

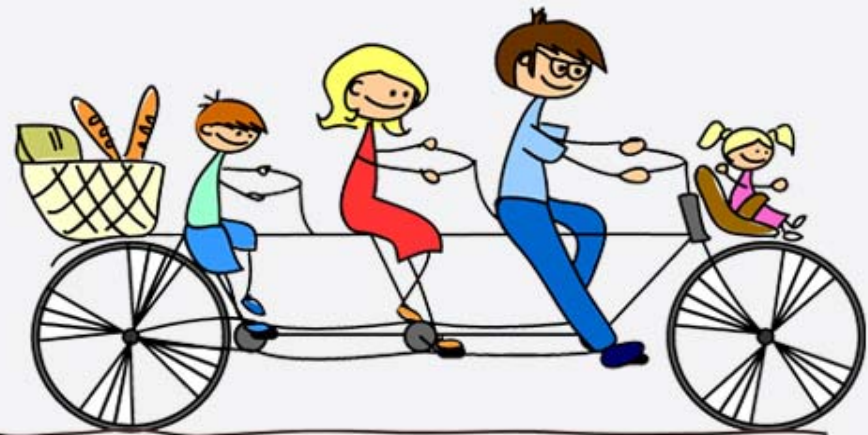
Prevenzione e Stili di Vita:
Strumenti per una Società che cambia

27 aprile 2012 Aula Pocchiari – ISS - Roma

ALLATTAMENTO MATERNO: PRIMO TRA GLI STILI DI VITA DA IMPLEMENTARE ED INCORAGGIARE

MARCO SILANO

*Dir. Rep. Alimentazione,
nutrizione e salute - ISS*



LATTE MATERNO

Il latte materno è il sistema biologico destinato all'alimentazione del neonato in maniera esclusiva per i primi 4-6 mesi (OMS, ESPGHAN) e in maniera complementare almeno fino all'anno di vita.

Il latte materno è:

- ✓ **specie – specifico**
- ✓ **microbiologicamente sicuro**
- ✓ **gratuito**
- ✓ **immunologicamente attivo**
- ✓ **nutrizionalmente unico e variabile a seconda delle necessità del bambino**



PROTEINE

LM: 9 gr / l

LV: 34 gr / l

caseina / sieroproteine: 40/60

α - lattoalbumina

β -lattoglobulina

lattoferrina

sieroalbumina

lisozima

slgA



AMINOACIDI E AZOTO NON PROTEICO

LM

aa aromatici F 48 T 61 mg/dl

taurina 8 mg/dl

nucleotidi

poliamine

LV

F 172 T 179 mg/dl

0,1 mg/dl



LIPIDI

LM: 3.9 gr / l

LV: 3.7 gr / l

AG saturi 65%

AG insaturi 55%

AG polinsaturi $\omega 3/\omega 6$ 10/1

$\omega 6$ (tracce linolenico)

LC-PUFA $\omega 3/\omega 6$ 2/1

acido palmitico TG2

TG1 o 3

CHL 20-25 mg/dl

10-15 mg/dl

fosfolipidi 80 mg/dl

40 mg/dl



CARBOIDRATI

LM: 7.1 gr / l

LV: 4.9 gr / l

lattosio 6.0 mg/dl

4.8 mg/dl

oligosaccaridi 1.1 mg/dl

0.1 mg/dl



PROGRAMMING

Processo mediante il quale, in un periodo critico dello sviluppo (vita fetale), il difetto di un nutriente può causare effetti a lungo termine su una funzione o struttura dell'organismo



