PREVALENCE AND FACTORS ASSOCIATED WITH CHILDHOOD MALNUTRITION AMONG THE INDIGENOUS ORANG ASLI IN PENINSULAR MALAYSIA

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High prevalence of malnutrition and anaemia was identified among Orang Asli children under-5 years in rural Peninsular Malaysia, with 55.77% stunted and 86.96% anaemic. Urgent, culturally sensitive interventions are required to address these critical public health issues

INTRODUCTIONS

- **Background:** Orang Asli are indigenous peoples unique to Peninsular Malaysia characterised by their diverse cultures, language and heritage [1].
- **Problem statement:** Orang Asli children in Malaysia face disproportionately high rates of malnutrition and anemia, far exceeding national averages, raising significant public health concerns [2].
- **Research gap:** There is a lack of studies on indigenous Orang Asli children under five in rural Peninsular Malaysia.
- **Research question:** What are the prevalence and factors associated with malnutrition and anaemia among the indigenous Orang Asli children under five in rural Peninsular Malaysia?


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METHODOLOGY

- **Study design:** Cross-sectional study from September 2021 to September 2022.
- **Sampling:** Convenience sampling (following the Ministry of Health mobile clinics & community based sampling)
- **Study population:** 529 Orang Asli children aged 6 to 60 months for seven sub-tribal groups.
- **Study locations:** Four rural districts of Peninsular Malaysia (Figure 1.1).
- **Measurements:** Anthropometric data, haemoglobin levels, and structured interviews on sociodemographic factors, childcare practices, environmental conditions, food insecurity, and dietary intake were used to assess childhood malnutrition.
- **Malnutrition indicators (WHO standards):** Underweight: weight-for-age z-score < -2 SD, Stunting: height-for-age z-score < -2 SD, Wasting: BMI-for-age z-score < -2 SD and Anaemia (under-fives): haemoglobin < 11.0 g/dL
- **Analysis:** Multiple binary logistic regression

