Factors Associated with Over Nutrition among Private Primary School Students in Urban Vientiane Capital, Lao PDR

Phayvanh Keopaseuth[1], Somchay Sithipangna[2], Souksamone Thongmyxay[2], Visanou Hansana[3].

1. Cabinet of Ministry of Health, Ministry of Health, Vientiane Capital, Lao PDR
2. Faculty of Public Health, University of Health Sciences, Ministry of Health, Vientiane, Lao PDR
3. Institute of Research and Education Development, University of Health Sciences, Lao PDR.

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Abstract

Background: Childhood over nutrition, including overweight and obesity, is an emerging public health challenge in low- and middle-income countries such as Lao PDR. Rapid urbanization and lifestyle changes in cities like Vientiane Capital have contributed to a rising prevalence of childhood overweight, coexisting with persistent undernutrition.

Objectives: This study aimed to determine the prevalence of nutritional status and identify factors associated with over nutrition among private primary school students in Vientiane Capital, Lao PDR.

Methodology: An analytical cross-sectional study was conducted from March to June 2024 involving 412 students aged 6–12 years, randomly selected from ten private primary schools in Saysettha and Xaythany districts. Data collection included structured questionnaires covering socio-demographics, dietary intake (measured via Minimum Dietary Diversity for Women adapted for children), physical activity, sedentary behaviour, and parental nutrition knowledge. Anthropometric measurements were taken to calculate BMI-for-age z-scores using WHO AnthroPlus software. Multivariate logistic regression identified factors associated with underweight and overweight status.

Results: Among participants, 16.3% were underweight, 47.3% had normal weight, and 36.4% were overweight or obese. Most parents had vocational or higher education (81.1% of fathers; 71.1% of mothers). Fathers predominantly worked in farming, labor, or state sectors (56.3%), while mothers mainly engaged in private or informal employment (58.0%). Over half the children showed low nutrition knowledge (53.2%) and a roughly equal split was observed in diet quality. Physical activity assessments indicated 63.8% were sedentary, with 39.6% exceeding recommended sedentary behaviour limits. Multivariate analysis showed children older than 8 years were less likely to be underweight (AOR=0.07; 95% CI: 0.02–0.20). Unexpectedly, higher paternal education (AOR=6.65; 95% CI: 2.40–18.42) and fathers working in private/business sectors (AOR=2.14; 95% CI: 1.23–3.72) were linked to higher underweight risk. Physically active children had lower odds of overweight (AOR=0.52; 95% CI: 0.28–0.96).

Conclusion: The double burden of malnutrition is evident among private school children in urban Lao PDR. Physical activity protects against overweight, while socioeconomic factors show complex associations with undernutrition. Interventions should integrate nutrition education, physical activity promotion, parental engagement, and multispectral policies to address these challenges effectively.

Keywords: Over nutrition, childhood obesity, private schools, physical activity, Lao PDR, BMI z-score.

*** Corresponding author:** Somchay Sithipangna, Tel:+85620 5544 6268, Email: somchaispy@gmail.com

Introduction

Childhood over nutrition, including overweight and obesity, has become a growing global health challenge. Once limited to high-income countries, it now affects low and middle-income countries (LMICs), contributing significantly to the burden of non-communicable diseases (NCDs) [9] [14]. The nutritional focus in LMICs is shifting from undernutrition alone to a double burden of malnutrition where both under and over nutrition coexist [22] [8].

According to the World Health Organization (WHO), over nutrition is defined as a BMI-for-age Z-score greater than +1 SD, with obesity at >+2 SD [22]. Excessive body fat in children is linked to increased risks of Type 2 diabetes, cardiovascular disease, and long-term health complications [20] [2]. This dual burden is particularly evident in urban LMICs, where children face a mix of inadequate nutrition and high consumption of low-cost, energy-dense, nutrient-poor foods, exacerbated by physical inactivity and urban lifestyles [23].

In Lao PDR, this trend threatens progress toward achieving the Sustainable Development Goals and targets outlined in the 9th National Socio-Economic Development Plan (NSEDP) 2021–2025, which aims to reduce all forms of malnutrition through a multispectral approach [10].

Over nutrition among children is an emerging public health concern in Lao PDR, particularly in urban areas like Vientiane Capital. In 2019, the WHO estimated that 38.2 million children under five were overweight or obese globally, with nearly half in Asia [19]. A 2018 study in Lao PDR reported that 17.5% of adolescents were overweight and 5.9% were obese [11].

Contributing factors are complex and include dietary behaviors, physical inactivity, parental education, household income, and access to healthy environments [13] [17]. Students in private schools often come from wealthier families and may have greater exposure to fast foods and screen time, putting them at higher risk for over nutrition [5]. Identifying the factors associated with childhood over nutrition in this population is essential to guide targeted interventions and inform school and policy-level strategies for promoting healthy lifestyles in urban Lao PDR. So this study aims to identify the factors associated with over nutrition among private primary school children in Vientiane Capital, Lao PDR.

