

Modifiable risk factors for obesity at age 4½ years

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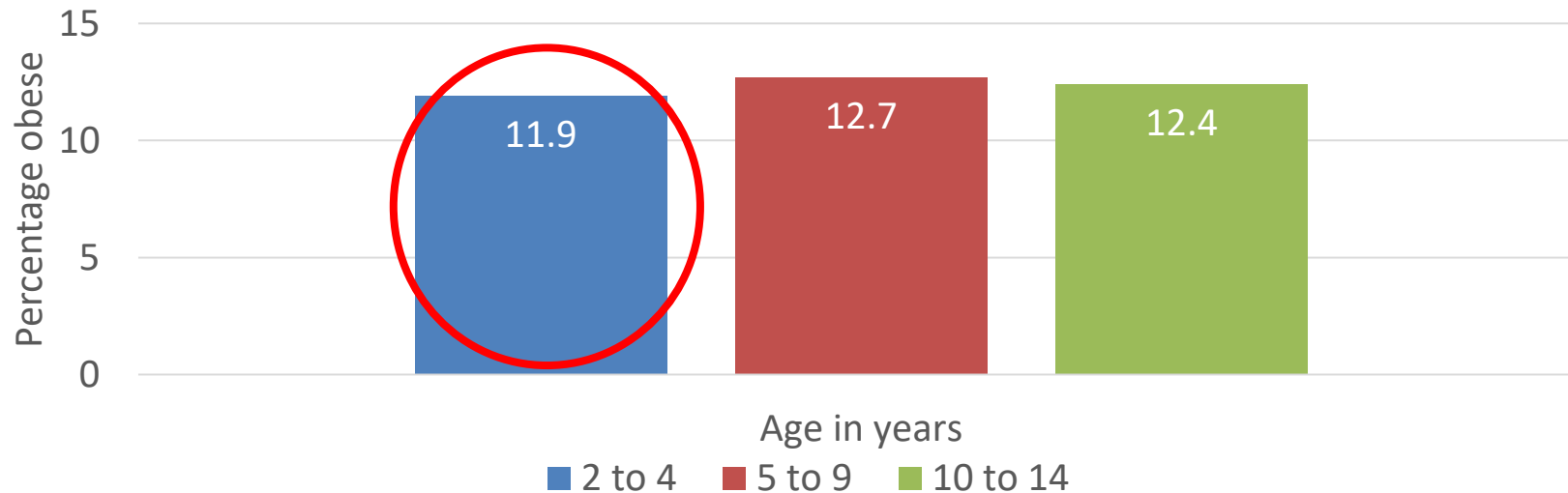
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Obesity: Why look early in life?

- **In 2018, 1 in 8 (12%) of NZ children aged 2-14 years) were obese.¹**
- Between 2006-2007 and 2017-2018 obesity prevalence in NZ children 2 to 14 years old increased from 8% to 12%.



- According to the OECD's 2014 figures, child obesity rates are highest in Greece, Italy and New Zealand.²

Objectives

1. Identify modifiable risk factors which play a role in early childhood obesity
 - Evidence from the literature.
 - Applied to the New Zealand context.
2. Explore early childhood risk factors, predictive of obesity at age 4½ years using the Growing Up in New Zealand cohort study
 - Of specific relevance to Maori and Pacific children.

