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MRC Lifecourse Epidemiology Unit

The Southampton Women's Survey: from observational evidence to behaviour change interventions.

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POWER OF PROGRAMMING CONFERENCE
Recommendations for Practice

SOUTHAMPTON Women's SURVEY

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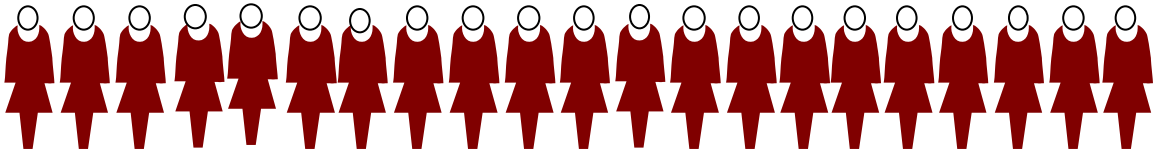
Recommendations for practice

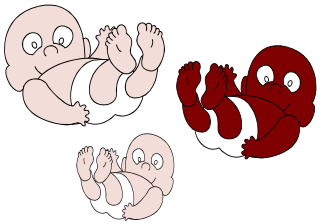
- There is increasing emphasis on translating observational evidence into interventions to improve health
- Quite often the move from observational epidemiological evidence to practice is made without the intermediate step of evaluating the intervention
- Results from the Southampton Women's Survey have lead to the development of three interventions
- These need to be properly evaluated before being rolled out in practice
- The findings from the SWS and the subsequent intervention studies will be discussed, along with some of the challenges

The Southampton Women's Survey



12,583 non-pregnant Southampton women aged 20-34 years interviewed between 1998 and 2002.

Subsequent pregnancies studied, ultrasound scans and interviews.



3159 births

Children followed-up at 6, 12, 24 & 36 months. Samples seen at 4, 6, 8 & 10-12 yrs.

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Adapted from Inskip et al. Int J Epidemiol. 2006

Findings and interventions

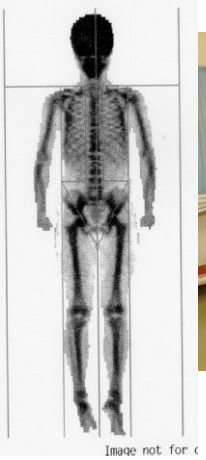
- Maternal vitamin D and child outcomes
  - Leading to an RCT:
    - Maternal Vitamin D in Osteoporosis (MAVIDOS)

- Women's diets before pregnancy and links with childhood dietary and health outcomes
  - Leading to three intervention studies:
    - Southampton Initiative for Health
    - Southampton PRegnancy Intervention for the Next Generation (SPRING)
    - LifeLab Southampton

Maternal serum vitamin D concentrations and fetal, infant & child outcomes

Lung function

Atopy



DXA

Fetal ultrasound

Grip strength

Relationship between maternal 25(OH)-vitamin D concentration and outcomes in the child

- Positive associations with
  - Bone & muscle development
    (Javaid *et al.* Lancet 2006, Mahon *et al*. JBMR 2010, Harvey *et al.* JCEM 2013)
  - Fat mass at birth (Crozier *et al.* Am J Clin Nutr 2012)

+ve

- Negative association with
  - Fat mass by age 6 years (Crozier *et al.* Am J Clin Nutr 2012)

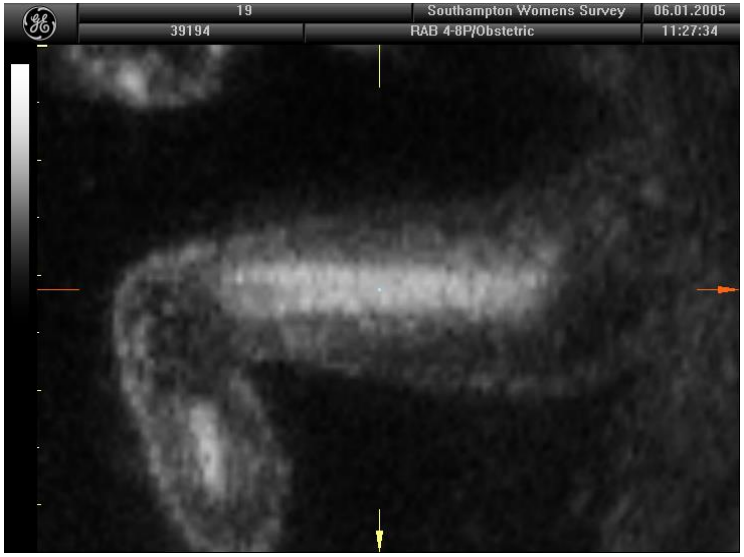
−ve

- No association with
  - Asthma, wheeze, lung function or atopy
    (Pike *et al.* Thorax 2012)

Null

Systematic review concludes:

In no single disease area did the evidence base unequivocally support the use of vitamin D supplementation during pregnancy (Harvey *et al*. HTA Journal 2014 (in press))