Figure 1.1 : Study locations
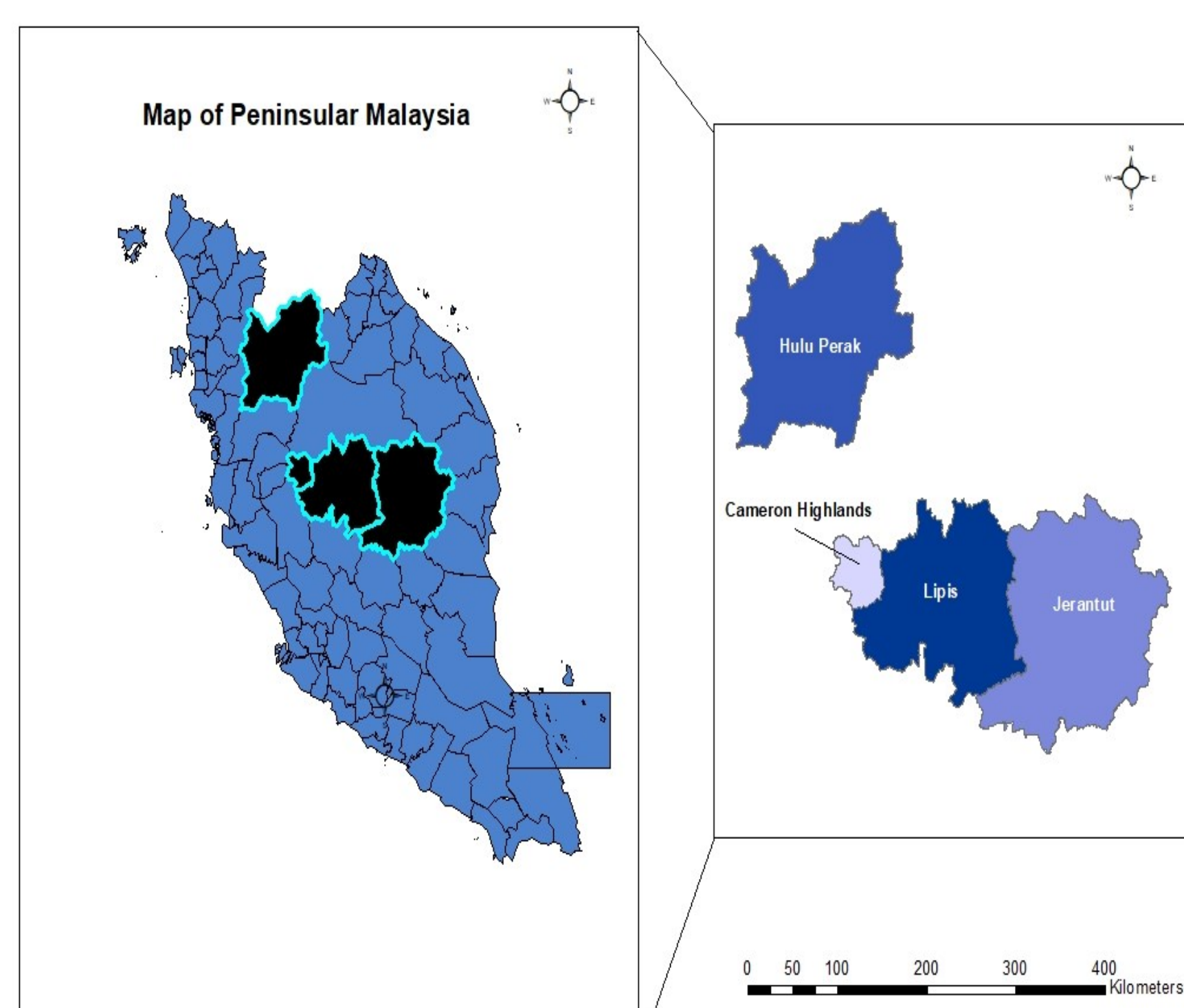
RESULTS

- The study found a high prevalence of childhood malnutrition, with 34.97% of children being underweight, 55.77% stunted, 7.56% wasted and 86.96% anaemic.

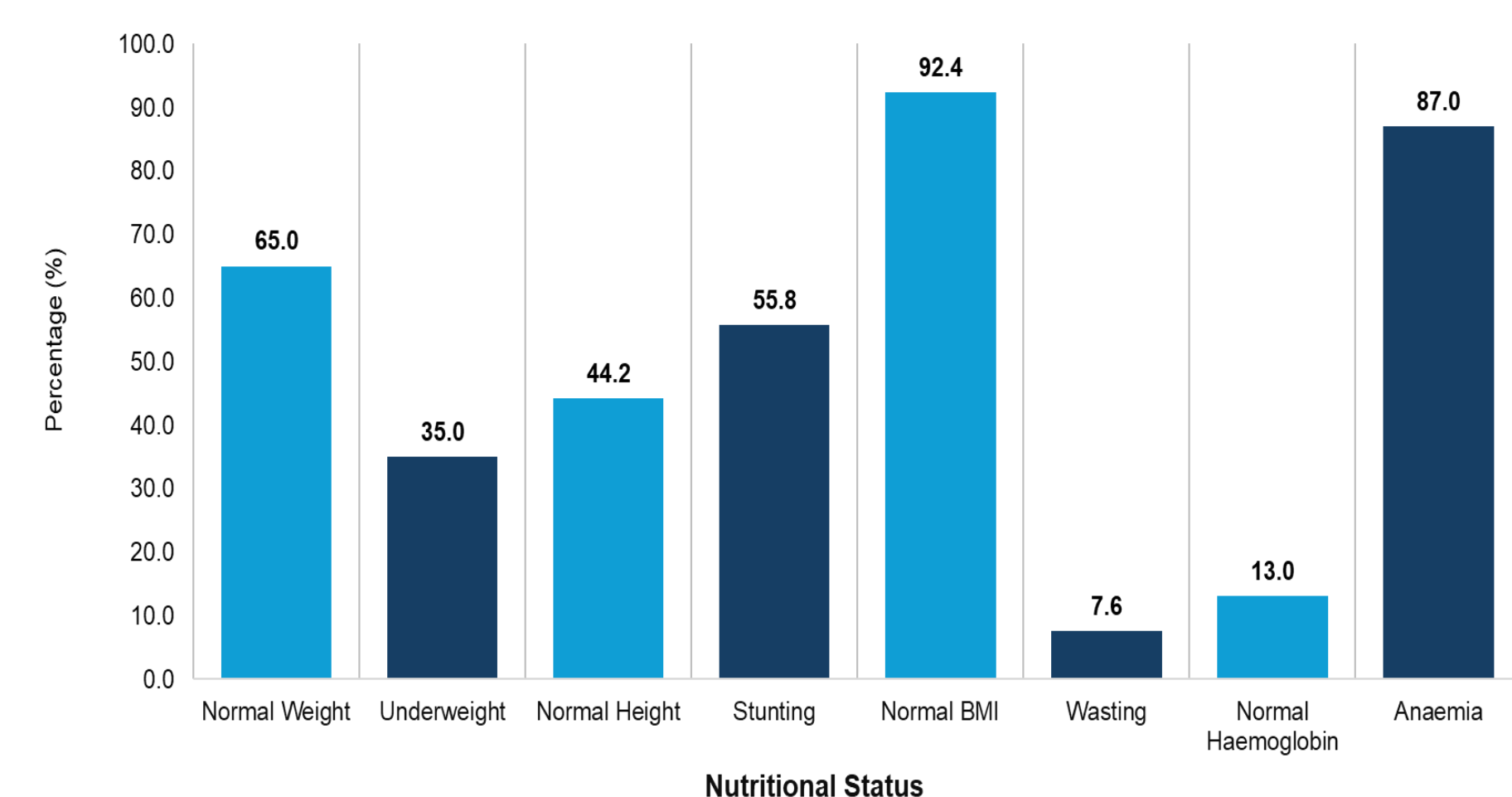**Figure 1.2 : Prevalence of childhood malnutrition and anaemia among Orang Asli**