OUTCOME



In utero programming of chronic disease

Barker DJ

Clin Sci 1998; 95:115-118

Fetal nutrition and adult disease

Barker DJ

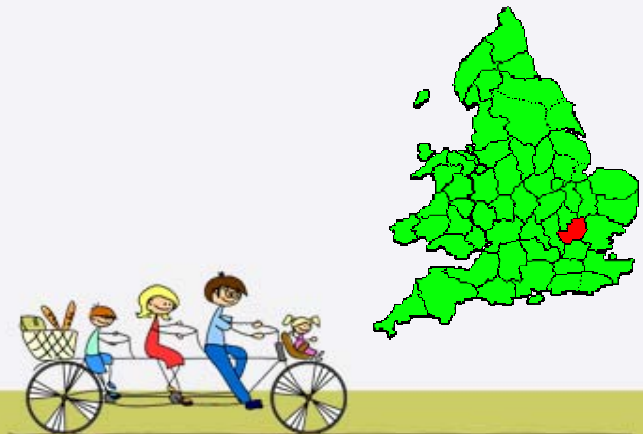
Am J Clin Nutr 2000; 71S:1344-52

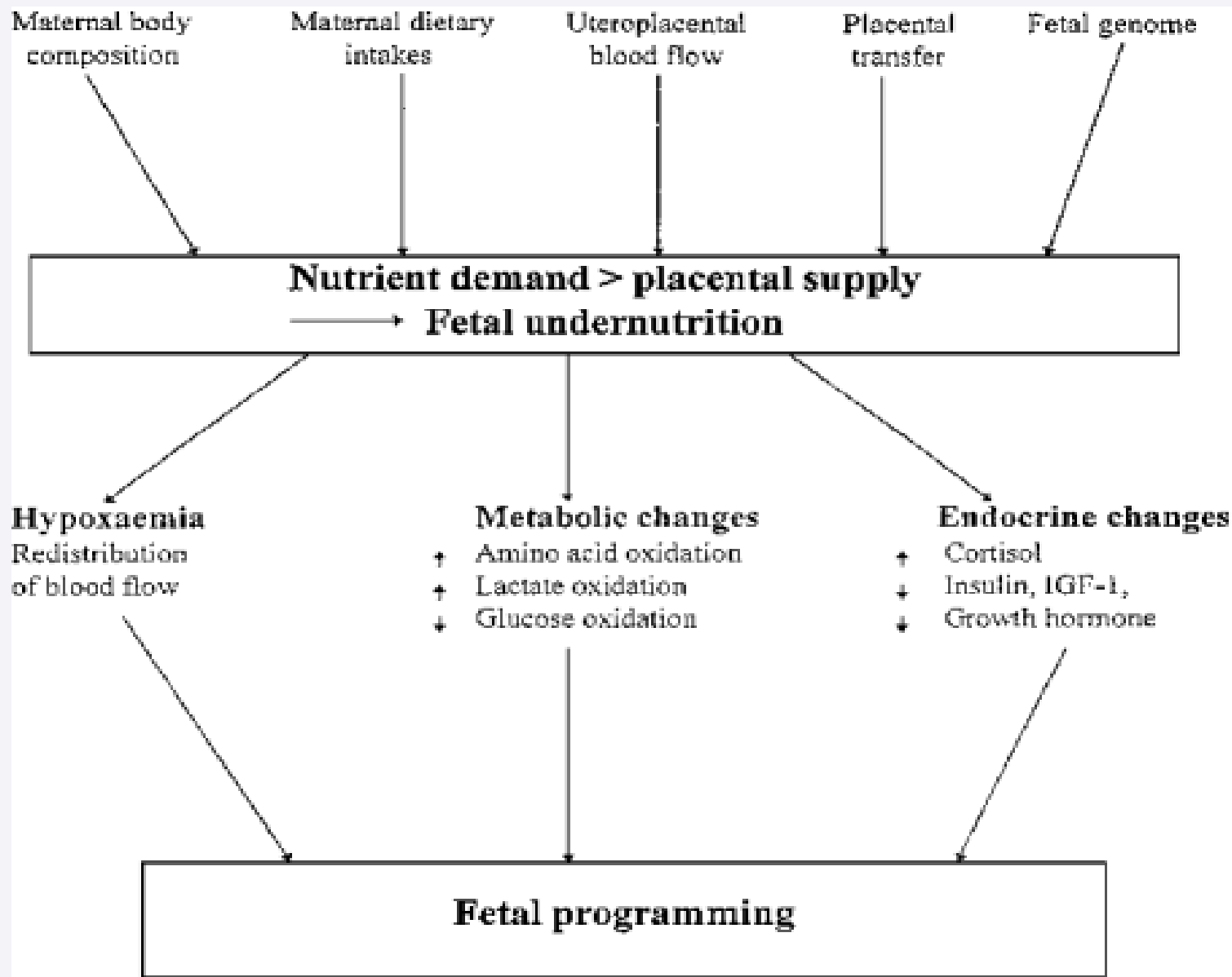


PROGRAMMING

Correlazione tra *basso peso alla nascita* (e non prematurità) (rilevato nell' Hertfordshire su 25.000 schede neonatali compilate tra il 1911 e il 1930) con aumentata incidenza nell'adulto di:

- *ipertensione arteriosa*
- *ipercolesterolemia*
- *ridotta tolleranza al glucosio e resistenza insulinica*
- *BPCO*
- *malattie cardiovascolari*
- *osteoporosi*





PROGRAMMING

Processo mediante il quale, in un periodo critico dello sviluppo (primi mesi di vita???) alterazione nell'assunzione di nutrienti può causare effetti a lungo termine su una funzione o struttura dell'organismo



