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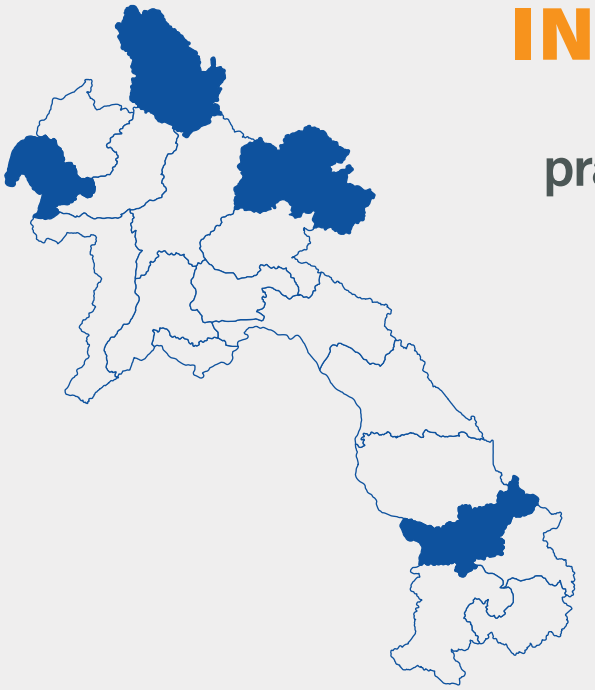
Nutrition Policy Brief



INFANT AND YOUNG CHILD FEEDING

practices, associated predictors, and undernutrition in Lao PDR

Quantitative evidence from Bokeo, Huaphanh, Phongsaly and Saravane provinces

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A better understanding of the role of infant feeding practices and diets in children's nutritional status is crucial to inform or update nutrition policies and programme decisions in Lao PDR.

This brief highlights findings from "Association between children's feeding practices and the nutritional status of children 6–23 months in Lao PDR: Evidence from the Provincial Household Survey 2022". The assessment was conducted in Bokeo, Huaphanh, Phongsaly and Saravane Provinces by the Socio-Economic and Policy Research Institute (SPRI), Lao Academy of Social and Economic Science (LASES).

Socio-Economic Policy Research Institute (SPRI)
Lao Academy of Social and Economic Sciences (LASES)
Lao PDR

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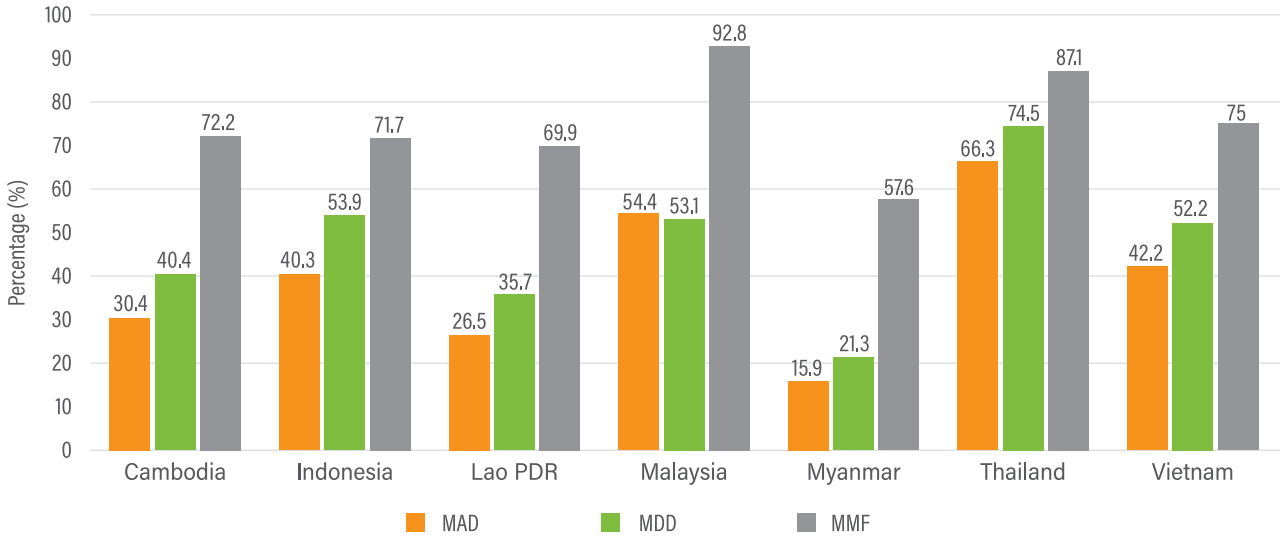
What's at Stake?

