

Food Service Programme for Promoting Healthy Nutrition among Medical Cadets of Phramongkutklao College of Medicine: A Preliminary Study

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Objective: To evaluate the patterns of food services and to determine the kinds and frequencies of food items served to the medical cadets.

Material and Method: Menu records of the meals served to the medical cadets at a mess hall of Phramongkutklao College of Medicine were retrospectively reviewed, covering the period of one month of the academic year 2004. The menus were analysed using descriptive statistics.

Results: Sixty-five medical cadets participated in the food service programme by setting their own menus. The programme provided three main meals a day. In August, the studied month, it was found that some selected menus were not suitable. Only two types of foods of carbohydrate sources were used. The predominant one was milled rice (87 meals or 93.5%). At least 5 meals (5.4%) did not serve vegetables at all. As for fresh fruits, up to 16 days (51.6%) they were not served.

Conclusion: The food service programme is a strength point for promoting healthy nutrition to medical cadets in this setting. Involvement of medical cadets by setting up their own menus can reflect very clearly undesirable eating habits. Thus, appropriate involvement of medical cadets can be a good means to help them acquire knowledge and skills in healthy nutrition practices.

Keywords: Food service programme, Healthy nutrition, Health promotion.

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Good nutrition is a fundamental of well being throughout life. Adequate intakes of energy and nutrients are needed for optimal growth and learning ability. Conversely, poor nutrition can have many adverse effects. Children and adolescents who do not consume enough food may develop

growth retardation, poor educational achievements and continue to have poor work performance and low income in adulthood⁽¹⁻³⁾. Moreover, poor nutrition since childhood was shown to be associated with increased rates of developing chronic diseases such as coronary heart disease in later life⁽⁴⁻⁵⁾. Therefore, it is important to instill knowledge, attitudes and skills in nutrition when they are young.

A food service programme is one of the essential components of nutrition interventions that

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can be implemented in educational settings in order to teach persons healthy eating patterns, to promote healthy nutrition and to decrease the risk of diseases⁽⁶⁾.

Phramongkutklao College of Medicine is the sole uniformed services medical college in Thailand. The College provides medical education and training for medical cadets. In addition, the College also provides a food service programme according to the Army Regulations, in order to ensure that all medical cadets obtain clean, nutritious and adequate food intakes for optimal health and good educational performance and military readiness. The food service programme is targeted at the second and third year medical cadets who are obliged to stay at the dormitory in the campus for the whole year. Since the food service programme was launched in 1981, there has been no research on this programme. The present study was the first research aimed to evaluate the patterns of food services and to determine the kinds and frequencies of food items consumed. The baseline information obtained will be useful for improving the programme so that it can help the medical cadets acquire knowledge and skills which are needed to promote their own health as well as the health of others.

Material and Method

Menu records of the meals served to the medical cadets at a mess hall of Phramongkutklao College of Medicine were retrospectively reviewed, covering the period of one month of the academic year 2004.

The menus were analysed using descriptive statistics and expressed as frequencies and percentages.

Results

The beneficiaries of the food service programme in the academic year 2004 were 65

medical cadets. All of them were male, aged 18 - 20 years. Thirty of them studied in the second year level and another 35 cadets studied in the third year level. These medical cadets participated in the food service programme by selecting their popular dishes and setting their own menus of each month. Then, foodservice personnel of the Student Affairs Division, Phramongkutklao College of Medicine prepared and served meals for them using their own skills and experiences. Standard recipes have rarely been used. As military personnel, these medical cadets receive subsistence allowance every day. In preparing their meals, the budget of 66 baht/ head/ day is deducted from the subsistence allowance.

The records of the menus in August were selected for the study since only the records in August were completely kept.

