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Nutrition Policy Brief

Importance of Subsistence Food Production Diversity and Household Food Security for Women's and Children's Dietary Diversity

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A better understanding of the role of subsistence food production diversity and household food security in women's and children's dietary diversity is crucial to inform and update nutrition policies and programme decisions in Lao PDR.

This brief highlights key findings from "Subsistence Agriculture, Household Food Security, and Women's and Children's Dietary Diversity in Lao PDR". This analysis was conducted by the Socio-Economic and Policy Research Institute (SPRI) and Lao Academy of Social and Economic Sciences (LASES), supported by the European Union (EU) and the United Nations Children's Fund (UNICEF).

What's at Stake?

Nutrition-sensitive interventions have been identified as promising instruments to accelerate achievement of nutrition and food security, contributing to the second Sustainable Development Goal (SDG 2).¹ There are multiple pathways from agriculture to nutrition. Among them, the links between subsistence food production diversity, household food security, and dietary diversity have been a significant focus of research in the past decade.² However, a recent meta-analysis of 45 studies from 26 countries found little evidence that diversifying production has a meaningful impact on dietary diversity and food security. If it does, this impact is minimal.³

In Lao PDR, there is little to no evidence of the association between subsistence food production diversity, household food security, and dietary diversity, despite the Government of Lao PDR and its development partners having prioritized nutrition-sensitive agriculture. Therefore, exploring the relationship between subsistence food production diversity, household food security, and dietary diversity is essential in this context.

¹ Ruel & Alderman, 2013.

² Dizon et al., 2021.

³ Sibhatu & Qaim, 2018.

Research Approach

This nutrition policy brief sets out to answer two research questions: (i) is there an association between minimum dietary diversity for women (MDD-W) and minimum dietary diversity for children (MDD) with household food security, and (ii) is there an association between MDD-W and children's MDD with household food production diversity?

To achieve these research goals, the study uses data from the latest national Nutrition Sentinel Surveillance (NSS) Survey conducted by the Centre of Nutrition, the Department of Hygiene and Health Promotion, Ministry of Health and UNICEF in Lao PDR between October and November 2023. A child was defined as having MDD if it had consumed foods from at least five of the eight main groups the previous day. A woman of reproductive age was regarded as having MDD-W if she had consumed foods from at least five of the 10 main groups the previous day. A food consumption score (FCS) was used as a proxy for household food security. If the FCS was less than 35, it indicated the presence of household food insecurity. Food production diversity was calculated based on a count of food groups produced by each household.

The study analyzed data pertaining to women of reproductive age (15–49 years) and children aged 6–23 months only. A total of 611 datasets were included in the analysis after cleaning, which involved removing data entries with missing variables such as incomplete MDD, MDD-W, FCS, household food production, demographic, and socio-economic status. Logistic regressions were used to assess the relationship between MDD and MDD-W and household food security and subsistence food production diversity.

Key Findings

Based on the analysis (Table 1), the prevalence of MDD was 52.4 per cent for children and MDD-W was 75.3 per cent for women. The majority of households came from the central region (42.2 per cent), followed by the north (37.3 per cent) and the south (20.5 per cent). More than three-quarters (78.2 per cent) of households comprised four to eight people. Approximately 40.1 per cent of women had completed primary education or less, followed by secondary education (48.9 per cent), and 11.0 per cent completed post-secondary or more. Children aged 6–11 months made up 40.6 per cent of the sample, and 67.8 per cent were currently being breastfed.

Most households had harvested or owned an average of three or more (3.42 ± 0.06) food groups (Table 1), mainly grains, roots, tubers and plantains (83.3 per cent), small livestock (79.5 per cent) and vegetables (69.1 per cent). According to the FCS, nearly one-in-10 (10.6 per cent) households had unacceptable food consumption scores.