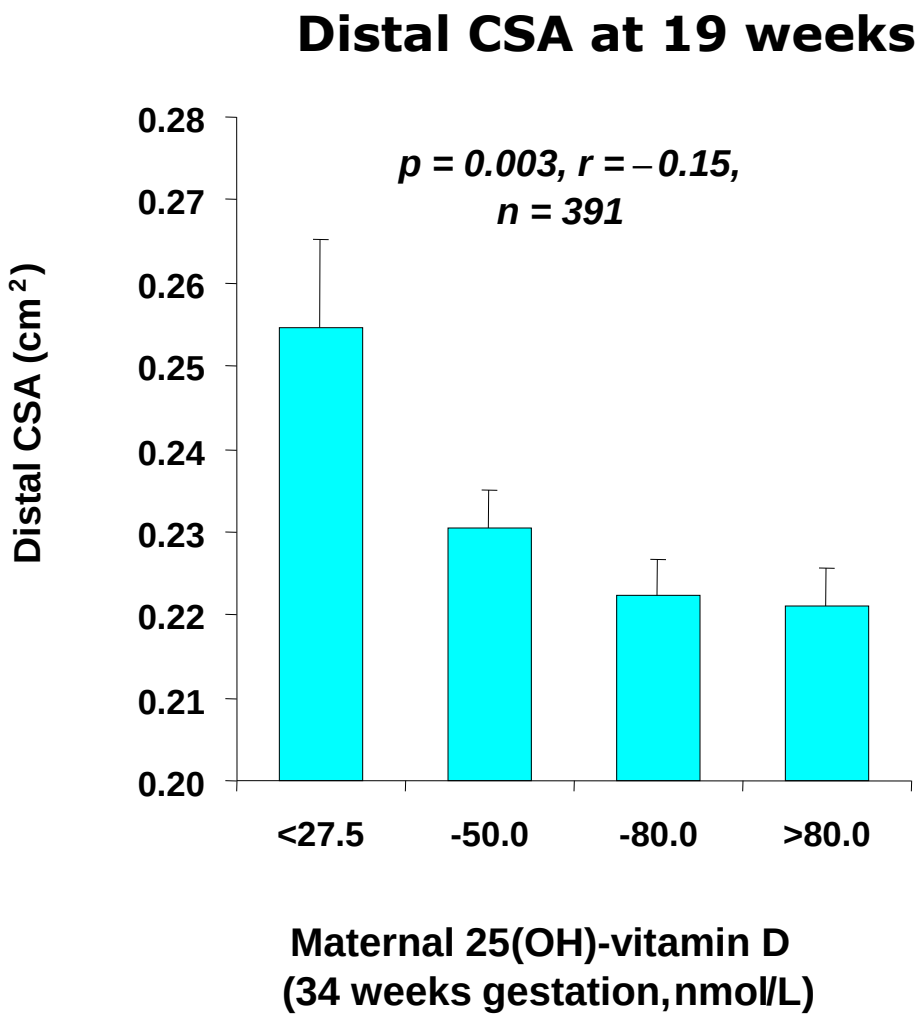
Normal femur shape - 19 weeks.

Splayed metaphyseal ends -19 weeks.

Radiograph of child with rickets

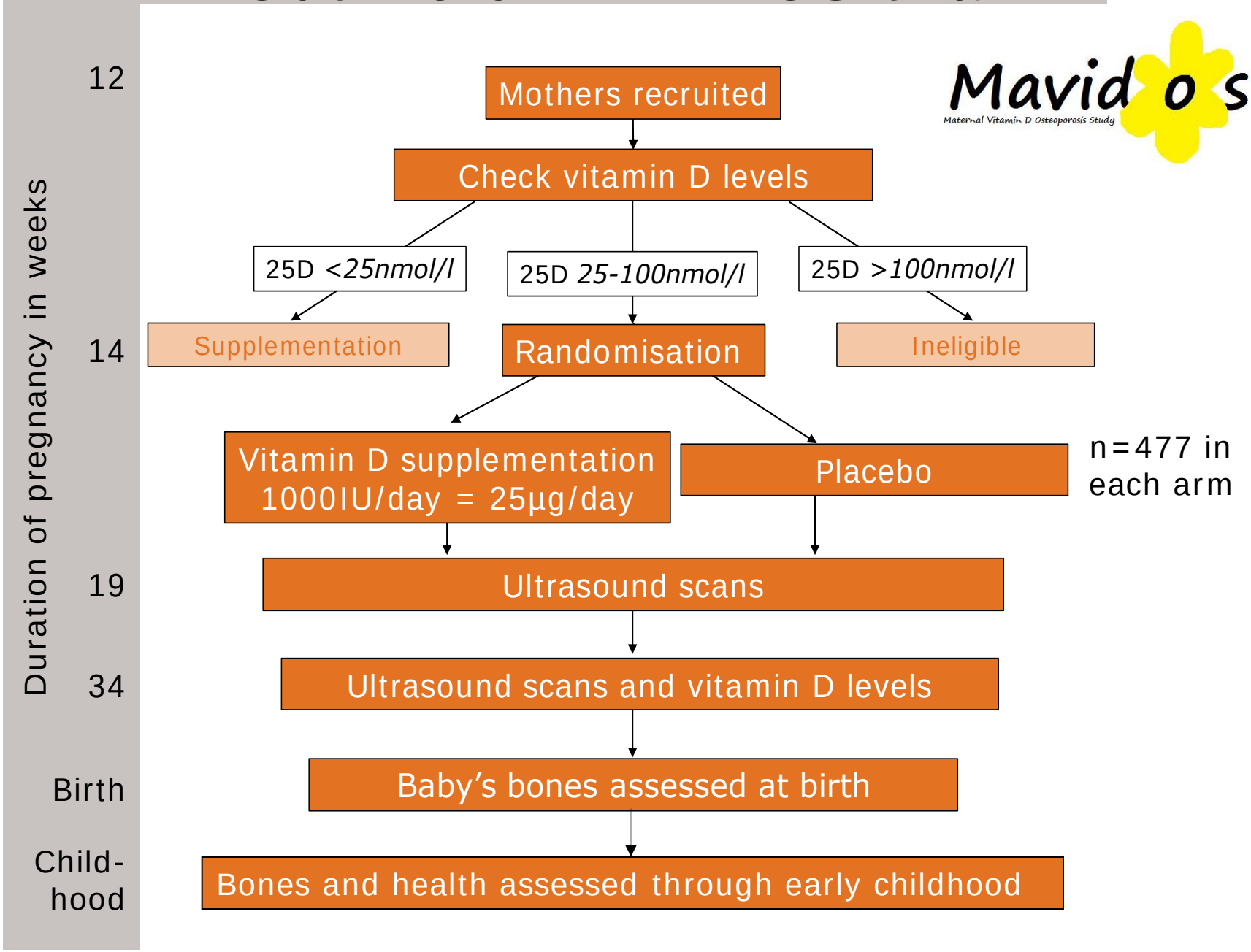
Note the splayed femoral metaphyses.

