

DIETARY INTAKE AMONG SCHOOL ADOLESCENTS IN TERENGGANU, MALAYSIA: ARE THEY DIFFER BETWEEN GENDER?



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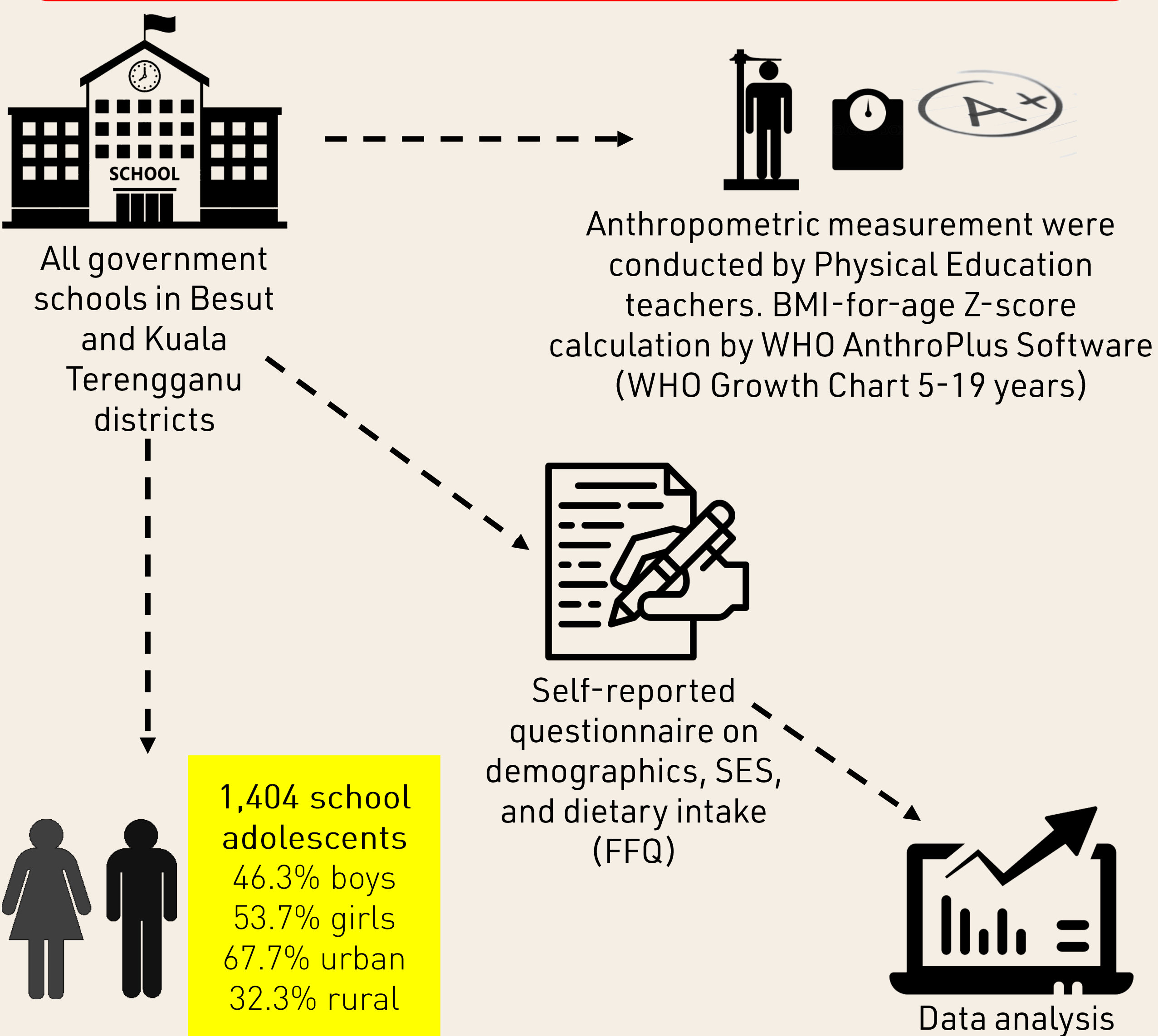
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RESEARCH BACKGROUND

- Malaysia is witnessing a remarkable **nutrition transition nationwide**, and the diets of school-aged children may be amongst those most affected.
- However, studies examining food consumption patterns and nutrient adequacy between gender, particularly in Terengganu, are limited.
- This study aimed to **evaluate the dietary intake of school adolescents in Terengganu and assess differences between gender**.

