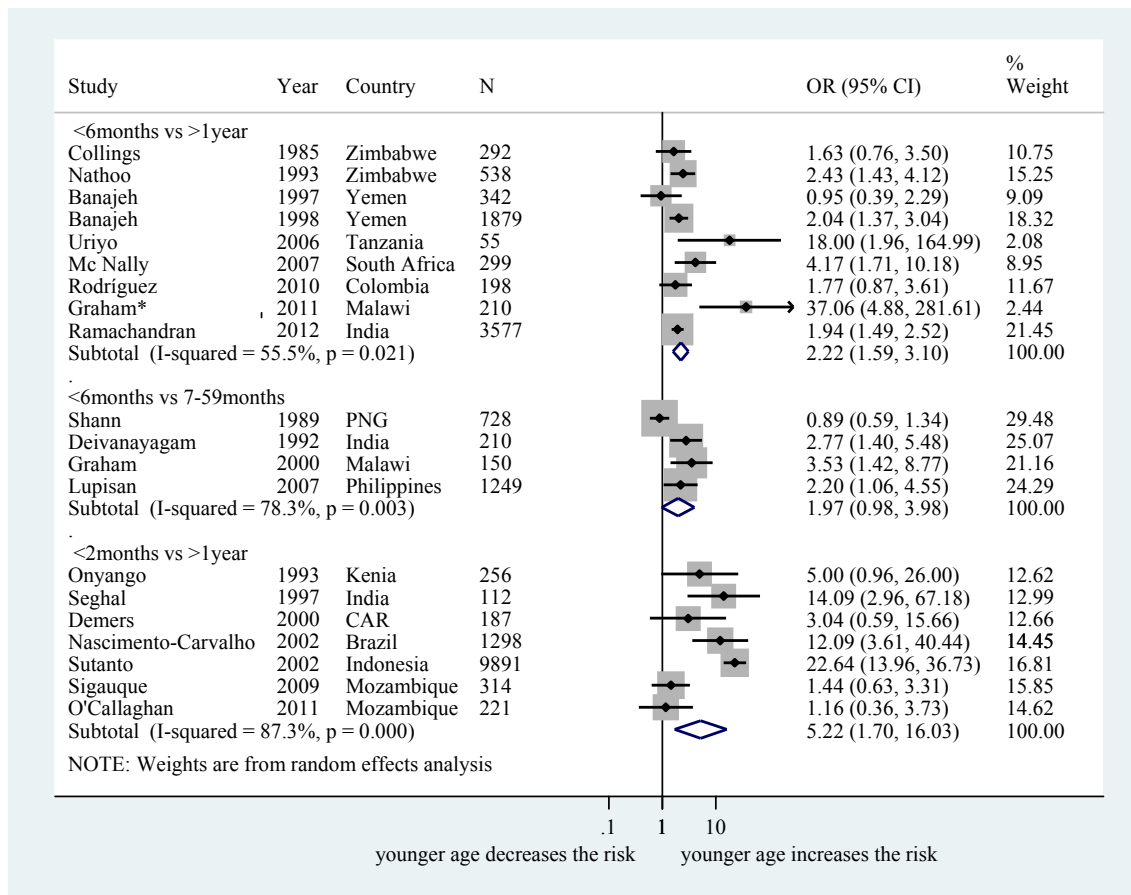


\* includes Johnson "Host factors.." 1992  
 \*\* includes Smyth 1997  
 \*\*\* includes Ramakrishna 2012  
 + children-years

**Other studies not included in the forest plot**

- Bahwere 2004: <24 month vs 2-5 years: OR=1.57 (1.01-2.42)
- Djelantik: 2003: <4 months vs >4 months: OR: 4.18 (3.45-5.30)
- Chisti 2011: median age(IQ) 8.3 months (5.5-11.5) in children who died vs 5 months (2.9-12) in survivors
- Chisti 2013 median age(IQ): 8 months (4.9-11.0) in children who died vs 9.7 months (5.0-18.0) in survivors
- Delpont 2002: median age: 15 weeks in children who died, 5 weeks in survivors
- Johnson 2008: non significant (p=0.65) difference of mean between children who died and survivors

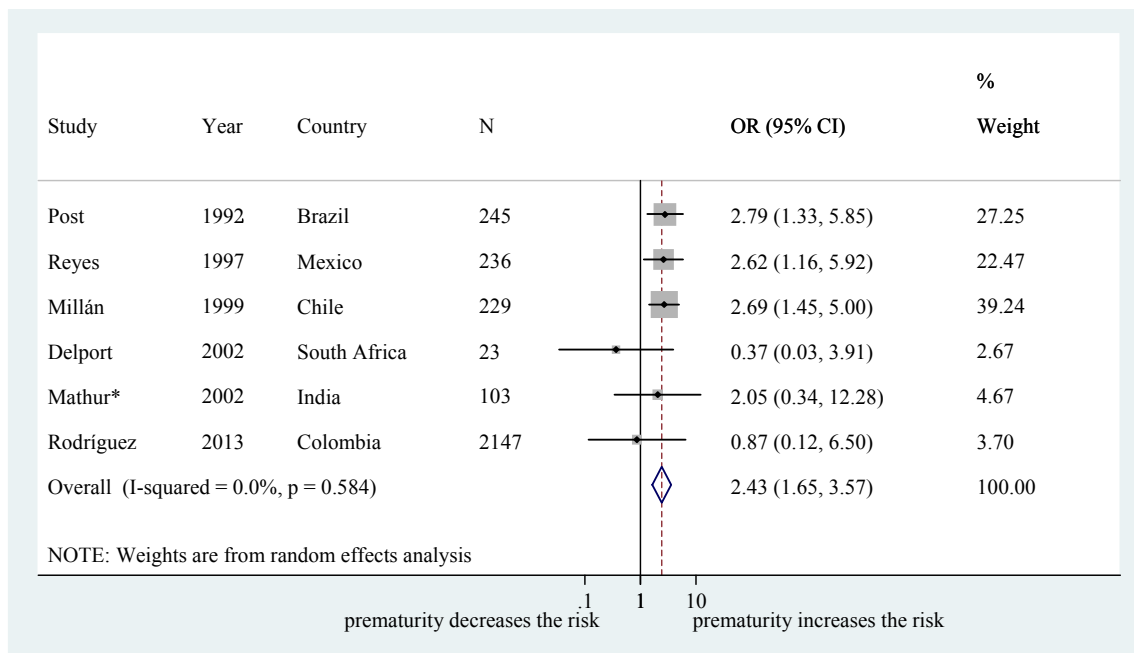
**Figure 2 Association between younger versus older age in infants and death from ALRI (20 studies; 22,006 children)**



\*includes Ramakrishna 2012



**Figure 4 Association between prematurity and death from ALRI (6 studies; 2,983 children)**

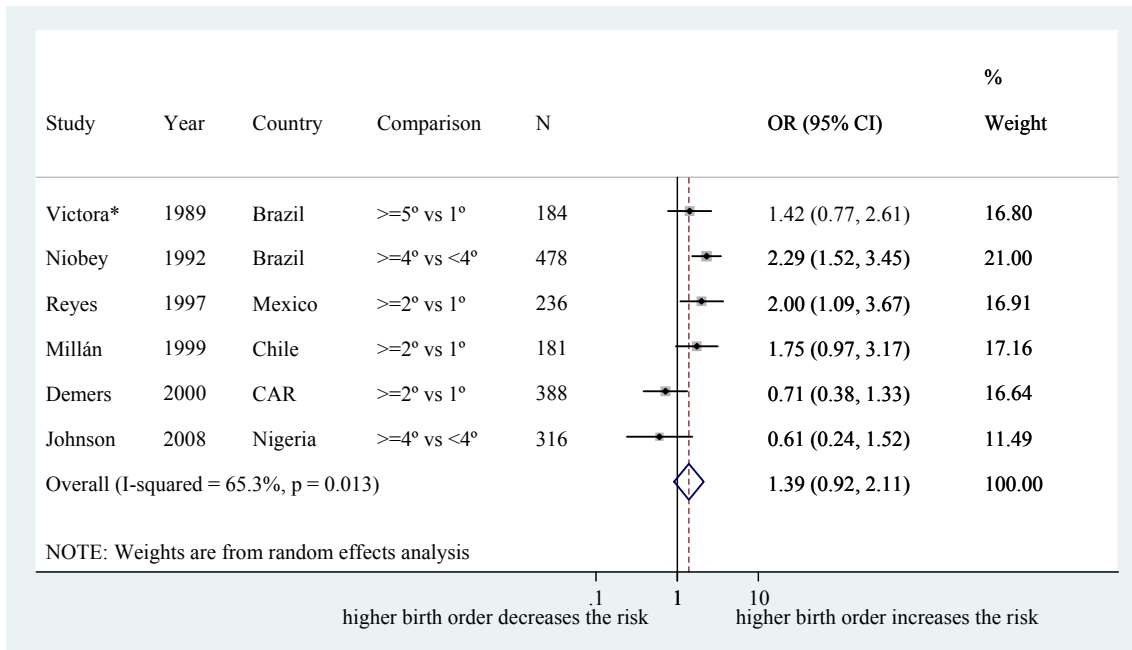


\*adjusted OR

**Other studies not included in the forest plot**

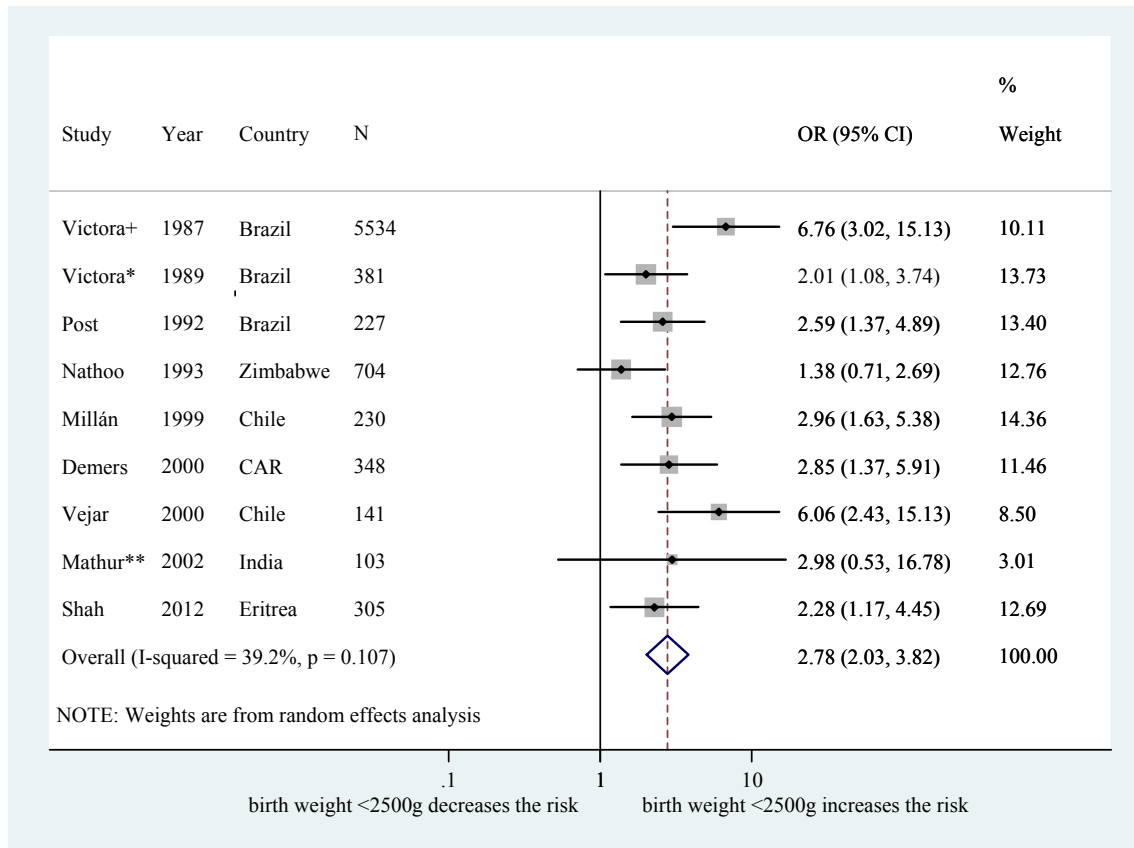
Shah 2012: OR for each one week increase in gestational age: =0.31 (0.18-0.73)