Fetal distal femur cross-sectional area at 19 weeks, by quarters of maternal vitamin D.



Mahon et al, JBMR 2010

Outline of MAVIDOS trial

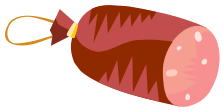


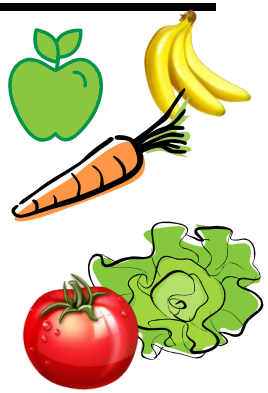
Women's diets before pregnancy and links with childhood dietary and health outcomes

Photographs: © Magda Segal

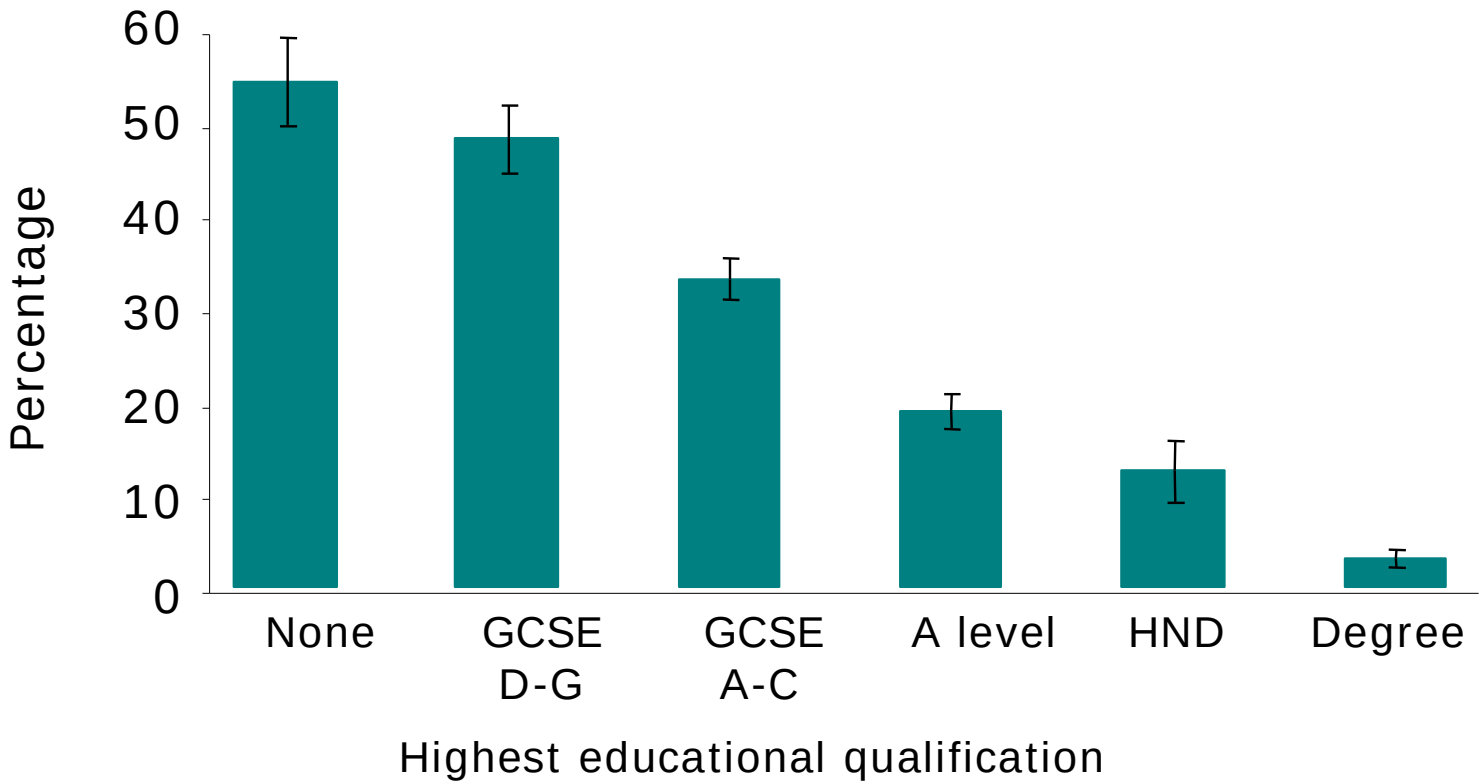
Median times per week food is consumed in the least and most 'prudent' diet quarters