Growing Up in New Zealand child cohort study

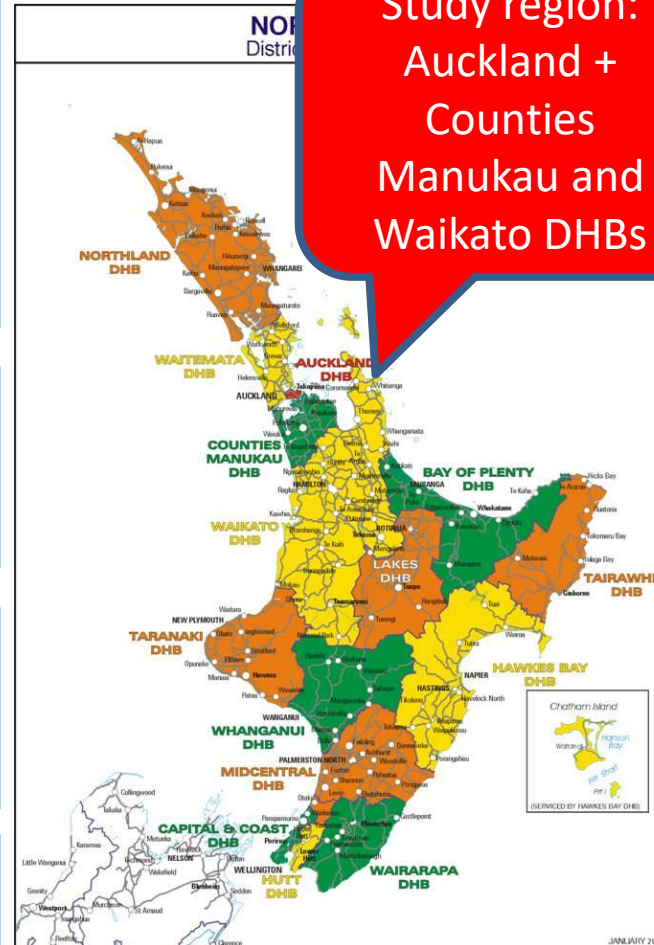
Design features

- Enrolment during pregnancy
- Inclusion of partners
- Ethnic and socioeconomic diversity

Births occurred across the calendar year April 2009-March 2010

11% of national birth cohort during the recruitment period

Closely aligned to all NZ births in 2007-2010



6,822 women and
4401 partners
enrolled & completed
antenatal interview
Child cohort of 6853
children

2 year interview 94%
retention of child
cohort (n = 6327)

4½ year interview 90%
retention of child
cohort (n=6156)