Table 1. Background characteristics of women and children aged 6–23 months and the prevalence of dietary diversity (NSS Survey 2023 Round II)

Background characteristics	Frequency (%)	Minimum dietary diversity for children %, (95% CI)	p-value ¹	Minimum dietary diversity for women %, (95% CI)	p-value ¹
Total	611 (100)	52.4 (48.4-56.3)		75.3 (71.7-78.5)	
Region					
Central	258 (42.2)	50.4 (44.3-56.4)	0.67	70.9 (65.1-76.1)	0.10

North	228 (37.3)	54.4 (47.9-60.7)		78.5 (72.7-83.3)	
South	125 (20.5)	52.8 (44.1-61.3)		78.4 (70.4-84.7)	
Maternal education					
Primary or less	245 (40.1)	42.0 (36.0-48.3)	< 0.001	65.5 (58.3-70.2)	< 0.001
Secondary	299 (48.9)	56.5 (50.9-62.0)		80.9 (76.1-85.0)	
Post-secondary or more	67 (11.0)	71.6 (59.9-81.0)		89.6 (80.0-94.5)	
Household size					
2-3 people	51 (8.3)	52.9 (39.5-65.9)	0.99	80.4 (67.5-89.0)	0.63
4-8 people	478 (78.2)	52.3 (47.8-56.7)		75.1 (71.0-78.8)	
More than 9 people	82 (13.4)	52.4 (41.8-62.9)		73.1 (62.7-81.6)	
Age in months					
6-11	248 (40.6)	50.0 (43.8-56.1)	0.46	-	-
12-17	197 (32.2)	55.8 (48.9-62.6)		-	-
18-23	166 (27.2)	51.8 (44.2-59.3)		-	-
Currently breastfed					
Yes	414 (67.8)	55.8 (50.9-60.5)	0.02	-	-
No	197 (32.2)	45.2 (38.4-52.1)		-	-
Sex					
Male	307 (50.2)	53.1 (47.5-58.6)	0.78	-	-
Female	304 (49.8)	51.6 (46.0-57.2)		-	-
Food production diversity					
Average food groups		3.42 ± 0.06		3.42 ± 0.06	
Less than 2	181 (29.6)	44.2 (37.2-51.5)	< 0.001	68.5 (61.4-74.8)	< 0.001
3 to 4	245 (40.1)	47.7 (41.6-53.9)		72.6 (66.7-77.8)	
More than 5	185 (30.3)	66.5 (59.4-72.9)		85.4 (79.6-89.8)	
Grains, roots, tubers, and plantains					
Yes	509 (83.3)	51.7 (47.3-56.0)	0.50	74.8 (70.1-78.4)	0.67
No	102 (16.7)	55.9 (46.2-65.1)		77.4 (68.4-84.5)	
Legumes					
Yes	212 (34.7)	65.6 (58.9-71.6)	< 0.001	86.3 (81.0-90.3)	< 0.001
No	399 (65.3)	45.4 (40.5-50.3)		69.4 (64.7-73.7)	
Vegetables					
Yes	422 (69.1)	55.2 (50.4-59.9)	0.04	77.0 (72.8-80.8)	0.16
No	189 (30.9)	46.0 (39.1-53.1)		71.4 (64.6-77.4)	
Fruits					
Yes	309 (50.6)	61.2 (55.6-66.4)	< 0.001	83.8 (79.3-87.5)	< 0.001
No	302 (49.4)	43.4 (38.0-49.0)		66.6 (61.1-71.6)	
Small livestock					
Yes	486 (79.5)	53.7 (49.3-58.1)	0.23	75.9 (71.9-79.5)	0.54
No	125 (20.5)	47.2 (38.7-55.6)		72.8 (64.4-79.8)	
Fish farming					
Yes	154 (25.2)	61.7 (53.8-69.0)	0.009	79.9 (72.8-85.4)	0.15
No	457 (74.8)	49.2 (44.7-53.8)		73.7 (69.5-77.6)	
Food Consumption Score					
Unacceptable	65 (10.6)	27.7 (18.3-39.6)	< 0.001	43.1 (31.8-55.2)	< 0.001
Acceptable	546 (89.4)	55.3 (51.1-59.4)		79.1 (75.5-82.3)	

Source: NSS Survey 2023 Round II. Authors' calculations.

Notes: ¹Chi-square test statistics.

Interestingly, this analysis identified a significant positive association between households with acceptable food consumption scores and the achievement of MDD compared to children with unacceptable food consumption scores (see Table 2 for detailed results). Children from households with acceptable food consumption scores had nearly three-fold higher odds of achieving MDD compared to peers with unacceptable food consumption scores. Additionally, a positive association was found between children's dietary diversity and household food production diversity. Children from households that produce five or more food groups were approximately twice more likely to meet MDD than children whose households produce two or fewer food groups.