Food	Least prudent	Most prudent
Sugar	21	0
White bread	14	3
Red meat and processed meat	7	2
Crisps and confectionery	10	4
Fruit and fruit juice	7	18
Non-salad vegetables	9	17
Salad vegetables	3	11



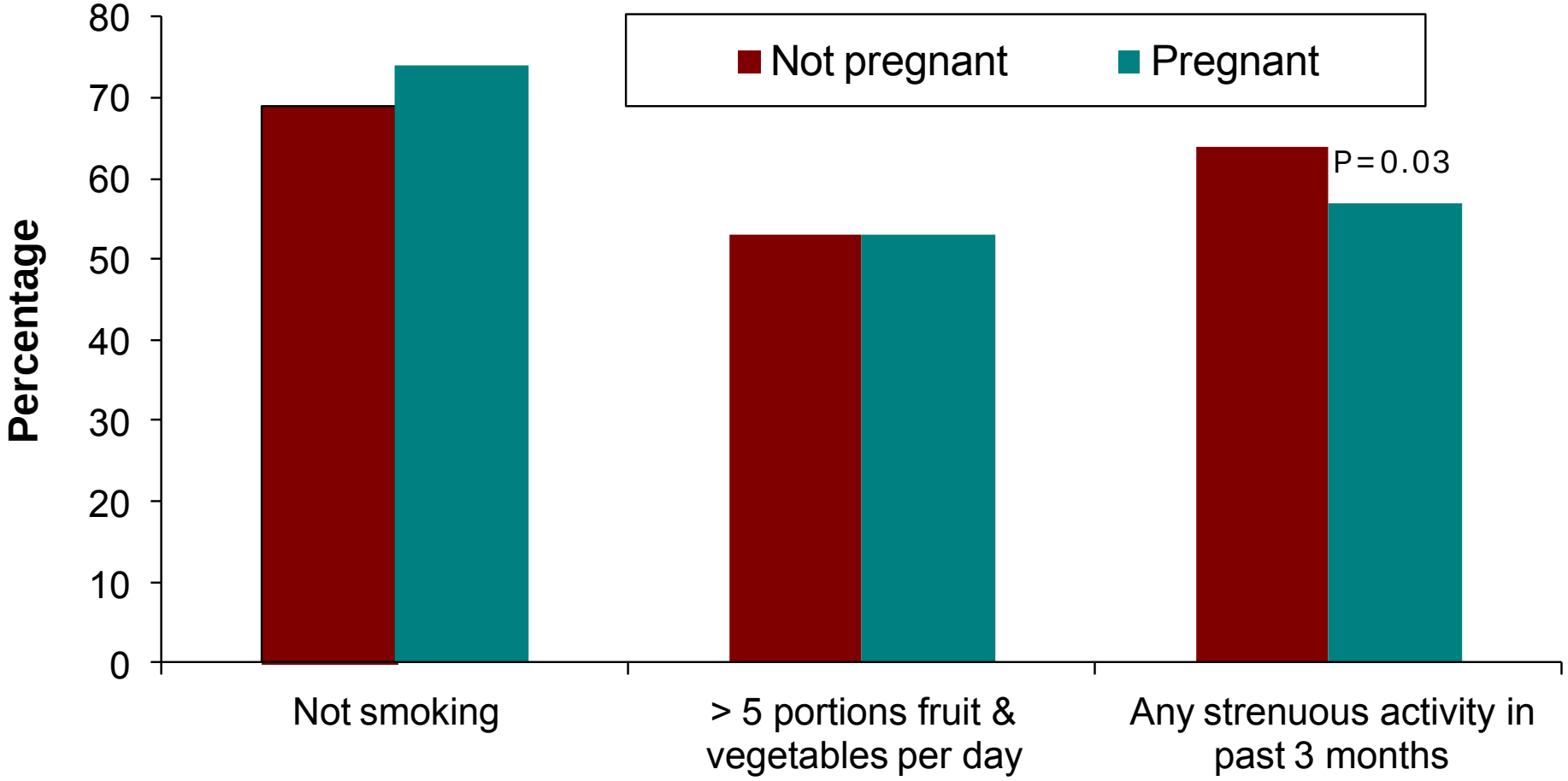


Percentages in the lowest quarter of prudent diet score by highest educational qualification



