CARDIOVASCULAR RISK FACTOR CLUSTER ANALYSIS OF PERTH ADOLESCENTS

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A survey was conducted in 1991 on fifteen year old Perth schoolchildren as part of a longitudinal study tracking cardiovascular disease(CVD) risk factors. Analysis was done on 555 students for whom complete data was available, including 266 females and 289 males. Cluster analysis was utilised to identify whether there was a subgroup at 'high risk'(HR) of future CVD. Relevant variables covered blood pressure, body fatness, activity level, aerobic fitness and diet. It was also sought to establish the quality of the nutrient intake of this high risk group.

Significant HR subgroups were established separately for each sex using combinations of the following variables; systolic blood pressure(SBP), diastolic blood pressure(DBP), body fat, body mass index(BMI), fitness, activity, energy intake(kJ), percent fat intake(%FAT), and energy adjusted cholesterol (adjCHOL), fibre(adjFIB), sodium(adjNA) and calcium intakes(adjCA).

VARIABLE	MALE CLUSTER		FEMALE CLUSTER	
	HR(n=61)	LR(n=228)	HR(n=55)	LR(n=211)
SBP(mmHg)	125.8*	119.0	120.7*	114.0
DBP(mmHg)	65.2*	62.3	65.9	65.3
BODY FAT(%)	18.4*	11.4	25.8*	18.0
BMI(kg/m^2)	23.1	20.1	24.6*	19.9
FITNESS(laps)	59.4*	84.7	33.6*	53.9
ACTIVITY(time)	20.5*	24.4	17.4	18.3
ENERGY INTAKE(kJ)	9197*	12106	7123	7644
FAT INTAKE(%)	36.7*	34.3	37.9*	34.6
adjCHOL(mg)	391.7*	287.9	197.6	191.2
adjNA(mg)	3648	3715	2590*	2315
adjCA(mg)	1253	1179	648*	742
adjFIBRE(g)	21.8	24.2	15.9*	18.1

* - Variables used in cluster analysis for each sex.

The HR clusters consisted of 21.1% of males and 20.7% of females, both of whom showed consistently and significantly worse scores in variables recognised as contributing to CVD in later life.

A further complication to the health of these individuals was the tendency for the HR group to be at greater risk of inadequate nutrition. Females in general were at significantly greater risk than males due to lower quantities of food intake, but HR females also displayed poorer nutrient quality of intake. Energy intake was particularly related to physical activity in males, and HR males undernutrition was primarily dependent on food quantity.

Dietary components most compromised over the whole sample included calcium, carotene equivalents and fibre for both sexes, plus zinc, riboflavin and niacin for females. Risk of undernutrition was substantially more prevalent in the high risk groups for most components.

These results suggest cluster analysis can be used to identify a subpopulation at increased risk of CVD. This approach would allow the targetting of specific individuals with relevant interventions.

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