Materials and Methods

Study Design

This analytical cross-sectional study assessed the prevalence and factors associated with over nutrition among primary school children in Vientiane Capital using structured face-to-face interviews with caregivers.

Study Population

The study included children aged 6–12 years enrolled in grades 1–5 at private primary schools during the 2023/2024 academic year. Parents or primary caregivers served as respondents.

Inclusion and Exclusion Criteria

Inclusion

Healthy children enrolled in grades 1–5, present during data collection, with informed parental consent.

Exclusion

Children with physical disabilities or chronic/acute illnesses, those residing in hostels, critically ill students, and those unable to communicate verbally.

Sample Size

A multistage random sampling approach was used:

1. Two districts (one urban, one peri-urban) were randomly selected from Vientiane Capital.
2. Five private schools per district were randomly chosen (10 total).
3. One class per grade per school was randomly selected.
4. Within classes, children aged 6–12 were selected by systematic random sampling proportional to class size.

Data Collection

Data collectors administered interviewer-led structured questionnaires adapted from validated tools: physical activity items from WHO's GPAQ (Andarge et al., 2021) and dietary questions from Food and Nutrition Technical Assistance guidelines (de Morais Macieira et al., 2017). Anthropometric measures (weight, height) were taken twice using calibrated SECA scales and Microtoise stadiometers; averages were used to calculate BMI-for-age Z-scores (BAZ) via WHO AnthroPlus software.

The dependent variable was over nutrition, classified according to WHO criteria (2020) as BMI-for-age Z-score greater than +1 standard deviation (overweight) and greater than +2 standard deviations (obesity). Independent variables included child characteristics (age, sex, health status), parental socio-demographic factors (education, income, occupation), eating habits, physical activity levels, and the availability of electronic devices at home.

Data Analysis

Data were entered and cleaned in Epi-Data 3.1 and analyzed in STATA 16.1. Descriptive statistics summarized participant characteristics and behavioral factors. Over nutrition prevalence was reported as a proportion. Univariate logistic regression identified factors associated with over nutrition (OR, 95% CI). Variables with $p < 0.05$ were included in multivariate

logistic regression using backward elimination to produce adjusted ORs with 95% CIs.

Ethical Considerations

Ethical approval was obtained from the National Ethics Committee for Health Research, Lao PDR. Participation was voluntary with informed consent from caregivers. Confidentiality was maintained by excluding personal identifiers and securing data. Participants were informed of study aims, procedures, risks, and benefits.

Results

Socio-demographic Characteristics

Of the 412 participating children, 64.3% were female, and the mean age was 8.29 years (SD = 1.65), with 57.8% younger than 8. Participants were evenly distributed across Grades 1 to 5. Most children had fewer than two siblings (64.8%) and lived in households with fewer than five members (69.7%). Over half (55.8%) were first-born. The mean age of fathers was 40.9 years (SD = 6.1), and mothers 37.0 years (SD = 4.7). A majority of parents attained vocational or higher education (81.1% of fathers; 71.1% of mothers). Fathers were primarily employed in farming, labor, or state roles (56.3%), while most mothers worked in the private or informal sector (58.0%). Monthly household income was below 10 million kip in 72.6% of households, with a mean income of 8.88 million kip (SD = 2.23 million; range: 3–20 million) (Table 1).

Table 1: Socio-demographic characteristics

Variables	Number (412)	Percent (%)
Gender		
Female	265	64.3
Male	147	35.7
Age		
< 8 years	238	57.8
8-10 years	174	42.2
Mean= 8.29, Sd= 1.65, Min= 1, Max= 14		
Grade		
Grade 1	84	20.4
Grade 2	83	20.1
Grade 3	80	19.4
Grade 4	81	19.7
Grade 5	84	20.4
Number of siblings		
≤2	267	64.8
>2	145	35.2
Mean= 2.42, Sd= 1.41, Min= 1, Max= 15		
Household member		
≤5	287	69.7
>5	125	30.3
Mean= 5.13, Sd= 1.85, Min= 1, Max= 14		
Birth order		
First	230	55.8
Second and over	182	44.2
Mean=1.61, Sd=0.87, Min =1, Max =7		
Father age		
<40 years	236	57.3
>40 years	176	42.7
Mean =40.89, Sd=6.06, Min =27 Max =64		
Mother age		
<37 years	220	53.4
>37 years	192	46.6
Mean =37.01, Sd=4.69, Min = 24, Max =55		
Father's education		
Illiterate/Primary school	13	3.1
Secondary/Upper school	65	15.8
Vocational//Diploma/ Bachelor degree/ Master degree	334	81.1
Father's occupation		
Unemployed or Not working	3	0.7
Farmer/Laboure/ State employee	232	56.3
Private employee/ Running own business/ Merchant	177	43.0
Mother's education		
Illiterate/Primary school	20	4.9
Secondary/Upper school	99	24.0
Vocational//Diploma/ Bachelor degree/ Master degree	239	71.1
Mother's occupation		
Unemployed or Not working	34	8.3
Farmer/Laboure/ State employee	139	33.7
Private employee/ Running own business/ Merchant	239	58.0
Monthly income		
< 10,000,000 kip	299	72.6
> 10,000,000 kip	113	27.4
Mean =8,875,000 kip, Sd=2,230,000, Min = 3,000,000 kip, Max =20,000,000		