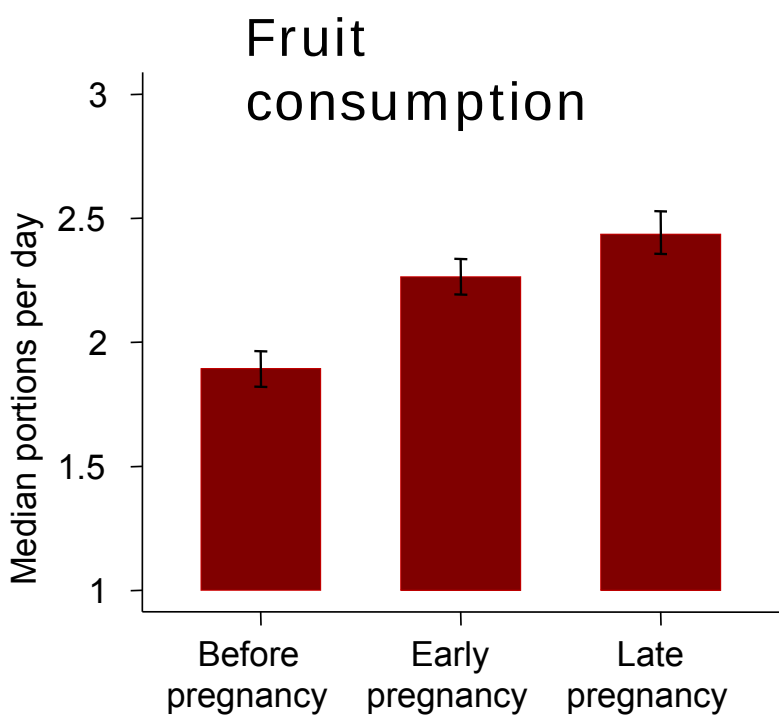
Robinson et al Eur J Clin Nutr. 2004

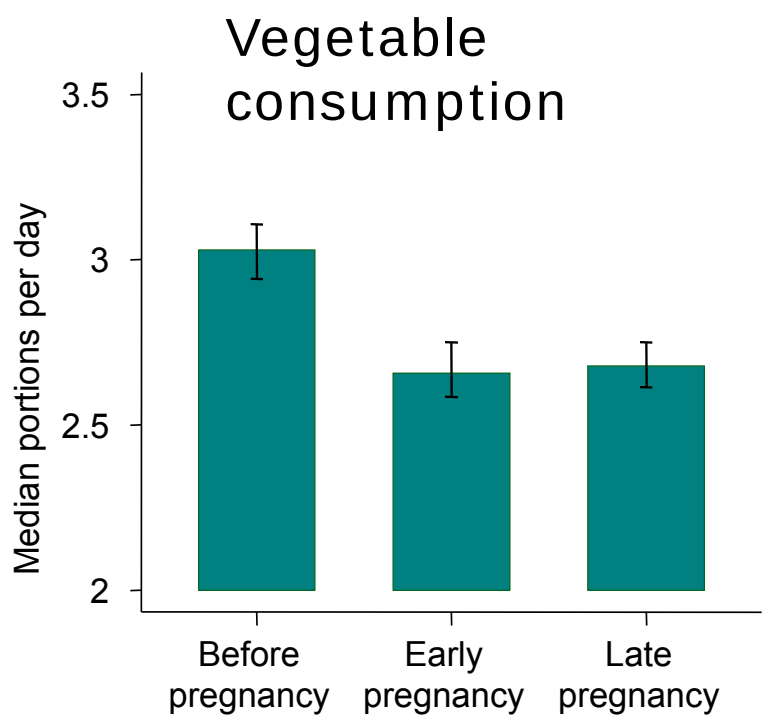
Lifestyles of SWS women who did and did not become pregnant within 3 months of interview