Optimal nutrition is crucial for the proper growth and development of children, particularly during the first 1,000 days of life: from conception to the child's second birthday. Considering the significance of this period, it is also called the "Window of Opportunity." During this period, nutrition deficiency can lead to growth faltering, poor cognitive development, increased incidence and severity of illness, and mortality among children.[1]

According to the UNICEF Nutrition Strategy, 2020–2030, nutritious diets, practices and services are critical for the optimal growth and development of children.[2] To ensure proper growth and development and meet additional nutrient requirements, the World Health Organization (WHO) has recommended that a child consumes foods from at least five of eight food groups, also known as minimum dietary diversity (MDD).[3] It also suggests that breastfeeding children consume soft foods twice a day if an infant aged 6–8 months and three times for children 9–23 months and that non-breastfeeding children consume solid, semi-solid, soft foods or milk feeds four times if aged 6–23 months.[4] This is known as minimum meal frequency (MMF). Combined, these two measures make up the minimum acceptable diet (MAD) that children aged 6–23 months should have at least had to meet the minimum meal frequency and minimum dietary diversity the previous day.[5] In Lao PDR, only one-in-four (26.5 per cent) children consume foods that meet the minimum acceptable diet, the second lowest among Association of Southeast Asian Nations (ASEAN) member states (Figure 1).[6]

Figure 1. Feeding practices in children 6–23 months of age, ASEAN



Source: ASEAN, UNICEF, and WFP, 2022.

Considering the significance of diversified diets and feeding practices in ensuring a child's optimal growth and development, it was essential to further investigate the association between children's feeding practices and childhood malnutrition using district-level disaggregated data in Lao PDR.

[1] de Onic & Branca, 2016.
[2] UNICEF, 2020.
[3] WHO and UNICEF. 2021.
[4] Ibid.
[5] Ibid.
[6] ASEAN, UNICEF and WFP, 2022.

Research Approach

This study investigated the association between children's feeding practices and the nutritional status of children aged 6–23 months in Lao PDR. In addition, this study explored the factors associated with MDD, MMF and MAD, which will be collectively referred to hereinafter as "minimum dietary practices".

The analysis is based on the Provincial Household Survey 2022 (PHS 2022) conducted by the Lao Statistics Bureau (LSB) and UNICEF, with funding from the European Union, to further understand the underlying causes of malnutrition in four provinces: Bokeo, Huaphanh, Phongsaly, and Saravane. A total of 10,731 households were surveyed across the four provinces. For this study, 4,184 children's data were analyzed from the pooled data after cleaning and removing incomplete data (incomplete anthropometric measures to categorize a child's nutritional status, MDD, MMF, MAD, demographic and socio-economic status variables, for example). Stunting, wasting and being underweight are three widely recognized indicators of children's nutritional status and were used to categorize a child's nutrition status for this study.

Key Findings

From the pooled analysis of the four provinces (Table 1), the prevalence of minimum dietary diversity (MDD) was found to be 58.4 per cent, minimum meal frequency (MMF) at 64.8 per cent, and minimum acceptable diet (MAD) at 41.4 per cent. The findings indicate that a large portion of children are at risk of poor physical growth and development.

Table 1 further shows that children living in rural areas, of the Mon-Khmer ethnic group and whose mothers had primary education or less were least likely to have diets that met MAD. Also, children living in Saravane province were least likely to meet the minimum acceptable diet (20.6 per cent) compared to those from other provinces in the study.