Food Service Patterns

In August, a total of 93 meals, three meals a day were provided to 65 medical cadets free of charge at a mess hall. These main meals were defined as breakfast, lunch and dinner and were characterised as follows:

Breakfast consisted of 24 meals (77.4%) of cooked rice and one main dish and 7 meals (22.6%) of a one-plate dish. No beverages were recorded. The following are examples of menus for breakfast:

- * Cooked rice - Pork and cabbage soup
- * Ground rice porridge with minced pork
- * Khao man kai (Rice cooked in chicken broth, topped with steamed chicken)

Lunch comprised 21 meals (67.7%) of cooked rice and two main dishes and dessert/ snack food and 10 meals (32.3%) of one-plate dish and one dessert. Examples of menus for lunch were

- * Cooked rice - Green curry chicken (Kaeng khiao wan kai) - Deep-fried pork - black jelly in syrup

* Rice noodles with pork and soup (Guay-teaw nam) - Bread topped with artificial Sala flavoured syrup

31 meals of dinner (100%) consisted of cooked rice and two main dishes and dessert. Examples of menus for dinner were as follows:

* Cooked rice - Minced pork salad, northeastern style (Laab moo) - Fried Nile tilapia - Pineapple in syrup

* Cooked rice - Stir fried pork with curry paste fried in oil (Moo pad nam prik phow) - Deep-fried minced pork - Jam roll

Types and Numbers of Main Dish and Dessert

In the studied month, a total of 100 food items were selected by the medical cadets with the assistance of foodservice personnel. Among these, 76 items were main dishes and 24 items were desserts/ snack foods. These dishes were classified into 11 groups of main dishes and 6 groups of dessert/ snack food according to cooking methods

and ingredients (Tables 1 and 2). The most popular type of food was a one-plate dish, which accounted for 14 items. For the desserts, the most popular was desserts with coconut milk which accounted for 7 items.

With these 100 food items, 85 menus were constructed for 93 meals. Five menus were used repeatedly and the rest were used only one time in a month. An example of a menu is shown in Table 3.

Varieties and Frequencies of Consumption

The menus were analysed according to a variety of food groups and frequency of consumption, the results were shown as follows:

Rice-starchy food group. There were only two types of foods of carbohydrate sources served in one month. The predominant one was milled rice or polished rice. Eighty-seven meals (93.5%) were served with milled rice. Unpolished rice, however, has never been served. In addition, rice noodles, an alternate carbohydrate source, was used

Table 1. Types and numbers of dishes served in one month

Food items	No.	Percent
1. Clear soup with vegetables and meats: pork/chicken and cabbage/wax gourd/ white Chinese cabbage soup, tofu soup, etc.	10	13.2
2. Stir-fried vegetables and/or meats: stir-fried crispy pork and Chinese kale (Pad ka na moo krob), sweet and sour pork (Moo pad preaw wan), etc.	8	10.5
3. Stir-fried vegetables and/or meat with curry paste: stir fried chicken/ squid with holy basil leaves (Pad ka phrao kai, Pad ka phrao pla muk), stir fried catfish with red curry paste (Pad phet pla duk), etc.	6	7.9
4. Eggs and egg alternate: fried egg, spice egg and pork Chinese style (Khai pa lo), etc.	7	9.2
5. Curry with coconut milk, hot and spicy: green curry chicken (Kaeng khieo wan kai), yellow curry chicken (Kaeng kari kai), etc.	7	9.2
6. Curry with coconut milk: chicken and galangal soup with coconut milk (Tom kha kai)	1	1.3
7. Curry without coconut milk, hot and spicy: sour chicken soup with lemon grass (Tom yum kai), hot and sour curry with mixed vegetables (Kaeng som pak raum)	3	3.9
8. Deep-fried meats: deep-fried pork/ chicken, deep-fried Saba, etc.	10	13.2
9. Stewed meats: stewed pork and stewed chicken	2	2.6
10. Hot and spicy salad: roasted pork salad, mungbean noodle salad (Yum wun sen), etc.	8	10.5
11. One-plate dish: rice fried with fermented sausages (Khao pad naem), rice porridge, with minced pork, etc.	14	18.5
Total	76	100.0

Table 2. Types and numbers of desserts served in one month

	Food items	No.	Percent
1.	Fresh fruit: water melon, cantaloupe and pineapple	3	12.5
2.	Dessert with coconut milk: banana in coconut milk, mungbean thread in coconut milk (Sa-rim), etc.	7	29.2
3.	Dessert without coconut milk: bread in artificial Sala flavoured syrup, sugar palm in syrup (Luk-chid), etc	6	25.0
4.	Bakery products: jam roll and banana cake	2	8.3
5.	Fruit juice: coconut juice, longan juice and chrysanthemum juice	3	12.5
6.	Snack food: deep-fried bread topped with minced pork, fried wonton pasta and spring roll	3	12.5
	Total	24	100.0