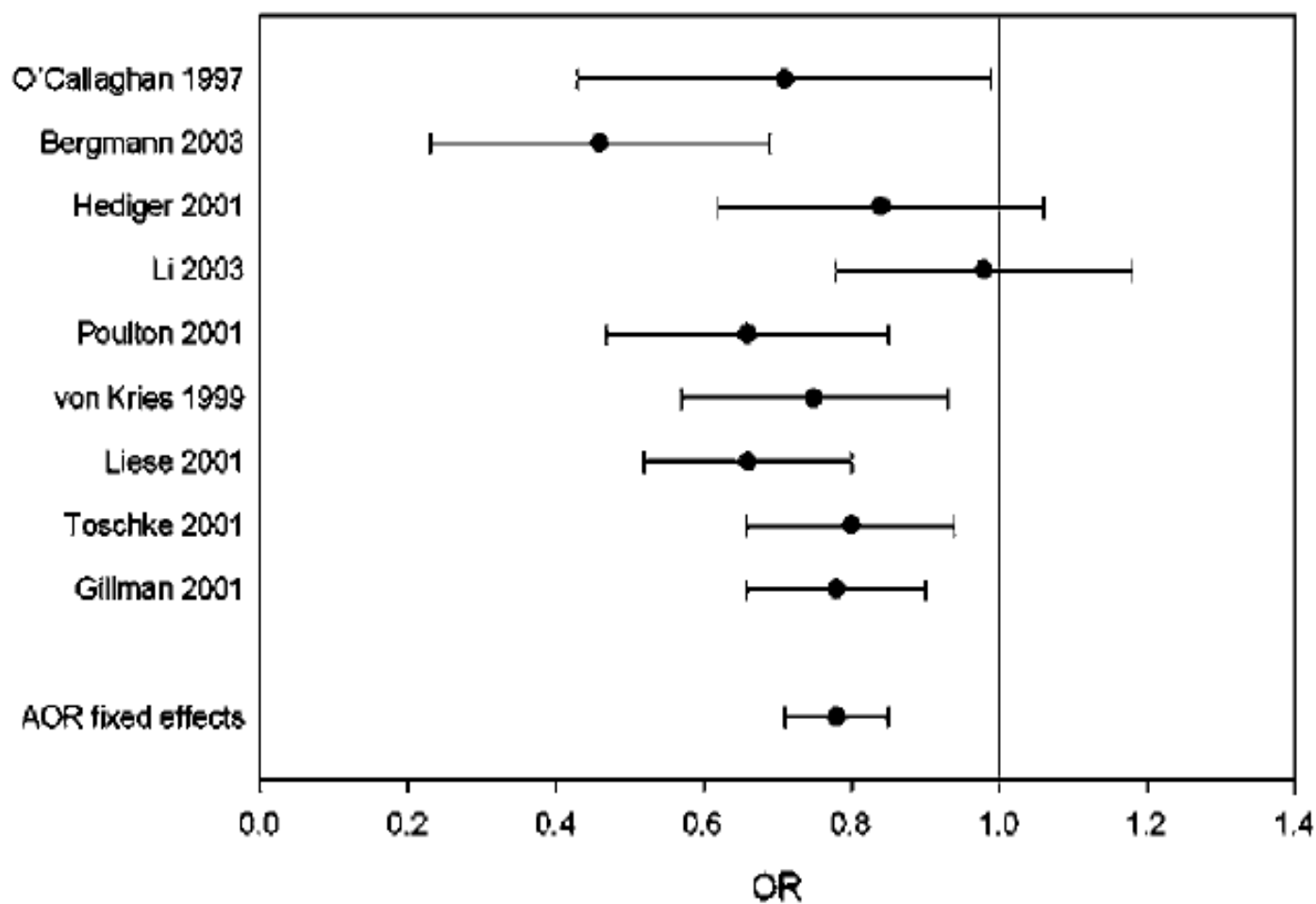
OUTCOME



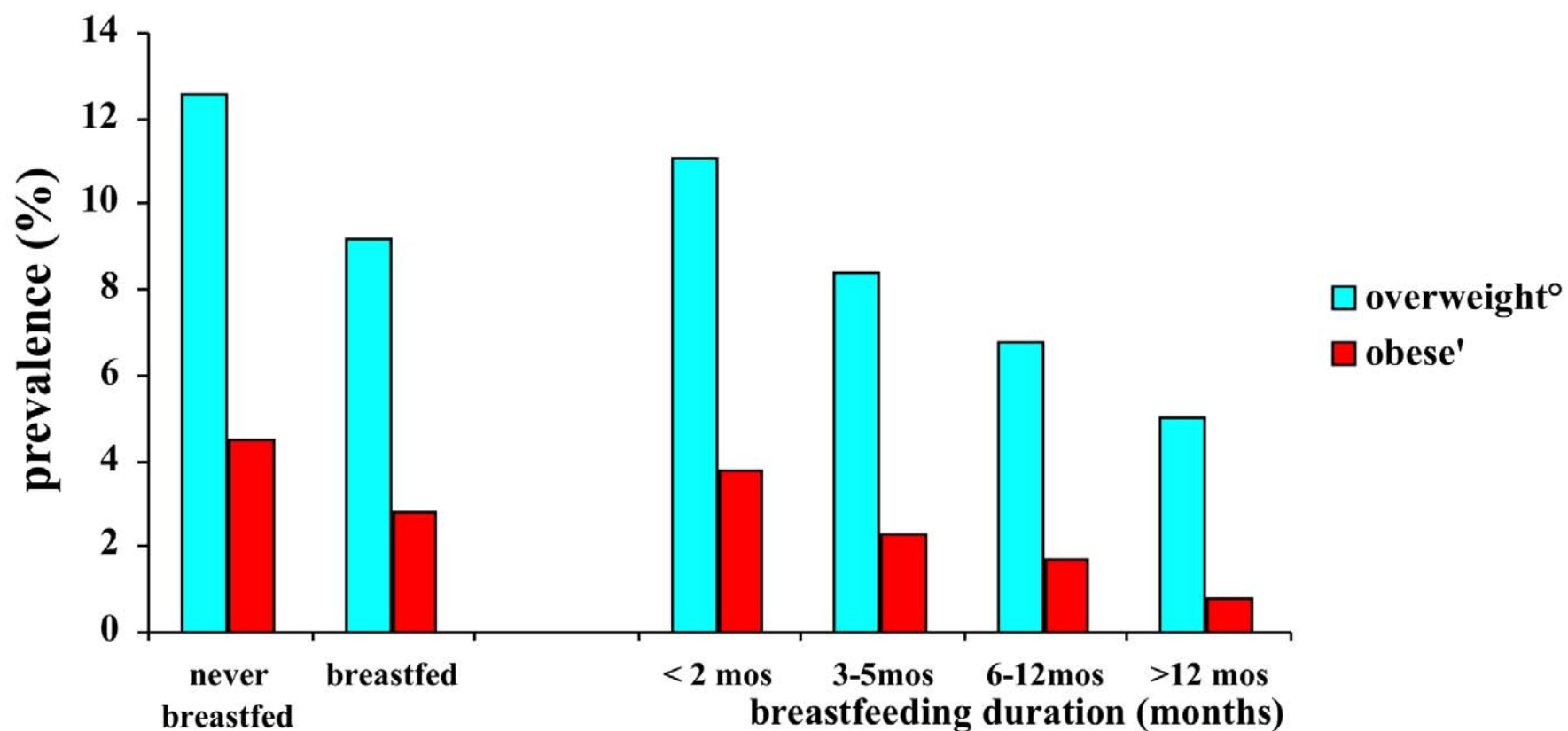
REVIEW

Breast-feeding and childhood obesity—a systematic review

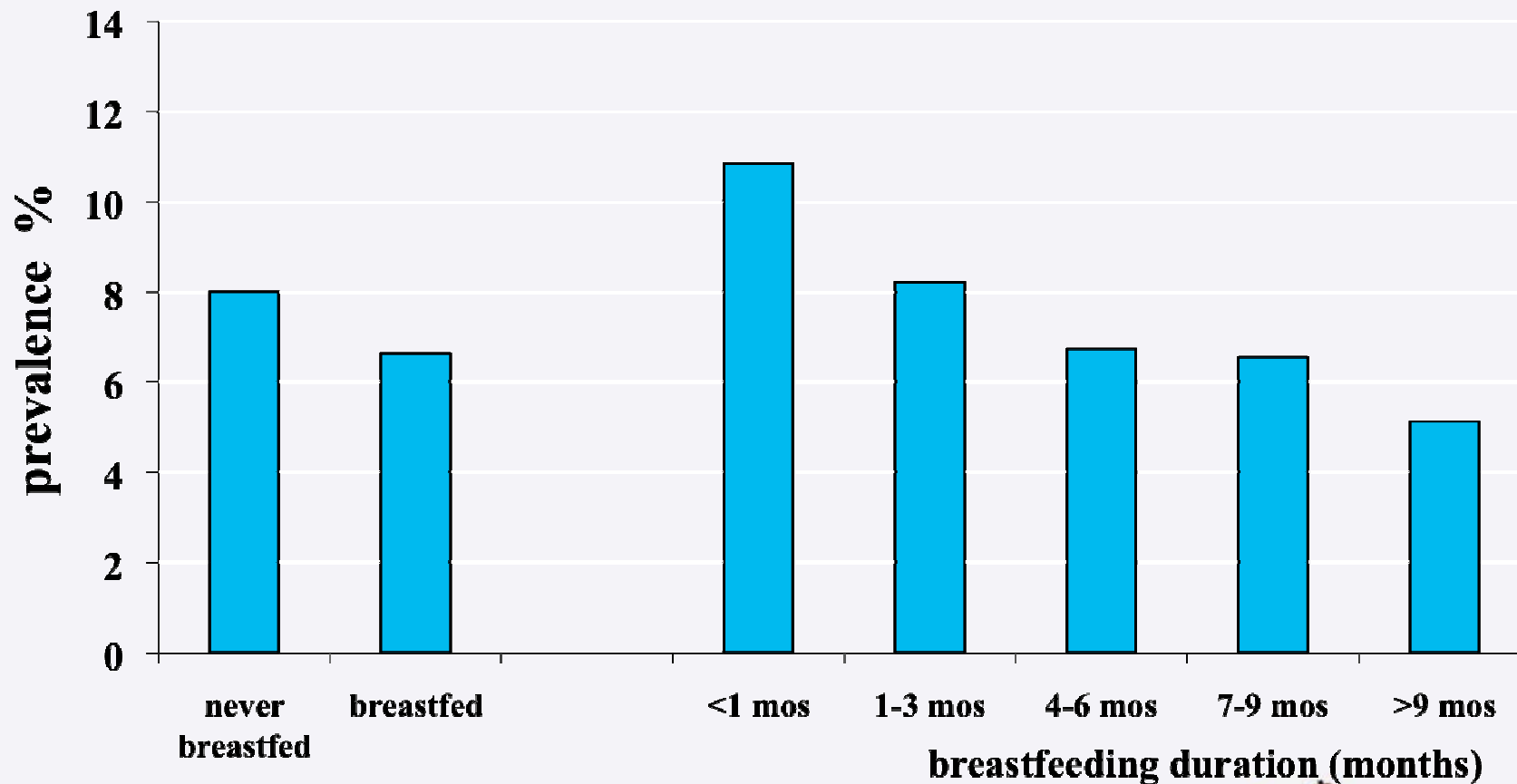
S Arenz¹, R Ruckerl², B Koletzko³ and R von Kries^{1*}