Growing Up in New Zealand cohort

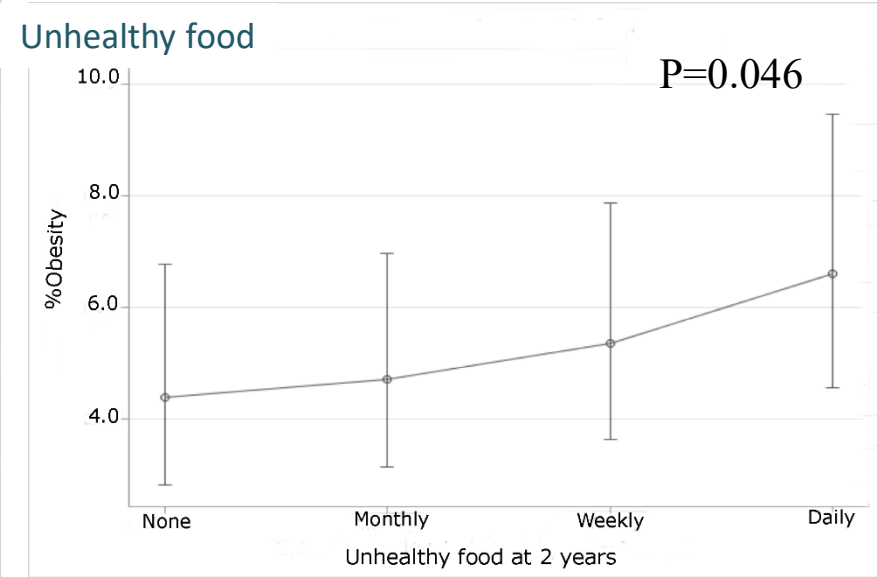
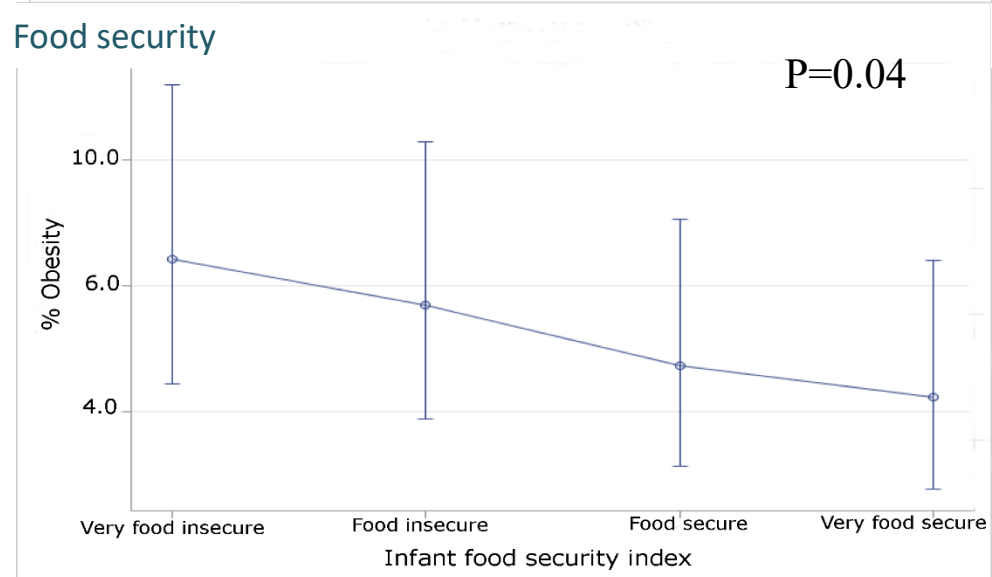
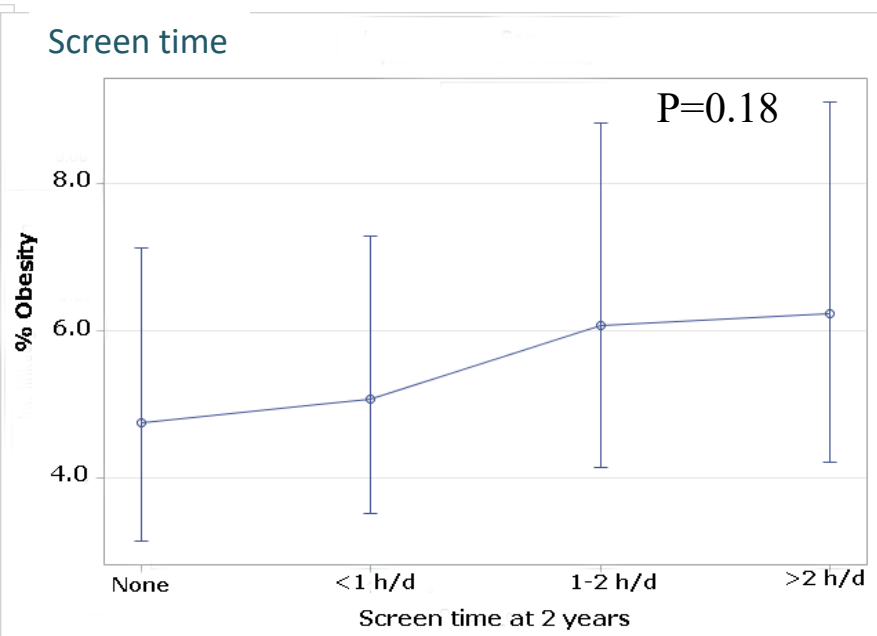
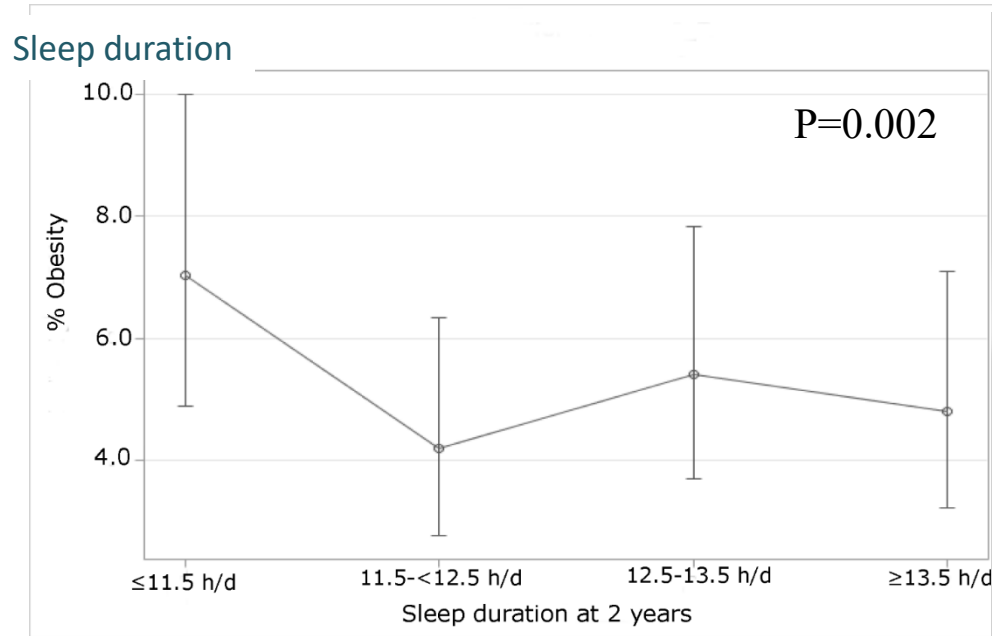
- Recruited 6853 children before their birth - via pregnant mothers (6823) in 2009 and 2010
- Partners recruited and interviewed independently in pregnancy (4401)
- Cohort size and diversity ensure adequate explanatory power to consider trajectories for Maori (1 in 4), Pacific (1 in 5) and Asian (1 in 6) children, and multiple ethnic identities (over 40%)
- “Population of interest” - cohort broadly generalisable to current NZ births (diversity of ethnicity and family SES)
- Retention rates high in first 5 years (over 92%)