Table 3. An example of a menu (week 4: Sunday 22nd to Saturday 28th August 2004)

Sun 22	Breakfast	Cooked rice - Deep fried pork sausages
	Lunch	Cooked rice - Pork and cabbage soup - Pad phet pla duk - Bread topped with artificial Sala flavoured syrup
	Dinner	Cooked rice - Pad poew sein - Deep-fried pork - Sweet potato in heavy syrup
Mun 23	Breakfast	Cooked rice - Stewed pork
	Lunch	Cooked rice - Khao moo dang - Coconut juice
	Dinner	Cooked rice - Kaeng moo te po - Deep-fried pork - Cantaloupe
Tue 24	Breakfast	Cooked rice - Pork and white Chinese cabbage soup
	Lunch	Cooked rice - Guay-teaw rad nah - Pineapple in syrup
	Dinner	Cooked rice - Stir-fried pork and cabbage - Yum wun sen - Sweet potato in heavy syrup
Wed 25	Breakfast	Khao pad American
	Lunch	Cooked rice - Kaeng massaman kai - Fried egg topped with minced pork - Sugar palm in syrup
	Dinner	Cooked rice - Deep-fried Saba - Chicken clear soup - Bread topped with artificial Sala flavoured syrup
Thu 26	Breakfast	Cooked rice - Phanaeng moo
	Lunch	Suki haeng - Coconut juice
	Dinner	Cooked rice - Fried egg salad - Kaeng som pak raum - Lod-chong in coconut milk
Fri 27	Breakfast	Cooked rice - Stewed chicken
	Lunch	Khao pad naem - Longan juice
	Dinner	Cooked rice - Pad poew sein - Yum raum mit - Pineapple
Sat 28	Breakfast	Cooked rice - Minced pork and mungbean noodle soup
	Lunch	Cooked rice - Pad ka phrao kai - Fried egg - Bread in artificial Sala flavoured syrup
	Dinner	Cooked rice - Fried chicken - Stir-fried chicken and bamboo shoot - Sugar palm in syrup

in only six meals (6.5%) by preparing them as a one-plate dish.

Vegetable group. Vegetables used in meal preparation in August included ivy gourd, Chinese kale, swamp cabbage, cabbage, Chinese white cabbage, Chinese cabbage, holy basil leaves, coriander, wax gourd, gourd, yard long bean, cucumber, onion, radish, mungbean sprout and bamboo shoot. Most of the meals were served

with vegetables, some of them were used as main ingredients and some were used only for decoration or topping onto the dishes. However, it was found that at least four breakfast meals and one lunch meal in five days did not contain vegetables. These menus included

Cooked rice - Spice egg and pork, Chinese style (Khai pa lo)

Table 4. Types and frequencies of consumption of fruit group in August (31 days)

Fruit items		Frequency	
		Day	Percent
Fresh fruit served	1 meal/ day	7	22.6
Fresh fruit served	2 meals/ day	2	6.4
Fruit in syrup served	1 meal/ day	3	9.7
Fruit in coconut milk served	1 meal/ day	3	9.7
No fruit served	3 meals/ day	16	51.6
Total		31	100

Table 5. Types and frequencies of consumption of meat group in August (31 days)

Meat items		Frequency
Pork and chicken	Every week	Every meal
Egg	Every week	1-4 eggs/ week
Fish	4 out of 5 weeks	2 meals/ week
Squid	3 out of 5 weeks	1 meal/ week
Tofu	2 out of 5 weeks	1 meal/ week

Cooked rice - Omelette with minced pork
Cooked rice - Deep fried pork sausages
Cooked rice - Deep fried salted pork
Cooked rice - Fried egg with minced pork
- Massaman chicken curry (Kaeng massaman kai)
- Sugar palm in syrup

Fruit group. Three kinds of fruit were consumed fresh including water melon, cantaloupe and pineapple. Apart from consumed fresh, pineapple was also served in syrup. Another kind of fruit, banana, was cooked in coconut milk. Regarding frequency of consumption, it was found that at least 16 days (51.6%) did not have fruit served at breakfast, lunch and dinner (Table 4).