**Figure 5 Association between birth order and death from ALRI (6 studies; 1,783 children)**



\* includes Victora 1988

**Figure 6 Association between low birth weight and death from ALRI (9 studies; 7973 children)**



\*includes Victora 1988

\*\* adjusted OR

+ infant-years

**Other studies not included in the forest plot**

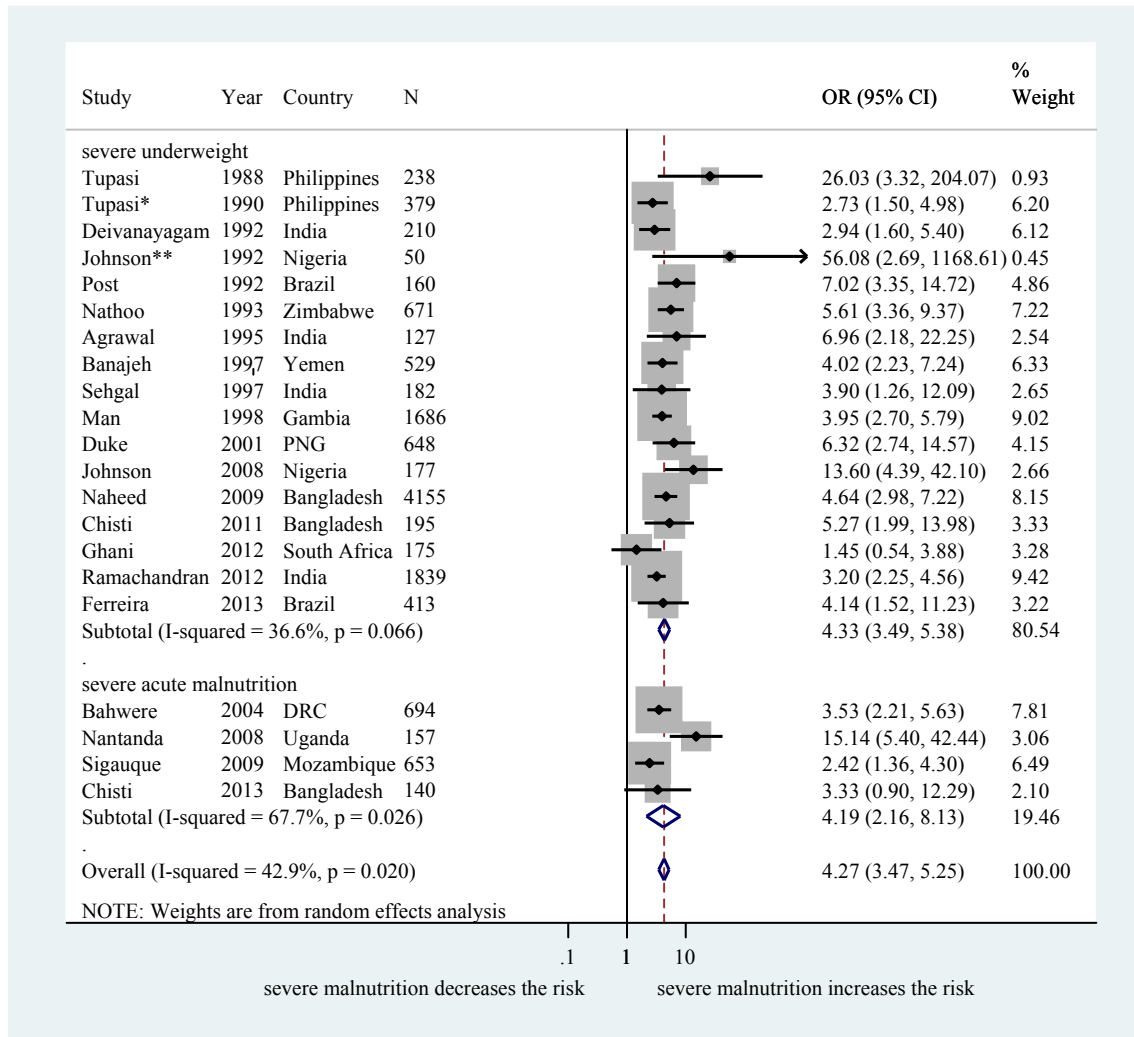
Arifeen 2001: birth-weight< 2500g vs >2500g: RR: 2.21 (1.54-3.17)

Niobey 1992: OR for each 100g increase in birth-weight: 0.36 (0.26-0.48)

Lehmann 1996: HR for each 1kg reduction in birth-weight: 2.1 (1.19-3.73)



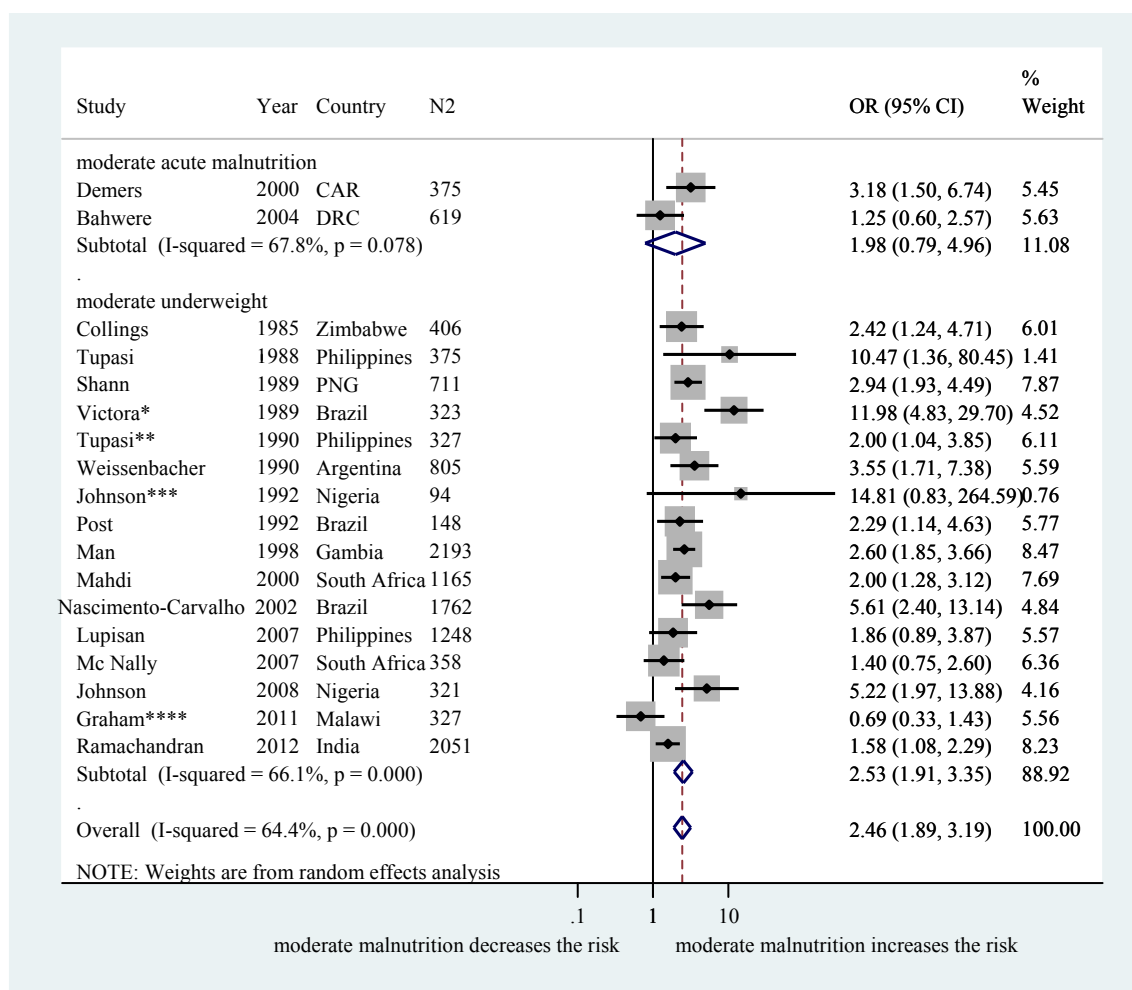
**Figure 7 Association between severe malnutrition and death from ALRI (21 studies; 13,478 children)**



\* includes Tupasi etiology 1990

\*\* includes Johnson "Host factors.." 1992

**Figure 8 Association between moderate malnutrition and death from ALRI (18 studies; 13,608 children)**

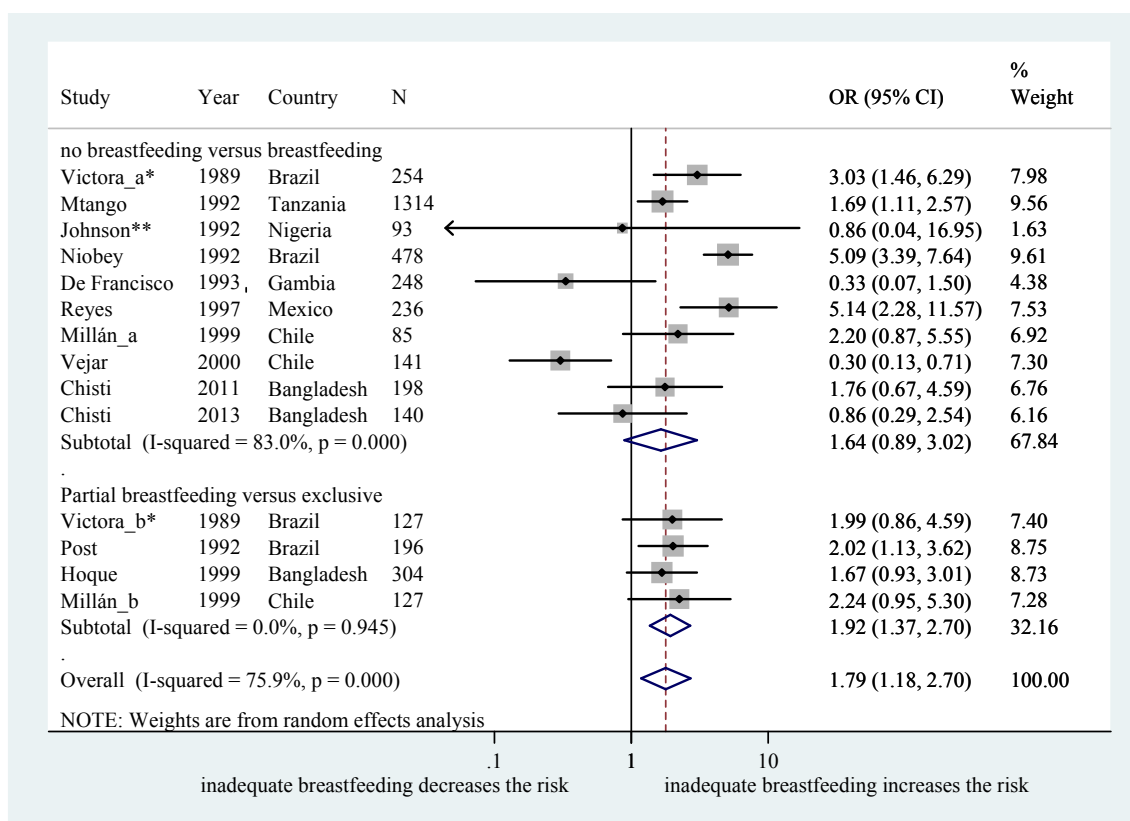


- \* includes Victora 1988
- \*\* includes Tupasi etiology 1990
- \*\*\* includes Johnson "Host factors.." 1992
- \*\*\*\* includes Ramakrishna 2012