Inskip et al. BMJ 2009

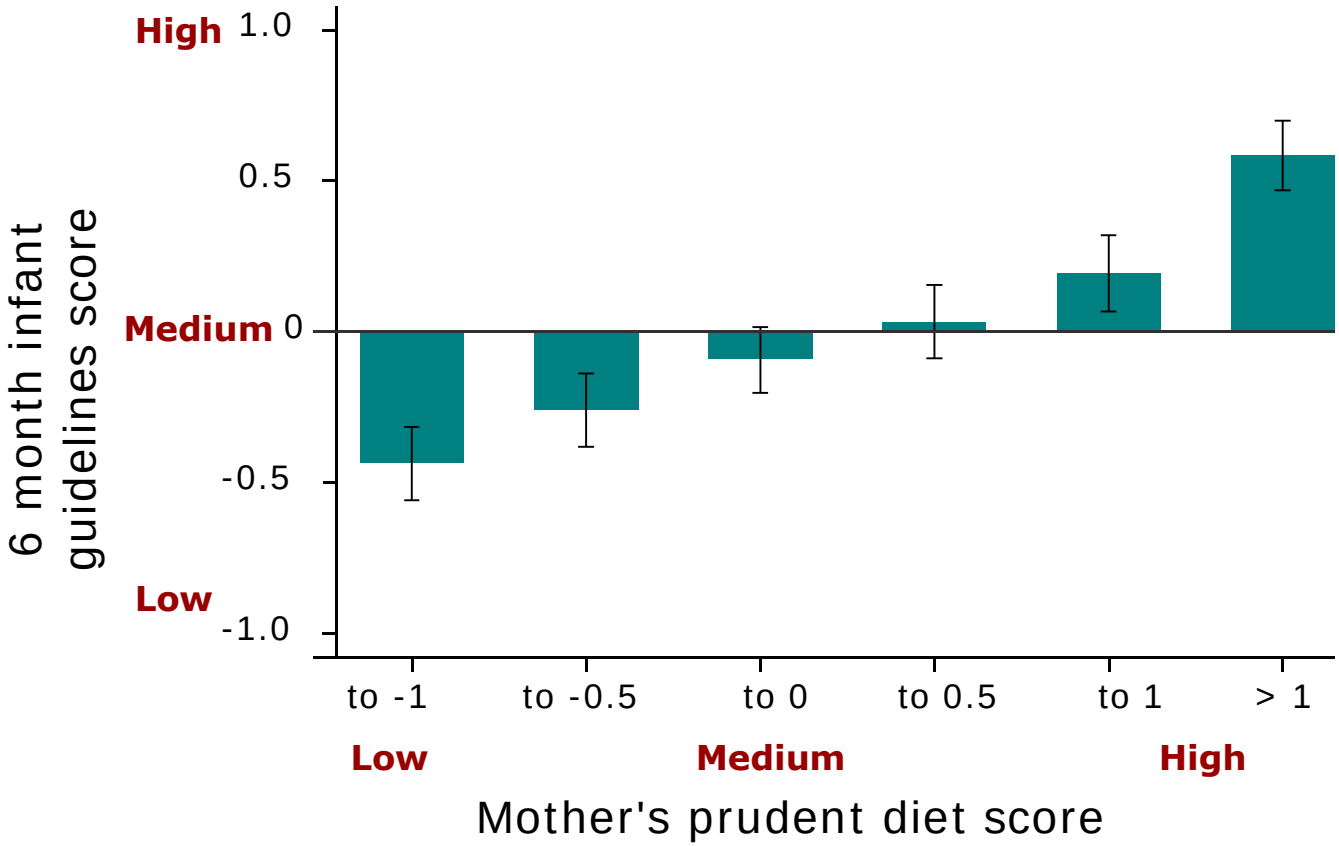
Changes in fruit and vegetable consumption from before to during pregnancy





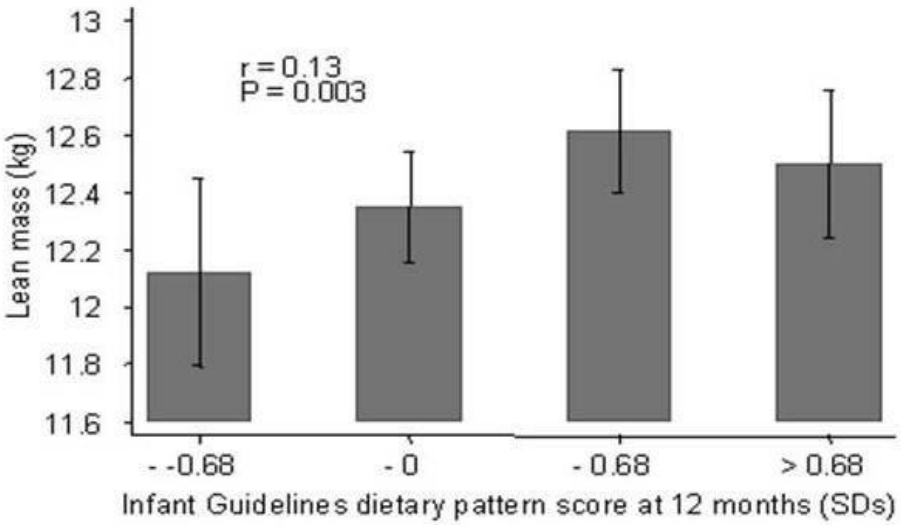
Crozier et al. Paed Perinatal Epidemiol 2009