Table 1. Background characteristics of children aged 6–23 months and prevalence of minimum dietary diversity, minimum meal frequency, and minimum acceptable diet (PHS 2022)

Background Characteristics	Frequency (%)	Minimum dietary diversity %, (95% CI)	Minimum meal frequency %, (95% CI)	Minimum acceptable diet %, (95% CI)
Total	4184 (100)	58.4 (56.9-59.9)	64.8 (63.4-66.3)	41.4 (39.9-42.9)
Age in months				
6-11	1567 (37.5)	52 (49.5-54.5)	77.1 (74.9-79.1)	42.6 (40.1-45)
12-17	1503 (35.9)	61.9 (59.5-64.4)	66.3 (63.9-68.7)	45.8 (43.3-48.4)
18-23	1114 (26.6)	62.7 (59.8-65.4)	45.5 (42.6-48.4)	33.7 (30.9-36.5)
Sex				
Male	2140 (51.1)	58.8 (56.7-60.9)	65.3 (63.3-67.3)	41.9 (39.8-44)
Female	2044 (48.9)	58 (55.8-60.1)	64.3 (62.2-66.3)	40.9 (38.7-43)
Area				
Urban	386 (9.2)	67.9 (63.1-72.3)	69.9 (65.2-74.3)	52.1 (47.1-57)
Rural with road	2947 (70.4)	55.5 (53.7-57.3)	64.9 (63.2-66.6)	39.3 (37.5-41.1)
Rural without road	851 (20.3)	64.3 (61-67.4)	62.2 (58.9-65.4)	43.7 (40.4-47.1)
Ethnicity				
Lao-Tai	1819 (43.5)	58.9 (56.7-61.2)	63.9 (61.7-66.1)	41.2 (38.9-43.5)
Mon-Khmer	978 (23.4)	43 (40-46.2)	64.5 (61.5-67.5)	30.9 (28.1-33.8)
Hmong-Mien	801 (19.1)	71.4 (68.2-74.4)	67.3 (64-70.5)	52.3 (48.8-55.7)

