



ກອງປະຊຸມເຜີຍແຜ່ ຜົນໄດ້ຮັບເບື້ອງຕົ້ນຂອງການຄົ້ນຄວ້າ ໃນຫົວຂໍ້
ການປະເມີນອາຫານທ່ຽງປະຈຳວັນ ຂອງໂຮງຮຽນ, ຄ່າສະເລ່ຍຂອງສານອາຫານຫຼັກ ແລະ
ພະລັງງານ ໃນໜຶ່ງອາທິດ, ແລະ ປະເມີນຕົວຂັບເຄື່ອນຫຼັກຂອງອາຫານທ່ຽງໃນໂຮງຮຽນ ທີ່ປຸງ
ແຕ່ງຢູ່ໃນໂຮງຮຽນທ້ອງຖິ່ນ ຂອງ ຄູ ແລະ ແມ່ຄົວໃນ ສອງແຂວງ, ສປປ ລາວ 2024

ຄັ້ງວັນທີ 06 ກັນຍາ 2024

ຢູ່ທີ່ ໂຮງແຮມ ລາວພາຊາ (Lao Plaza Hotel), ນະຄອນຫຼວງວຽງຈັນ

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Assessment of daily school lunch and a weekly average of the macronutrients and energy intake and evaluate the key drivers of the local school meals cooked in local schools among teachers and cooks in two provinces,

Lao PDR 2024

By Somphone Soukhavong MD., MPH.

Lao Tropical and Public Health

06/09/2024

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Rational

- Since 2002, the Ministry of Education and Sports (MoES) through the Inclusive Education Center of the Department of Pre-primary and Primary Education and WFP has been implementing School Feeding in 30 districts in the 6 provinces
- The School Meal Program is anchored in the belief that good nutrition leads to good health, which improves resistance to diseases and promotes good mental and physical development.
- As a result, children learn better and go to school regularly. The Program not only provides school lunches to address short-term hunger but also promotes linkages with other school interventions like access to safe water, other basic health and nutrition services, and personal hygiene.
- The Government of Lao PDR has prioritized the School Meal Program as one of the key components to achieving Millennium Development Goal (MDG) 2 – Universal Education, in general, and improving school enrollment, transition, and survival rate as well as reducing repetition and dropout rates in primary education, in particular.
- The program also contributes to promoting gender equality (MDG 3) by encouraging girls to go to school
- The signing of the school lunch program plan to handover between the MoEs and CRS 23 April 2020
- Lack of data for **the macronutrients and energy intake to access**



Objective:

General objective

- To assess daily school lunch and a weekly average of the macronutrients and energy intake and evaluate the key drivers of the local school meals cooked in local schools among teachers and cooks in two provinces, Lao PDR 2024

Specific objective

- To describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR
- To describe what local school meals are most acceptable (most popular) for students
- To evaluate the key drivers of the school meal cooked in local schools among teachers and cooks

Research Methodology

Survey Population and Sample Size

- Group 1 Students: Grades 1 to grade 5 in the school for using the structure of questionnaire interview
- Group 2 Directors/Teachers who work on school meals (all participants who work on the program)
- Group 3 All Canteen providers/staff in each school

Study design: Descriptive cross-sectional study in Two Provinces (Khammuan and Savannakhet)

Data Collection: 32 data collectors were trained in including field supervisor in each team and Face-to-face interview, IDI and FGD

Sample Size and Power Calculations: All sample sizes are available in 8 primary schools (4 districts in 2 provinces)

Duration of Study

- The project period is January to November 2024
- The survey will collect data in May 2024

Data entry and Analysis:

- Data will be coded and entered into Epidata software version 3.1; **IMMUCAL**, Excel and will be analyzed in STATA software Version 17.0.



Data training and Pre-test 2-4 May 2024



Data training and Pre-test 2-4 May 2024 (Cont.)



Data collection 6-10 May 2024





ລົມ	ຂາມ	ບູດ	ພະຫັດ	ສຸກ
ຊົ່ວໜຶ່ງ	ປ່ຽນ	ຊົ່ວໜຶ່ງ	ປ່ຽນ	ຊົ່ວໜຶ່ງ
ແຕ່ງຈົບປະຈຳວັນ				
ລົມ	ຂາມ	ບູດ	ພະຫັດ	ສຸກ
ເຂົ້າໝັ່ນ	ລາດບຸນ ຜັກ: ປ້ອງ	ເຂົ້າປຸກ	ເຂົ້າລາວ ພະເປົກ: ປ້ອງ	ເຂົ້າປຸກ
ມາຍເປັນ 02091 2812				
ມາຍ ໓໑ 0304989350				





ວັນທ່າກັນ ລາຍການ(ເມນູ) ເຂື່ອງຊຸງ ອັດຫຸດປິ
 ວັນຈັນ ເຂົ້າເຫຼົ້າໄສໄຂ່ ແມກກີ, ຄະລໍ... ໄຂ່, ກະຫຼຸບ...
 ວັນຄາລ ຂົວປ້ອງບາໄສ່ເອັກ ແມກກີ, ຄະລໍ, ຟັກເກມ ເອັກຕ່າງ
 ວັນພູ ຕັມເຂົ້າປຽກໄສ່ຕູກບູ ຄະລໍ, ເອັກ... ຫຼຸ, ກ
 ວັນພະຫັກ ແກງປ້ອງບາໄສ່ເອັກ ຄະລໍ, ເອັກ... ລ
 ວັນ... ຄະລໍ, ແມກກີ...