Knowledge of Nutrition and Obesity

Table 2 shows Knowledge of Nutrition and Obesity among the 412 participants, nutrition and obesity knowledge was mixed. Most students (>89%) correctly identified the health benefits of fruits, vegetables, beans, dairy products, and dietary variety. However, only

38.6% understood that diets high in staple foods are not ideal, and just 28.2% recognized that unrefined grains are more nutritious than refined ones. Misconceptions were common: 83.7% believed vegetables have more starch than staples, and 53.9% incorrectly thought lard is healthier than vegetable oils. While the majority (92.7%) disagreed that eating sugar is healthy and 90.8% rejected the idea that heavier body weight indicates better health, only 34.2% supported the daily intake of animal products.

Regarding obesity, 77.8% were aware of its link to heart disease, but only 54.6% knew that overweight children are likely to become overweight adults. Understanding of cholesterol, natural sugars, the impact of salty foods, and screen time was moderate. Overall, 53.2% demonstrated low knowledge, and 46.8% showed high knowledge. The average score was 7.52 (SD = 2.90, range = 2–20), with acceptable reliability (KR-20 = 0.5749).

Table 2: Knowledge of nutrition and obesity

Variables	**No**	**Yes**
1. Choosing a diet with a lot of staple foods [rice and rice products and wheat and wheat products] is not good for one's health*	235 (61.4)	159 (38.6)
2. Refined grains (rice and wheat flour) contain more vitamins and materials than unrefined grains	296 (71.8)	116 (28.2)
3. Consuming beans and bean products are good for one's health	370 (89.8)	42 (10.2)
4. Choosing a diet with a lot of fresh fruits and vegetables is good for one's health	378 (91.7)	34 (8.3)
5. Vegetables contain more starch than staple foods (rice or wheat flour)	67 (16.3)	345 (83.7)
6. Vegetables and fruits will help you to lower your chance of getting high blood pressure and/or heart disease?	301 (73.1)	111 (26.9)
7. Lard is healthier than vegetable oils	190 (46.1)	222 (53.9)
8. Eating a lot of sugar is good for one's health*	382 (92.7)	30 (7.3)
9. Consuming a lot of animal products daily (fish, poultry, eggs and lean meat) is good for one's health	271 (65.8)	141 (34.2)
10. Reducing the amount of fatty meat and animal fat in the diet is good for one's health	319 (77.4)	93(22.6)
11. Consuming milk and dairy products are good for one's health	378 (91.7)	34 (8.3)
12. Eggs and milk are the important sources of high-quality protein	374 (90.8)	38 (9.2)
13. Eating a variety of foods is good for one's health	336 (81.6)	76 (18.4)
14. Choosing a diet high in fat is good for one's health*	381 (92.5)	31 (7.5)
15. The heavier one's body is, the healthier he or she is	38 (9.2)	374 (90.8)
16. Eat as much food as possible will help you have a healthy weight*	343 (83.2)	69 (16.8)
Knowledge of obesity		
17. Are who People obese have a higher risk for getting heart disease than people who are not obese.	320 (77.8)	92 (22.3)
18. Children and teens who are overweight are at a higher risk of being overweight as adults than children and teens who are not overweight.	225 (54.6)	187 (45.4)
19. Cholesterol is only found in animal foods.	148 (35.9)	364 (64.1)
20. Sugar is found naturally in fruits and liquid milk.	244 (59.2)	168 (40.8)
21. Nutrient dense means high in solid fat	148 (35.9)	264 (64.1)
22. Whole grains are may reduce your chance of getting heart disease	244 (59.2)	168 (40.8)
23. Eating salty foods can cause hypertension	221 (53.6)	191 (46.4)
24. Watching mobile for 8 hours a day may cause overweight and obesity in children	195 (47.3)	217 (52.7)
Knowledge of nutrition and obesity	**number= 412**	**Percent (%)**
Low knowledge (<80%)	219	53.2
High Knowledge (≥ 80%)	193	46.8
Mean =7.52, Sd=2.90, Min =2, Max =20, Kr20: 0.5749		

Diet Quality

Among 412 participants, staple food consumption was nearly universal (91.3%), with high intake of maize and root vegetables (71.6% and 65.1%, respectively). Legumes were consumed by 62.4%. Vegetable consumption varied: 61.6% ate dark leafy greens, while only 32.3% consumed tomatoes or mushrooms.