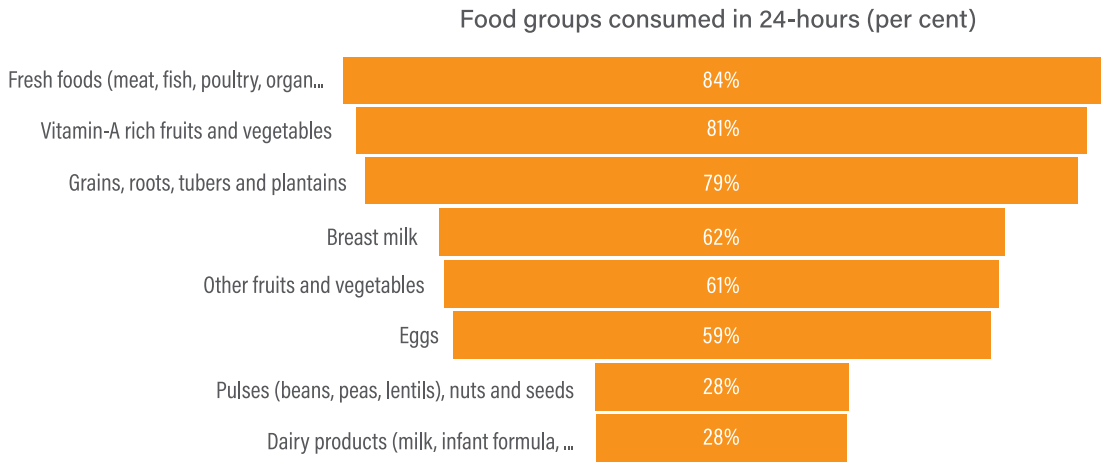
Chinese-Tibetan	383 (9.2)	61.4 (56.4-66.1)	68.1 (63.3-72.6)	44.9 (40-49.9)
Other	203 (4.9)	70.9 (64.3-76.7)	58.1 (51.3-64.7)	43.8 (37.2-50.7)
Province				
Phongsaly	614 (14.7)	61.7 (57.8-65.5)	61.7 (57.8-65.5)	41.9 (38-45.8)
Bokeo	512 (12.2)	61.5 (57.2-65.6)	76.8 (72.9-80.2)	50.2 (45.9-54.5)
Huaphanh	2100 (50.2)	71.8 (69.8-73.7)	62.8 (60.7-64.8)	48.6 (46.4-50.7)
Saravane	958 (22.9)	25.3 (22.6-28.1)	64.9 (61.9-67.9)	20.6 (18.1-23.2)
Maternal education				
Primary or less	2151 (51.4)	52.2 (50-54.3)	64.7 (62.6-66.7)	37.5 (35.4-39.5)
Secondary	1689 (40.4)	63.5 (61.2-65.8)	64.7 (62.3-66.9)	44.5 (42.1-46.8)
Post-secondary or more	344 (8.2)	72.4 (67.4-76.8)	66.6 (61.4-71.3)	50.6 (45.3-55.8)
Currently breastfed				
Yes	2614 (62.5)	59 (57.1-60.9)	87.1 (85.8-88.4)	53.9 (51.9-55.8)
No	1570 (37.5)	68.2 (65.9-70.5)	27.6 (25.5-29.9)	20.6 (18.6-22.6)
Stunted				
Yes	1622 (38.8)	58.9 (56.5-61.2)	63.6 (61.2-65.9)	40.8 (38.4-43.2)
No	2562 (61.2)	58.1 (56.1-59.9)	65.5 (63.7-67.4)	37.4 (35.6-39.3)
Wasting				
Yes	328 (7.8)	52.1 (46.7-57.5)	65.2 (59.9-70.2)	38.7 (33.6-44.1)
No	3856 (92.2)	58.9 (57.4-60.5)	64.8 (63.3-66.3)	41.6 (40.1-43.2)
Underweight				
Yes	874 (20.9)	56.1 (52.8-59.3)	66.2 (63-69.3)	39.8 (36.6-43.1)
No	3310 (79.1)	59 (57.3-60.7)	64.4 (62.8-66.1)	41.8 (40.1-43.5)

Source: PHS 2022. Authors' calculations.

Note: Estimates derived from the author's calculations may differ from PHS 2022. Author's estimates from the analysis were restricted to completed cases, whereas estimates from the PHS 2022 were derived from all available (including incomplete) data.

Figure 2 shows that among the eight food groups, foods from flesh foods (83.5 per cent), Vitamin-A rich fruits and vegetables (80.7 per cent), and grains, roots, tubers and plantains (78.7 per cent) were highly consumed by children. On the other hand, pulses, nuts and seeds (28.1 per cent) and dairy products (27.7 per cent) were the least consumed food groups by Lao children.

Figure 2. Different food groups consumed by children



Source: PHS 2022. Authors' calculations.

Note: Estimates derived from the authors' calculations may differ from PHS 2022. Authors' estimates from the analysis were restricted to completed cases, whereas estimates from the PHS 2022 were derived from all available (including incomplete) data.

Several interrelated factors cause the high prevalence of undernutrition among Lao children from the age of 6–23 months. This study found a significant positive association between meeting MAD practice and stunting (see Table 2 for detailed results). Children who did not meet minimum acceptable diet practice had a 17 per cent higher possibility of being stunted after adjusting with age in months, area, ethnicity, province, maternal education, and currently breastfed [AOR= 1.17, 95% *CI: 1.01-1.37*].

The study also found a positive association between meeting MDD practice and wasting. Children who did not meet minimum dietary diversity practice had a 32 per cent higher possibility of being wasted [COR= 1.32, 95% *CI: 1.05-1.65*]. However, it was not significant after adjusting with age in months, area, ethnicity, province, maternal education, and currently breastfed [AOR= 1.03, 95% *CI: 0.79-1.33*].