Preliminary result:

General information in 8 schools

	Province	District	School	Day	Menu Name	Student number	male (n)	Percent (%)	female (n)	Percent (%)
1	KM	Yommalath	Phonbok	Monday	Rice with soybeans and stir-fried canned fish with morning glory	47	17	36.2	30	63.8
	KM	Yommalath	Phonbok	Tuesday	Rice with soybeans and canned fish with Chinese cabbage soup	83	39	47.0	44	53.0
	KM	Yommalath	Phonbok	Wednesday	Rice with soybeans and stir-fried canned fish with morning glory and Chinese cabbage	82	37	45.1	45	54.9
	KM	Yommalath	Phonbok	Thursday	Rice with soybeans and canned fish with morning glory and Chinese cabbage soup	94	43	45.7	51	54.3
	KM	Yommalath	Phonbok	Friday	Rice with soybeans and canned fish with morning glory	99	46	46.5	53	53.5
2	KM	Yommalath	Nafaimai	Monday	Rice and stir-fried canned fish	30	15	50.0	15	50.0
	KM	Yommalath	Nafaimai	Tuesday	Rice with soybeans and stir-fried morning glory	49	26	53.1	23	46.9
	KM	Yommalath	Nafaimai	Wednesday	Rice and canned fish with morning glory soup	63	31	49.2	32	50.8
	KM	Yommalath	Nafaimai	Thursday	Rice and stir-fried soybeans with morning glory	60	27	45.0	33	55.0
	KM	Yommalath	Nafaimai	Friday	Rice and stir-fried soybeans with morning glory and canned fish	62	29	46.8	33	53.2

Preliminary result (Continue):

	Province	District	School	Day	Menu Name	Student number	male (n)	Percent (%)	female (n)	Percent (%)
3	KM	Mahaxay	Nakyo	Monday(Friday)	Fried rice with soybeans	68	28	41.2	40	58.8
	KM	Mahaxay	Nakyo	Tuesday	Fried rice with soybeans	92	48	52.2	44	47.8
	KM	Mahaxay	Nakyo	Wednesday	Fried rice with soybeans	90	45	50.0	45	50.0
	KM	Mahaxay	Nakyo	Thursday	Rice and stir-fried canned fish	85	42	49.4	43	50.6
	KM	Mahaxay	Nakyo	Friday	Rice and stir-fried canned fish	74	35	47.3	39	52.7
4	KM	Mahaxay	Sangpork	Monday	Fried rice with soybeans and egg	65	39	60.0	26	40.0
	KM	Mahaxay	Sangpork	Tuesday	Rice and stir-fried canned fish with bamboo shoots	57	34	59.6	23	40.4
	KM	Mahaxay	Sangpork	Wednesday	Rice soup with pork	54	33	61.1	21	38.9
	KM	Mahaxay	Sangpork	Thursday	Rice and stir-fried canned fish with bamboo shoots	48	28	58.3	20	41.7
	KM	Mahaxay	Sangpork	Friday	Fried rice with soybeans and egg	62	37	59.7	25	40.3

Preliminary result (Continue):

	Province	District	School	Day	Menu Name	Student number	male (n)	Percent (%)	female (n)	Percent (%)
5	SVK	Phalanxay	Phosy	Monday	Rice with soybeans and omelet	72	26	36.1	46	63.9
	SVK	Phalanxay	Phosy	Tuesday	Rice and stir-fried morning glory and carrot with pork	83	32	38.6	51	61.4
	SVK	Phalanxay	Phosy	Wednesday	Rice soup with minced pork and pork balls	81	27	33.3	54	66.7
	SVK	Phalanxay	Phosy	Thursday	Rice and stir-fried morning glory with egg	61	24	39.3	37	60.7
	SVK	Phalanxay	Phosy	Friday	Rice and fried egg	86	30	34.9	56	65.1
6	SVK	Phalanxay	Huamueng	Monday	Rice and omelet and papaya salad with morning glory	32	18	56.3	14	43.8
	SVK	Phalanxay	Huamueng	Tuesday	Rice with soybeans and gourd with pork soup	45	21	46.7	24	53.3
	SVK	Phalanxay	Huamueng	Wednesday	Rice soup with macaroni, minced pork, and pork balls	43	20	46.5	23	53.5
	SVK	Phalanxay	Huamueng	Thursday	Rice with soybeans and mackerel soup	40	17	42.5	23	57.5
	SVK	Phalanxay	Huamueng	Friday	Rice with soybeans and boiled egg	48	22	45.8	26	54.2

Preliminary result (Continue):

	Province	District	School	Day	Menu Name	Student number	male (n)	Percent (%)	female (n)	Percent (%)
7	SVK	Xepon	Phonmuan	Monday	Rice soup with minced pork, blood, soybeans, and pork balls	113	50	44.2	63	55.8
	SVK	Xepon	Phonmuan	Tuesday	Rice and jackfruit with soybeans soup	96	38	39.6	58	60.4
	SVK	Xepon	Phonmuan	Wednesday	Rice with soybeans and boiled egg	89	33	37.1	56	62.9
	SVK	Xepon	Phonmuan	Thursday	Rice with soybeans	97	45	46.4	52	53.6
	SVK	Xepon	Phonmuan	Friday	Rice soup with pork leg and soybeans	80	35	43.8	45	56.3
8	SVK	Xepon	Muengchanh	Monday	Rice with soybeans and stir-fried morning glory with egg	79	41	51.9	38	48.1
	SVK	Xepon	Muengchanh	Tuesday	Rice with soybeans and bitter gourd with egg soup	94	48	51.1	46	48.9
	SVK	Xepon	Muengchanh	Wednesday	Fried rice with egg	99	58	58.6	41	41.4
	SVK	Xepon	Muengchanh	Thursday	Rice with soybeans and stir-fried morning glory with egg	84	51	60.7	33	39.3
	SVK	Xepon	Muengchanh	Friday	Fried rice with egg	73	42	57.5	31	42.5
					Total (person time)	2,859	1,357	47.5	1,502	52.5

Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR

Overall, in two Provinces, four Districts and eight Schools found that:

✓ **26 menu**

✓ **5 food groups**

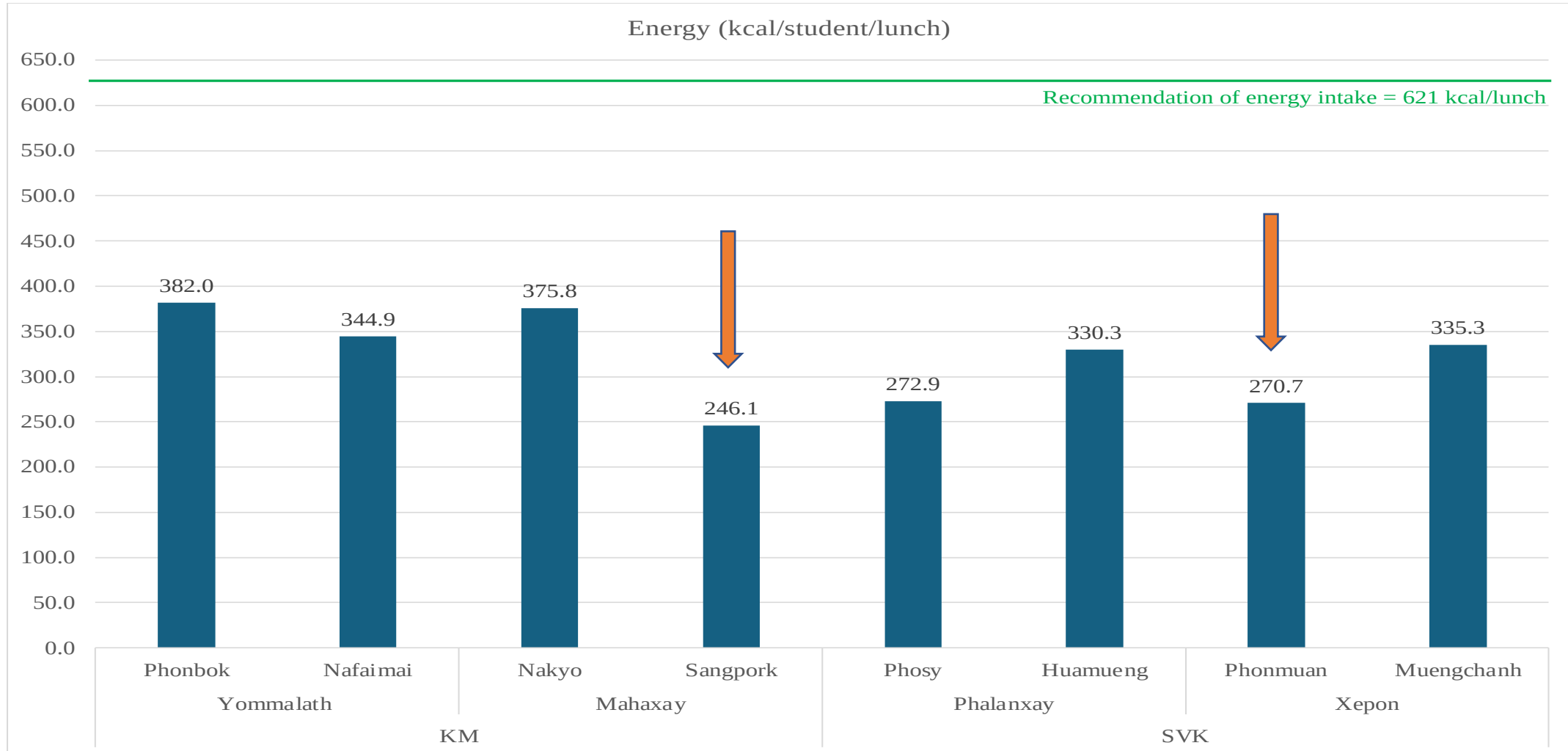
✓ **50 food lists and condiments**

Recommendations of Thai Dietary Reference Intakes (DRI) for primary school age

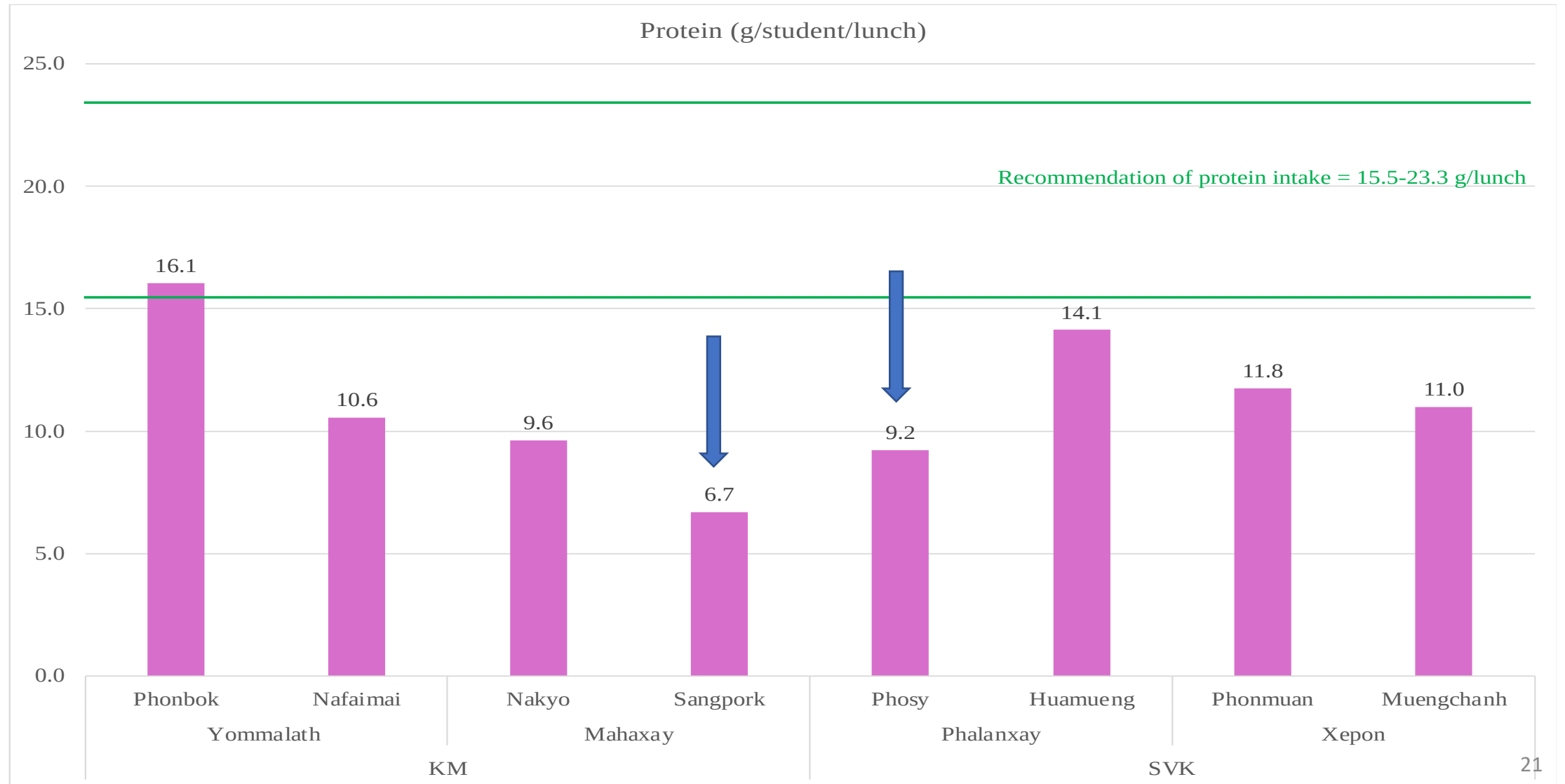
	Total per day	Average (min)	Average (max)	40% (min)	40% (max)
Energy (kcal)		1552.5		621.0	