Table 1.1 : Factors associated with underweight among Orang Asli children

Variables	Categories	OR (95% CI)	aOR (95% CI)
Gender	Female	Ref	
	Male	1.4(0.98,2.01)	1.85(1.19,2.88)*
Birthweight	Normal birth weight	Ref	
	Low birth weight	1.8 (1.17,2.77)*	2.26 (1.39,3.68)*
Ethnic	Non-Negrito	Ref	
	Negrito	2.53 (1.49,4.3)*	3.11 (1.47,6.56)*
Birth Order	< 3	Ref	
	≥ 3	1.46 (1.02,2.09)*	1.59 (1.03,2.45)*
Child Hunger	Food Secure	Ref	
	Food Insecurity	1.55 (0.94,2.55)	2.13 (1.18,3.85)*
Breast Feeding Duration	Q1	Ref	
	Q2	1.2 (0.76,1.89)	1.31 (0.75,2.29)
	Q3	2.2 (1.29,3.78)*	2.88 (1.51,5.49)*
Weaning Age	180 Days	Ref	
	<180 Days	2.4 (1.56,3.71)*	2.95 (1.74,5)*
	>180 Days	1.71 (1.07,2.72)*	1.52 (0.86,2.68)
Village Type	Traditional	Ref	
	Restructure Village	0.80 (0.51,1.28)	0.55 (0.31,0.98)*
Water Supply	Tap Water	Ref	
	Natural Water	0.59 (0.36,0.95)*	0.45 (0.25,0.81)*

Bivariate logistic regression * (P-value< 0.05) was considered significant.

Table 1.2 : Factors associated with stunting among Orang Asli children

Variables	Categories	OR (95% CI)	aOR (95% CI)
Age Categories	6 to 11 months	Ref	
	12 to 23 months	5.11 (2.23,11.71)*	6.95 (2.64,18.30)*
	24 to 35 months	3.57 (1.56,8.16)*	5.59 (2.11,14.79)*
	36 to 47 months	4.51 (1.96,10.38)*	7.91 (2.92,21.38)*
	48 to 60 months	5.64 (2.48,12.81)*	8.31 (3.15,21.94)*
Weaning Age	180 days	Ref	
	<180 days	1.57 (1.02,2.43)*	1.70 (1.05,2.73)*
	> 180 days	0.77 (0.49,1.19)	0.70 (0.42,1.14)
Birth Order	<3	Ref	
	≥3	1.6 (1.13,2.26)*	1.61 (1.10,2.37)*
Child Hunger	Food Secure	Ref	
	Food Insecurity	1.74 (1.03,2.94)*	1.95 (1.09,3.51)*
Iron Intake	Adequate	Ref	
	Inadequate	1.26 (0.87,1.82)	1.62 (1.06,2.47)*
Mother BMI	Normal	Ref	
	Underweight	1.34 (0.69, 2.59)	1.50 (0.72, 3.08)
	Overweight	0.64 (0.42, 0.98)*	0.61 (0.38, 0.97)*
	Obesity	0.83 (0.52, 1.34)	0.85 (0.50, 1.41)

Bivariate logistic regression * (P-value< 0.05) was considered significant.