Table 2. Association between children's feeding practices and nutritional status of children

	Stunting		Wasting		Underweight	
	COR (95% CI)	AOR[1] (95% CI)	COR (95% CI)	AOR[1] (95% CI)	COR (95% CI)	AOR[1] (95% CI)
Minimum acceptable diet (MAD)						
Yes	Ref.		Ref.		Ref.	
No	1.04 (0.92-1.18)	1.17 (1.01-1.37)*	1.13 (0.90-1.42)	1.05 (0.81-1.37)	1.08 (0.93-1.26)	1.16 (0.97-1.39)
Minimum meal frequency (MMF)						
Yes	Ref.		Ref.		Ref.	
No	1.09 (0.96-1.25)	1.04 (0.87-1.25)	0.98 (0.77-1.24)	1.30 (0.97-1.75)	0.92 (0.79-1.08)	1.15 (0.94-1.42)
Minimum dietary diversity (MDD)						
Yes	Ref.		Ref.		Ref.	
No	0.97 (0.85-1.10)	1.15 (0.99-1.34)	1.32 (1.05-1.65)*	1.03 (0.79-1.33)	1.13 (0.97-1.31)	1.03 (0.87-1.23)

Source: PHS 2022. Authors' calculations.

Notes: COR (Crude Odd Ratio), AOR (Adjusted Odd Ratio), Ref (reference group), Asterisks mark estimated coefficients which are statistically significant at a level less than or equal to 5 per cent (*). 1 Adjusted with age in months, area, ethnicity, province, maternal education, and currently breastfed. For each of the variables (MAD, MMF, and MDD), the first category (Yes) is identified as the reference category. As such, all results for each variable will be expressed as a comparison to the reference category of each variable.

Factors significantly affecting meeting MDD, MMF, and MAD practices were a child's age, geographic location, maternal education status, ethnicity, and whether a child is breastfed (see Table 3 for detailed results). This implies that challenges range from individual to household level and may cut through village, district, and provincial levels.

Table 3. Predictors of MDD, MMF, and MAD among children

	MDD		MMF		MAD	
	COR (95% CI)	AOR[1] (95% CI)	COR (95% CI)	AOR[1] (95% CI)	COR (95% CI)	AOR[1] (95% CI)
Age in months						
6-11	Ref.		Ref.		Ref.	
12-17	1.50 (1.30-1.73)*	1.91 (1.62-2.26)*	0.59 (0.50-0.69)*	1.26 (1.03-1.54)*	1.14 (0.99-1.32)	1.96 (1.66-2.32)*
18-23	1.55 (1.32-1.81)*	2.28 (1.88-2.77)*	0.25 (0.21-0.29)*	1.02 (0.82-1.28)	0.68 (0.58-0.80)*	2.00 (1.63-2.45)*
Area						
Urban	Ref.		Ref.		Ref.	
Rural with road access	0.59 (0.47-0.74)*	0.67 (0.51-0.86)*	0.79 (0.63-1.00)	0.54 (0.40-0.72)*	0.60 (0.48-0.74)*	0.51 (0.39-0.66)*
Rural without road access	0.85 (0.66-1.10)	0.77 (0.57-1.04)	0.71 (0.54-0.91)*	0.42 (0.30-0.60)*	0.71 (0.56-0.91)*	0.51 (0.38-0.70)*
Ethnicity						
Lao-Tai	Ref.		Ref.		Ref.	
Mon-Khmer	0.53 (0.45-0.62)*	0.48 (0.40-0.57)*	1.03 (0.87-1.21)	0.68 (0.55-0.85)*	0.64 (0.54-0.75)*	0.51 (0.42-0.62*