Infant guidelines pattern score according to prudent diet score of the mother

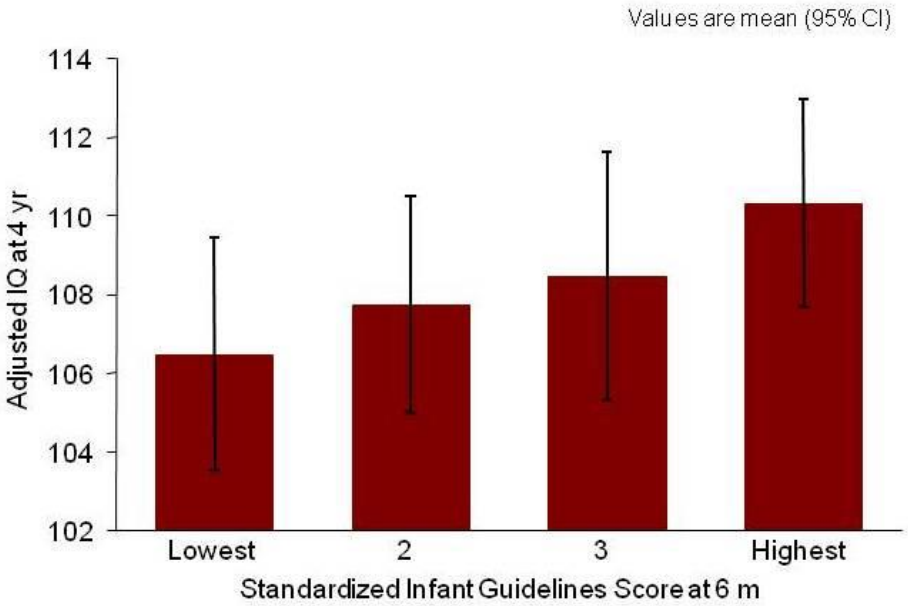


Robinson et al. Br J Nutr. 2007

Infant guidelines score in relation to childhood outcomes

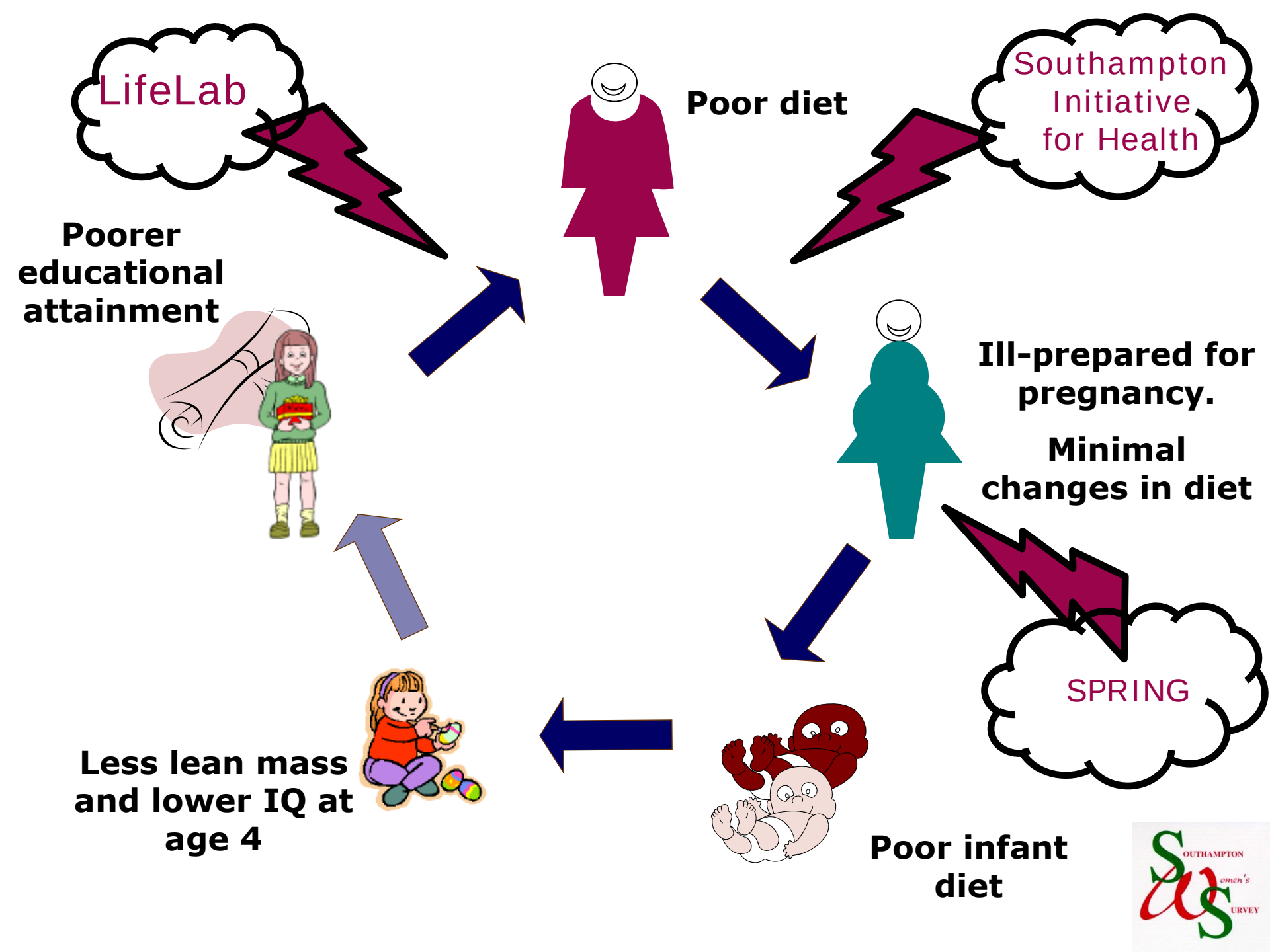


Robinson et al JCEM 2009



IQ adjusted for sex, birth order, gestational age, birth weight, maternal age, IQ, social class, education and HOME score

Gale et al. J Child Psychol Psychiatry. 2009


LifeLab
Poor diet
Southampton Initiative for Health
Poorer educational attainment
Ill-prepared for pregnancy.
Minimal changes in diet
SPRING
Less lean mass and lower IQ at age 4
Poor infant diet
SOUTHAMPTON Women's SURVEY

‘Healthy conversation’ skills

To enable those working with women and children in the community or hospitals to engage in conversations with women that enable to women to take control of their actions

Effectiveness and Efficacy

- Effectiveness
  - Southampton Initiative for Health
  - Before and after pragmatic trial of the effect of training staff in SureStart Children's Centres to engage with women attending the Centres
  - Staff can be trained successfully and deliver the intervention appropriately

