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Abstract title: Seasonal differences in diet quality and anaemia status among Malaysian urban poor adolescents: A cohort study

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Background: Adolescents are more susceptible to anaemia due to their rapid physical and biological growth with unique nutritional requirements. There has been growing interest in understanding how seasonality contributes to diet quality and anaemia.

Objectives: The study aimed to determine the differences between seasons in terms of diet quality and anaemia among Malaysian urban poor adolescents.

Methods: This was a cohort study among 10–17 years old urban poor adolescents ($n=164$) from 12 People Housing Programme and data were collected during November 2021 (wet seasons) and June 2022 (dry seasons). The hemoglobin concentration was measured using HemoCue 201+ hemoglobinometer. A two-day 24-hr dietary recall was used and Standardized Malaysian Healthy Eating Index (S-MHEI) was used to determine the diet quality.

Results: The prevalence of anemic adolescents significantly differ between wet seasons (50.6%) and dry seasons (39.6%) ($p=0.016$). Significantly higher hemoglobin level was observed during the dry seasons (13.13 ± 1.60 g/dl) as compared wet season (11.77 ± 1.63 g/dl)

(Δ :+0.36, $p= 0.001$). Seasonal differences were seen in dietary intake whereby better adherence to national guidelines on fish intake (Δ :+1.66, $p<0.001$), meat/poultry/eggs (Δ :+0.95, $p=0.003$), milk/milk products (Δ : +0.64, $p = 0.019$) and optimal fat intake (Δ :+0.71, $p=0.005$) during the dry season. On the other hand, legumes/nuts (Δ :-1.91, $p<0.001$) and sodium (Δ :-0.87, $p=0.040$) intake were found to have less adhered to national guidelines during the wet season. No seasonal differences were observed in other S-MHEI components ($p>0.05$).

Conclusions: Anaemia and poor diet quality remain significant issues among urban poor adolescents. Particularly, seasonal differences in the fish and meat/poultry/eggs, legumes/nuts, milk/milk products, sodium and fat intake may predict the seasonal differences in the hemoglobin level. More studies should be done to explore how seasonal impacts on diet quality and its components affecting the seasonal impacts on hemoglobin level in for establishing a seasonally sensitive nutrition initiatives.

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