Allattamento al seno esclusivo e prevalenza di sovrappeso e obesità in 9357 bambini di età compresa tra 5 e 6 anni (Von Kries R et al, BMJ 1999; 319:147)



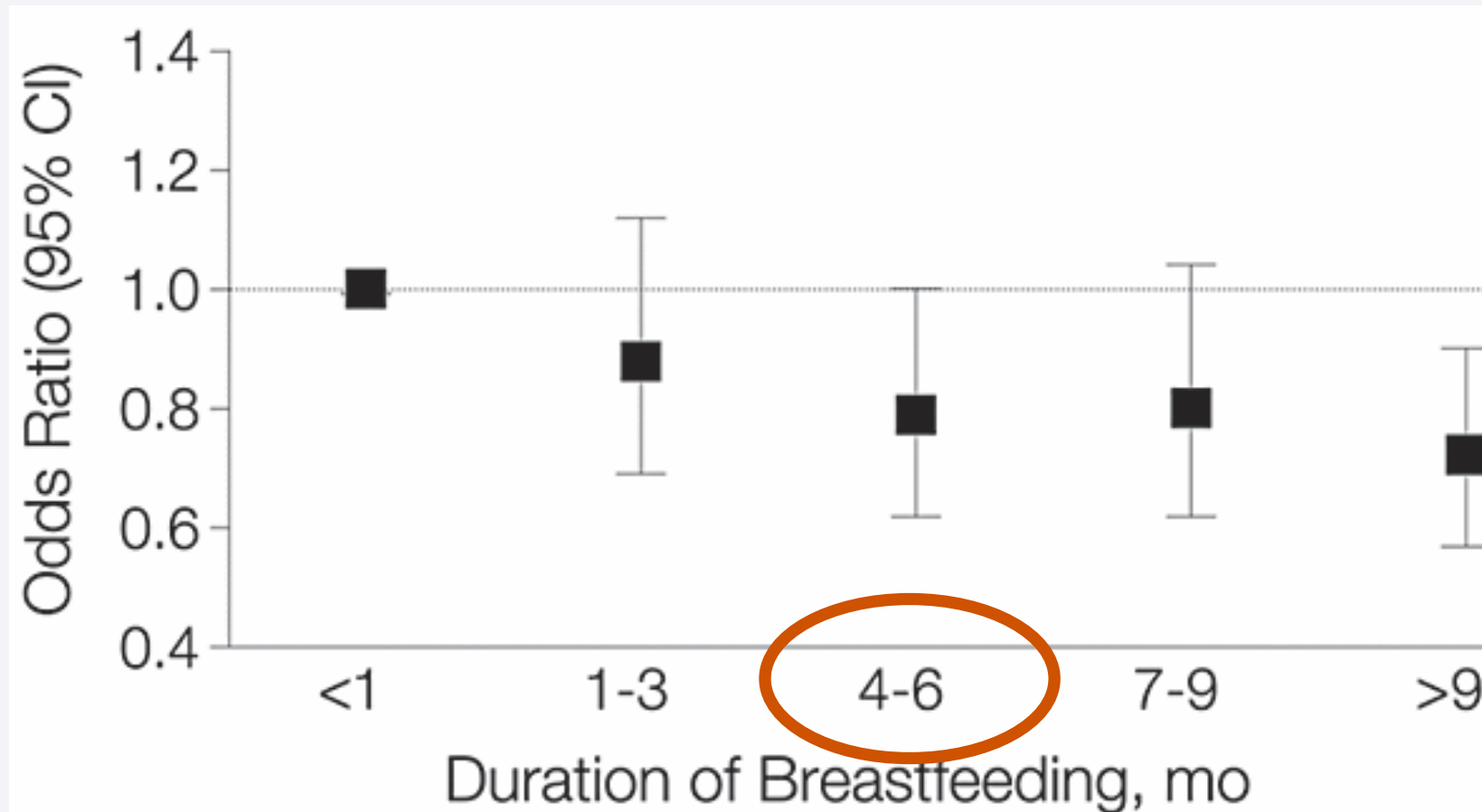
Breastfeeding and prevalence of overweight^o in over 15000 adolescents aged 9-14 years. (adapted from Gillmann et al, JAMA 2001:285:2461-67)