For fruits, 70.1% ate ripe tropical fruits, 45.2% had citrus or other fruits, and 34.0% consumed local fruits. Sweet foods were common: 54.6% consumed desserts and 47.8% consumed candies or traditional sweets. Animal-source food intake was low for eggs (27.9%) and cheese (14.8%) but very high for yogurt and processed meats (90.8%). Meat intake included pork or wild animals (68.0%), beef (42.0%), poultry (35.9%), and fish/seafood (36.2%). Other frequently consumed items included instant noodles (61.9%), chips (63.8%), nuts/seeds (50.5%), and fast food (74.3%).

Diet quality levels found that Half (50.1%) had low diet quality (consumed <5 food groups), and 49.9% had high diet quality (≥5 groups). The mean diet quality score was 6.6 (SD = 2.04; range = 1–10) (See table 3).

Table 3: Diet Quality Summary

Food Group	Most Consumed Items (%)
Staple foods	Rice, bread, etc. (91.3%)
Roots & legumes	Roots (65.1%), Legumes (62.4%)
Vegetables	Nutrient-rich greens (61.6%)
Fruits	Tropical fruits (70.1%)
Sweets	Cakes/desserts (54.6%)
Animal foods	Processed meats/yogurt (90.8%)
Fast food (e.g., KFC)	74.3%
Diet Quality Category	n (%)
Low (<5 food groups)	208 (50.1)
High (≥5 food groups)	204 (49.9)
Mean (SD)	6.6 (2.04)
Range	1–10

Physical Activities

Most students reported physical activity 0–2 days per week. Around half engaged in jogging (50.7%), skating (49.5%), and aerobics (50.5%) for 1–2 days weekly. Walking (39.6%) and cycling (42.5%) were also common for 1–2 days. More intense activities like tag, football, or volleyball had wider distribution, but fewer participated ≥5 days. Swimming (62.9%) and dance (43.7%) had the highest non-participation rates. Based on PAQ-C scores, 63.8% were categorized as sedentary (<3), while 36.1% were active (≥3). The mean score was 1.99 (SD = 2.03), indicating a generally sedentary profile (Table 4).

Table 4: Physical Activity Frequency (Most Common Activities)

Activity	1–2 days/week (%)	≥5 days/week (%)
Jogging/running	50.7	4.1
Aerobics	50.5	3.4
Walking	39.6	7.8
Basketball	42.2	6.3
Swimming	24.0	3.4
Activity Level	**n (%)**	
Sedentary (<3)	263 (63.8)	
Active (≥3)	149 (36.1)	

Sedentary Activities

Most participants reported spending <1 hour per day on sedentary behaviors: 67.7% for TV, 74.3% for gaming, and 56.1% for handheld device use. Similar patterns were observed for crafts (77.2%), reading (83.2%), and sitting around (57.5%). However, a notable portion reported ≥3 hours per day, especially for screen-based activities. Sedentary behavior level found that 60.4% met the guideline of ≤2 hours/day, while 39.6% exceeded it. The mean sedentary score was 1.35 (SD = 1.32; range = 1–5) (Table 5).

Table 5: Sedentary Activities

Variables	< 1 h	1-3 h	>3 h
	n (%)	n (%)	n (%)
• Viewing television	279 (67.7)	112 (27.2)	21 (5.1)
• Playing computer/online games	306 (74.3)	74 (18.0)	32 (7.8)
• Using hand-held devices (mobiles, i-pads, i-pods)	231 (56.1)	118 (28.6)	63 (15.3)
• Doing crafts or hobbies (paper crafts, painting, sketching, etc.)	318 (77.2)	77 (18.7)	17 (4.1)
• Reading for fun	343 (83.2)	57 (13.8)	12 (2.9)
• Sitting around (chatting with friends/ on the phone/chilling)	237 (57.5)	135 (32.8)	40 (9.7)
Sedentary activity			
Normal	249	60.4	
High sedentary activity	163	39.6	
Mean=1.35; SD=1.32, Min=1, Max=5			

BMI z score classification

Weight and height measurements were converted to BMI-for-age Z-scores (BAZ) using the WHO AnthroPlus software (version 10.4). Among the 412 participants, 16.3% (n= 67) were classified as underweight (BMI z-score < -2 SD), and 47.3% (n= 195) had a normal weight (BMI z-score between -2 SD and +1 SD). In contrast, 20.9% (n= 86) were categorized as overweight (BMI z-score > +1 SD to +2 SD), and 15.5% (n= 64) were obese (BMI z-score > +2 SD). When combining overweight and obese categories, a total of 36.4% of participants were classified as overweight (table 6).