Table 1.3 : Factors associated with wasting among Orang Asli children

Variables	Categories	95% CI	95% CI
Birth Weight	Normal birth weight	Ref	
	Low birth weight	2.77 (1.37,5.58)*	4.47(1.96,10.19)*
Weaning Age	180 days	Ref	
	<180 days	1.96 (0.89,4.32)	2.73 (1.06,7.03)*
	> 180 days	2.36 (1.07,5.22)*	1.91 (0.75,4.87)
Child Hunger	Secure	Ref	
	Insecure	1.63 (0.72,3.69)	3.50 (1.05,11.71)*
Clinic Distance	≤ 5KM	Ref	
	> 5KM	0.33 (0.15,0.72)*	0.06 (0.02,0.23)*
Flood	No	Ref	
	Yes	1.70 (0.82,3.54)*	0.24 (0.06,0.92)*

Bivariate logistic regression * (P-value< 0.05) was considered significant.

Table 1.4 : Factors associated with anaemia among Orang Asli children.

Variables	Categories	95% CI	aOR (95% CI)
Weaning Age	180 days	Ref	
	<180 days	1.28 (0.62,2.62)	2.65 (1.01,6.98)*
	> 180 days	0.42 (0.23,0.75)*	0.63 (0.3,1.32)
Worm Prophylaxis	Yes	Ref	
	No	2.21 (1.02,4.77)*	2.79 (1.12,6.96)*
Past History Sickness (in last 3 months)	Never Sick	Ref	
	Diarrhoea	1.15 (0.25,5.19)	3.53 (0.39,32.27)
	Fever/URTI	1.02 (0.6,1.74)	2.61 (1.28,5.3)*
Districts	Cameron Highlands	Ref	
	Jerantut	0.19 (0.09,0.41)*	0.16 (0.06,0.41)*
	Lipis	0.76 (0.35,1.65)	0.44 (0.18,1.08)
	Hulu Perak	0.50 (0.21,1.22)	0.30 (0.10,0.90)*

DISCUSSION

High prevalence: The prevalence of childhood malnutrition and anemia among the Indigenous Orang Asli far surpasses national rates and is unmatched by other indigenous children in Malaysia.

- **Underweight:** Increased risk was observed in males, low birth weight infants, the Negritos sub-ethnic group, those with higher birth order, prolonged breastfeeding, early weaning initiation, and food insecurity. Conversely, reliance on natural water sources and living in restructured villages appeared protective.
- **Stunting:** Increased risk was linked to older age, early weaning initiation, higher birth order, food insecurity, and inadequate iron intake, while having overweight mothers was associated with a lower risk.
- **Wasting:** Increased odds were associated with low birth weight, early weaning initiation, and food insecurity, while living far from clinics and flood exposure appeared protective.
- **Anaemia:** Early weaning initiation, lack of worm prophylaxis, and a history of fever or URTI significantly increased the odds, while children from Jerantut and Hulu Perak districts had lower odds compared to those from Cameron Highlands.

Challenges faced:

- **Geographical barriers:** Indigenous Orang Asli are a hard-to-reach population, often living in remote areas with lack of infrastructure, such as roads and communication networks.
- **Marginalisation:** The lack of political representation perpetuates insufficient research funding and attention to health, particularly malnutrition. This study identifies contributing factors to malnutrition, including poor dietary intake, childhood diseases, suboptimal childcare, food insecurity, and poor living conditions — all rooted in systemic inequality.

CONCLUSIONS

High prevalence of childhood malnutrition and anemia requires a multifaceted approach. Culturally sensitive strategies that leverage traditional knowledge are essential. Effective interventions include targeted food programs, community education, integrated health services, and strong policy support.

REFERENCES:
1. Masron et al. (2013), Journal of Ritsumeikan, social sciences and humanities
2. Tey et al. (2022), The Malaysian journal of medical sciences: MJMS, DOI: 10.21315/mjms2022.29.3.3