Table 2. Multivariate logistic regression analysis of association between household food security, farm production diversity and MDD for children aged 6–23 months

		Model A			Model B ¹	
	Frequency (%)	MDD %, (95% CI)	OR (95% CI)	P	OR (95% CI)	P
Food Consumption Score (FCS)						
Unacceptable	65 (10.6)	27.7 (18.3-39.6)	Reference		Reference	
Acceptable	546 (89.4)	55.3 (51.1-59.4)	3.23 (1.86-5.84)	0.001	2.85 (1.61-5.23)	0.001
Food Production Diversity						
Less than 2	181 (29.6)	44.2 (37.2-51.5)	Reference		Reference	
3 to 4	245 (40.1)	47.7 (41.6-53.9)	1.15 (0.78-1.70)	0.47	1.09(0.74-1.63)	0.64
More than 5	185 (30.3)	66.5 (59.4-72.9)	2.50 (1.64-3.84)	0.001	2.27 (1.47-3.53)	0.001

Source: NSS Survey 2023 Round II. Authors' calculations.

Notes: ¹Adjusted with mother's education and currently breastfed.

Similar results were found among women (see Table 3). Women from households with acceptable food consumption scores had nearly five-fold higher odds of attaining MDD-W than women with unacceptable food consumption scores. Women from households that produce five or more food groups were approximately twice more likely to meet MDD-W than women whose households produce two or fewer food groups.

Table 3. Multivariate logistic regression analysis of association between household food security, farm production diversity, and MDD-W for women of reproductive age

		Model A			Model B ¹	
	Frequency (%)	MDD-W %, (95% CI)	OR (95% CI)	P	OR (95% CI)	P
Food Consumption Score (FCS)						
Unacceptable	65 (10.6)	43.1 (31.8-55.2)	Reference		Reference	

Acceptable	546 (89.4)	79.1 (75.5-82.3)	5.01 (2.95-8.59)	0.001	4.66 (2.63-8.38)	0.001
Food Production Diversity						
Less than 2	181 (29.6)	68.5 (61.4-74.8)	Reference		Reference	
3 to 4	245 (40.1)	72.6 (66.7-77.8)	1.22 (0.80-1.86)	0.35	1.03 (0.67-1.91)	0.36
More than 5	185 (30.3)	85.4 (79.6-89.8)	2.69 (1.62-4.55)	0.001	2.33 (1.37-4.02)	0.01

Source: NSS Survey 2023 Round II. Authors' calculations.

Notes: ¹Adjusted with region and mother's education

Overall, empirical analyses suggest that household food production diversity and food security were positively associated with dietary diversity in women and children. In the study, the lowest prevalence of attaining MDD and MDD-W were among households whose food consumption scores were unacceptable. This lower dietary diversity of women and children living in food-insecure households could be attributed to the low consumption of nutritious foods. Correspondingly, the highest prevalence of attaining MDD and MDD-W was observed among households that produced five or more food groups. The increased dietary diversity among women and children in these households could reflect the fact that many households in Lao PDR mainly or partly rely on subsistence farming. Such households cultivate food crops and raise livestock or farm fish to meet their own and families' needs. As suggested by prior literature and intuitively understood, these households primarily consume what they grow.

Policy Recommendations

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

- 1) Increase the availability, accessibility, and affordability of a variety of nutritious foods.** The Government of Lao PDR is encouraged to identify locally-available and lower-cost nutritious foods – including legumes, fruits, vegetables, and animal-source foods – and make them the focus of national policies, programmes, and guidelines to close nutrient gaps in women's and children's diets. To increase the accessibility and affordability of these nutritious foods, it is crucial to create incentives that encourage their production, distribution, and retailing. This includes providing incentives and subsidies to enhance the production of locally-available foods through multiple channels, including home gardening programmes. This is especially important in rural areas where people have limited income-earning opportunities and poor access to markets. Home gardens can ensure access to various kinds of foods that make up a healthy diet for mothers and their children.
- 2) Optimize food systems to produce nutritious foods.** At the same time as increasing the availability of nutritious and diverse crops, there is a need to boost demand for these foods. Demand can rise either through consumer preferences for a wider variety of foods or by producers altering consumption patterns. Both scenarios require provision of education and information to producers and consumers on nutrition and the importance of diversified diets. This can be achieved through various channels, including agricultural extension programmes and initiatives to create markets for diverse local foods in urban and rural areas. Strengthening connections between the supply and demand for diverse and nutritious foods is key to achieving this goal.

