

DIET QUALITY AND FACTORS ASSOCIATED WITH BODY MASS INDEX OF CHILDREN WITH LEARNING DISABILITIES IN KELANTAN, MALAYSIA

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Introduction

- Early determination of body weight status (BWS) helps to prevent from being severely obese or thin which may expose to the risk of getting chronic diseases¹.
- Children with learning disabilities (LD) have a higher probability of experiencing poor health status due to limited ability to understand and assess information on nutrition and health.
- LD defined as several disabilities that may affect the understanding or use of verbal or nonverbal information and demonstrate at least average abilities for thinking and/or reasoning².
- Disabled children have more risk of getting overweight and obesity³ and more likely to be malnourished (underweight, wasting and stunting) than typically developing children⁴.
- They prone to poor nutrient intake and low diet quality due to limited food choice, feeding problems, which increased risk for health problems.
- Diet quality refers to both uptake of specific nutrients from each food groups and the amount of nutrients to support growth⁵.
- This study aimed to determine the diet quality and factors associated with BWS of children with LD.

Methodology

A cross sectional study

9 primary schools with Special Education Integration Program (SEIP) located in districts with high, moderate and low socioeconomic status in Kelantan were randomly selected

All children with LD in the selected schools were recruited to participate

- Respond rate was 82.8% from 333 subjects
- After excluding missing parts, incomplete data and no anthropometric measurements, the eligible respondents for data analysis was 259

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Children with LD aged 7-14 y/o who attend SEIP No consideration of aetiology or cause of disability Able to stand straight and still without assistance Parents willing to participate and answer the questionnaire 	<ul style="list-style-type: none"> Who refused to be examined Who was following a special diet due to medical reasons Had oedema or physical deformities of limbs and spine

Data analysis

- IBM SPSS Statistic 26, significant level set at $p < 0.05$
- Pearson product-moment correlation, Spearman's rho correlation and multiple linear regression analysis

Results

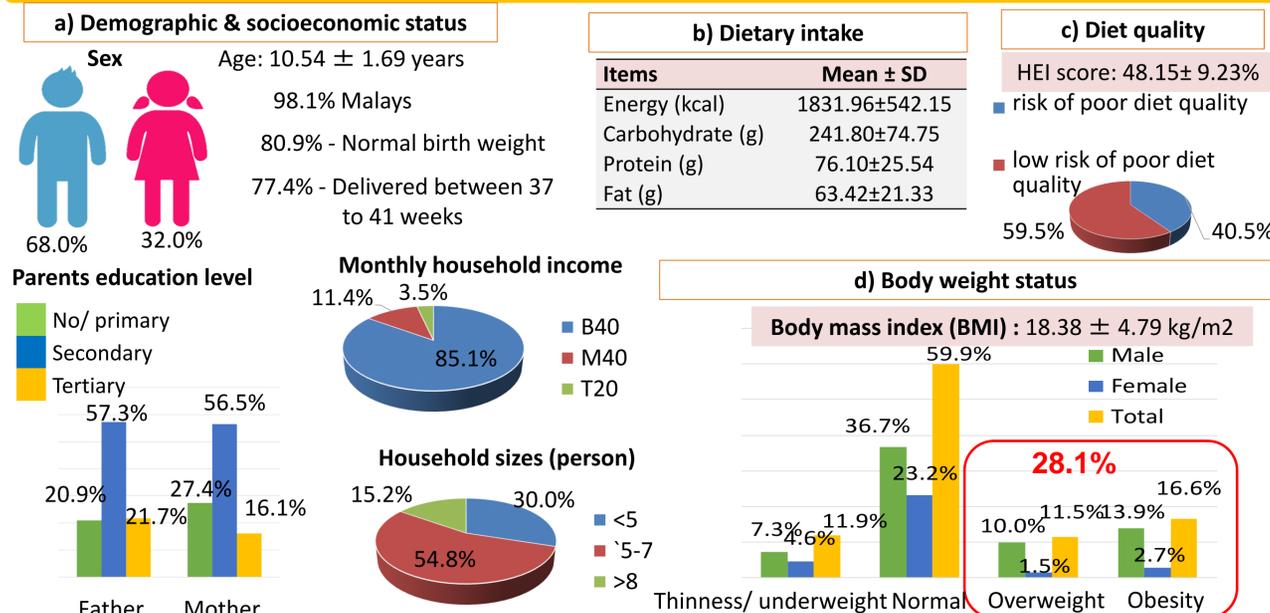


Table 2: Result of multiple linear regression analysis (stepwise method) for BMI & its associated factors (n = 223)