**Other studies not included in the forest plot**

- De Francisco 1993: poor weight progress versus good weight progress: OR 5.26 (1.82-14.29)
- Smyth 1998: multivariate coefficient for weight for age: -0.652 (p=0.0073)
- Yoon 1997: HR for for 1 standard deviation reduction in weight-for-age z score: 1.8 (1.4-2.4)
- Djelantik 2003: <5° percentile vs >5°: OR =1.12 (0.92-1.36)
- Vejar 2000: < -1SD vs >1SD: OR= 30.6 (3.9-64.5)
- Rodriguez 2010: <3° percentile vs >3° = OR= 1.69 (0.66-4.33)

**Figure 9 Association between inadequate breastfeeding and death from ALRI (12 studies, 14 comparisons; 3,941 children)**



\* includes Victora 1988

\*\* includes Johnson "Host factors..." 1992

#### Other studies not included in the forest plot

Arifeen 2001: partial or no breastfeeding vs exclusive breastfeeding HR: 2.4 (1.14 – 5.04)

Bahl 2005: no breastfeeding vs predominant breastfeeding HR : 38.9 (8.37-180.4)

Yoon 1996: no breastfeeding vs breastfeeding (immediately prior to the illness) in ALRI

- 0-5 months: HR=0.4 (0.1 -1.9)

- 6-11 months: HR=2.2 (0.75-3.6)

- 12-23 months: HR=0.8 (0.15-4.6)

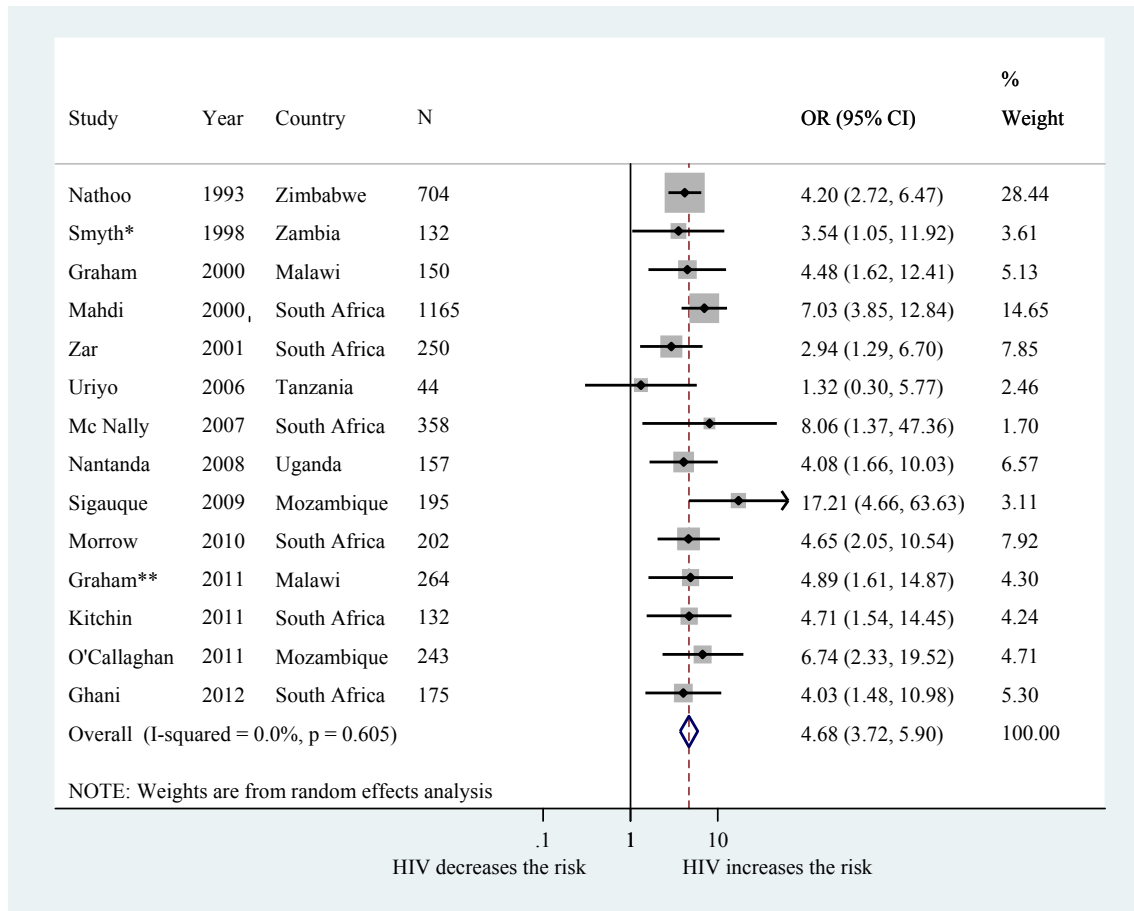
Yoon 1996: no breastfeeding vs breastfeeding (immediately prior to the illness) in ALRI associated with diarrhoea

- 0-5 months: HR=5.7 (1.8 -18.4)

- 6-11 months: HR=0.9 (0.35-2.3)

- 12-23 months: HR=7.2 (0.87-59.5)

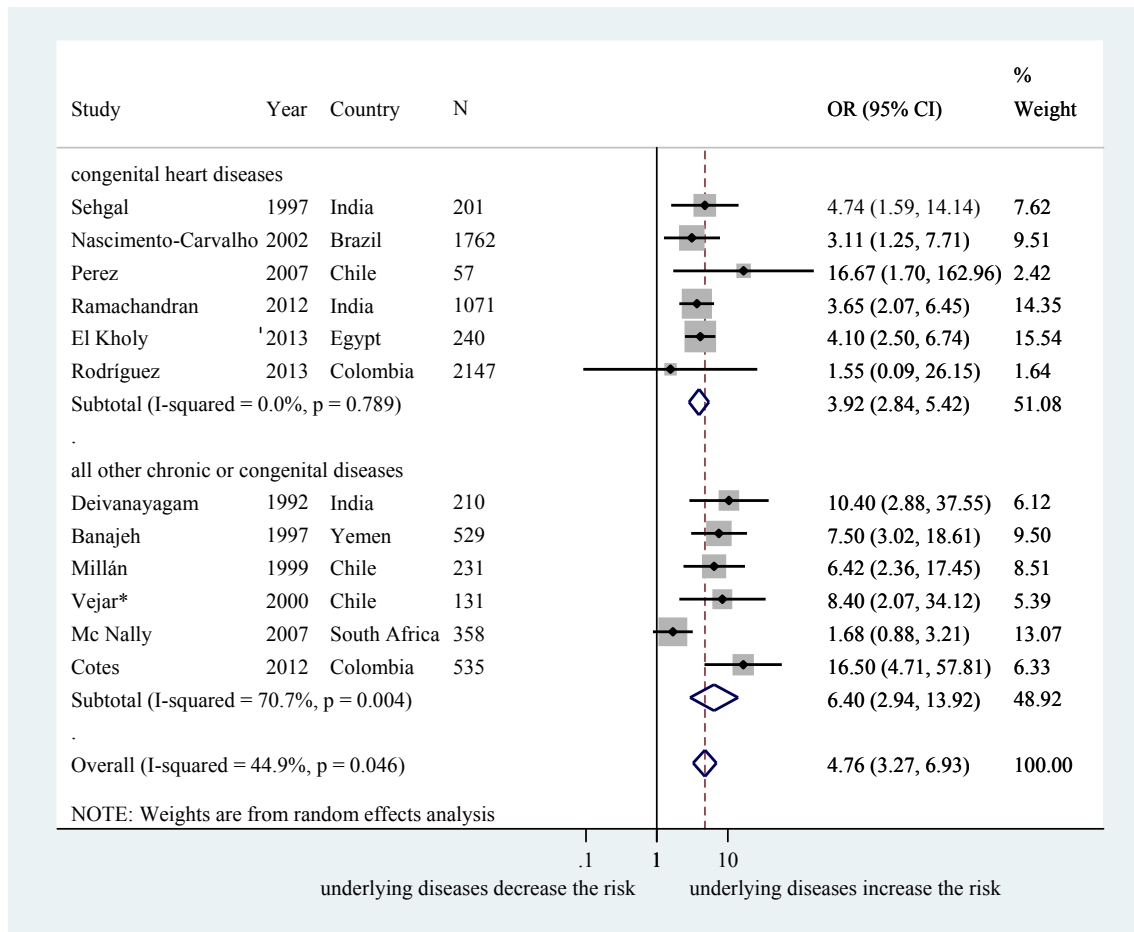
**Figure 10 Association between HIV/AIDS and death from ALRI (14 studies; 4,171 children)**