Table 6: BMI z score classification

BMI z-score Category	n=412	Percent
< -2 SD (Underweight)	67	16.3
-2 SD to +1 SD (Normal)	195	47.3
> +1 SD to +2 SD (Overweight)	86	20.9
> +2 SD (Obese)	64	15.5
Mean= 0.06, SD=1.60, Min=-3 SD, Max=+3 SD		

Multivariate Analysis of Factors Associated with Underweight and Overweight Status

Multivariate logistic regression analysis showed that children older than 8 years were significantly less likely to be underweight compared to those younger than 8 years (AOR = 0.07, 95% CI: 0.02–0.20; p < 0.001). Higher paternal education (vocational or above) was significantly associated with greater odds of underweight in children (AOR = 6.65, 95% CI: 2.40–18.42; p = 0.014), as was the father's occupation in the private/business sector (AOR = 2.14, 95% CI: 1.23–3.72; p = 0.007), compared to unemployed/farmer/laborer/state-employed fathers (see Table 7).

Table 7: Multivariate Analysis of Factors Associated with Underweight Status

Variable	Normal (n=195)	Underweight (n=67)	COR (95% CI)	AOR (95% CI)	p-Value
Age					
< 8 years	99 (61.49)	62 (38.51)	1 (Ref)	1 (Ref)	–
> 8 years	96 (95.05)	5 (4.95)	0.08 (0.03–0.21)	0.07 (0.02–0.20)	0.000
Father's Education					
Secondary/Upper school	53 (96.36)	2 (3.64)	1 (Ref)	1 (Ref)	–
Voc/Diploma/Bachelor+	142 (68.60)	65 (31.40)	12.13 (2.86–51.30)	6.65 (2.40–18.42)	0.014
Father's Occupation					
Unemployed/Farmer/etc.	33 (94.29)	2 (5.71)	1 (Ref)	1 (Ref)	–
Private/Business/etc.	162 (71.37)	65 (28.63)	6.62 (1.54–28.39)	2.14 (1.23–3.72)	0.007

In the final multivariate model, children classified as physically active were 48% less likely to be overweight compared to their sedentary counterparts, with an adjusted odds ratio (AOR) of 0.52 (95% CI: 0.28–0.96), indicating a statistically significant association (p = 0.038) (see Table 26).

Table 8: Multivariate Analysis of Factors Associated with Overweight Status

Variable	Normal (n=195)	Overweight (n=150)	COR (95% CI)	AOR (95% CI)	p-Value
Physical Activity					
Sedentary (score 1-3)	154 (54.04)	131 (45.96)	1 (Ref)	1 (Ref)	–
Active (score ≥3)	41 (68.33)	19 (31.67)	0.54 (0.30–0.98)	0.52 (0.28–0.96)	0.038

Discussion

This study assessed the nutritional status of 412 students attending private primary schools in urban Vientiane Capital using WHO BMI-for-age Z-scores (BAZ). The results revealed a concerning double burden of malnutrition: 16.3% of children were underweight,

while 36.4% were overweight or obese twice the global average [21]. These findings reflect a rapid nutritional transition underway in Lao PDR, characterized by the coexistence of under- and over nutrition, largely driven by urbanization, dietary shifts, and increasingly sedentary lifestyles [16].

The high prevalence of overweight and obesity may be attributed to increased consumption of energy-dense processed foods, sugar-sweetened beverages, and reduced physical activity associated with screen time and constrained urban environments [12]. Surprisingly, undernutrition also persists even among students in private schools, challenging the assumption that such institutions serve only socioeconomically advantaged families. This suggests the presence of intra-urban disparities, potentially linked to unequal food access, variations in caregiver knowledge, or inequitable in household food distribution.

Multivariate logistic regression analysis identified several significant predictors of undernutrition. Notably, children older than 8 years were significantly less likely to be underweight compared to younger children

This aligns with developmental research showing that early school-aged children face higher risks of undernutrition due to greater nutritional needs, heightened susceptibility to illness, and dependence on adult caregivers for appropriate feeding [4]. As children grow, they may attain greater autonomy over food choices and benefit from more consistent dietary patterns, thereby lowering their risk of being underweight.