- Efficacy
  - Southampton PRegnancy Intervention for the Next Generation (SPRING)
  - Research midwives conducting health conversations with pregnant women
  - 2x2 factorial design individually randomised with vitamin D supplementation as the other treatment

LifeLab Southampton

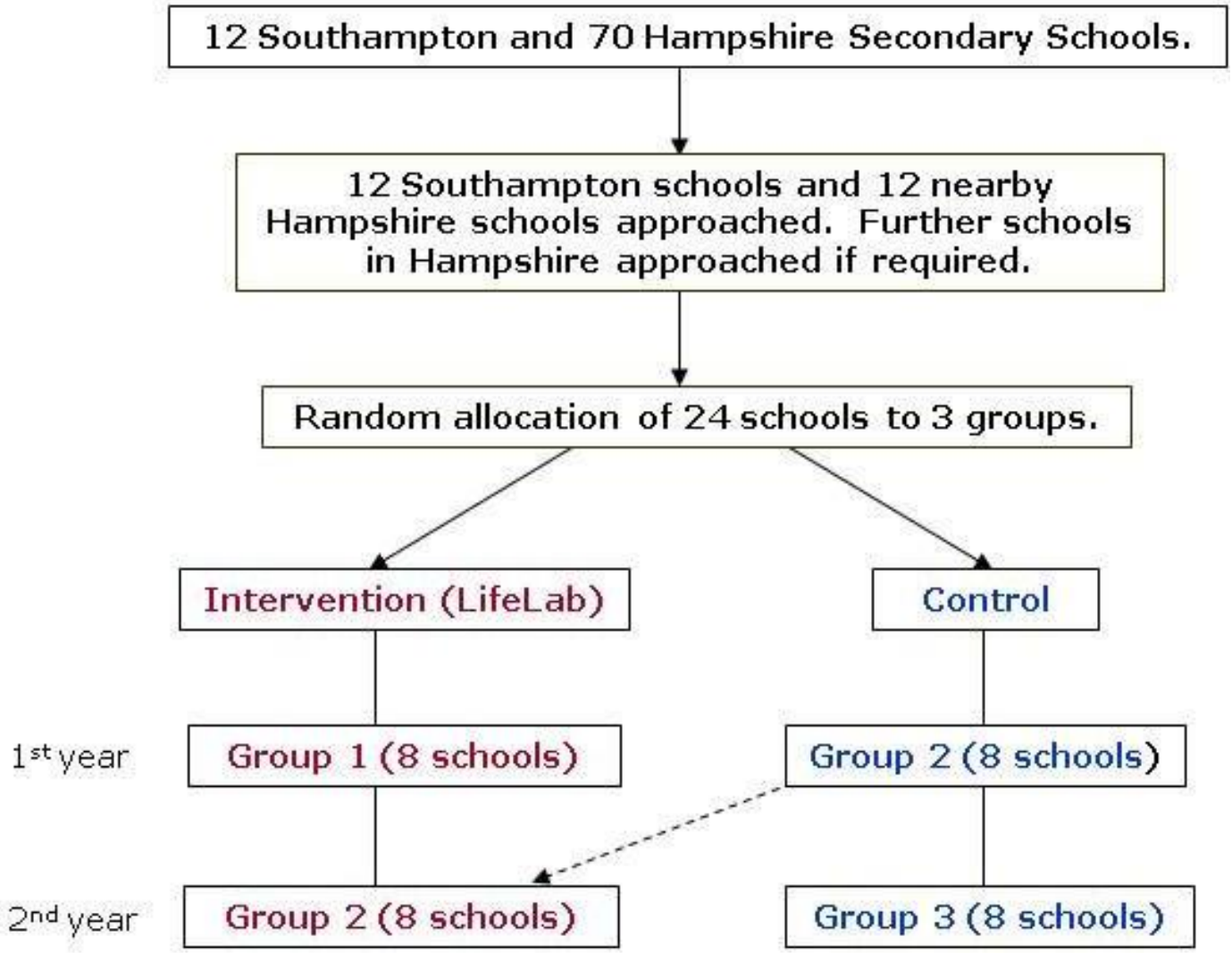
Opened September 2013

'Me, My Health and My Children's Health'

Engaging 13-14 year olds in

- the importance of their diet and lifestyle:
  - ➢for their own health and
  - ➢their future children
- inspiring them to take in interest in science
- aiming to improve health, nutrition and science literacy

LifeLab evaluation – cluster randomised trial



Summary

- Findings from the SWS are being translated into three interventions assessed in four studies
- ***<u>If</u> successful these interventions will result in:***
  - (a) improved diets and lifestyles of young women and benefits for their children
  - (b) improved diets and lifestyles in teenage children
  - (c) stronger bones in children born to women who receive vitamin D supplementation, leading to better health when the children reach old age

Implications for practice

- The Southampton Women's Survey points to:
  - Maternal supplementation with vitamin D in pregnancy
  - Interventions to improve health behaviours before and during pregnancy

- Practice ahead of research:
  - Vitamin D supplementation recommended in pregnancy in UK, though no trial completed yet
  - Southampton, Hampshire and Buckinghamshire in UK, and parts of New Zealand, South Africa and Canada now using the 'Healthy conversation skills' in their routine services

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Radiographers

Young women and children in Southampton, GPs, midwives, SureStart staff, and schools

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