Carbohydrate (kcal)	55%-65%				
Carbohydrate (g)		213.5	252.3	85.4	100.9
Protein (kcal)	10%-15%				
Protein (g)		38.8	58.2	15.5	23.3
Fat (kcal)	25%-30%				
Fat (g)		43.1	51.8	17.3	20.7
Dietary fiber (g)*		11		4.4	

*Recommendations of Thai DRI, number of ages (years) +5 equals grams of dietary fiber per day.

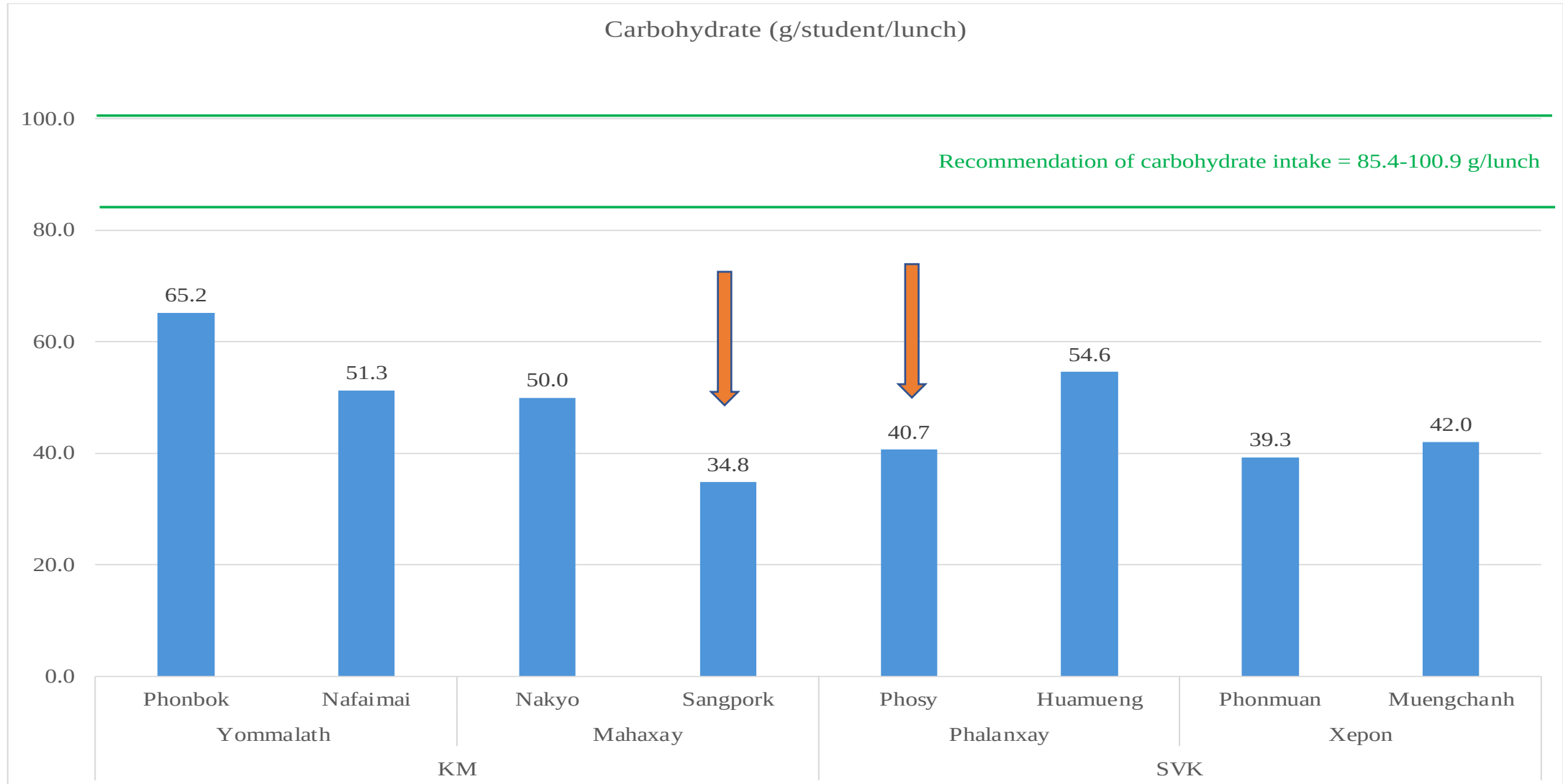
Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR by Energy (kcal/student/lunch)