Paradoxically, the study found that higher paternal education specifically vocational level or above was significantly associated with increased odds of underweight among children. This contradicts the widely held belief that parental education is inherently protective due to enhanced health literacy and improved economic opportunities [7]. One possible explanation may lie in context-specific dynamics: more educated fathers may be employed in demanding jobs that reduce their involvement in childcare and nutrition decisions [3]. Additionally, increased household income associated with higher education may lead to spending patterns that prioritize adult consumption or convenience foods over child nutrition.

A similar trend was observed in relation to paternal occupation. Children whose fathers worked in the private or business sector were significantly more likely to be underweight compared to those whose fathers were unemployed, farmers, laborers, or state-employed. This may reflect how private-sector employment, despite offering economic stability, often entails irregular hours, high stress, and less time for caregiving responsibilities [1]. Moreover, income from informal private work may be unstable or inadequately allocated toward child health and nutrition needs. These findings caution against simplistic assumptions that employment and education alone ensure child well-being, particularly in rapidly urbanizing societies where caregiving roles and household dynamics are in flux [18].

Taken together, these results highlight the complexity of socio-economic determinants of child undernutrition and underscore the importance of understanding local contexts. Traditional indicators such as parental education or income may not capture the full spectrum of influences on child health. Interventions must consider how urban lifestyles, family structure, and time-use patterns affect child nutrition. More qualitative research is needed to unpack how paternal roles and household decision-making processes shape feeding practices and resource allocation within urban Lao households.

On the other end of the malnutrition spectrum, the study found that children who were physically active had nearly half the odds of being overweight compared to their sedentary peers. This finding carries significant implications for public health policy. Childhood overweight and obesity are associated with increased risks of chronic diseases such as type 2 diabetes, cardiovascular conditions, and poor mental health later in life [21]. Early prevention through lifestyle interventions is critical for reducing the long-term burden of non-communicable diseases.

Promoting physical activity among children is a cost-effective and feasible strategy that can be implemented through schools, community programs, and family-based interventions. Regular physical activity not only supports healthy weight but also improves mental health, cardiovascular fitness, and academic outcomes [6] [20]. In low- and middle-income countries undergoing rapid nutritional transitions, where overweight is rising even as undernutrition persists, increasing physical activity offers a vital avenue for addressing the double burden of malnutrition [16].

The findings also point to the importance of reducing sedentary behaviors, particularly screen time, which independently contributes to overweight risk [15]. In urban settings where children may have limited access to safe play spaces, public health interventions should focus on creating enabling environments that encourage active lifestyles while limiting passive, screen-based activities.

In summary, this study highlights the urgent need for a holistic, multisectoral approach to child nutrition one that integrates school-based interventions, parental education, physical activity promotion, and supportive urban policies. Addressing these interconnected factors early in life is essential for reversing the dual threats of

undernutrition and obesity, and for improving the long-term health trajectory of children in urban Lao PDR.

Conclusion and Recommendations

This study confirms the presence of a significant double burden of malnutrition among children attending private primary schools in urban Vientiane Capital. While older age appeared to be protective against underweight, unexpectedly, higher paternal education and employment in the private/business sector were associated with increased risks of undernutrition. Conversely, physical activity emerged as a strong protective factor against overweight and obesity. These findings suggest that traditional socioeconomic indicators such as parental education and occupation may not fully capture the complex drivers of child malnutrition in this urban context. Instead, behavioral factors and family dynamics play critical roles.

To address the multifaceted nature of malnutrition in urban Lao PDR, the following recommendations are proposed:

1. School-Based Nutrition Programs: Implement comprehensive nutrition interventions within schools that include the provision of balanced meals, regular growth monitoring, and targeted nutrition education for students and staff. These programs should address both undernutrition and overweight to effectively tackle the double burden.
2. Promotion of Physical Activity: Ensure that schools incorporate daily structured physical activities and encourage active play, while simultaneously promoting reductions in sedentary behaviors such as excessive screen time. Creating safe and accessible spaces for movement is essential.
3. Parental Engagement and Education: Develop community outreach programs to educate parents and caregivers on child nutrition and healthy lifestyle practices regardless of their income or education levels. Greater parental awareness can positively influence household food choices and caregiving patterns.
4. Policy Integration and Expansion: Broaden national nutrition strategies to explicitly include urban private schools and address the coexistence of undernutrition and overweight. Policies should encourage multisectoral collaboration between health, education, and urban planning sectors.
5. Further Research: Conduct longitudinal and qualitative studies to better understand the nuanced interactions between family socio-economic factors, urbanization, behavioral patterns, and child nutrition. In particular, exploring paternal roles and intrahousehold decision-making will provide valuable insights to guide context-appropriate interventions.

By implementing these recommendations, stakeholders can better support the nutritional well-being of children in rapidly urbanizing settings, ultimately contributing to healthier growth trajectories and reduced long-term risks of malnutrition-related diseases.