METHODS



RESULTS AND DISCUSSION

Table 1: Mean of Energy and Macronutrients Intake between Gender

	Boys	Girls	All	p-value ^a
Energy (kcal/d)	2499 ± 834	2282 ± 720	2383 ± 782	< 0.001**
CHO (g/d)	340.5 ± 125.3	318.8 ± 106.8	328.9 ± 116.2	0.003*
% Total energy	54.7 ± 9.6	56.3 ± 8.9	55.5 ± 9.3	0.001*
Added sugar (g/d)	64.0 ± 54.5	57.7 ± 41.1	60.6 ± 47.9	0.007*
% Total energy	9.9 ± 7.6	9.9 ± 7.0	9.9 ± 7.3	0.721
Protein (g/d)	104.8 ± 44.5	91.1 ± 34.5	97.5 ± 40.0	< 0.001**
% Total energy	16.8 ± 4.5	15.9 ± 3.3	16.3 ± 3.9	< 0.001**
Fat (g/d)	79.8 ± 33.3	71.5 ± 29.4	75.3 ± 31.5	< 0.001**
% Total energy	28.5 ± 6.4	27.8 ± 6.7	28.1 ± 6.6	< 0.001**
SFA(g/d)	35.7 ± 15.1	31.9 ± 13.4	33.7 ± 14.3	< 0.001**
% Total energy	12.8 ± 2.9	12.4 ± 3.2	12.6 ± 3.1	0.011*
MUFA (g/d)	30.7 ± 13.1	27.2 ± 11.4	28.8 ± 12.4	< 0.001**
% Total energy	11.0 ± 2.8	10.6 ± 2.8	10.8 ± 2.8	0.01*
PUFA (g/d)	12.2 ± 5.6	11.1 ± 4.9	11.6 ± 5.2	< 0.001**
% Total energy	4.4 ± 1.2	4.3 ± 1.2	4.3 ± 1.2	0.406
Fibre (g/d)	11.3 ± 7.6	11.0 ± 6.6	11.1 ± 7.1	0.669

Data are Mean ± SD. Energy and macronutrients intake vs. genders (Independent sample t-test). MUFA = Mono-unsaturated Fat; PUFA = Poly-unsaturated Fat; (**p<0.001, *p<0.05).

Table 2: Mean of Micronutrients Intake between Genders

Micronutrients	Boys	Girls	All	p-value ^a
Calcium (mg/d)	731.1 ± 551.8	666.2 ± 369.2	696.2 ± 463.7	0.001*
Phosphorus (mg/d)	1693.5 ± 805.2	1478.0 ± 621.5	1577.8 ± 720.3	< 0.001**
Iron (mg)	19.6 ± 8.3	18.0 ± 7.8	18.8 ± 8.1	< 0.001**
Sodium (mg/d)	3344.6 ± 1768.7	3004.9 ± 1680.3	3162.2 ± 1729.5	< 0.001**
Potassium (mg/d)	1993.6 ± 959.5	1806.7 ± 784.3	1893.2 ± 874.5	< 0.001**
Retinol (µg/d)	991.5 ± 586.3	878.4 ± 511.9	930.8 ± 550.3	< 0.001**
Carotenes (µg/d)	1171.8 ± 1282.2	1226.7 ± 1263.1	1201.3 ± 1271.8	0.484
Vitamin A (µg/d)	1121.4 ± 621.3	1015.6 ± 544.5	1064.6 ± 583.5	< 0.001**
Vitamin B1 (mg/d)	1.6 ± 0.8	1.4 ± 0.8	1.5 ± 0.8	0.003*
Vitamin B2 (mg/d)	2.6 ± 2.5	2.2 ± 1.4	2.4 ± 2.0	< 0.001**
Niacin (mg/d)	19.8 ± 9.6	17.5 ± 8.5	18.6 ± 9.1	< 0.001**
Vitamin C (mg/d)	77.8 ± 108.9	84.0 ± 99.4	81.1 ± 103.9	0.045*

Data are Mean ± SD. Micronutrients intake vs. genders (**p<0.001, *p<0.05; Independent sample t-test).