\* includes Smyth 1997

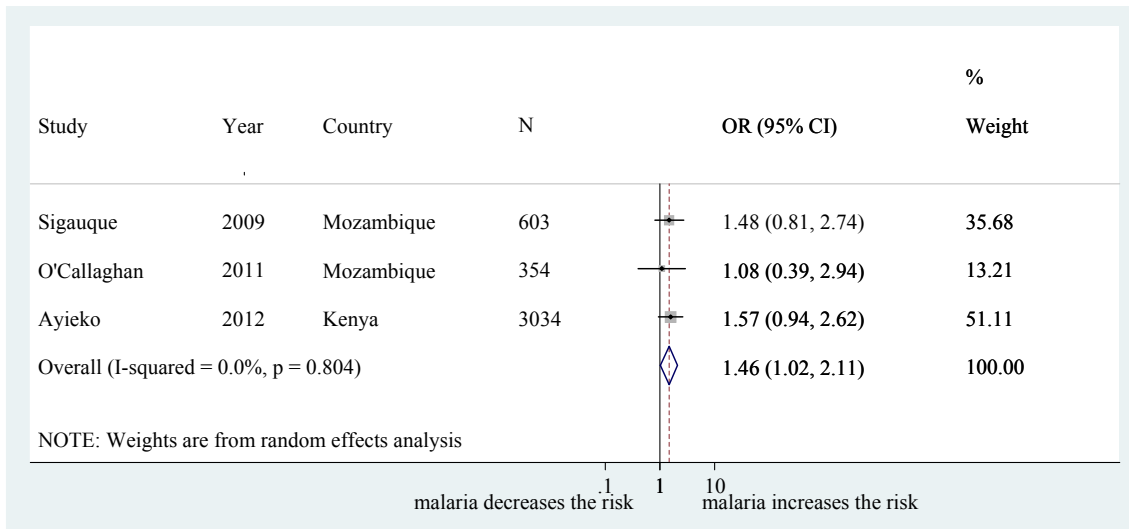
\*\* includes Ramakrishna 2012

**Figure 11 Association between comorbidity with chronic diseases and death from ALRI (12 studies; 7,473 children)**



\*Vejar: aOR

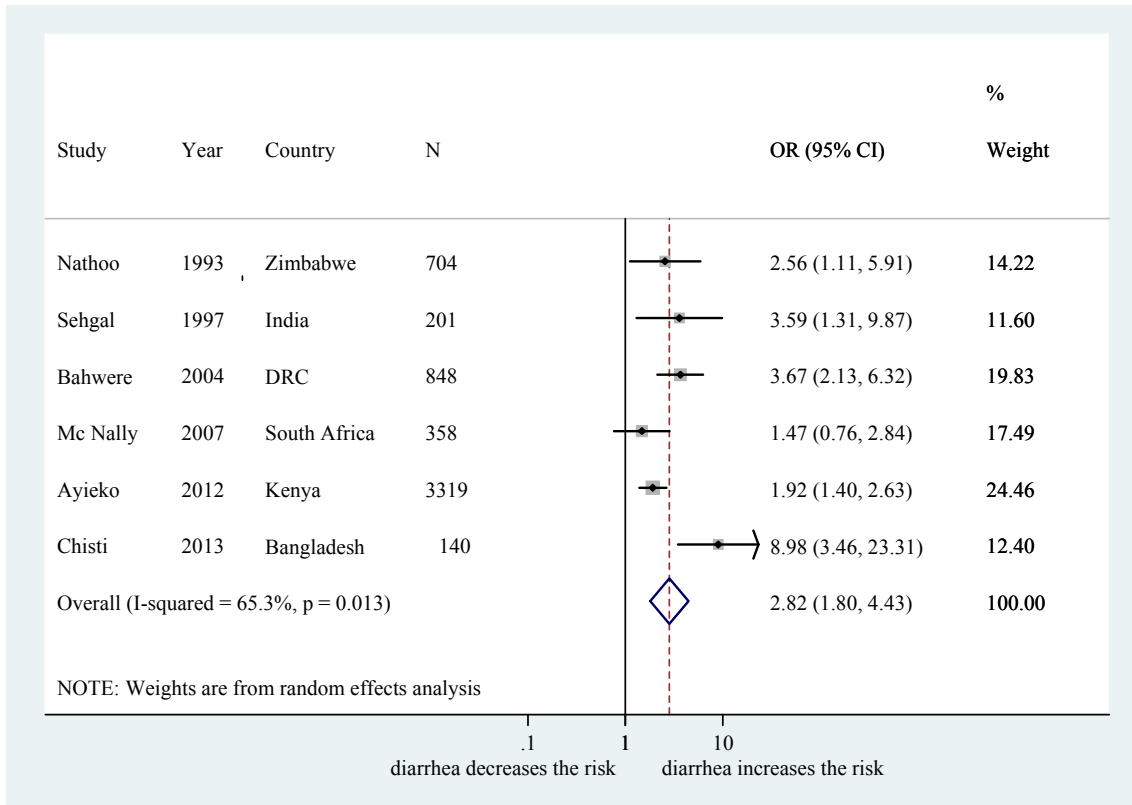
**Figure 12 Association between malaria and death from ALRI (3 studies; 3,991 children)**



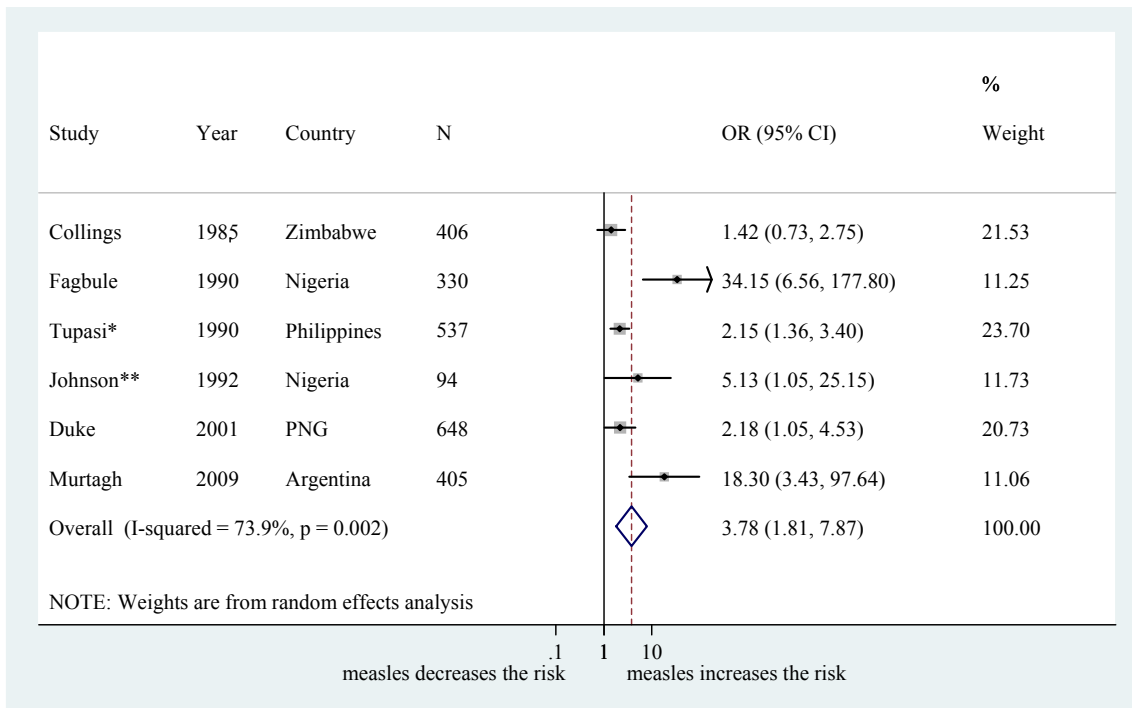
**Other studies not included in the forest plot**

Smyth 1998: malaria non significant for PN mortality (p= 0.3692)