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ປັດໄຈທີ່ມີຄວາມສຳພັນກັບພະວະໂພຊະນາການເກີນ ໃນນັກຮຽນໂຮງຮຽນປະຖົມເອກະຊົນ ຂອງນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ

ໄພວັນ ແກ້ວປະເສີດ[1], ສົມໃຈ ສິດທິປັນຍາ[2], ສຸກສະໝອນ ທອງມີໄຊ[2], ວິສະນະ ຫານຊະນະ[3]

1. ຫ້ອງການກະຊວງສາທາລະນະສຸກສາດ, ກະຊວງສາທາລະນະສຸກສາດ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ
2. ຄະນະສາທາລະນະສຸກສາດ, ມະຫາວິທະຍາໄລ ວິທະຍາສາດ ສຸຂະພາບ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ
3. ສະຖາບັນຄົ້ນຄວ້າ ແລະ ພັດທະນາການສຶກສາ, ມະຫາວິທະຍາໄລ ວິທະຍາສາດ ສຸຂະພາບ, ສປປ ລາວ

ໄດ້ຮັບຕົ້ນສະບັບ ທີ 18 ມີນາ 2025, ໄດ້ຮັບບົດທີ່ກວດແກ້ຄືນ ທີ 20 ກໍລະກົດ 2025, ເຫັນດີໃຫ້ຈັດພິມ 25 ພະຈິກ 2025

ບົດຄັດຫຍໍ້

ເຫດຜົນ ແລະ ຄວາມສຳຄັນ: ພະວະໂພຊະນາການເກີນໃນເດັກນ້ອຍ ລວມທັງຄວາມອ້ວນ ແລະ ນ້ຳໜັກເກີນ ເປັນບັນຫາທ້າທາຍດ້ານສາທາລະນະສຸກທີ່ກຳລັງເກີດຂຶ້ນໃນບັນດາປະເທດກຳລັງພັດທະນາ ແລະ ປະເທດລາຍໄດ້ປານກາງ ເຊັ່ນ ສປປ ລາວ. ການຂະຫຍາຍຕົວຂອງຕົວເມືອງໃຫ່ຍ ແລະ ຮູບແບບການດຳລົງຊີວິດທີ່ປ່ຽນໄປໃນເມືອງ ເຊັ່ນ ນະຄອນ ຫຼວງວຽງຈັນ ສົ່ງຜົນເຮັດໃຫ້ອັດຕາເດັກນ້ອຍນ້ຳໜັກເກີນເພີ່ມຂຶ້ນ ໄປຄຽງຄູ່ກັບພະວະຂາດສານອາຫານທີ່ຍັງຄົງຢູ່.

ຈຸດປະສົງ: ການສຶກສານີ້ມີຈຸດປະສົງເພື່ອປະເມີນສະພາບໂພຊະນາການ ແລະ ກຳນົດປັດໄຈທີ່ມີຄວາມສຳພັນກັບພະວະໂພຊະນາການເກີນ ໃນນັກຮຽນໂຮງຮຽນປະຖົມເອກະຊົນ ຂອງນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ.

ວິທີວິທະຍາການຄົ້ນຄວ້າ: ເປັນການສຶກສາແບບວິເຄາະ-ຕັດຂວາງ (Analytical, Cross-sectional Study) ແຕ່ເດືອນມີນາ–ມິຖຸນາ 2024 ໂດຍມີນັກຮຽນ 412 ຄົນ ອາຍຸ 6–12 ປີ ທີ່ຖືກຄັດເລືອກແບບສຸ່ມ ຈາກໂຮງຮຽນເອກະຊົນ 10 ແຫ່ງ ໃນເມືອງໄຊເສດຖາ ແລະ ໄຊທານີ ເຂົ້າຮ່ວມ. ການເກັບຂໍ້ມູນປະກອບມີ: ແບບສອບຖາມໂຄງສ້າງ ກ່ຽວກັບຂໍ້ມູນດ້ານເສດຖະກິດ-ສັງຄົມ, ການບໍລິໂພກອາຫານ (ໃຊ້ຕົວຊີ້ວັດ MDD-W ປັບໃຊ້ສຳລັບເດັກ), ການອອກກຳລັງກາຍ, ພຶດກຳການບໍ່ເຄື່ອນໄຫວທາງຮ່າງກາຍ, ແລະ ຄວາມຮູ້ດ້ານໂພຊະນາການຂອງພໍ່ແມ່. ການວັດແທກມວນສານຮ່າງກາຍ ໄດ້ຖືກນຳໄປຄິດໄລ່ຫາ BMI-for-age z-score ໂດຍໃຊ້ໂປຣແກຣມ WHO AnthroPlus. ໄດ້ນຳໃຊ້ວິທີທາງສະຖິຕິແບບ Multiple logistic regression ເພື່ອຫາຄວາມສຳພັນລະຫວ່າງຕົວຜັນແປຕ່າງໆ ແລະ ພະວະຂາດໂພຊະນາການ ແລະ ນ້ຳໜັກເກີນ.