Hmong-Mien	1.74 (1.46-2.09)*	0.87 (0.70-1.07)	1.16 (0.97-1.38)	0.88 (0.69-1.14)	1.57 (1.33-1.85)*	0.95 (0.77-1.17)
Chinese-Tibetan	1.11 (0.88-1.39)	0.75 (0.55-1.04)	1.21 (0.96-1.53)	0.75 (0.50-1.13)	1.16 (0.93-1.45)	0.69 (0.49-0.96)*
Other	1.70 (1.25-2.35)*	1.03 (0.72-1.49)	0.78 (0.58-1.05)	0.69 (0.45-1.05)	1.12 (0.83-1.49)	0.80 (0.56-0.14)
Province						
Phongsaly	Ref.		Ref.		Ref.	
Bokeo	0.99 (0.78-1.26)	1.03 (0.77-1.38)	2.05 (1.58-2.67)*	1.91 (1.31-2.80)*	1.40 (1.11-1.77)*	1.17 (0.87-1.59)
Huaphanh	1.58 (1.31-1.91)*	1.48 (1.14-1.94)*	1.05 (0.87-1.26)	1.01 (0.73-1.40)	1.31 (1.09-1.57)*	1.19 (0.90-1.57)
Saravane	0.21 (0.17-0.26)*	0.19 (0.14-0.26)*	1.15 (0.93-1.42)	0.80 (0.56-1.15)	0.36 (0.29-0.45)*	0.25 (0.19-0.35)*
Maternal education						
Primary or less	Ref.		Ref.		Ref.	
Secondary	1.60 (1.40-1.82)*	1.26 (1.08-1.46)*	1.00 (0.87-1.14)	1.37 (1.14-1.65)*	1.34 (1.17-1.52)*	1.31 (1.13-1.53)*
Post-secondary or more	2.40 (1.88-3.10)*	1.98 (1.48-2.65)*	1.08 (0.86-1.39)	2.40 (1.75-3.30)*	1.71 (1.36-2.15)*	2.18 (1.65-2.89)*
Currently breastfed						
Yes	Ref.		Ref.		Ref.	
No	0.93 (0.82-1.06)	0.53 (0.45-0.62)*	0.06 (0.05-0.07)*	0.04 (0.03-0.05)*	0.22 (0.19-0.26)*	0.11 (0.9-0.14)*

Notes: COR (Crude Odd Ratio), AOR (Adjusted Odd Ratio), Ref (reference group0 Asterisks mark estimated coefficients which are statistically significant at a level less than or equal to 5 per cent (*).1 Adjusted for all variables in the table. For each of the variables (age in months, area, ethnicity, province, maternal education, currently breastfed), the first category (6-11, urban, Lao-Tai, Phongsaly, primary or less, yes) is identified as the reference category. As such, all results for each variable will be expressed as a comparison to the reference category of each variable.

Regarding the predictors of adequate feeding practices, the likelihood of meeting MDD and MAD increased with the child's age. Younger children may be unable to consume or digest all varieties of foods compared with older children, which could be a possible reason for this finding.

The analysis found that maternal education status (secondary or higher) was significantly associated with MDD, MMF, and MAD. Children of mothers with higher education (secondary and above) were more likely to meet the recommended minimum dietary practices than children whose mothers had primary education or less. Educated mothers may be higher income earners and, therefore, can spend more money on healthier and more diversified foods from a wide range of sources.

A significant disparity was observed among provinces. Children residing in Huaphanh province had nearly 1.5-times higher odds for MDD compared with children from Phongsaly province. Conversely, children residing in Saravane province had approximately 81 per cent less chance for MDD than those from Phongsaly province. Children residing in Bokeo province had nearly 1.9-times higher odds for MMF than children from Phongsaly province. There was also a negative association between children residing in Saravane province and MAD.

Disparities were also observed among geographic locations (urban and rural areas). Children living in rural areas with road access had 33 per cent less chance of meeting minimum dietary diversity than those in urban areas. In relation to MMF, children who lived in rural areas with road access had 46 per cent less chance for MMF compared with those in urban areas, and children in rural areas without road access were 58 per cent less likely to realize MMF compared with children residing in urban areas. Additionally, children in rural areas were on average 49 per cent less likely to secure MAD than children residing in urban areas.