**Figure 13 Association between diarrhea/dehydration and death from ALRI (6 studies; 5,570 children)**



**Figure 14 Association between diagnosis of measles and death from ALRI (6 studies; 2,420 children)**

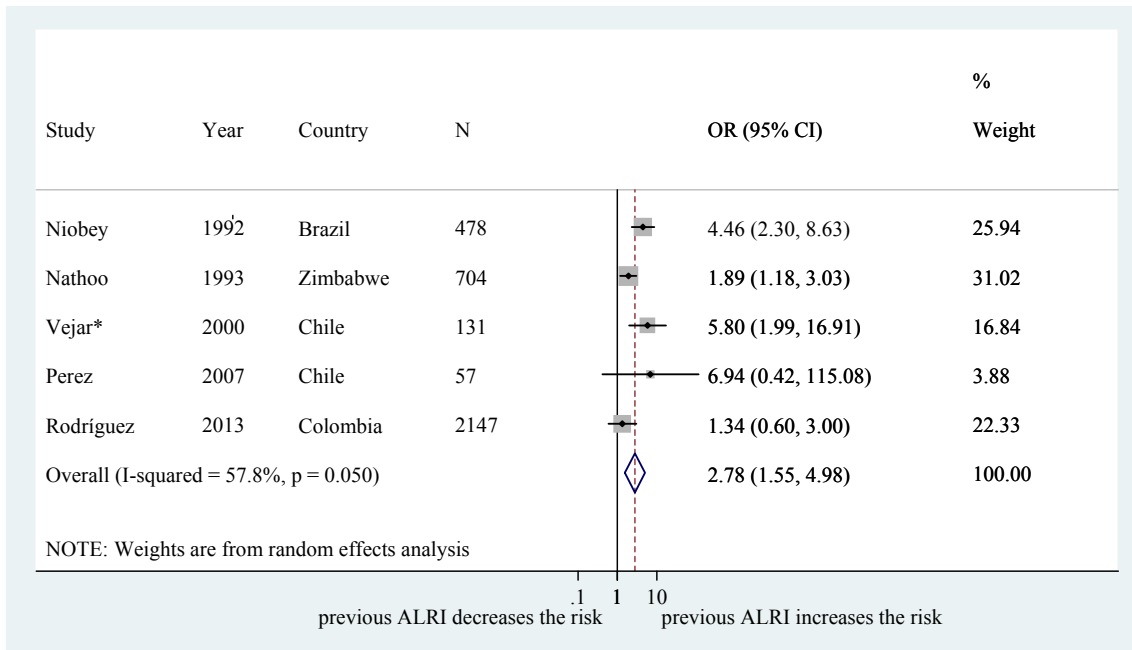


\* includes Tupasi etiology 1990

\*\* includes Johnson "Host factors..."1992

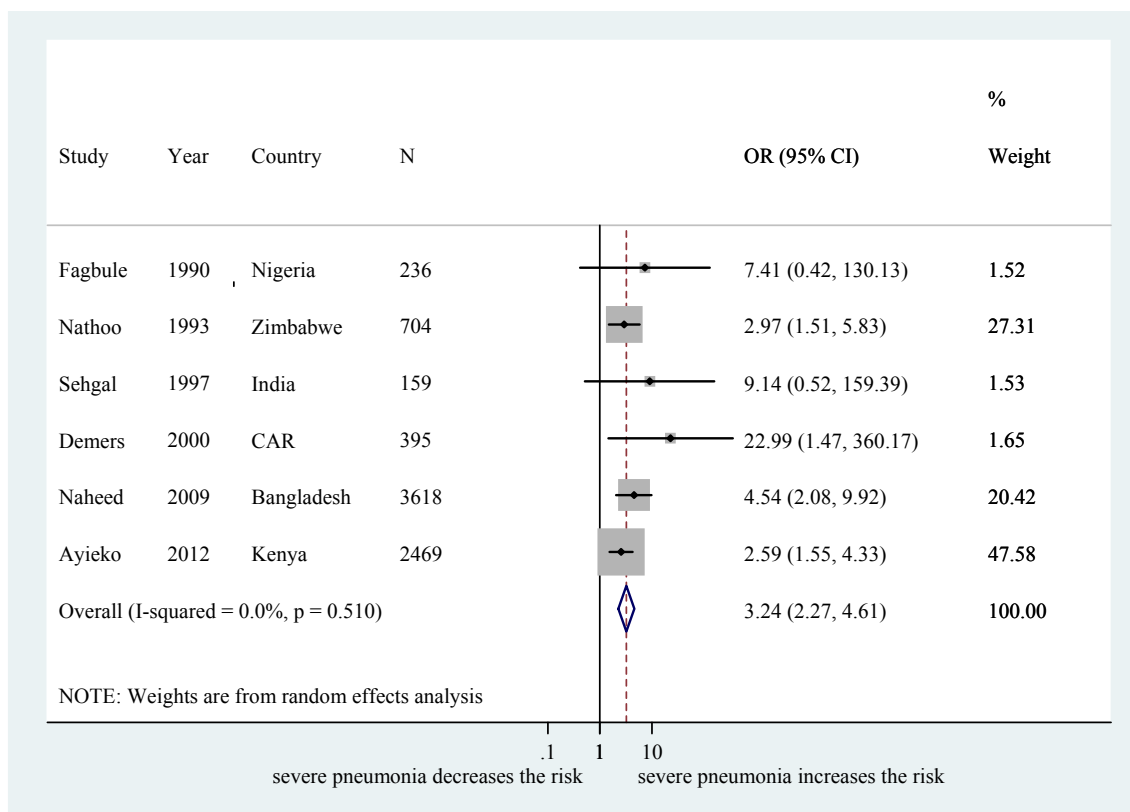


**Figure 15 Association between previous ALRI and death from ALRI (5 studies; 3,517 children)**

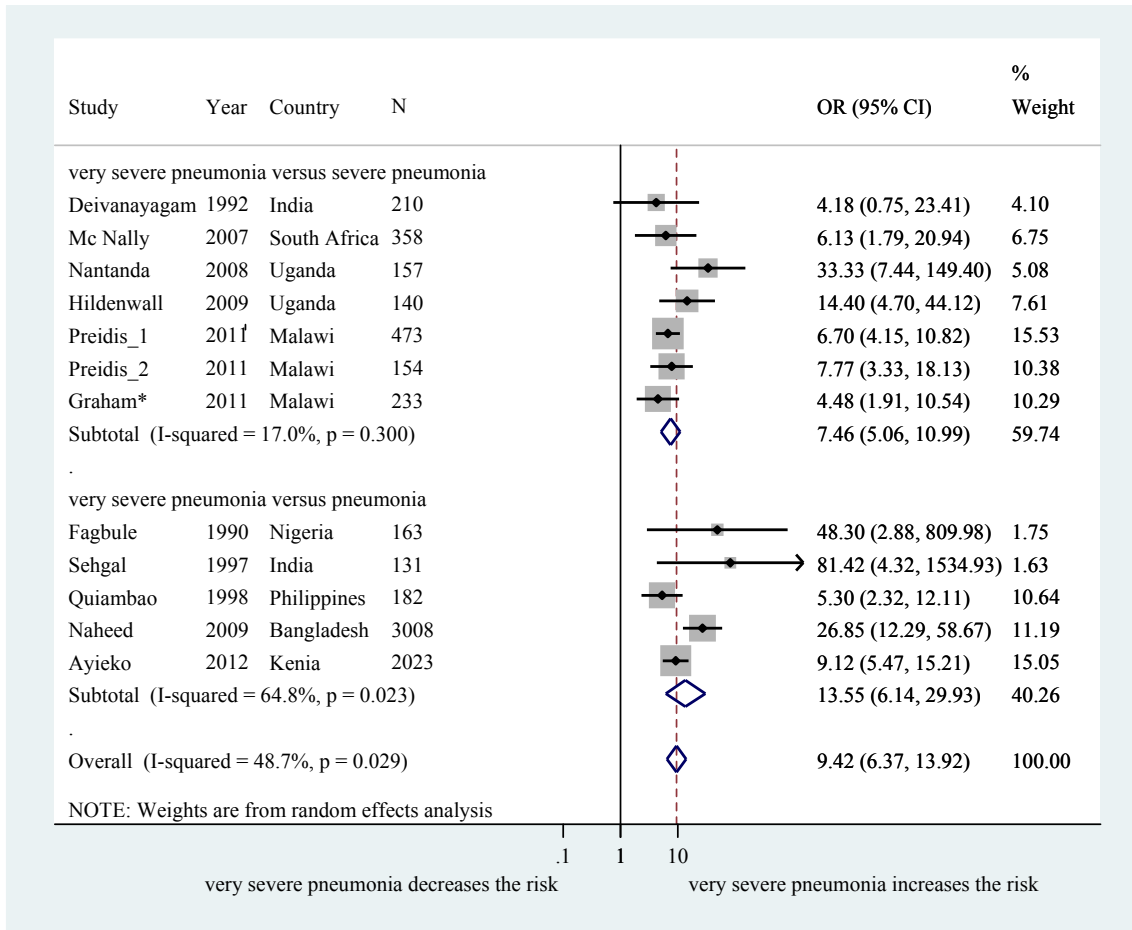


\*Vejar: aOR

**Figure 16 Association between severe pneumonia and death from ALRI (6 studies; 7,581 children)**



**Figure 17 Association between very severe pneumonia and death from ALRI (12 studies; 7,232 children)**

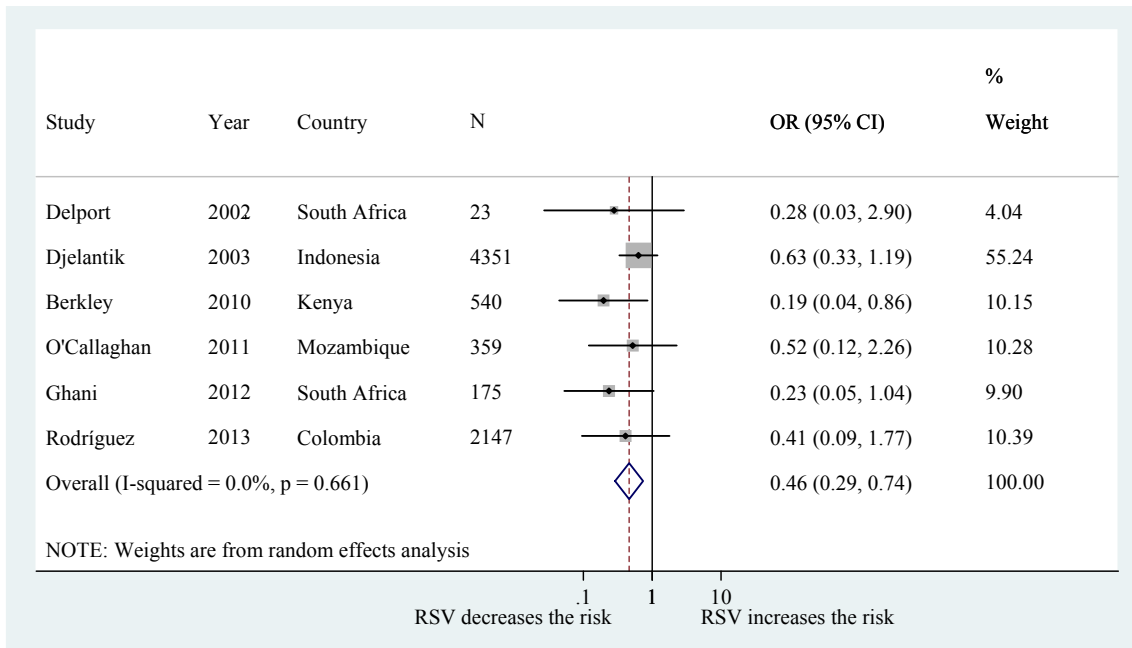


\*includes Ramakrishna 2012

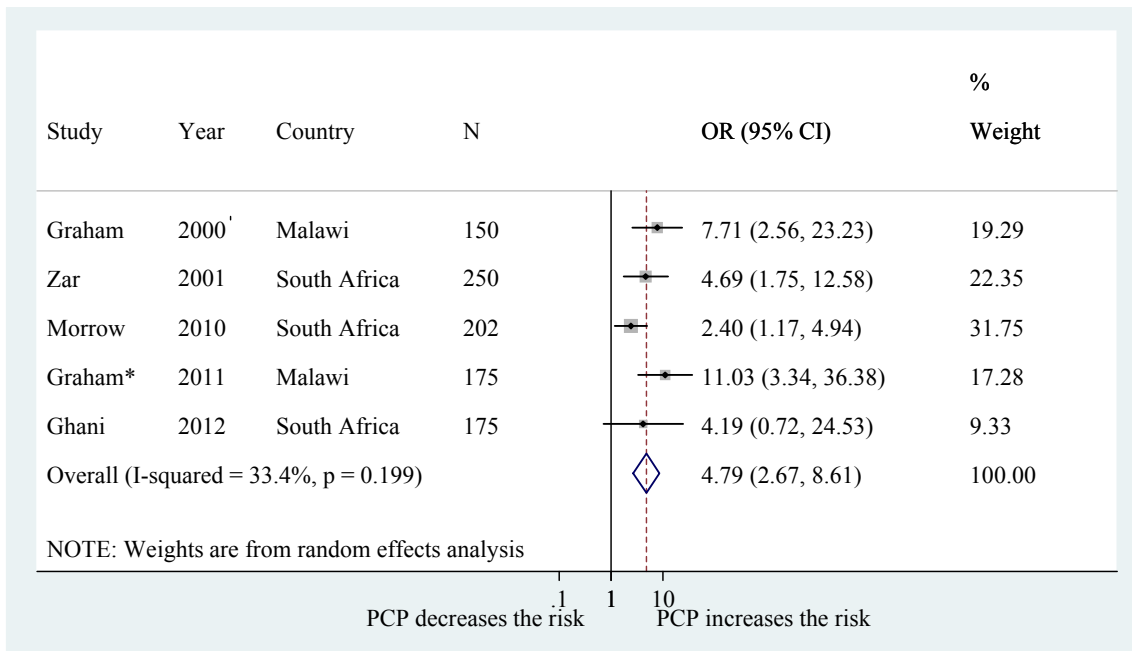
Preidis\_1: HIV negative

Preidis\_2: HIV positive

**Figure 18 Association between diagnosis of Respiratory Syncytial Virus (RSV) and death from ALRI (6 studies; 7,595 children)**