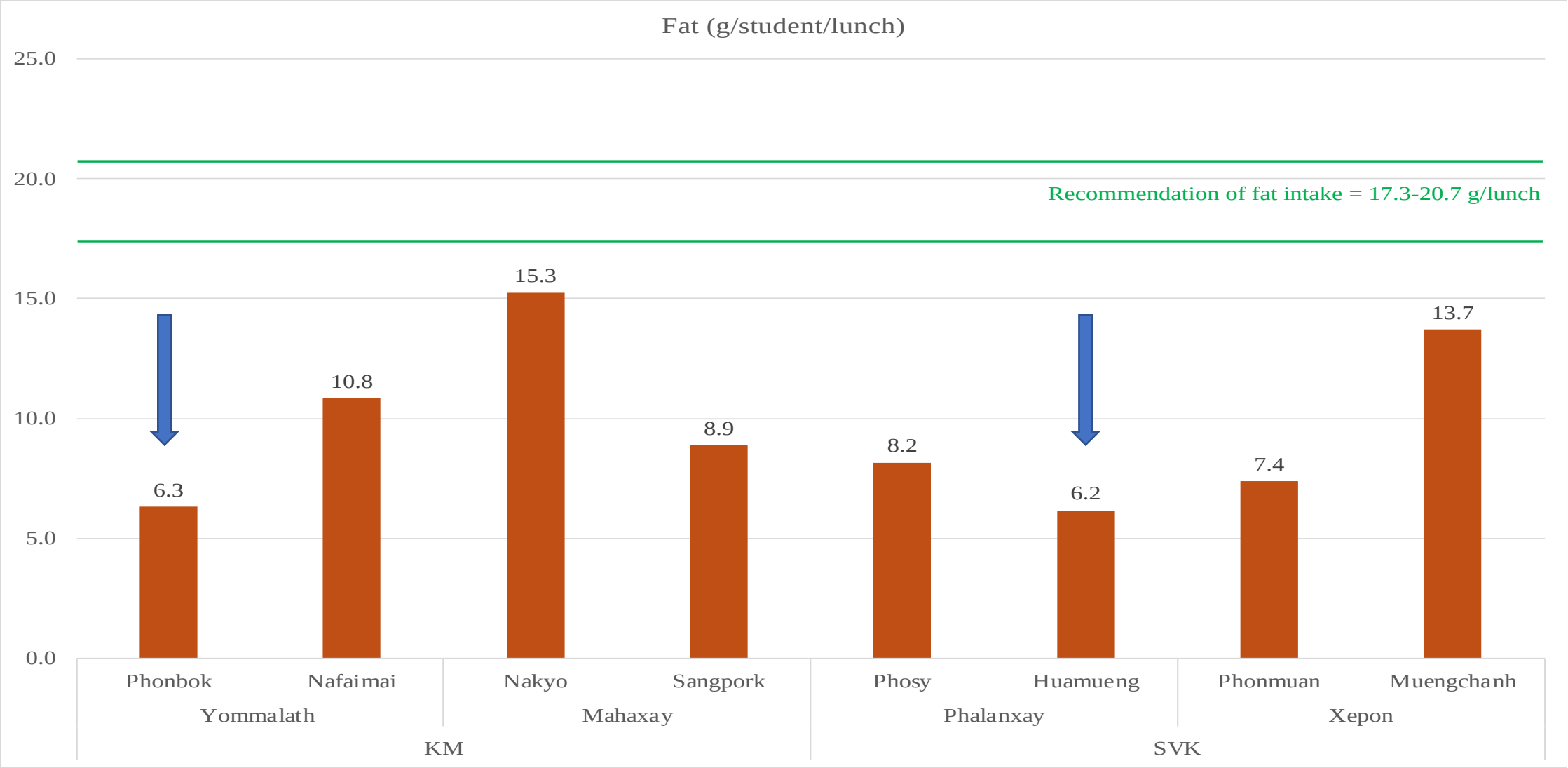
Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR by Protein (kcal/student/lunch)