^oOverweight was BMI>95th percentile for age and sex



Figure. Risk of Overweight in Adolescence by Duration of Breastfeeding in Infancy Odds ratio and 95% confidence interval (CI) for each category compared with the reference group of never breastfed or breastfed less than 1 month.



Gillman, M. W. et al. JAMA 2001;285:2461-2467



Long-term morbidity and mortality of overweight adolescents.
A follow-up of the Harvard Growth Study of 1922 to 1935.
Must A et al., N Engl J Med 1992; 327:1350

METHODS. We studied the relation between overweight and morbidity and mortality in 508 lean or overweight adolescents 13 to 18 years old who participated in the Harvard Growth Study of 1922 to 1935.



RESULTS.

Overweight in adolescent subjects was associated with an increased risk of mortality from all causes and disease-specific mortality among men, but not among women. Overweight in adolescence was a more powerful predictor of these risks than overweight in adulthood.

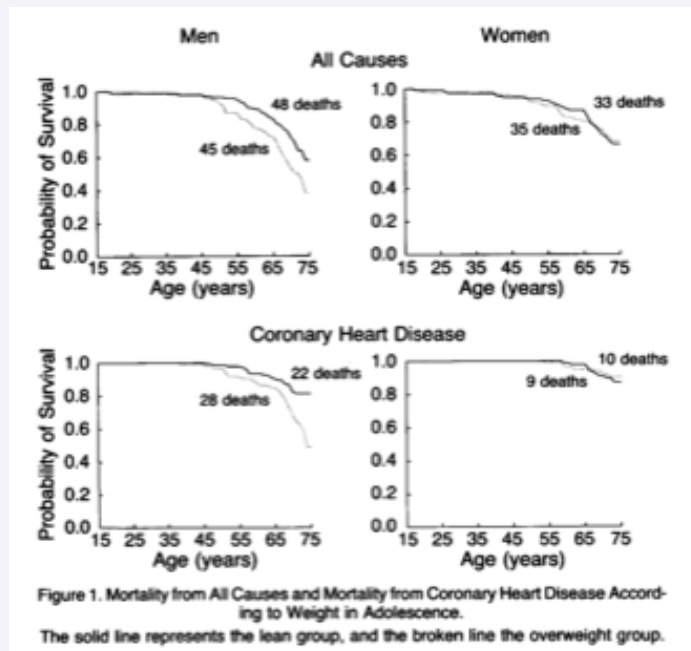


Table 2. Relative Risk of Mortality Associated with Overweight in Adolescence.*

CAUSE OF DEATH	MEN (N = 256)		WOMEN (N = 252)	
	NO. OF DEATHS	RELATIVE RISK (95% CI)	NO. OF DEATHS	RELATIVE RISK (95% CI)
All causes	93	1.8 (1.2–2.7)†	68	1.0 (0.6–1.6)
Coronary heart disease‡	51	2.3 (1.4–4.1)§	19	0.8 (0.3–2.1)
Atherosclerotic cerebrovascular disease¶	8	13.2 (1.6–108.0)§§	7	0.4 (0.1–1.8)
Colorectal cancer	6	9.1 (1.1–77.5)**	4	1.0 (0.1–7.0)
Breast cancer ††	0	—	8	0.9 (0.2–3.8)

*The relative risks are for the overweight group as compared with the lean group. CI denotes confidence interval.

†P = 0.004 for the comparison between the overweight and lean groups.

‡ICD-9-CM codes 402, 410 through 414, 428, 429, and 440.

§P = 0.002 for the comparison between the overweight and lean groups.

¶ICD-9-CM codes 431 through 437.

§§ICD-9-CM codes 153 and 154.

**P = 0.01 for the comparison between the overweight and lean groups.

††ICD-9-CM code 174.



Long-term morbidity and mortality of overweight adolescents.
A follow-up of the Harvard Growth Study of 1922 to 1935.
Must A et al., N Engl J Med 1992; 327:1350

CONCLUSIONS. Overweight in adolescence predicted a broad range of adverse health effects that were independent of adult weight after 55 years of follow-up.



Does Breast-Feeding in Infancy Lower Blood Pressure in Childhood?

The Avon Longitudinal Study of Parents and Children (ALSPAC)

Systolic and diastolic pressures were, respectively, 1.2 mm Hg lower (95% CI, 0.5 to 1.9) and 0.9 mm Hg lower (0.3 to 1.4) among breast-fed than formula-fed children

We examined the effect of breast-feeding duration. In fully adjusted models, there was a 0.2-mm Hg reduction (0.0 to 0.3) in systolic pressure for each 3 months of breast-feeding at 7 yo.