Modifiable factors identified from literature review and then applied to the Growing Up in New Zealand study

- Food security - from 0 to 9 months
 - A measure of child's own food security status during infancy rather than a household measure includes, breastfeeding, healthy and unhealthy food consumption, and mother's coping mechanisms.
- Non-core food intake
 - Developed from the 23 month food frequency questionnaire.
 - Frequency of soft drink, fruit juice, and take-away consumption over the previous 28 days.
 - Unhealthy food – aggregate of soft drink and take-away
- Sleep duration
 - A combination of average night time and day time sleep hours at 23 months.
- Screen time
 - A combination of average daily television viewing hours and electronic game use.

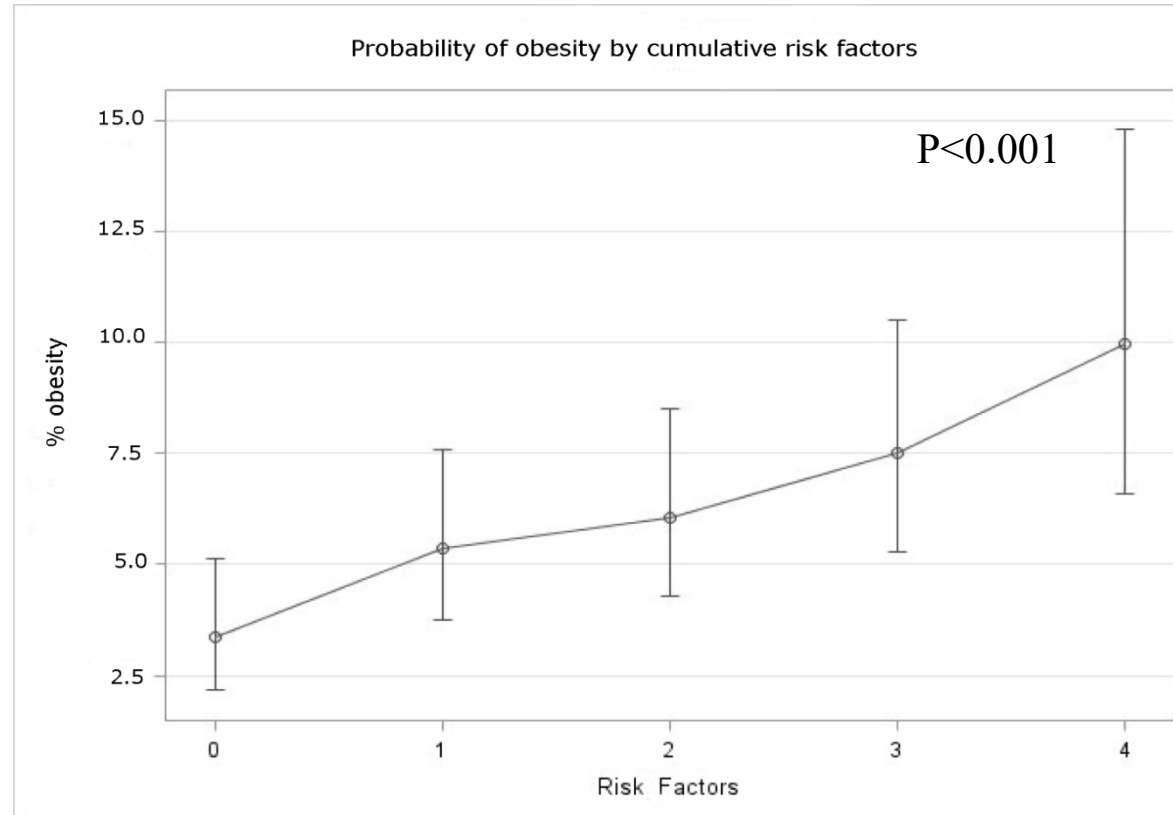
Risk of obesity with exposure to each risk factor