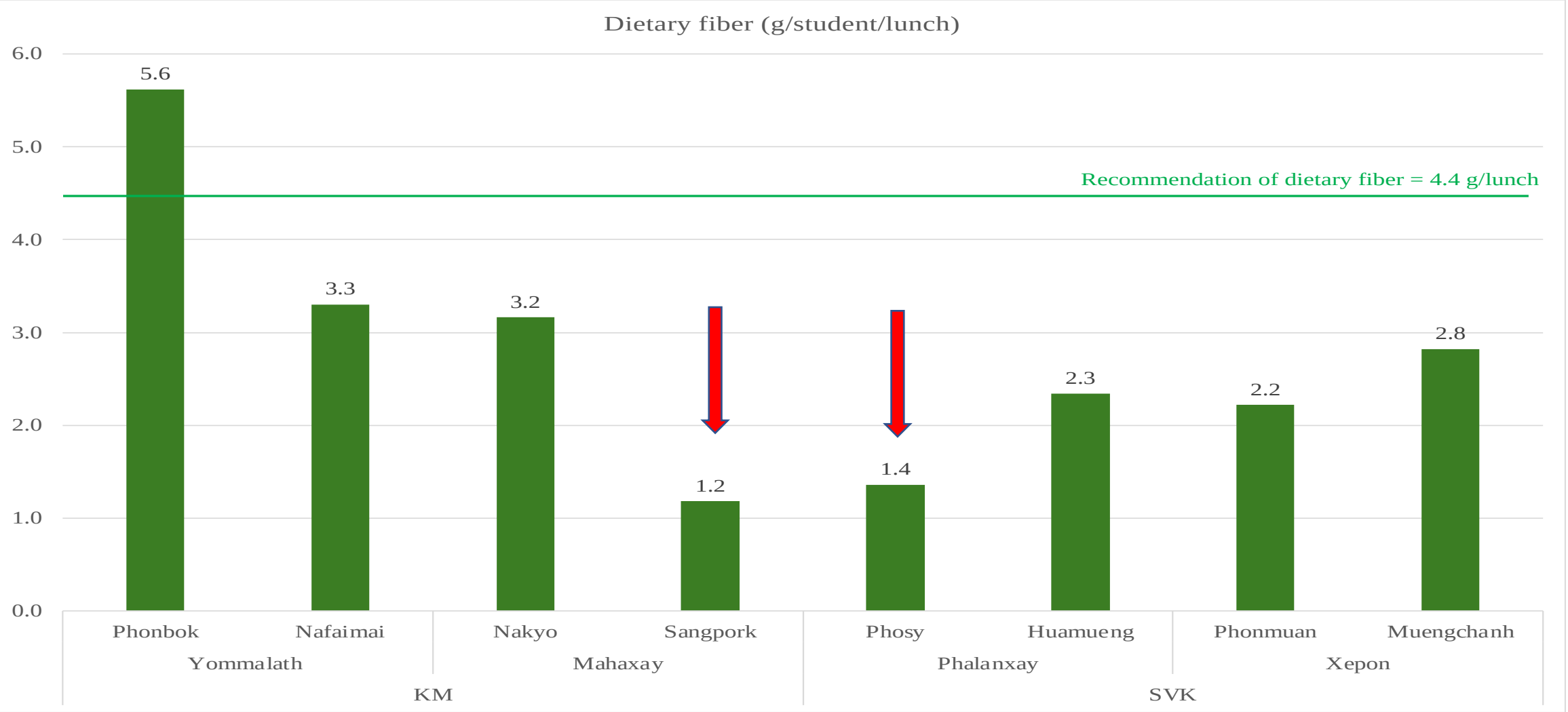
Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR by Carbohydrate (kcal/student/lunch)



Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR by Fat (kcal/student/lunch)



Describe daily school lunch and a weekly average of the macronutrients and energy intake of local school meals in 2 provinces in Lao PDR by Dietary fiber (kcal/student/lunch)



Overall local school meals are acceptable for students by scoring

Province	District	School	Overall of local school meals are acceptable (most popular) for students by scoring			
			like the appearance of School meals n (%)		Taste of School meals n (%)	
		n=574 students Male= 47, 5% Female = 52, 5%	(1) Strongly Disagree (2) Disagree (3) Neither Agree or Disagree	(4) Agree (5) Strongly Agree	(1) Strongly Disagree (2) Disagree (3) Neither Agree or Disagree	(4) Agree (5) Strongly Agree
KM	Yommalath	Phonbok (n=81)	7 (8.6)	74 (91.4)	6 (7.4)	75 (92.6)
KM	Yommalath	Nafaimai (n=53)	3 (5.7)	50 (94.3)	2 (3.8)	51 (96.2)
KM	Mahaxay	Nakyo (n=82)	4 (4.9)	78 (95.1)	3 (3.7)	79 (96.3)
KM	Mahaxay	Sangpork (n=58)	2 (3.4)	56 (96.6)	3 (5.2)	55 (94.8)
SVK	Phalanxay	Phosy (n=77)	6 (7.8)	71 (92.2)	5 (6.5)	72 (93.5)
SVK	Phalanxay	Huamueng (n=42)	6 (14.3)	36 (85.7)	6 (14.3)	36 (85.7)
SVK	Xepon	Phonmuan (n=95)	11 (11.6)	84 (88.4)	10 (10.5)	85 (89.5)
SVK	Xepon	Muengchanh (n=86)	6 (7.0)	80 (93.0)	5 (5.8)	81 (94.2)

Focus Group Discussion (FGD) Overall Local School Meals among Students

The results of this study highlight the overall positive reception of school meals among students across various districts and schools.

