

## CLUSTERING OF OBESITY-RELATED RISK BEHAVIOURS IN CHILDREN AND THEIR MOTHERS.

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## Background

- > Health behaviours often cluster in individuals
- > Little work done a) in children, b) including both eating and activity-related behaviours, and c) examining clustering within families
- > Knowing what behaviour patterns co-occur, in individuals and across generations, can help targeting of interventions

## READI Study Details

(Resilience for Eating & Activity Despite Inequality)

- > Women aged 18-45 from 40 urban & 40 rural randomly selected, low SES (bottom 1/3 SEIFA) suburbs <200km from Melbourne.
- > Total survey, n=4934 (response 41%)
  - > Mothers with children aged 5-12, n=1456
  - > Agreed for child to be surveyed, n=762 (52%)
  - > Data for (biological) mother and child, n=647
  - > All relevant data for mother (n=555), child (n=370)

## Measures

### Healthy Eating

- > Mothers/Children: fruit & veg/day (questionnaire)\*

### Unhealthy Eating

- > Mothers/Children: fast & junk food/day (questionnaire)

### Physical Activity

- > Mothers: IPAQ long questionnaire
- > Children: Accelerometer

### Sedentary Behaviour

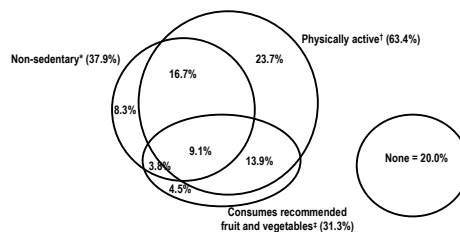
- > Mothers: time sitting/day (questionnaire)
- > Children: time spent TV/video/computer/computer games /day (questionnaire)

\*note, potatoes not included for cluster analysis

## Analysis

- > Cluster analysis (Ward method with squared Euclidean distances)
- > Means compared using post hoc ANOVA with Bonferroni adjustment for multiple comparisons
- > Concordance of cluster solution in mothers and children testing using Chi-square test

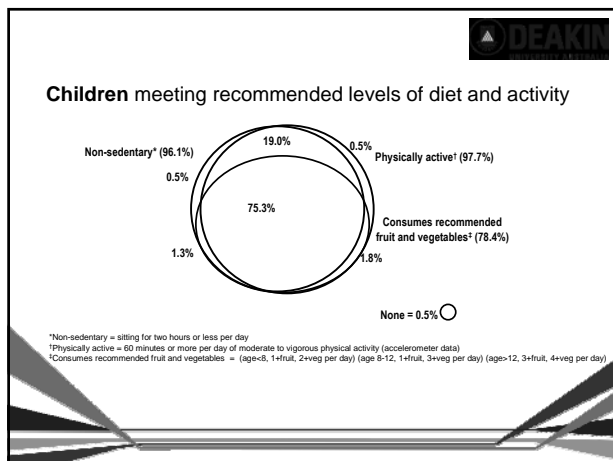
## Mothers meeting recommended levels of diet and activity



\*Non-sedentary = sitting for four hours or less per day

†Physically active = 30 minutes or more per day of leisure time physical activity

‡Consumes recommended fruit and vegetables = at least 2 serves of fruit and 5 serves of vegetables or legumes per day



### Results of cluster analysis: Mothers\*

Title	'Healthy eaters'	'Exercise addicts'	'Anti-veg, anti-exercise'	'Chronic sitters'	'Junk food addicts'
Fruit & Veg (serves/day)	5.7	3.9	2.5	4.2	4.7
Junk & fast food (serves/day)	.3	.6	.7	.8	1.7
Sitting (min/day)	317.7	266.5	278.5	920.0	293.2
Leisure time PA (min/day)	43.2	104.8	20.2	32.8	32.8
Self-rated health (likert scale)	3.6	3.8	3.4	3.4	3.3
Age (years)	39.4	37.9	38.4	38.7	38.8
Education (scale 1-7)	2.1	1.9	1.8	1.9	2.1
No. of children <18 yrs	2.3	2.3	2.3	2.2	2.5
BMI (kg/m <sup>2</sup> )	26.6	25.2	26.2	26.4	28.3
n	161	65	182	68	77

Method: 5 cluster model, Ward's hierarchical clustering with squared Euclidean distances  
 \*N=553

### Results of cluster analysis: Children\*

Title	'Young exercise addicts'	'All-round healthy'	'Junk food addicts'	'Anti-exercise and health food'	'TV and junk addicts'
Fruit & Veg (serves/day)	3.6	5.5	4.4	2.7	4.0
Junk & fast food (serves/day)	.9	.5	1.7	.7	1.5
Sitting (min/day)	35.8	38.5	51.8	54.7	116.3
Mod-Vig PA (min/day)	314.3	189.6	160.4	123.7	113.7
BMI (kg/m <sup>2</sup> )	17.0	18.6	18.7	20.0	19.3
Age (years)	6.7	9.4	10.1	10.8	11.5
n	61	130	99	60	18

Method: 5 cluster model, Ward's hierarchical clustering with squared Euclidean distances  
 \*n=368

### Concordance between clusters in mothers and their children\*

		Children				
		'Young exercise addicts'	'All-round healthy'	'Junk food addicts'	'Anti-exercise and health food'	'TV and junk addicts'
Mothers	'Healthy eaters'	Concordant: 9 Discordant: 15	44 31	19 22	10 14	3 3
	'Exercise addicts'	Concordant: 7 Discordant: 6	17 15	7 5	4 6	0 1
	'Anti-veg, anti-exercise'	Concordant: 17 Discordant: 16	26 34	20 24	25 16	6 4
	'Chronic sitters'	Concordant: 9 Discordant: 7	12 14	11 10	7 6	0 1
	'Junk food addicts'	Concordant: 11 Discordant: 9	10 18	21 19	4 5	3 2

Legend:  same traits in mother and child;  opposite traits in mother and child  
 \*N=302  
 Overall  $\chi^2$  p=0.001

- ### Conclusions
- > 44% of mothers, but 98% of their children meet more than 1/3 diet/PA/sedentary recommendations
  - > Clusters representing particular patterns of behaviour could be identified in mothers and children, with behaviours related to BMI & self-rated health in mothers (p<0.05)
  - > Healthy and unhealthy behaviours cluster in mothers and their children with reasonable concordance (p=0.001)
  - > This research suggests that targeted, multi-behaviour approaches, and family-level interventions for obesity prevention may be justified

- ### Acknowledgements
- > Study funded by a National Health and Medical Research Council (NHMRC) Strategic Award
  - > AC & KB supported by NHMRC
  - > DC supported by VicHealth
  - > The women and children who participated in the READI study