Mean probability of obesity at age 4½ years by exposure to number of risk factors

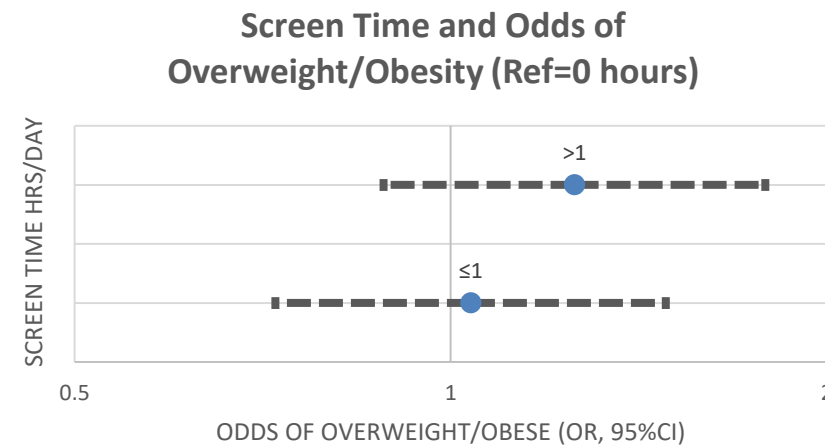
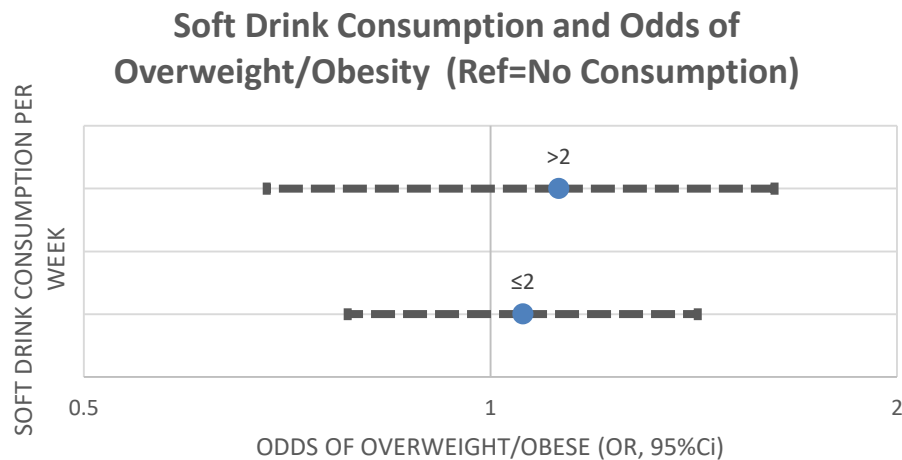
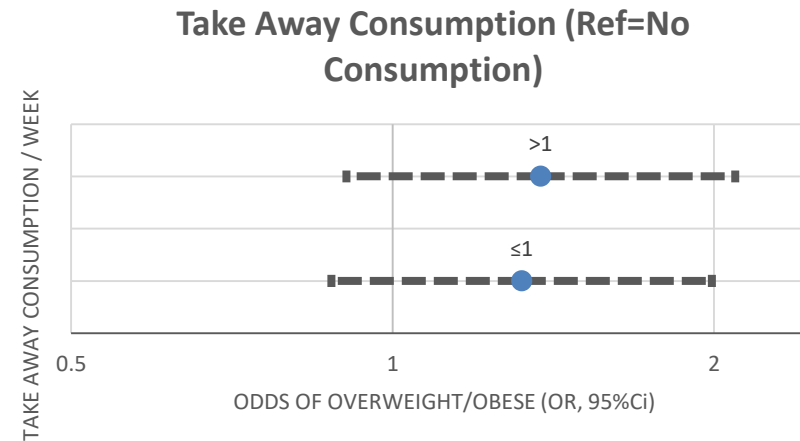
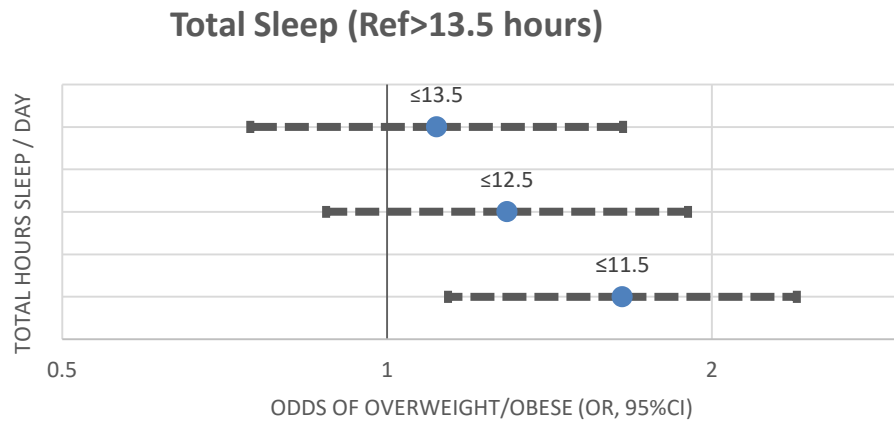
The four risk factors:

- Food security
- Sleep duration
- Screen time
- Unhealthy foods



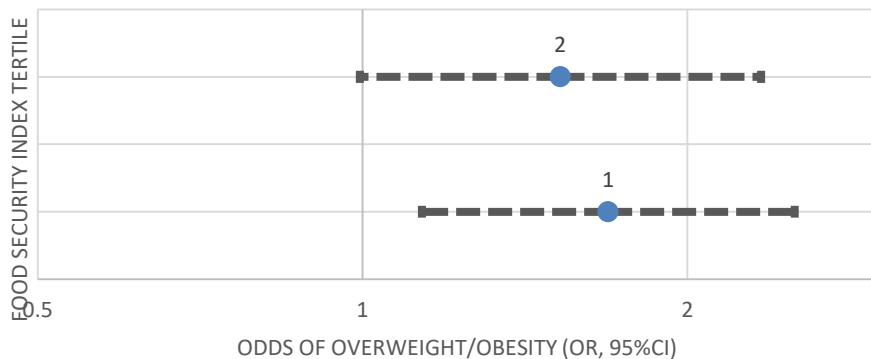
Explore the early childhood risk factors that are associated with obesity at age 4½ years for Māori and for Pacific children

Association of sleep duration, screen time, soft drink, and take-away consumption with obesity at age 4½ years for Māori children (n = 1406)

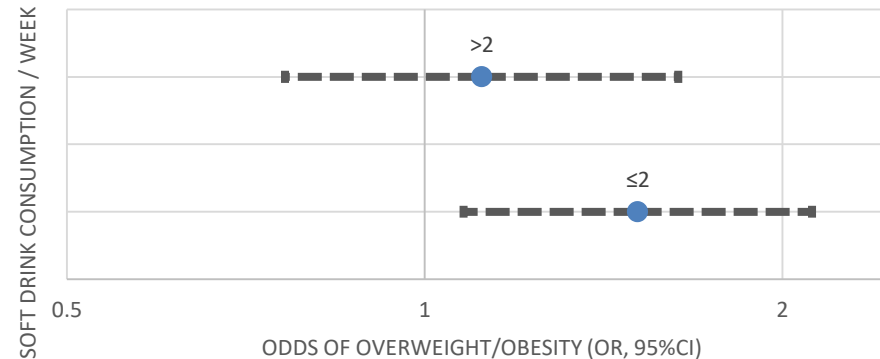


Association of food security, sleep duration, screen time and soft drink consumption with obesity at age 4½ years for Pacific children (n = 1140)

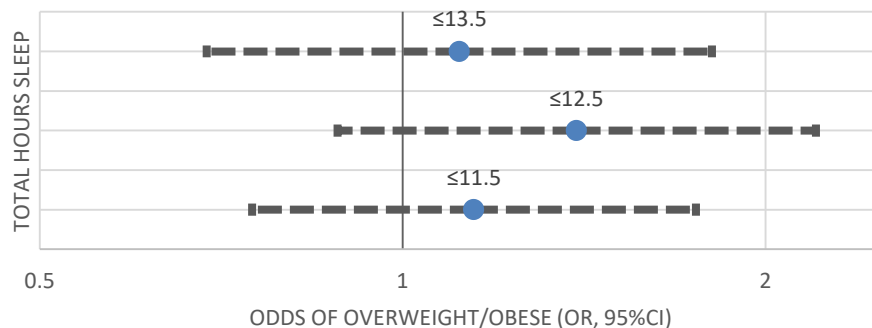
Food Security Index (Ref=FSI 3)