ຜົນການຄົ້ນຄວ້າ: ໃນກຸ່ມຜູ້ເຂົ້າຮ່ວມ 16.3% ມີພະວະຂາດໂພຊະນາການ, 47.3% ມີນ້ຳໜັກປົກກະຕິ ແລະ 36.4% ມີນ້ຳໜັກເກີນ ຫຼື ອ້ວນ. ພໍ່ແມ່ສ່ວນໃຫຍ່ມີການສຶກສາສູງກວ່າອະນຸປະລິນຍາ (81.1% ຂອງພໍ່; 71.1% ຂອງແມ່). ພໍ່ສ່ວນໃຫຍ່ເຮັດວຽກກະສິກຳ, ກໍ່ສ້າງ ຫຼື ເປັນພະນັກງານລັດ (56.3%), ໃນຂະນະທີ່ແມ່ສ່ວນໃຫຍ່ເຮັດວຽກເອກະຊົນ ຫຼື ອາຊີບອິດສະຫຼະ (58.0%). ກວ່າເຄິ່ງໜຶ່ງຂອງເດັກ (53.2%) ມີຄະແນນຄວາມຮູ້ໂພຊະນາການຕ່ຳ. ການປະເມີນການເຄື່ອນໄຫວພົບວ່າ 63.8% ເປັນຄົນບໍ່ມັກເຄື່ອນໄຫວຮ່າງກາຍ ແລະ 39.6% ມີພຶດກຳການນັ່ງຢູ່ນິ້ງເກີນຄຳແນະນຳ. ການວິເຄາະແບບ Multiple logistic regression ພົບວ່າ: ເດັກອາຍຸເກີນ 8 ປີ ມີໂອກາດຂາດໂພຊະນາການນ້ອຍກວ່າ (AOR=0.07; 95% CI: 0.02–0.20). ຜົນການສຶກສາທີ່ບໍ່ໜ້າຈະເປັນໄປໄດ້ ພົບວ່າ: ການສຶກສາຂອງພໍ່ທີ່ສູງ (AOR=6.65; 95% CI: 2.40–18.42) ແລະ ການເຮັດວຽກໃນກຸ່ມເອກະຊົນ/ທຸລະກິດ (AOR=2.14; 95% CI: 1.23–3.72) ພັດມີຄວາມສຳພັນກັບຄວາມສ່ຽງຕໍ່ພະວະຂາດສານອາຫານ. ເດັກທີ່ມີການເຄື່ອນໄຫວທາງຮ່າງກາຍຫລາຍ ມີໂອກາດເປັນນ້ຳໜັກເກີນນ້ອຍກວ່າ ເດັກທີ່ບໍ່ເຄື່ອນໄຫວຫລາຍ (AOR=0.52; 95% CI: 0.28–0.96).

ສະຫຼຸບ ແລະ ຂໍ້ສະເໜີແນະ: ຄວາມທ້າທາຍທາງພາວະໂພຊະນາການສອງດ້ານ (ຂາດ–ເກີນ) ປະກົດໃຫ້ເຫັນໄດ້ຢ່າງຊັດເຈນໃນເດັກໂຮງຮຽນເອກະຊົນ ທີ່ຢູ່ໃນຕົວເມືອງ. ການເຄື່ອນໄຫວທາງກາຍຊ່ວຍປ້ອງກັນຄວາມອ້ວນ, ໃນຂະນະທີ່ປັດໃຈສັງຄົມ–ເສດຖະກິດ ມີຄວາມສະລັບສັບຊ້ອນກັບພະວະຂາດໂພຊະນາການ. ມາດຕະການແກ້ໄຂ ແມ່ນຄວນບູລະນາການໃຫ້ຄວາມຮູ້ໂພຊະນາການ, ສົ່ງເສີມການອອກກຳລັງກາຍ, ການມີສ່ວນຮ່ວມຂອງພໍ່ແມ່ ແລະ ນະໂຍບາຍບູລະນາການຈາກຫຼາຍພາກສ່ວນ.

ຄຳສັບຫຼັກ: ໂພຊະນາການເກີນ, ຄວາມອ້ວນໃນເດັກ, ໂຮງຮຽນເອກະຊົນ, ການເຄື່ອນໄຫວ, ສປປ ລາວ, BMI z-score.

***ຕິດຕໍ່ກັບຜູ້ຂຽນ**: ສົມໃຈ ສິດທິປັນຍາ, ເບີໂທ: +85620 5544 6268; ອີເມວ: somchaispy@gmail.com