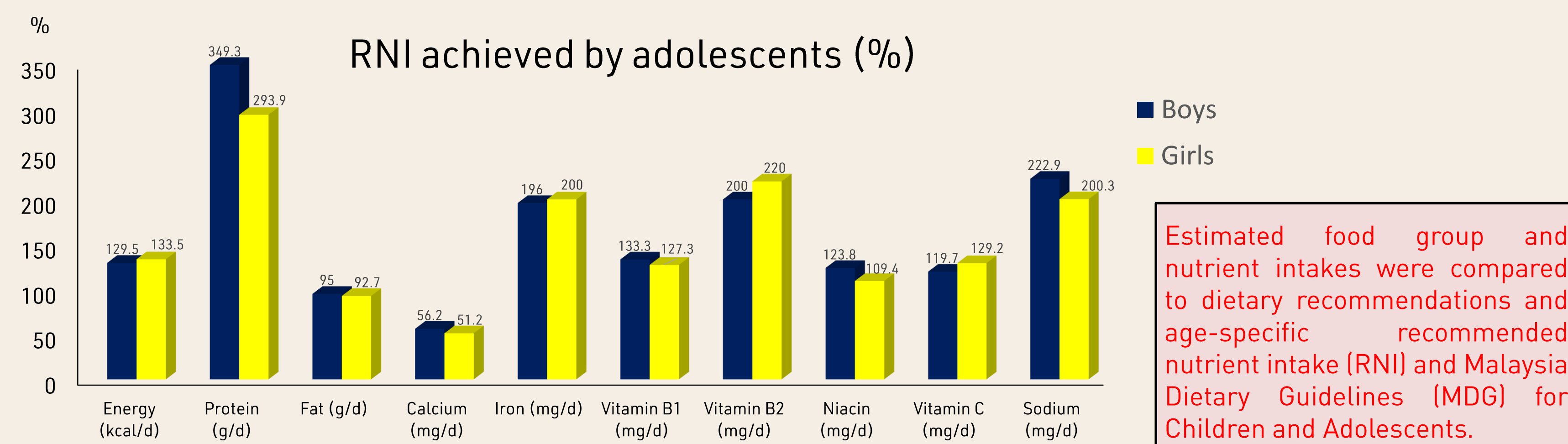


Figure 1: Percentage of RNI achieved by adolescents

CONCLUSION

- Nutritional adequacy among boys and girls in Terengganu was, in general, adequate, although it is necessary to analyse the implications of excessive intakes of energy and sodium intake, together with inadequate calcium and fibre intake.
- Nutrition interventions promoting appropriate dietary intake among school adolescents are recommended.

- Boys had a significantly higher intake of energy, CHO, protein and fat as compared to girls ($p < 0.001$).
- Compared to girls, **boys had a significantly higher intake of food groups of grains, cereals and tubers; meat and poultry; and fish** was 6.13 ± 3.47 servings/day, 1.62 ± 1.55 servings/day, 1.95 ± 2.02 servings/day; $p < 0.05$ respectively.
- **Sodium intake among both genders exceeded recommendation** (RNI < 2000 mg/day) by 122.9% and 100.3%, respectively.
- Sodium intake was suggested to have **moderating effects in obesity outcomes** as it may increase food palatability and induced greater energy intake [3,4].
- Overall, **calcium and total fibre** intake for both boys and girls were below the Malaysian RNI.
- **Inadequate daily intake of fruits and vegetables** among adolescents may contributed to the low total fibre intake.

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