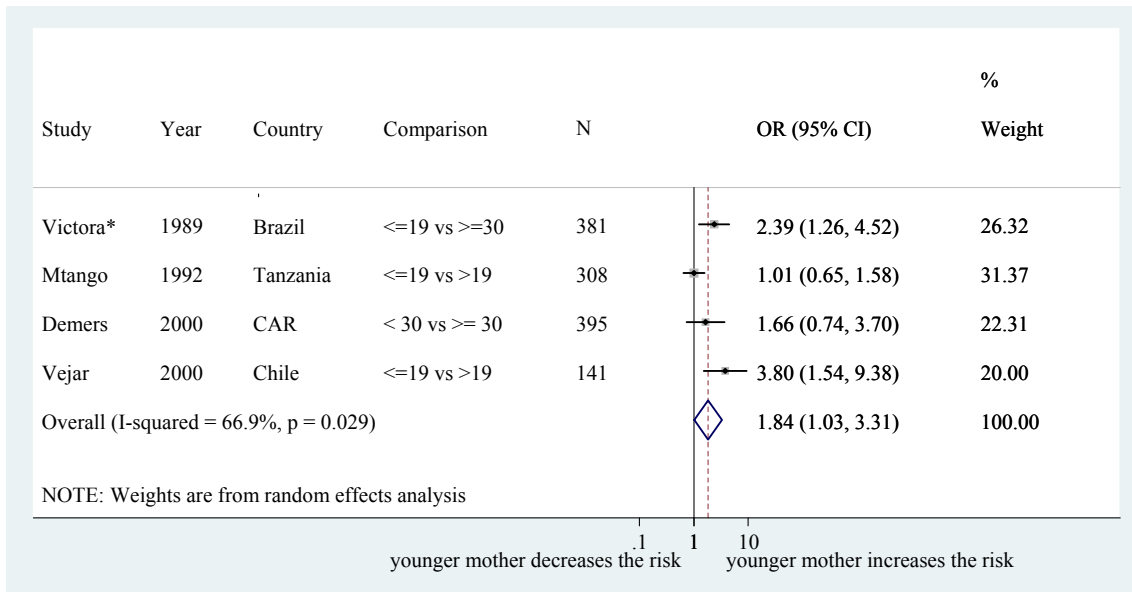


**Figure 19 Association between diagnosis of Pneumocystis Carinii (PCP) and death from ALRI (5 studies; 952 children)**



\* includes Ramakrishna 2012

**Figure 20 Association between mother’s age and death from ALRI (4 studies; 1,225 children)**

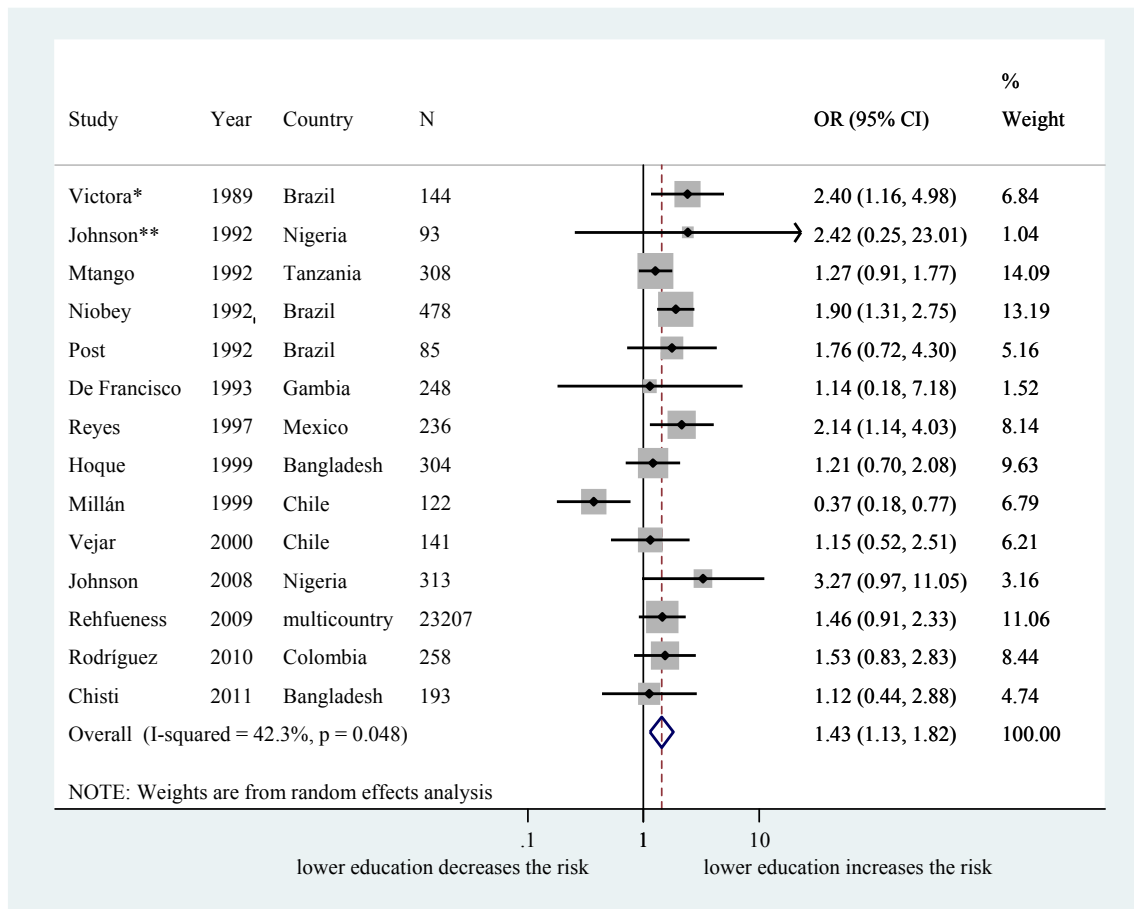


\* includes Victora 1988

**Other studies not included in the forest plot**

- Shah 2012: OR for one year increase in mother’s age: 0.99 (0.93-1.05)

**Figure 21 Association between mother’s low educational level and death from ALRI (14 studies; 26,130 children)**



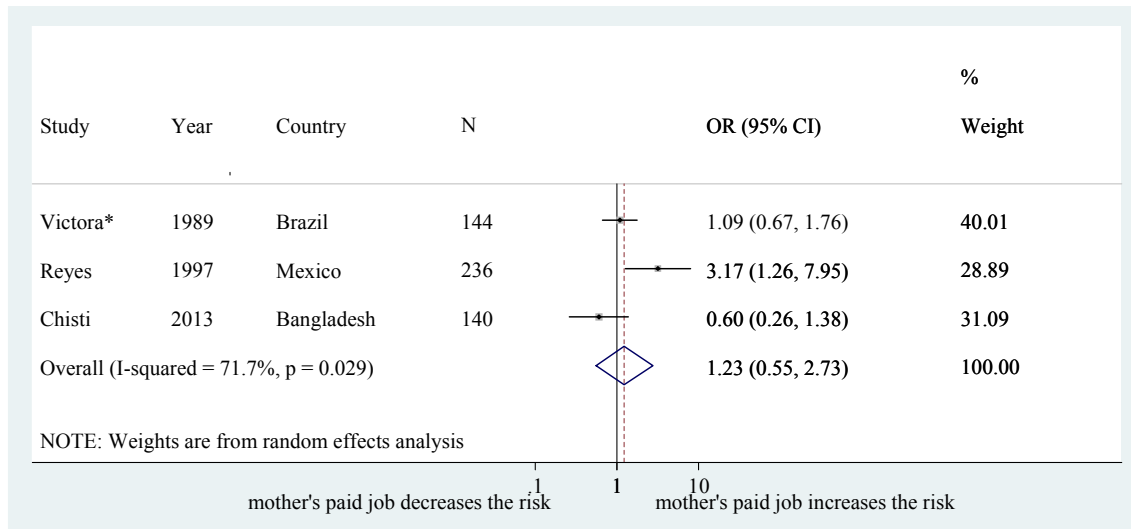
\* includes Victora 1988

\*\* includes Johnson “Host factors...” 1992

**Other studies not included in the forest plot**

- Arifeen 2013: any education vs none: RR:0.52 (0.32-0.86)

**Figure 22 Association between mother's paid job and death from ALRI (3 studies; 520 children)**



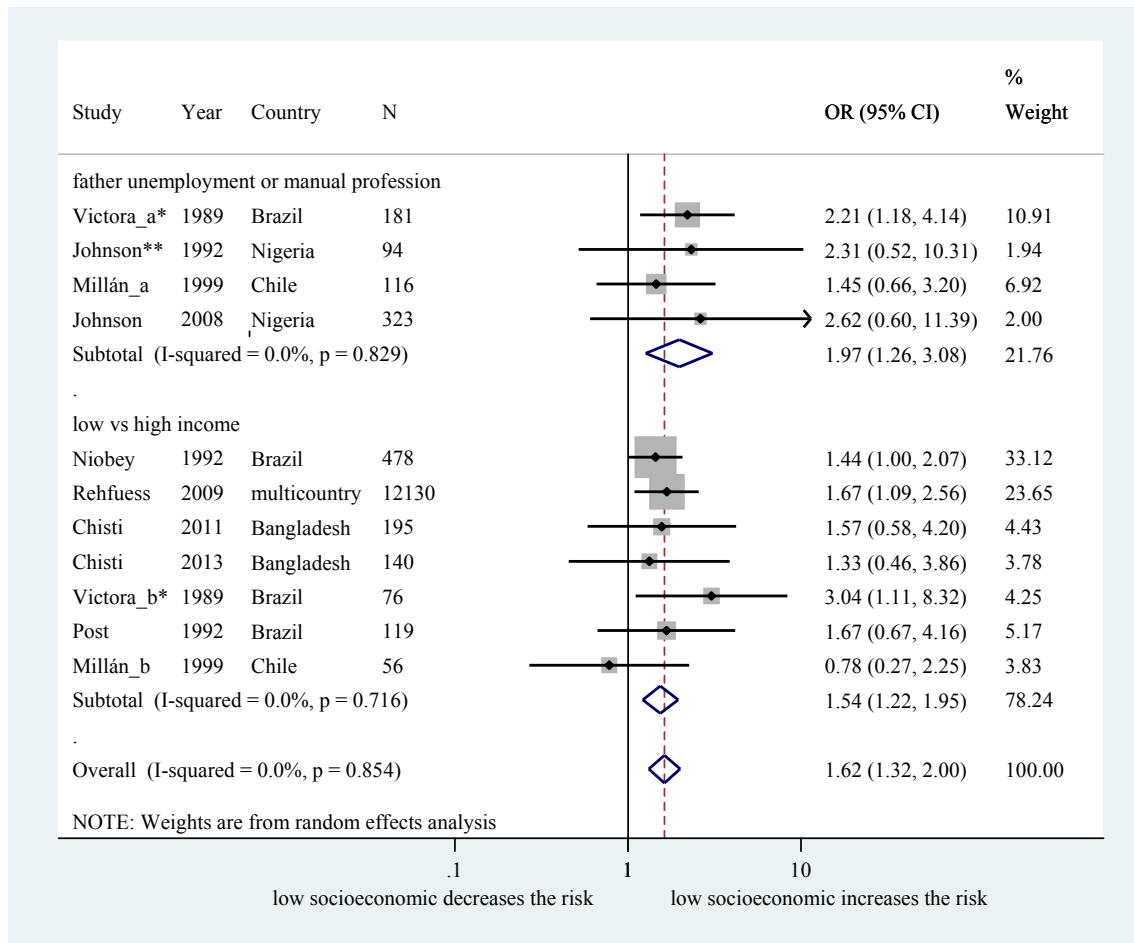
\* includes Victora 1988

**Other studies on maternal factors not included in the forest plot**

- Mtango 1992. Maternal parity  $\leq 2$  : OR=0.70 (0.49-1.0)
- Mc Nally 2007. Maternal TB: OR 4.36 (1.42-13.24)
- Victora 1989.
  - o Race of the mother (ref = white):
    - black: OR 1.41(0.73-2.70);
    - mixed: OR 0.84 (0.48-1.48)
  - o Cesarean delivery (vs vaginal): OR 0.72 (0.42-1.25)
- Millán 1999.
  - o unwanted pregnancy: OR 0.60 (0.35-1.0)
  - o diseases in pregnancy: OR 2.62 (1.41-4.85)
- Arifeen 2013: maternal height  $\geq 150$  cm vs  $< 145$  cm RR 0.72 (0.46-1.12)



**Figure 23 Association between socioeconomic status and death from ALRI (9 studies; 11 comparisons; 13,908 children)**



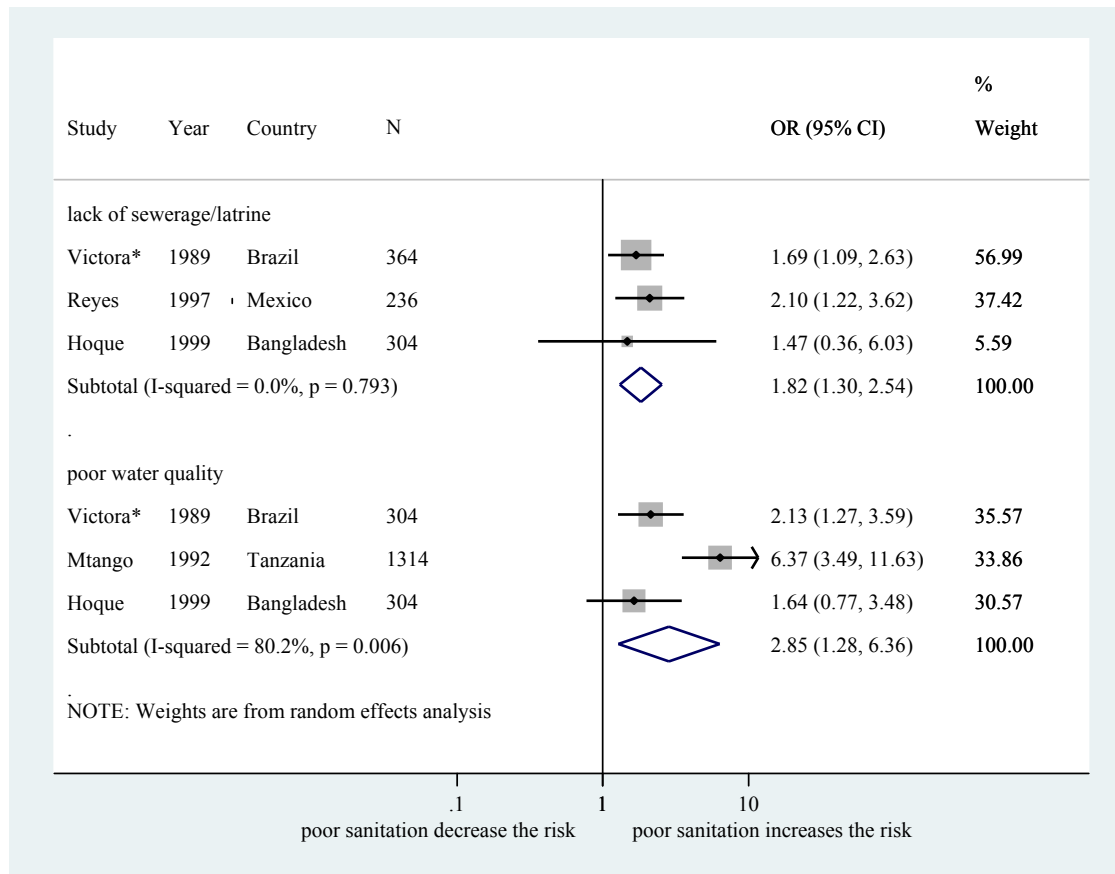
\*includes Victora 1988

\*\* includes Johnson "Host factors..." 1992

**Other studies on socioeconomic factors not included in the forest plot**

- Chisti 2011: Sleeping in a wooden bed with no covering: OR 1.7 (0.5-6.36)
- Rodríguez 2010: Humidity in the house OR: 2.75 (0.92-8.16)