(Circulation. 2004;109:1259-1266.)



A protective effect of breastfeeding on the progression of non-alcoholic fatty liver disease

V Nobili,¹ G Bedogni,² A Alisi,¹ A Pietrobbattista,¹ A Alterio,¹ C Tiribelli,² C Agostoni³

Arch Dis Child 2009;**94**:801–805.

What this study adds

- ▶ Earlier feeding habits might affect the clinical expression of non-alcoholic steatohepatitis (NASH) 3 to 18 years later, with an apparent drug-like preventive effect of breastfeeding.
- ▶ By demonstrating a possible protective effect on NASH, this study reinforces the notion that breastfeeding is important for later health.

the odds of NASH (OR 0.70, exact 95% CI 0.001 to 0.87) and fibrosis (OR 0.86, exact 95% CI 0.75 to 0.98) decreased for every month of breastfeeding.

EFFETTO DELL'ALLATTAMENTO MATERNO NEL PROGRAMMING

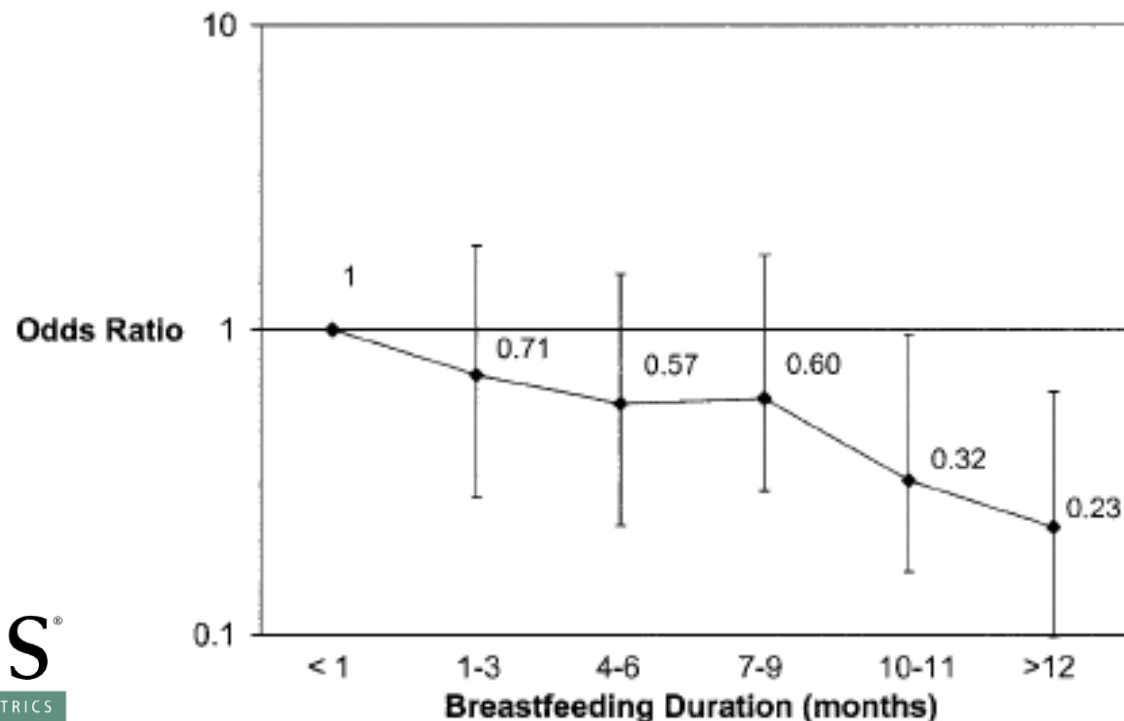


Effetto comportamentale: self – controlling and controlling dei genitori sull'appetito

Association of Breastfeeding With Maternal Control of Infant Feeding at Age 1 Year

Taveras EM et al 2004; 114: e577

Fig 1. Relationship of breastfeeding duration with maternal restriction of child's intake at age 1 year. ORs and 95% CIs for each category compared with the reference group of never breastfed or breastfed <1 month. Estimates are adjusted for gender only. $P < .0001$ for trend. Data from 1160 mother–infant pairs who participated in Project Viva.



Riduzione dell'intake proteico

Dramatic change in dietary protein content during weaning

- Protein energy percentage
 - Breastmilk 5%
 - Infant formula 9%
 - Whole cow's milk 20%
 - Family Food 15-20%
 - Skimmed milk 39%