- **The high levels of satisfaction**, particularly with the appearance and taste of the school meals, reflect the effectiveness of the current school lunch programs. In focus group discussions, the student's preferences for the school meals provided were well-received and likely to be consumed by students, including **the most popular meals accepted, such as Rice soup with minced pork, blood, soybeans, and pork balls; bamboo shoot soup, like Papaya salad**, Fried rice with soybeans, pork/chicken, and vegetable; Rice and stir-fried soybeans with morning glory and canned fish
- **Despite the generally positive outcomes**, it is essential to consider the minority of students who did not express satisfaction with the meals and fewer school lunches accepted were **Rice with soybeans, Fried rice with soybeans, Rice with egg**

Note: *Additionally, exploring the reasons behind dissatisfaction, whether due to cultural food preferences, individual taste differences, or other factors, could provide valuable insights for further tailoring the program.*

Focus Group Discussion (FGD) Overall Local School Meals among Students

- **The overall positive response to school meals, as indicated by the high satisfaction rates, reflects a well-executed program that meets most students' preferences. However, feedback from students suggests areas for enhancement that could further improve the variety, nutrition, and cultural relevance of the meals provided:**
 - **The request for traditional dishes like Papaya salad, Bamboo shoot soup, and Noodle soup reflects a desire to see familiar, culturally relevant foods on the school menu**
 - Students expressed a desire for more variety in protein sources, including meats like chicken, pork, duck, fish, and even frog.
 - The call for a **greater diversity of meals highlights the importance of variety** in maintaining student interest and satisfaction in school lunches: fruit, vegetables, and dessert



Quote 1 *“The food looks interesting, and the taste is delicious and good, but sometimes were not good, and sometimes the rice is hard. Eating certain foods all the time makes us feel bored. Most people like fried cabbage with pork because it is delicious, easy to eat, and useful. likes rice soup with pork because it's delicious, Eating the same foods regularly, such as boiled eggs, can lead to boredom; Boiled eggs normal taste because sometimes the school doesn't allow us to add more ingredients. We want to have a place to wash our hands near the eating area” (Female P1,P2,P3)*

Quote 2 *“Most of the food looked tasty. The taste of the food is very delicious such as fried vegetables with pork: delicious, easy to eat; fried rice with pork was delicious; rice soup: there are watery, with meatballs and pork; fried pumpkin with eggs: easy to eat. But, we don't like fried eggs: it is a menu that is always eaten” (Male P1,P2,P3)*

Quote 3 *“Most favorite dish is rice with canned fish, rice soup with pork bone and pork add some vegetables; and stir-fried rice with soybean add pork and egg because it is delicious. The school meal: some days is tasteless, some days it is a salty, stir-fried egg with pumpkin too much oil, the rice with egg soup we didn't want to eat it. Some days we ate rice with soybeans or rice with eggs only” (Male P4,P5)*

Quote 4 *“Egg Fried Rice, vegetables, and a bit of soy sauce, it's flavorful and can be prepared quickly and Khai Pha Loh used to eat only one time we liked it. Papaya salad, bamboo shoot soup; fish soup; stir-fried egg with morning glory were familiar and related to our normal taste in the family” (Female P4,P5)*

In-Depth Interview (IDI) among teachers and cooks

- Number of participants was 38 persons
- Education lowest level was no schooling and the highest-level bachelor's degree
- Age: 24-57 years old
- Work experience: 1-22 years old
- School lunch training : 0-5 time

The key drivers of the school meal cooked in local schools among teachers and cooks

- 1) Human resources and skills: Lack of staff, Cooking Skills, and the level of nutritional knowledge among school staff (teachers, cooks, administrators) directly influence the quality of school meals
- 2) The time available for meal preparation, recipes, and ingredients
- 3) Limited Food Menu Options
- 4) Cooking Facilities and WASH
- 5) Materials and Support
- 6) Storage Options
- 7) Financial Constraints
- 8) Parental and Community Involvement
- 9) Cultural Relevance and Traditional Dishes and Food Environment

❑ School meal programs are vital in promoting children's health, education, and social development, particularly those from disadvantaged backgrounds. They play a key role in ensuring that all children have the opportunity to thrive, both in school and in life.

- **Quote 1** *“The School meals provide essential nutrients children need for physical and cognitive development. Many children, especially in low-income families, may not receive adequate nutrition at home, which increases the percentage of student attendance and drop out of school”. (Directors, teachers, said)*
- **Quote 2** *“This discussion addresses the students' suggestions, emphasizing the importance of incorporating diverse and culturally relevant foods, ensuring adequate resources, and maintaining meal diversity to enhance the overall effectiveness of the school lunch program. Supporting water availability, increasing the number of plates and materials, and adding more recipes or ingredients including school meal guidelines” (Directors, teachers, storage staff, and cookers, said)*



Quote 3 *“A diverse menu can prevent meal fatigue and ensure students receive a balanced diet throughout the week. These changes, supported by ongoing student feedback and nutritional guidelines, will help create a school meal program that not only satisfies students' tastes but also supports their overall health and well-being ”*
(Directors, teachers, storage staff and cookers, said)

Quote 4 *“Cookers in school never train on this program just cook by their experience and follow some suggestions by us. So, the cooking skills and nutritional knowledge of school staff, including teachers, cooks, and administrators. Often, these individuals may lack the necessary training or expertise in preparing nutritious meals and there are no dietary or school meals guidelines”*
(Directors and teachers, said)

Quote 5 *“Many schools, especially in remote areas, may lack proper kitchens, equipment, and clean water sources. For our school went to bring the water from outside but we had to pay for fuel. In other s, inadequate storage facilities can lead to food spoilage and limit the variety of foods used in school meals. This is particularly problematic in regions with hot climates or where electricity is unreliable for example: A school with no refrigeration facilities may struggle to store fresh produce, dairy, or meat, leading to a reliance on processed or non-perishable foods with lower nutritional value” (Directors, teachers, storage staff and cookers, said)*