Variables	Unstandardized coefficient (B)	Standardized coefficient (Beta)	t- value	p- value	R	R ²	ΔR ²
Constant	10.335	-	3.795	<0.001	-	-	-
Pressure	-0.439	-0.282	-4.847	<0.001	0.341	0.116	0.116
Restriction of weight control	0.242	0.351	5.672	<0.001	0.469	0.220	0.104
Age	0.645	0.222	3.901	<0.001	0.523	0.274	0.053
Modelling	-0.231	-0.162	-2.583	0.010	0.545	0.297	0.023
Child birth weight	1.132	0.137	2.418	0.016	0.561	0.315	0.018

Note: F (5, 217) = 19.972, R = 0.561, R² = 0.315, p < 0.001; Durbin Watson = 2.019

Discussion

- The results showed poor nutritional status of LD children. 4 out of 10 respondents were at risk of poor diet quality. This finding similar with a study among children and adolescents⁶ but lower than other studies in Malaysia^{7,8}. Almost one third of them (28.1%) were overweight and obese which was higher than previous study⁹; while 11.9% were underweight, thin and severely thin.
- Lower pressure to eat was associated with higher BMI similar with previous study in Malaysia¹⁰ as less pressure to eat is imposed when parents released their child was overweight/obese. Parents with underweight children more likely to pressure their child to eat more¹¹. Higher restriction of weight control was associated with higher BMI. Child tend to eat lot of food to reduce stress if parent too strict. Stress can promote negative eating behaviour, irregular eating in the absence of hunger and overeating when the restricted foods become freely available^{10,12}. Poor parental modelling was associated with higher BMI as frequently modelled unhealthy nutrition behaviours would negatively influence child's health¹³. Older age was associated with higher BMI due to greater risk of weight gain during the transition from childhood to adolescence¹⁴. High child birth weight was associated with higher BMI; consistent with previous study⁹. Higher birth weight could become one of the early life risk factors correlating to the development of obesity in the future¹⁵.

Conclusion

The prevalence of poor diet quality and overweight and obesity were high among LD children. Lower pressure to eat, higher restriction of weight control and poor modelling, older child age, and higher child birth weight were significantly associated with higher BMI. Establishing nutrition and health-related intervention programmes with the parent's involvement may help to prevent further rise of overweight and obesity in LD children.

Table 1: The correlation between demographic and socioeconomic factors, dietary intake, diet quality and parental feeding practice with BMI of children with LD (N=259)

Variable	r/r _s	p-value
Monthly household income ^b (n=255)	-0.156	0.012*
Household sizes ^a (n=257)	-0.131	0.036*
Age ^a	0.262	<0.001*
Birth weight ^a (n=246)	0.157	0.006*
Dietary intake ^a (n=237)		
Energy	-0.083	0.201
Carbohydrate	-0.060	0.358
Protein	-0.085	0.192
Fat	-0.092	0.156
Diet quality ^a (n=237)	-0.024	0.716
Parental feeding practice ^a		
Monitoring	0.007	0.916
Child control	-0.047	0.450
Emotion regulation	-0.119	0.057
Encourage dietary balance and variety	-0.145	0.020*
Environment	0.029	0.642
Food as reward	-0.128	0.039*
Involvement	-0.023	0.712
Modelling	-0.073	0.241
Pressure	-0.315	<0.001*
Restriction for health	0.007	0.905
Restriction for weight control	0.344	<0.001*
Teaching about nutrition	-0.054	0.390

^aPearson product-moment correlation, ^bSpearman's rho correlation, *p<0.05

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