- 3) **Strengthen social behaviour change.** Health and nutrition education for mothers and caregivers should be promoted, focusing on feeding practices that reflect local cultures and available foods. Also, food taboos and social norms that are inimical to optimal nutrition should be addressed as integral components of social behavioural change interventions.
- 4) **Use various communication channels (print, broadcast, social, and digital media) to disseminate advice on nutrition and caregiving practices to women, girls, and the public.** The analysis highlighted that a mother's level of education is a significant predictor of meeting MDD and MDD-W, suggesting that educated mothers may possess more information or a better understanding of the importance of dietary diversity and consequences of poor nutrition. Transformative actions should be taken to ensure that girls enrol and complete their education. Empowering and educating girls has a corresponding impact on their food choices and practices. Furthermore, communication efforts should encourage and normalize fathers' participation in food preparation and feeding young children, thereby reducing time pressures on women and contributing to gender equality.
- 5) **Inclusion of nutrition education in school curricula.** The study underscored that a mother's education is an important predictor of achieving MDD and MDD-W. Educated mothers are likely to possess greater knowledge and understanding of nutrition and child feeding practices. They may appreciate the importance of dietary diversity and meal frequency in supporting children's growth and development, as well as the consequences of poor feeding practices. Consequently, they may be more inclined to provide their children with diversified foods and feed them more frequently. Educational interventions, especially at community level, have the potential to substantially enhance a child's nutritional status by empowering girls as future mothers with improved nutrition knowledge, practices, and health-seeking behaviour.
- 6) **Expand access to quality nutrition counselling and support for young child feeding and dietary diversity practices for women and girls before and during pregnancy, as well as while breastfeeding.** Community-based platforms are essential for increasing access to counselling and support services on child feeding and dietary diversity practices and for addressing equity gaps in coverage of essential nutrition interventions. The Government of Lao PDR and development partners must invest in recruiting, training, supervising, and motivating community-based counsellors and health workers to deliver quality nutrition counselling and support on child feeding and dietary diversity at scale. In addition, increasing awareness of nutritious and locally-available foods could improve their production and consumption.
- 7) **Position women's and children's rights to nutritious and safe diets as a priority in the National Socio-Economic Development Plan 2026–2030 and ensure coherent policy support and legislation across sectors and systems.** The Government of Lao PDR and development partners must elevate the diets of women and children as a national development priority and allocate adequate financial resources in ministerial budgets and investments. Policies, legislation, and programmes across food, health, and social protection systems must align, considering the interrelated roles of these systems in improving women's and children's diets. Effective coordination is essential to identify and implement mutually reinforcing policy and programme actions.
- 8) **Conduct research to understand factors contributing to the success or failure of systems in enhancing women's and children's diets.** The Government of Lao PDR and development partners

must fund research aimed at identifying the context-specific barriers and enablers to accessing adequate food, services, and practices for women's and children's nutrition, including insights from mothers and other primary caregivers. Additionally, investment in research is essential to identify factors, processes, and innovations that facilitate multi-system action to secure nutritious, safe, affordable, desirable, and sustainable diets. Learning from both failed and successful experiences is crucial for informed decision-making and effective policy formulation.

References

Dizon F, Josephson A, Raju D. Pathways to better nutrition in South Asia: Evidence on the effects of food and agricultural interventions. *Global Food Security*. 2021;28:100467. Available from: <https://doi.org/10.1016/j.gfs.2020.100467>

Ruel M, Alderman H. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *Lancet*. 2013;382:536–51. Available from: [https://doi.org/10.1016/S0140-6736\(13\)60843-0](https://doi.org/10.1016/S0140-6736(13)60843-0)

Sibhatu KT, Qaim M. Meta-analysis of the association between production diversity, diets, and nutrition in smallholder farm households. *Food Policy*. 2018;77:1-18.



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