**Figure 24 Association between sanitation and water, and death from ALRI:**  
 - lack of sewerage/latrine (3 studies; 904 children)  
 - poor water quality (3 studies; 1922 children)

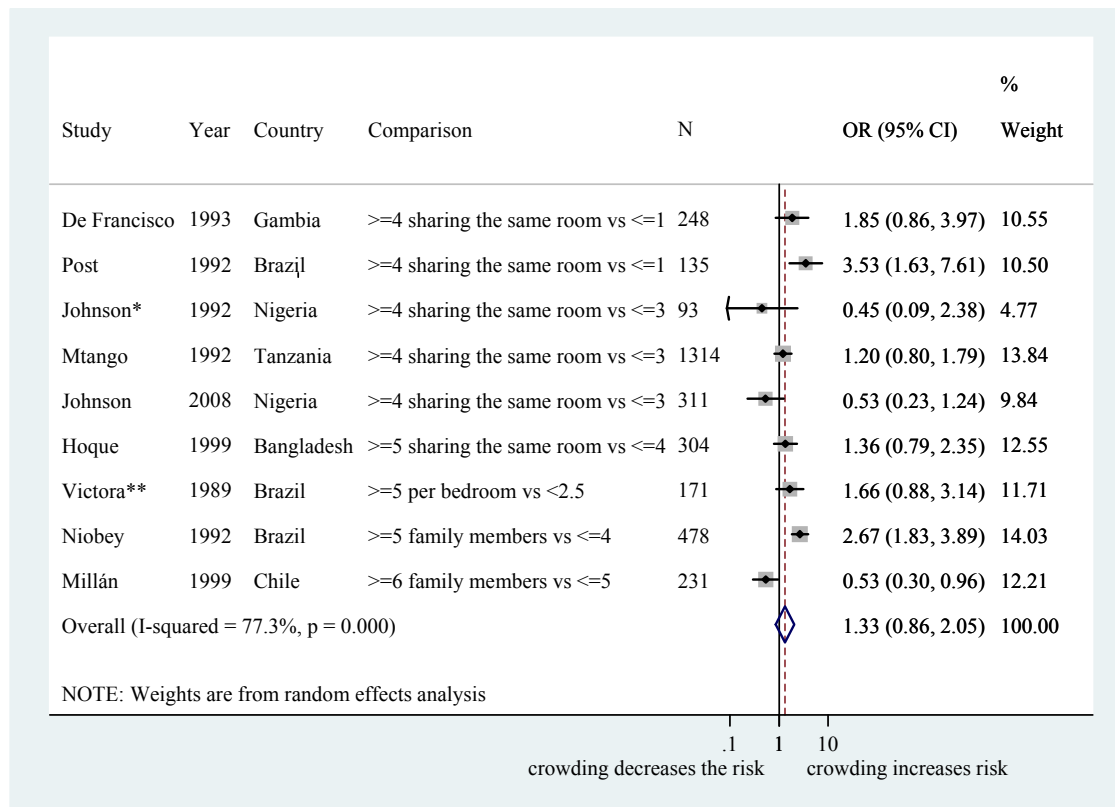


\*includes Victora 1988

**Other studies not included in the forest plot**

- Hoque 1999.
  - o Dirty latrine vs clean: OR 1.83 (0.91-3.60)
  - o No agent used for washing hands : OR 1.27 (0.58-2.80)
  - o Water used for washing hands (other vs tube well): OR 1.41 (0.76-2.63)

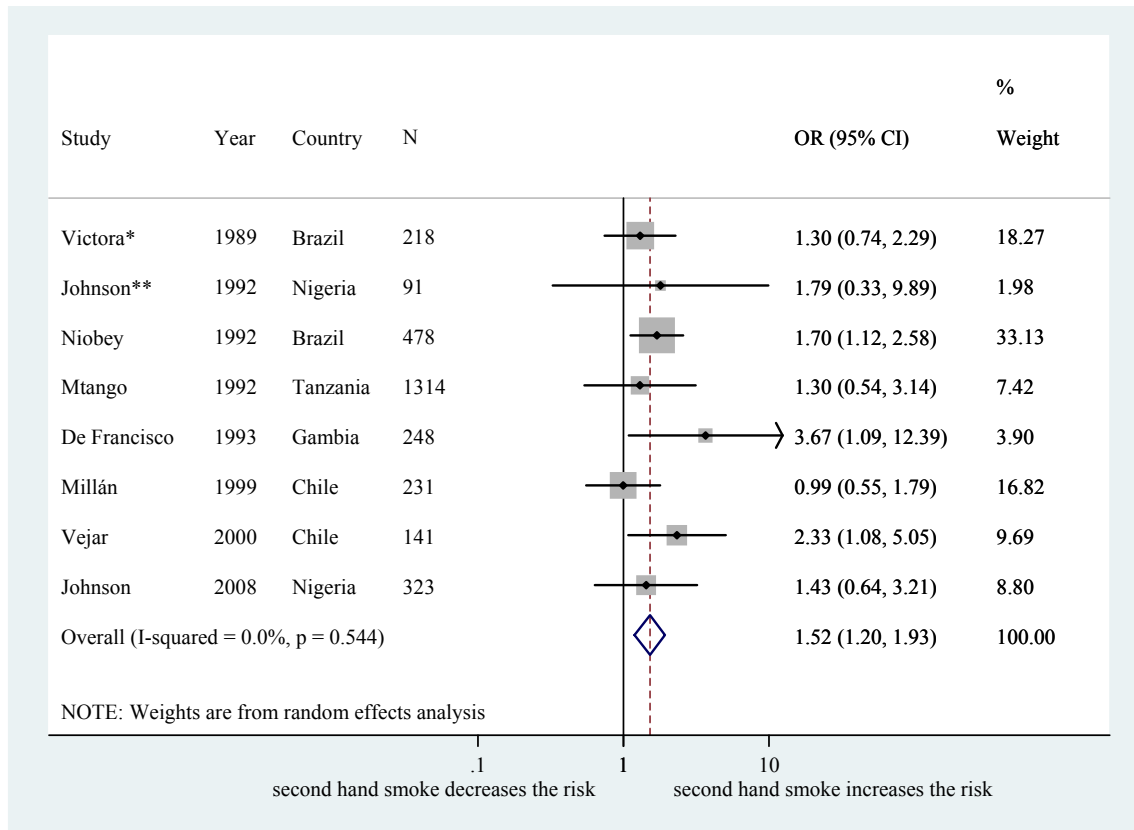
**Figure 25 Association between crowding and death from ALRI (9 studies; 3,285 children)**



\*includes Johnson “Host factors” 1992

\*\*includes Victoria 1988

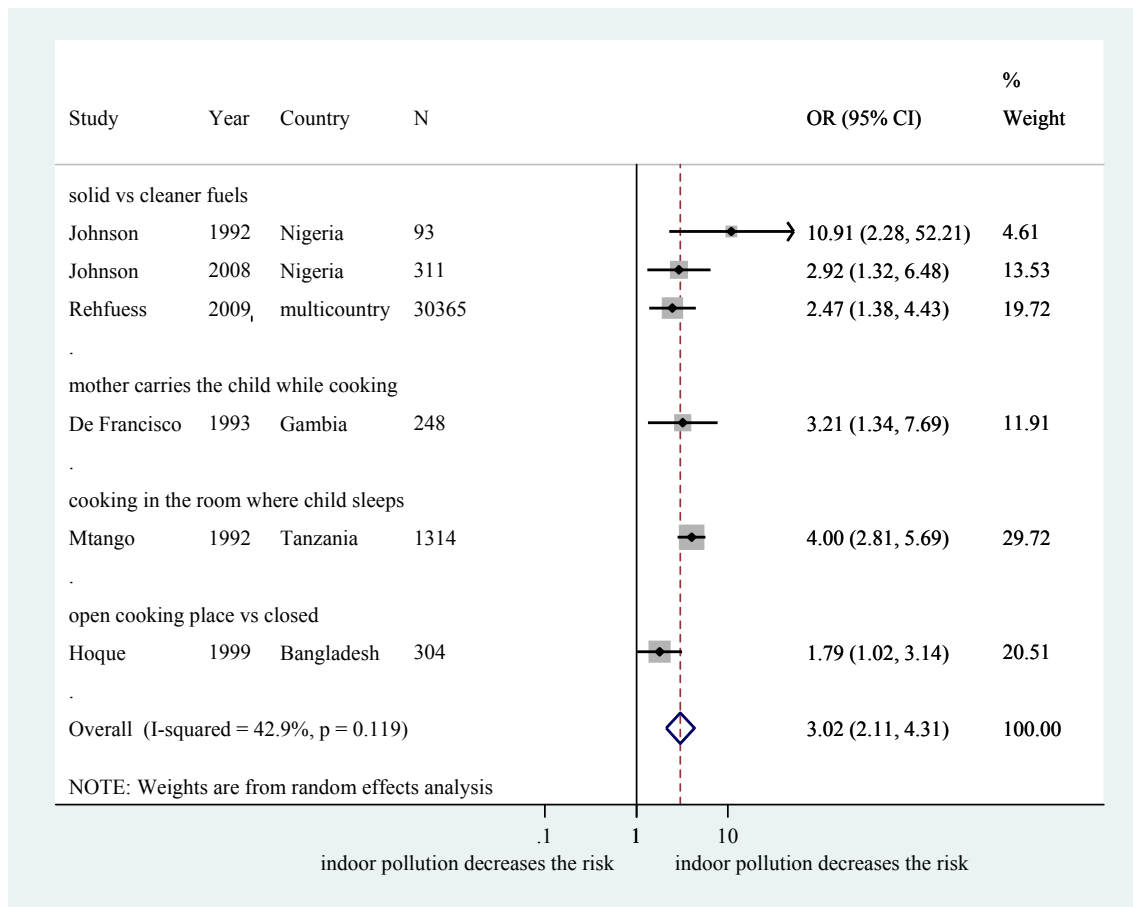
**Figure 26 Association between second-hand smoke and death from ALRI (8 studies; 3,044 children)**



