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Subsistence agriculture, household food security, and women's and children's dietary diversity in Lao PDR



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National Convention Centre

- Nutrition-sensitive interventions have been identified as promising instruments to accelerate the achievement of nutrition and food security, thus contributing to the second Sustainable Development Goal (SDG-2).
- 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.
- In Lao PDR, there is little to no evidence of the association between food production diversity, household food security, and dietary diversity.

OBJECTIVE OF THE STUDY

The study aimed 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) to household food security based on the food consumption score (FCS), and
- (ii) is there an association between MDD-W and children's MDD to household food production diversity?

METHODS

Source of data:

- Lao PDR – National Nutrition Sentinel Surveillance

Target:

- Women of reproductive age (15-49 years) and children 6-23 months

Sample size

- 611

Variables

- Minimum Dietary Diversity (MDD), Minimum Dietary Diversity for Women (MDD-W), Food Consumption Scores (FCS), household food production, demographic and socio-economic status variables (e.g., region, household size, child's age, child's sex, maternal education, breastfed)

Analysis

- Bivariate and multivariate logistic regression modelling



METHODS

- **Minimum dietary diversity (MDD) in children:** consumed foods from at least 5 of the 8 main groups the previous day.
- **Minimum dietary diversity for women (MDD-W):** consumed foods from at least 5 of the 10 main groups the previous day.
- **Food consumption score (FCS)** - proxy for household food security: FCS less than 35 indicates the presence of household food insecurity.
- **Food production diversity:** count of food groups produced by each household.

Key Findings

- The majority of households came from the Central region (42.2 per cent), followed by the North (37.3 per cent) and then the South (20.5 per cent).
- More than three-quarters (78.2 per cent) of households comprised 4-8 people.
- Approximately 40.1 per cent of women completed primary education or less, followed by secondary education (48.9 per cent), and 11.0 per cent completed post-secondary or more.
- Most children were 6-11 months (40.6 per cent) and currently breastfed (67.8 per cent).

Table 1A: Background characteristics of the women and children aged 6 to 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 (56.9-59.9)		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)		-	-

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

Notes: ¹Chi-square test statistics.

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

- Most households had harvested or owned three or more (3.42 ± 0.06) food groups, mainly grains and tubers (83.3 per cent), small livestock (79.5 per cent), and vegetables (69.1 per cent).

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 (56.9-59.9)		75.3 (71.7-78.5)	
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)	

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

Notes: ¹Chi-square test statistics.

- According to the food consumption score (FCS), nearly one-in-ten (10.6 per cent) households had unacceptable food consumption scores.

Table 1C: Background characteristics of the women and children aged 6 to 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 (56.9-59.9)		75.3 (71.7-78.5)	
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.

Children from households that had acceptable food consumption scores had nearly **3.0-times higher odds** for attaining MDD compared with children with unacceptable food consumption scores.

Children from households who produce five or more food groups were approximately **2.0-times more likely** to meet MDD than children whose households produce 2 or less food groups.

Table 2: Multivariate logistic regression analysis of the association between household food security, farm production diversity, and Minimum Dietary Diversity for Children 6 to 23 months (MDD)

			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.

Women from households that had acceptable food consumption scores had nearly **5.0-times higher odds** for attaining MDD-W compared with women with unacceptable food consumption scores.

Women from households who produce five or more food groups were also approximately **2.0-times more likely** to meet MDD-W than women whose households produce 2 or less food groups.

Table 3: Multivariate logistic regression analysis of the association between household food security, farm production diversity, and Minimum Dietary Diversity for Women of Reproductive Age (MDD-W)

			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 mother's education and currently breastfed.

Conclusions

- ✓ Household food **production diversity** and **food security** were **positively associated** with **dietary diversity** in women and children.
- ✓ The **lowest prevalence of attaining MDD and MDD-W** were among households whose **food consumption scores were unacceptable**.
- ✓ The **highest prevalence of attaining MDD and MDD-W** was among households that **produced five or more food groups**.
- ✓ The higher dietary diversity of women and children who produce more food groups could reflect the reality that **most households** in Lao PDR are still mainly or partly **subsistence farmers**.
- ✓ Each of these households grow food crops and owns livestock or farm fish to meet their own and their families' needs - households primarily **eat what they grow**.

- 1) Increase the availability, accessibility and affordability of a variety of nutritious foods.**
- 2) Improve the food systems for the production of nutritious foods.**
- 3) Strengthen social behaviour change.**
- 4) Expand access to quality nutrition counselling and support on young child feeding and dietary diversity practice for women and girls before and during pregnancy and while breastfeeding.**
- 5) 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.**

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THANK YOU VERY MUCH