2



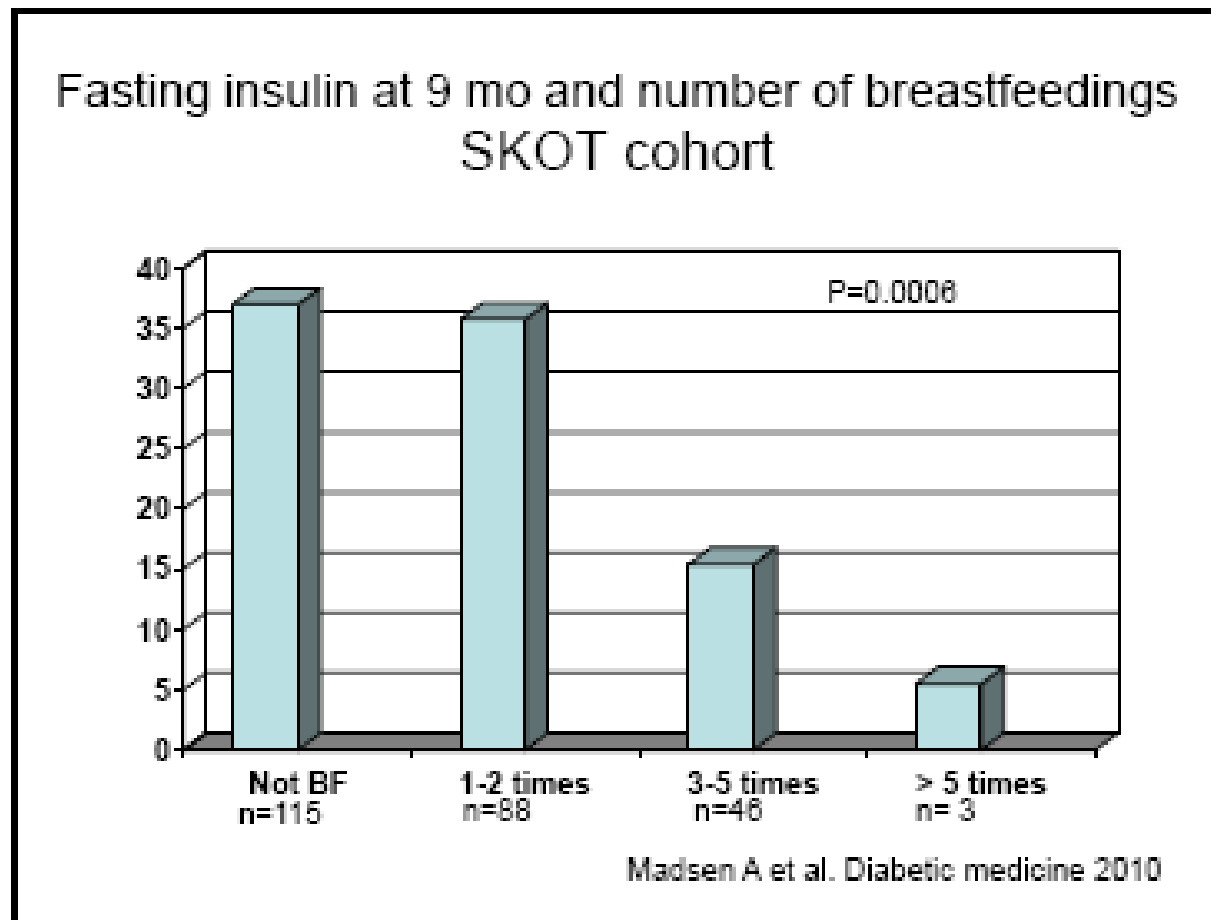
High protein intake in late infancy

- Safe protein intake 12 mo = 1.14 g/kg
- Mean protein intake 3-5 g/kg
- 90-95 percentile in Danish and Italian studies: 6-7 g/kg
- 1 liter cow's milk at 12 mo equal to 3.5 g protein/kg

9



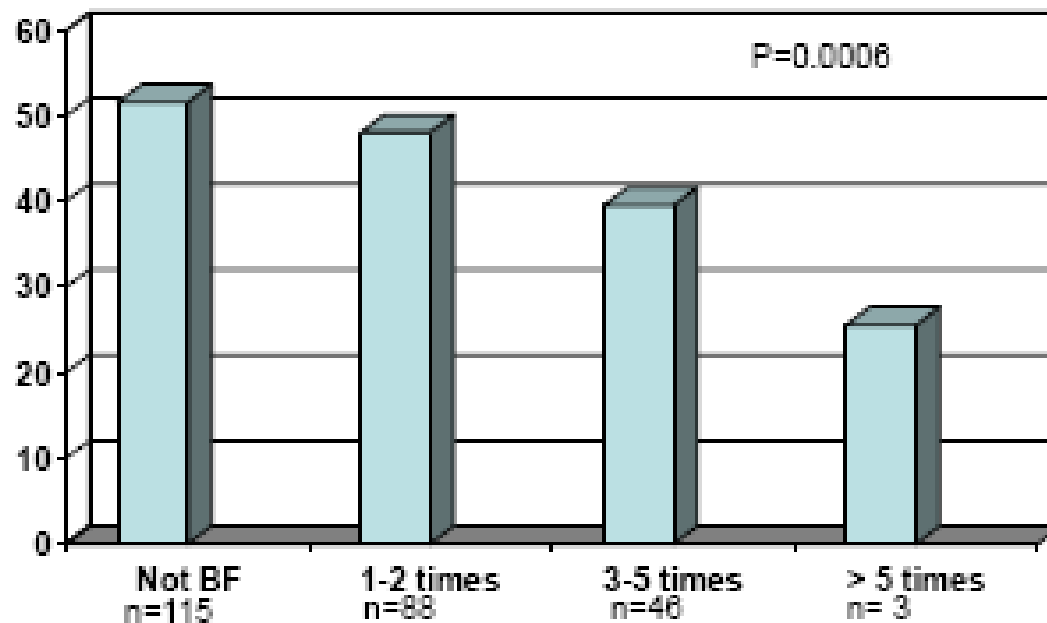
Riduzione dei livelli plasmatici di insulina



Riduzione dei livelli plasmatici di IGF-1

High IGF-I concentrations in infancy
have been associated with later obesity

IGF-I at 9 mo and number of breastfeedings
SKOT cohort



Madsen A et al. *Growth Hormone & IGF Research* (in press)