\*includes Victora 1988

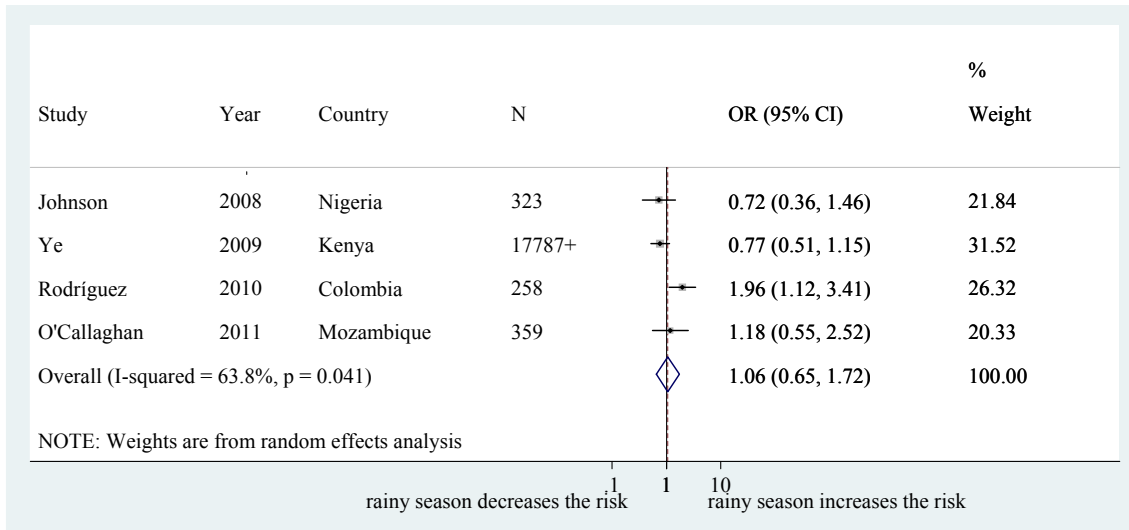
\*\* includes Johnson "Host factors" 1992

**Figure 27 Association between indoor pollution and death from ALRI (6 studies; 32,635 children)**



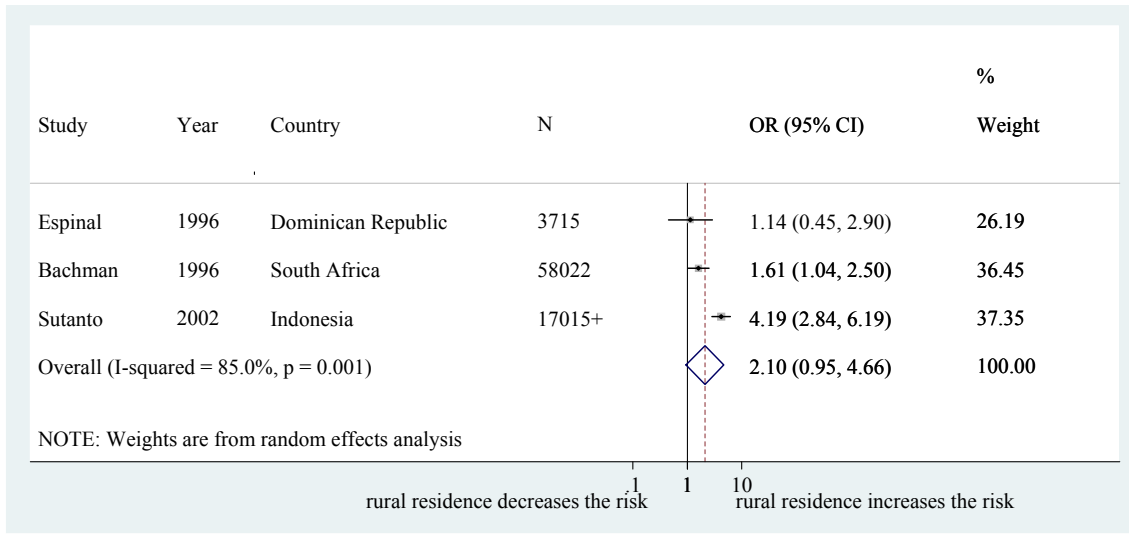
\*includes Johnson "Host factors..." 1992

**Figure 28 Association between seasonality (wet versus dry season) and death from ALRI (4 studies; 18,727 children)**



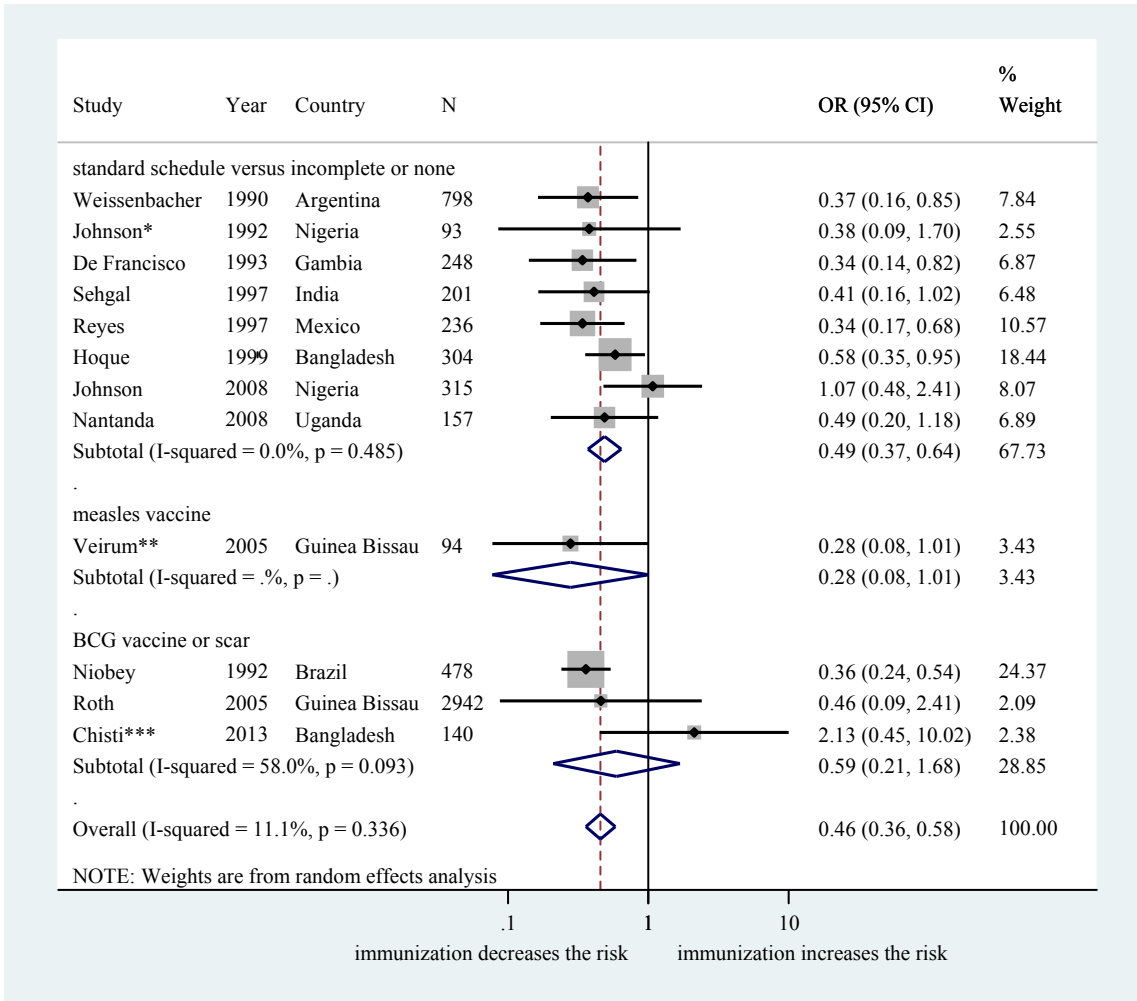
+children-year

**Figure 29 Association between setting of residence (rural versus urban zone) and death from ALRI (3 studies; 78,752 children)**



+ children-year

**Figure 30 Association between immunization and death from ALRI (12 studies; 6,006 children)**



\*includes Johnson “Host factors” 1992

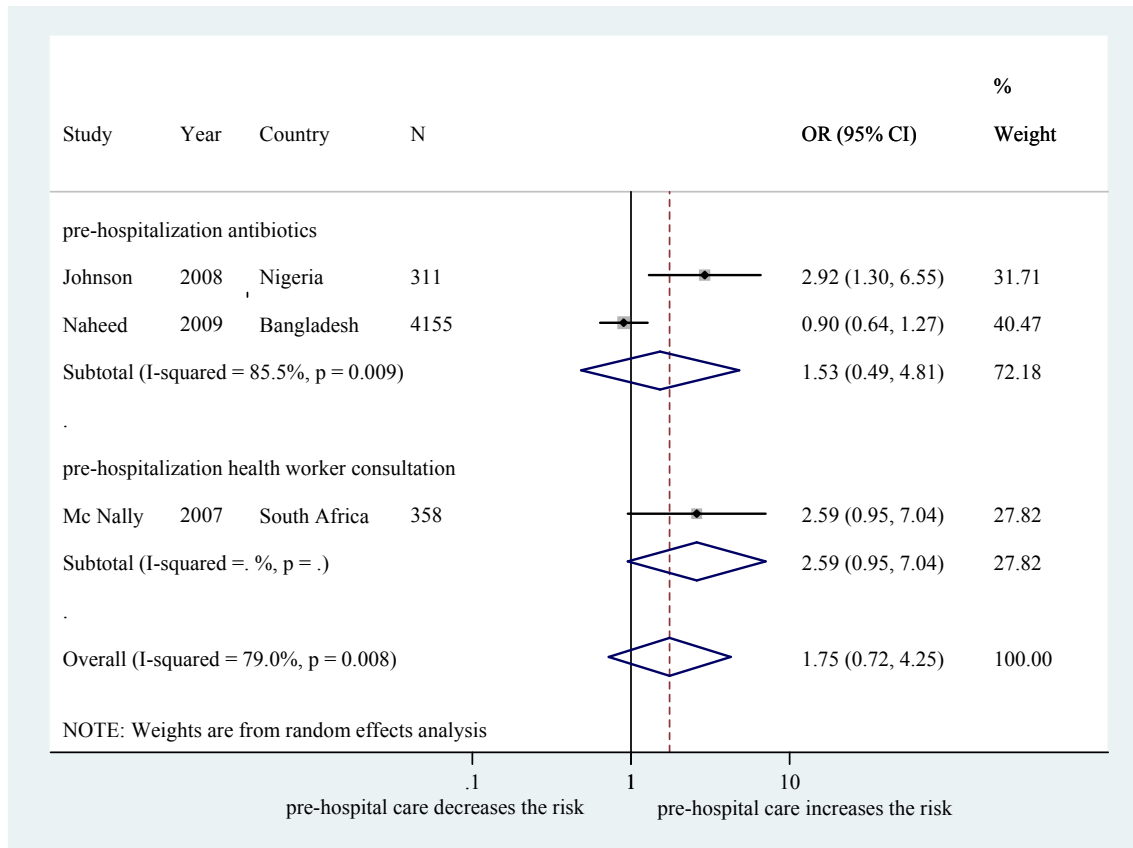
\*\* measles cases excluded

\*\*\* all severely malnourished children





**Figure 32 Association between pre-hospital care and death from ALRI (3 studies; 4,824 children)**



**Other studies related to health-care factors**

- Chisti 2011: poor understanding of ALRI by caretakers: OR 0.60 (0.24-1.49)
- Mtango 1992: dispensary <=3km: OR 0.65 (0.60-1.19)
- Reyes 1997
  - o lack of identification of ALRI by caretakers: OR 2.13 (1.15-3.94)
  - o late referral by caretakers: OR 20 (2.70-148.60):
  - o non-institutional barriers (economical, geographical, cultural) to access to care: OR 3.12 (1.41-6.93);
  - o late referral by primary care: OR 7.56 (3.78-15.13)