Disparities were also observed among ethnic groups. Children whose mothers were ethnically Mon-Khmer had 52, 32 and 49 per cent less chance for MDD, MMF and MAD, respectively. There was also a negative association between children whose mothers were Chinese-Tibetan and MAD.

Our analysis also found that children not currently breastfed had less chance for MDD, MMF, and MAD than those currently breastfed. Children not currently breastfed had 47, 96 and 89 per cent less chance for MDD, MMF, and MAD, respectively.

Policy Recommendations

Based on the findings of the analysis, the following recommendations are proposed:

1. **Ensure safe and nutritious food for all**. The 2030 Sustainable Development Agenda makes an explicit pledge to "leave no one behind". The study identified disparities in dietary diversity and meal frequency coverage among children from rural areas, ethnic minority backgrounds, and certain provinces. Nutrition-sensitive social protection programmes should be targeted to reach the most vulnerable. Also, there is a need to strengthen food systems to ensure cultivation and processing of nutritious foods are locally accessible.
2. **Strengthen social behaviour change:** For ethnic minority groups, health and nutrition education for mothers and caregivers should be promoted, with a focus on feeding practices that are in tandem with local cultures and available foods. Also, food taboos and social norms that are inimical to optimal nutrition should be addressed as part of social behavioural change interventions.
3. **Inclusion of nutrition education in school curricula**. The study indicated that a mother's education is an important predictor of meeting infant and young child feeding practices. Educated mothers might have more information or a better understanding of child feeding practices, the importance of dietary diversity and meal frequency to support children's growth and development, the consequences of poor feeding practices and nutrition education, which may lead them to feed their children with diversified foods and more frequently. Educational interventions, especially at community level, may substantially improve a child's nutritional status by directly enabling girls as future mothers to have improved nutrition knowledge, practices, and health-seeking behaviour.
4. **Step-up efforts to collect and report on diet quality and meal frequency**. Seeking appropriate metrics for national government action should be prioritized above and beyond the Sustainable Development Goals. The study showed that an acceptable diet (i.e., a diverse diet with frequent meals) is strongly associated with the nutrition status of children, particularly stunting, and can be tracked using metrics such as the minimum dietary diversity, minimum meal frequency, and minimum acceptable diet indicators. A robust national nutrition information system is essential for collecting timely, regular, quality data to assess children's nutrition status. The national surveillance system needs to have an action plan for improving the collection of supporting data.
5. **Promote value chains for nutrition to encourage diverse diets and economic value addition along the food chain**. Between the production of food from farm to table, there is a chain of storage, distribution, processing, retail, and preparation. How these processes are undertaken affects the access, acceptability, and nutritional quality of foods. Current value chains in Lao PDR are built on historic demand for certain foods and distorted by rice-centric government policy that marginalizes other foods. To redress the balance, explicit attention is required for the production, processing and marketing of nutritious foods needed for diverse diets. This includes the promotion of pulses, nuts, seeds and dairy products in hard-to-reach populations, to catalyse new markets and link supply and demand for foods high in economic and nutritional value.
6. **Improve the food systems for production of nutritious foods.** At the same time as increasing the availability of nutritious and diverse crops for producers, there is a need to boost demand from producers for these foods. Demand increases either when there is a market among consumers for the diverse foods produced, or when producers change their own consumption patterns. Both require the provision of information and education to producers and consumers on nutrition and the importance of diverse diets. This can occur through multiple channels, including programmes such as agricultural extension, creating markets for diverse local foods in urban and rural areas through better nutrition education and increasing the links between the supply and demand for diverse and nutritious foods.

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The National Information Platforms for Nutrition (NIPN) is an international initiative of the European Commission.

NIPN aims to build institutional capacities at national and sub-national levels to manage and analyse information and data from all sectors that influence nutrition, track progress, and better inform their policies and strategies.

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