

BACKGROUND

- *A posteriori* dietary pattern (DP) analysis is a data-driven approach that uses statistical method to derive dietary pattern based on participants' dietary intake.
- It is a comprehensive method often employed for understanding the combined and complex effect of dietary intake, rather than single nutrient or food, since foods are usually consumed in combination (1).
- Previous study has shown associations between sociodemographic factors with dietary pattern among preschoolers in Lebanon (2). However, research using this method to understand the diet of preschoolers is scarce in Malaysia.
- This study aimed to determine the dietary patterns commonly practised among preschoolers aged 3-6 years old and their relationships with sociodemographic factors.

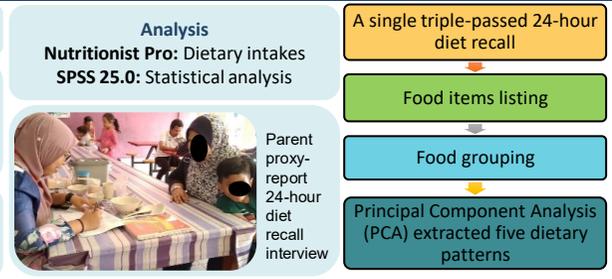
METHODOLOGY

This study was part of South East Asian Nutrition Surveys (SEANUTS II)

Subjects
Total: 645, aged 5.1 ± 1.0 years; (332 boys, 313 girls)

Location
8 selected urban and rural areas in Peninsular Malaysia

Ethical Approval by Research Ethics Committee of University Kebangsaan Malaysia
Written consent from parents or guardian was obtained.



RESULTS

Table 1. Food groups with factor loading for each dietary pattern

Dietary patterns	High intake of	Low intake of
Healthy Eating (HE)	Fruits (0.57), Fish & seafoods (0.55), Vegetables (0.50)	Franchised fast foods (-0.53)
Carbohydrate-rich (CR)	Starchy vegetables (0.76), Cereals, brown rice, wholegrains bread (0.70)	
High salts and sugar (HSS)	Spreads, condiments & flavourings (0.66), Chocolates, sweets, jellies & ice cream (0.54)	Noodle dishes (-0.56)
Western foods (WF)	Franchised fast foods (-0.53), Processed foods (0.63), Chocolates, sweets, jellies & ice cream (0.54)	
Sugary drinks & legumes (SDL)	Sugary drinks (0.65), Sweetened cultured milk, yoghurt drinks (0.54), Legumes, nuts & seeds (0.51)	

Figure 1. Ethnic distribution for highest adherence (Quartile 3) of HSS and SDL pattern

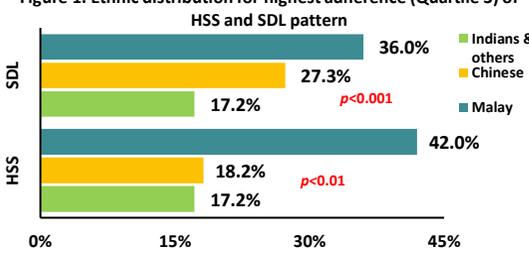


Table 2. Correlations between sociodemographic factors with DPs

Variables	r-value				
	HE	CR	HSS	WF	SDL
Age	-0.057	0.020	0.032	-0.044	0.134**
Maternal BMI	-0.013	-0.043	0.075	-0.116**	0.034
Household income	0.010	0.017	-0.108**	-0.047	-0.081*
Household size	-0.060	0.056	0.116**	0.037	0.020

* Significant (p<0.05) ** Significant (p<0.01)

DISCUSSION

- Five dietary patterns emerged, namely HE, CR, HSS, WF and SDL pattern which explained 10.4%, 10.1%, 9.2%, 9.0% and 8.6% of variation in food intake, respectively; with greater factor loading indicating greater contribution of food group towards DP.
- Malay children showed significantly highest adherence (Quartile 3) to HSS and SDL pattern, which is consistent with a previous study conducted in Malaysia (3).
- In this study, age was significantly correlated with SDL pattern while maternal body mass index (BMI) had significant inverse correlation with WF pattern. On the other hand, household income showed significant negative correlation with both HSS and SDL patterns, whereas significant positive correlation was observed between household size with HSS pattern.
- One study conducted among children in the United States reported that age was a consistent predictor to sugary drinks consumption (4).
- Moreover, lower income households tend to purchase cheap and convenient food options that tend to be less nutritious, such as high sugary foods and fewer vegetables and fruits, compared to those in higher SES category (5,6).
- Higher maternal BMI has been linked with restrictive feeding practices, mediated by maternal body dissatisfaction and child weight concern (7). This might explain the inverse relationship between maternal BMI and WF pattern in this study.

CONCLUSION

- There were five dietary patterns identified in this study which explained 47.3% of total food intake variation among preschoolers in Peninsular Malaysia.
- These dietary patterns demonstrated significant relationships with sociodemographic factors such as age, ethnicity, maternal factor, household income and household size.
- This study suggests that healthy eating habits should be promoted from an early age and with the involvement of parents and caregivers. Strategies on food pricing policy is also important to increase access to easier and affordable healthy food choices.

ACKNOWLEDGEMENT

SEANUTS II was funded by FrieslandCampina, Amersfoort, The Netherlands. We thank all the participants and their parents for their participation and cooperation during the course of the present study.

REFERENCES

- Tucker K. L. (2010). Dietary patterns, approaches, and multicultural perspective. *Applied physiology, nutrition, and metabolism = Physiologie appliquee, nutrition et metabolisme*, 35(2), 211–218.
- Nasreddine, L., Shalita, H., Itani, L., Hwalla, N., Jomaa, L., & Naja, F. (2019). A traditional dietary pattern is associated with lower odds of overweight and obesity among preschool children in Lebanon: a cross-sectional study. *European journal of nutrition*, 58(1), 91–102.
- Balasubramanian, G. V., Chuah, K. A., Khor, B. H., Suleheem, A., Yeak, Z. W., Chinn, K., ... & Karupiah, T. (2020). Associations of Eating Mode Defined by Dietary Patterns with Cardiometabolic Risk Factors in the Malaysia Lipid Study Population. *Nutrients*, 12(7), 2080.
- Nickelson, J., Lawrence, J. C., Parton, J. M., Knowlden, A. P., & McDermott, R. J. (2014). What Proportion of Preschool-Aged Children Consume Sweetened Beverages?. *Journal of School Health*, 84(3), 185–194.
- Appelhans, B. M., Milliron, B. J., Woolf, K., Johnson, T. J., Pagoto, S. L., Schneider, K. L., ... & Ventreim, J. C. (2012). Socioeconomic status, energy cost, and nutrient content of supermarket food purchases. *American journal of preventive medicine*, 42(4), 398–402.
- Headey, D. D., & Alderman, H. H. (2019). The relative caloric prices of healthy and unhealthy foods differ systematically across income levels and continents. *The Journal of nutrition*, 149(11), 2020–2033.
- Rodgers, R. F., Paxton, S. J., McLean, S. A., Campbell, K. J., Wertheim, E. H., Skouteris, H., & Gibbons, K. (2013). Do maternal body dissatisfaction and dietary restraint predict weight gain in young pre-school children? A 1-year follow-up study. *Appetite*, 67, 30–36.