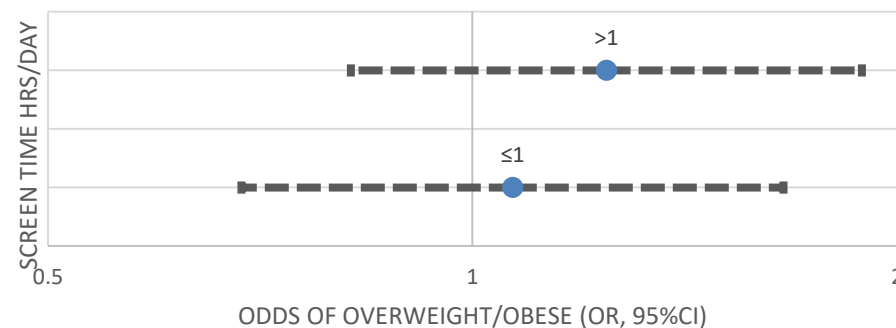
Soft Drink Consumption (Ref=No Consumption)



Total Sleep and Odds of Overweight/Obesity (Ref>13.5 hours)

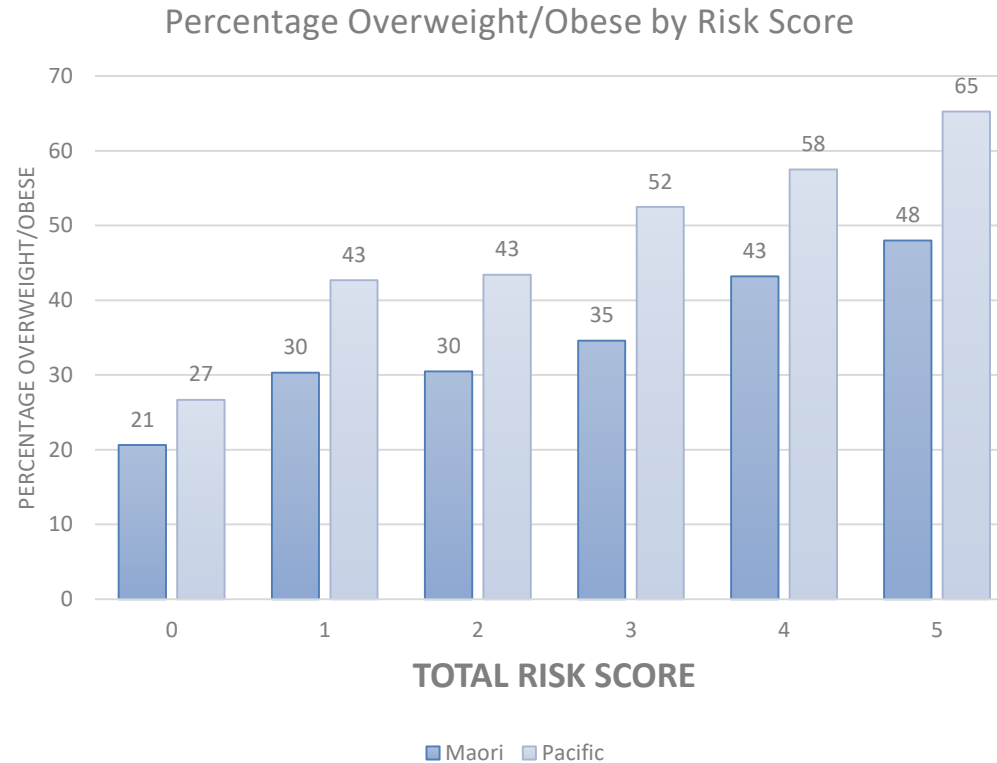


Screen Time and Odds of Overweight/Obesity (Ref=0 hours)