Breastfeeding and IGF-I later in life

ALSPAC Cohort

Martin et al. Clin Endocrinol 2005, 62, 728-37

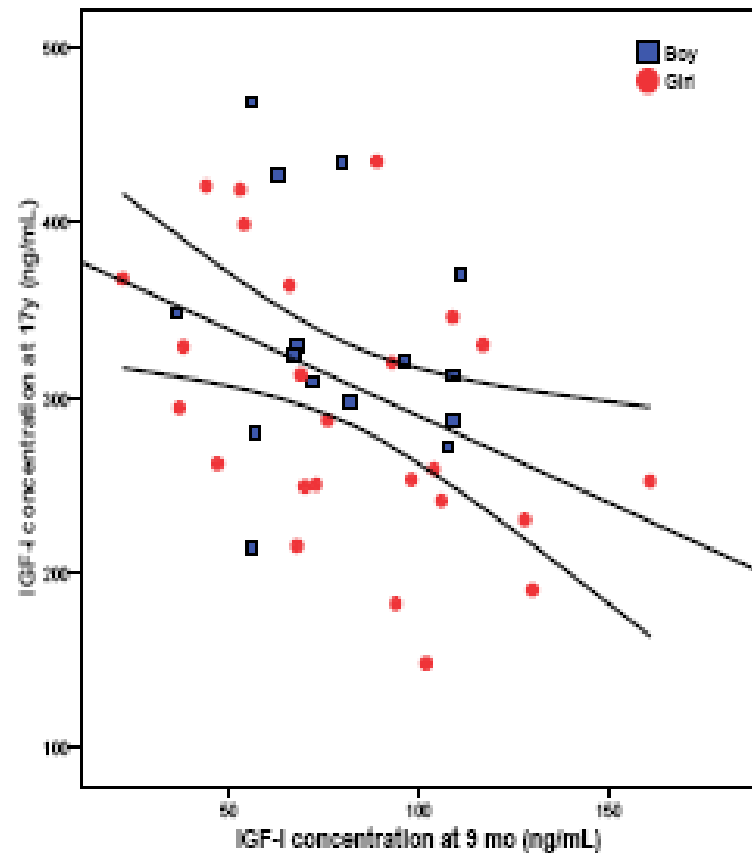
IGF-I measured at 7-8 year, n=488

- Never breastfed reference ~142 ng/ml
- Partial breastfed + 6.1 ng/ml
- Excl. breastfed (≥ 2 mo) +13.8 ng/ml

p=0.04



Programming of the IGF-I axis during infancy?



IGF-I concentration at 17y as a function of IGF-I concentration at 9 mo (n=40)

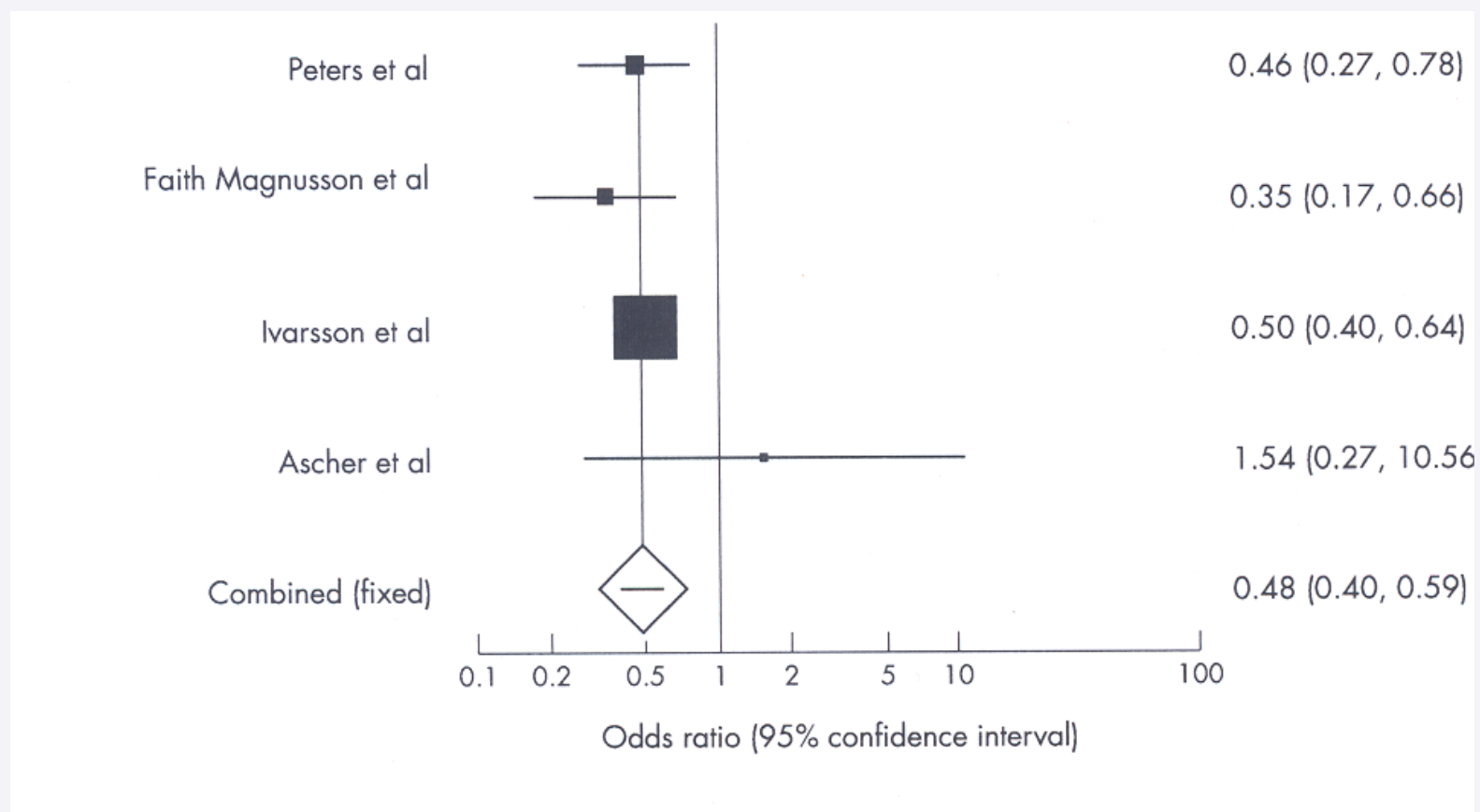
$p=0.014$

Larnkjær et al. Growth Hormone and IGF-I Research 2008



Allattamento al seno e malattia celiaca

Meta analisi degli studi osservazionali



Akobeng et al, Arch Dis Child 2006; 91:39-43



- **allattamento materno**
- **durata dell'allattamento materno**
- **allattamento materno durante il divezzamento ??**



Acknowledgments

***Prof. Carlo Agostoni
Clinica Pediatrica De Marchi
Università di Milano***



GRAZIE DELL'ATTENZIONE