Quote 6 *“Teachers and trainees are transferred to new positions so that the actual practitioner is not trained. It is important that anyone can adjust according to the needs of the children, the cooks do not know how to think about the food menu because the limited raw materials are only beans, rice, eggs, vegetable oil. They do not know how to make the children eat new foods. Storage of raw materials There are still rats to bite or thieves to steal the food in the school warehouse” (Directors, teachers said)*



Recommendations by directors, teachers, cookers

- ☐ Implement training programs for cooks and school staff focusing on basic cooking skills, food safety, and nutrition guidelines for school meals.
- ☐ Integrate nutritional education into the school curriculum/campaign and provide teachers/cooker/parents and engage them in learning about school meals and healthy eating.
- ☐ **workshops for the cooks to help them learn how to make the most of limited ingredients. Simple recipes that are nutritious and appealing to children could be developed with the help of a nutritionist**
- ☐ Prioritize investments in building or upgrading school kitchens and WASH facilities
- ☐ Supporting water availability, increasing the number of plates and materials, and adding more recipes or ingredients
- ☐ Advocate for increased government funding and development partner.

Recommendations by directors, teachers, cooks (Continue)

- ❑ **Implement cost-effective meal planning strategies that maximize nutritional value using seasonal produce by the community's product**
- ❑ **Involve parents and community members in the menu planning process to ensure that meals reflect cultural preferences and gain community support**
- ❑ **Local partner with local farmers or markets to ensure a steady supply of fresh produce that can be delivered daily or multiple times a week, reducing the need for long-term storage.**
- ❑ **Improved Storage Solutions:** Invest in proper storage facilities, such as refrigerators, freezers, and dry storage areas. In areas without reliable electricity, consider solar-powered refrigeration options

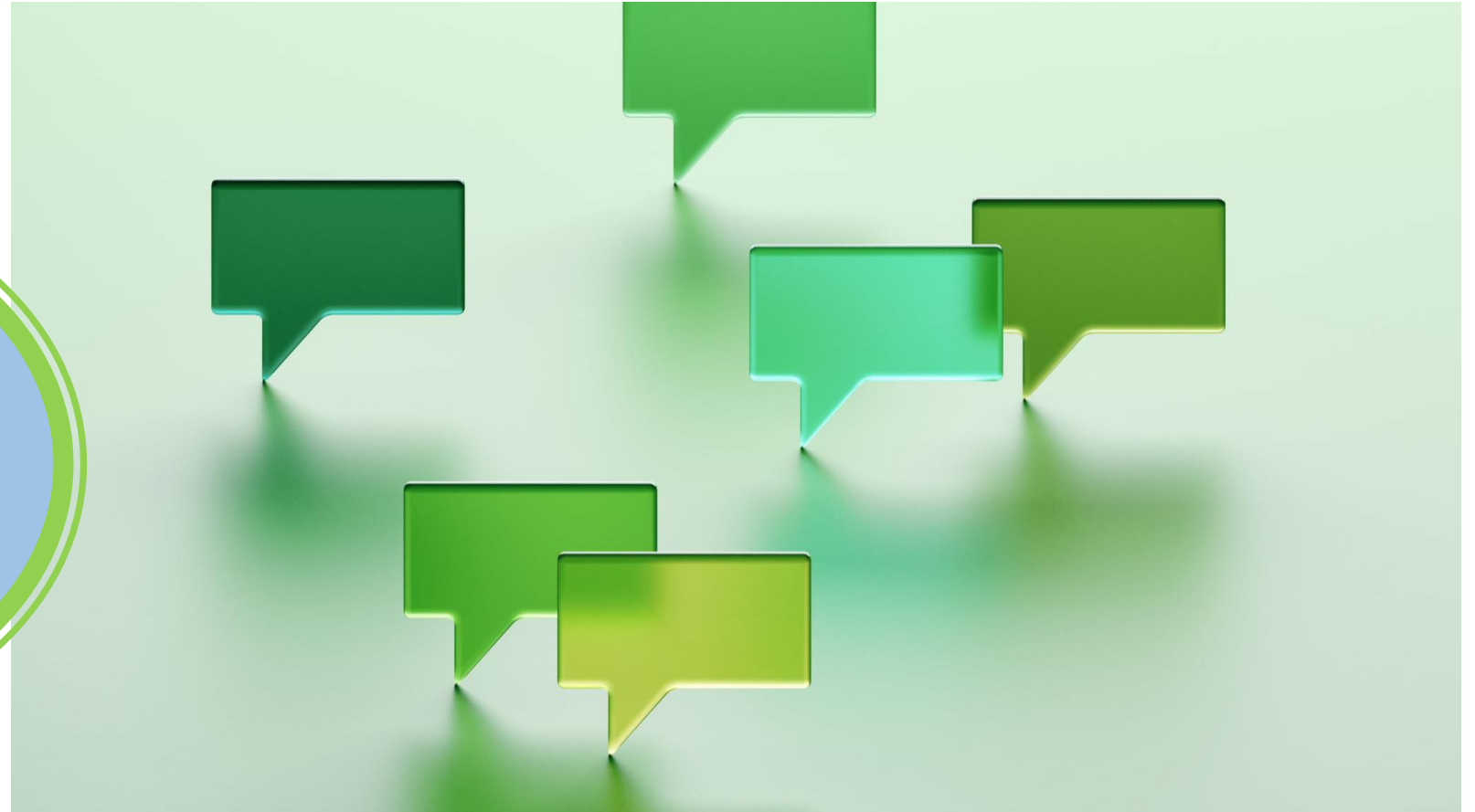


Next step

- ✓ Continue to the final result writing
- ✓ Continue to full report writing
- ✓ Prepare for manuscript
- ✓ Sharing the results in Lao PDR and National Conference



Thank you
(Khop Chai)



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