The Effect of an Accumulation of Risk Factors on Proportion of Overweight/Obese

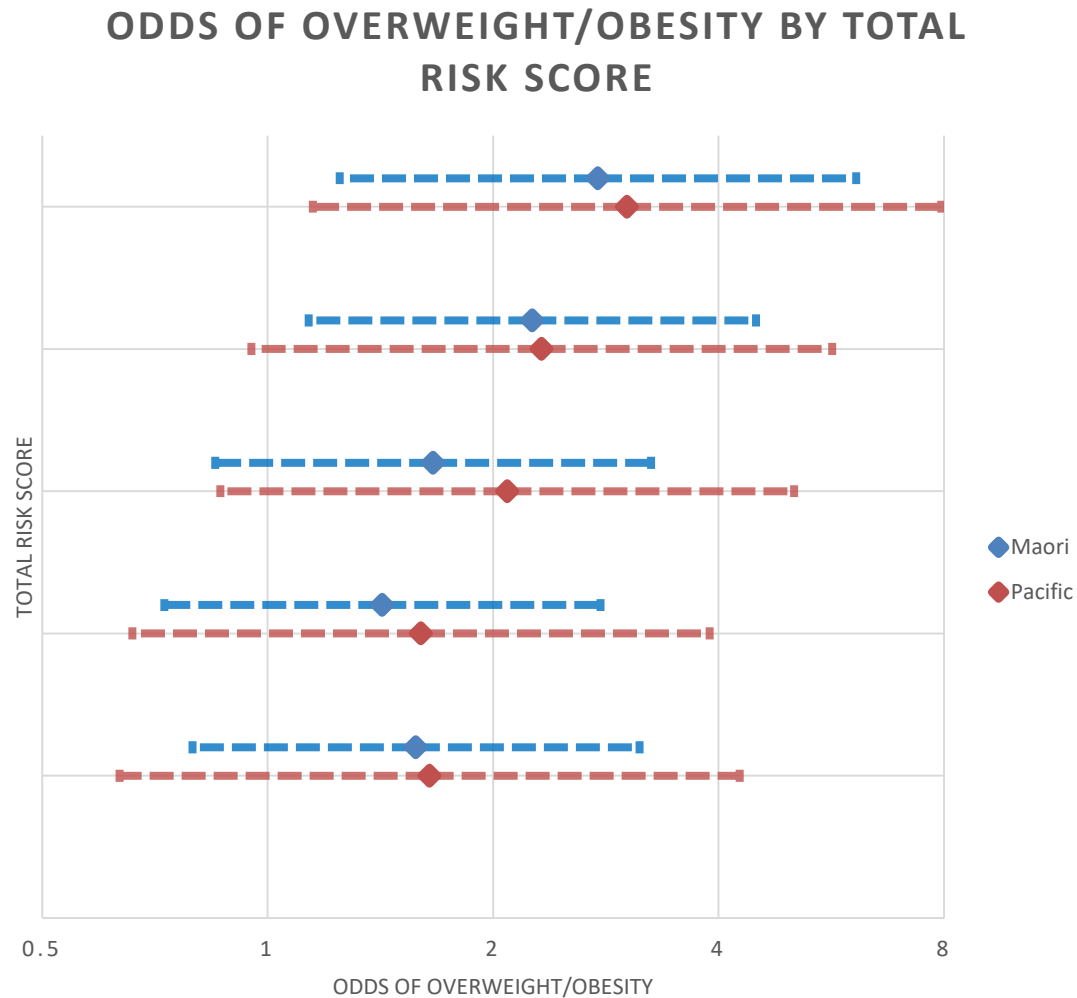
With 0 risk factors, 21% of Māori children are overweight/obese, compared with 35% with 3 risk factors and 48% with 5.



With 0 risk factors, 27% of Pacific children are overweight/obese, compared with 52% with 3 risk factors and 65% with 5.

Risk score determined by sum of risk factors: Screen time >1h/day; Sleep ≤11.5h/day; Food Security Index=1; Soft drink consumption >0; and Take away consumption >0.

Odds Ratios of Overweight/Obesity by Total Risk Score



- An accumulation of risk factors increase the odds of overweight/obesity
- Māori children with 4 or 5 risk factors have 2.23 (95%CI: 1.13, 4.49) and 2.76 (95%CI: 1.25, 1.51) times the odds of overweight/obesity than those with 0, respectively.
- For Pacific children, those with 5 risk factors are 3.02 times more likely to be overweight/obese (95%CI: 1.15, 7.93)

Indications and Conclusions

- All the risk factors that we considered play a role in childhood obesity.
 - Which seems to be stating the rather obvious.
- The important point is that these are **readily modifiable**.
- Parents can tackle some of these things at home, without external or policy help.
- Yes, reducing screen time may be a challenge, but it's a challenge worth taking up if it reduces the chances of your child become Ow/Ob.
- At any rate, less screen time/takeway foods/softdrinks is probably never a bad thing, is it?
- Food security will require some policy intervention. GST-free fruit & vegetables, anyone?

Next steps

1. Identify behavioural factors that contribute to a change from a healthy to an unhealthy weight or from an unhealthy to a healthy weight between age 2 and 4½ years
2. Investigating the contribution of family functioning, rules and structure related to sleep, screen time, meal times and food

Thank you Mihi Koe Malo
'aupito Faafetai धन्यवाद 非常
感谢你! Danke Спасибо
شكرا جزيلاً

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