Meat group. Pork and chicken and their products (e.g. pork sausage) were the main sources of protein used in every meal. Other meats were used from time to time, including fish (e.g. snake-head fish, Nile tilapia, saba, squid, canned fish) and eggs. For legumes and pulses, only their products i.e. bean curd (tofu) were used only in 2 meals for the whole month (Table 5).

Milk group. From the menus in August, milk was not recorded.

Oil, sugar and salt. Vegetable oil as well as iodised salt was used in preparing meals.

Discussion

The food service programme of Phramongkutklao College of Medicine aimed to provide a balanced diet to medical cadets to ensure that nutrient intakes were adequate and meet their daily needs. The programme provided three meals a day including breakfast, lunch and dinner. Breakfast meals were commonly served with cooked rice and one main dish or one-plate dish. Lunch meals were cooked rice, two main dishes and dessert/ snack food or one-plate dish and dessert and dinner meals were served with cooked rice, two main dishes and dessert. These kinds of food service patterns conformed to the Army Regulations. However, the findings here showed that the predominant dish for breakfast was clear soup with vegetables and meat e.g. pork/chicken and cabbage soup, pork/chicken and wax gourd soup, minced pork and mungbean noodle soup, etc. One serving of these kinds of soup for schoolchildren (standard recipe) provides energy about 97 - 172 kcal⁽⁷⁾. Though medical cadets might have two to three servings of these soups, it is unlikely to achieve the caloric need for the breakfast, which accounts for 556 - 667 kcal (25 - 30% of Dietary reference intake for males aged 16-30 years)⁽⁸⁾. Not eating breakfast or morning fasting was found to adversely affect cognitive performance⁽¹⁾. If breakfast is the most important meal of the day, these menus should be adjusted. In addition, during the past decade, rapid socio-economic development affected the lifestyle of Thais, including food habits, food purchasing and consumption patterns and resulted in a change in the food and nutrition scenario in the country. There is an increasing prevalence of various non-communicable diseases associated with

overnutrition, namely obesity, hypertension, coronary heart disease and cancer, whereas the undernutrition still exists in some pocket areas⁽⁹⁾. Recently, the Ministry of Public Health has launched the new version of Dietary reference intake for Thais⁽⁸⁾. Therefore, the Army Regulations, which have been established since 1977 should be revised.

From the present study, the nutritive values of the foods served could not be evaluated since the meals were prepared using skills and experiences of foodservice personnel without written recipes. However, when the menus were compared to the Food-based Dietary Guidelines for Good Health for Thais (FBDG) and Nutrition Flag⁽¹⁰⁾, which are the nutrition standards for educating all Thai people about the requirements and promoting correct eating behaviours and food habits, some practices and food choices did not conform to the suggestions of the Guidelines. For example, FBDG suggests to eat unpolished rice because it contains more substantial nutrients than milled rice such as protein, fat, dietary fiber, minerals and vitamins. The researcher did not find unpolished rice served in the studied month. Regarding vegetables and fruits, it is suggested that everyone eats a variety of vegetables during every meal, take fruit regularly and especially after meals or as a snack. The findings here revealed that less variety of vegetables were consumed particularly green-leafy vegetables which are rich sources of vitamin A, carotenoid, vitamin K, vitamin C, minerals and dietary fiber. More seriously, only three kinds of fruit were served fresh despite having numerous kinds of fruit in the country. Additionally, fresh fruit was almost omitted from the menus (Table 4). Since these menus were set by medical cadets which depended on their food preferences, these findings reflect that eating habits of these medical cadets have to be improved. Many studies showed the benefit of eating vegetables and fruit. Not only as a rich source of vitamins and minerals which are needed

for normal functions of our bodies, but also fiber and other useful substances found in vegetables and fruit showed a protective action against the risk of non-communicable chronic diseases such as obesity, coronary heart disease and some cancers⁽¹¹⁾. Considering the meat group, pork and chicken and their products (e.g. pork sausage) were the main sources of protein used in every meal. However, these meats should be lean meat. Furthermore, more fish, legumes and pulses should be put into the menus.

Apart from the food service programme of the College, other foods were also available to these medical cadets through the food store which was located close to the dormitory in the campus. The store is operated by the medical cadets and open for a whole day. Most of the foods sold here were chips (potato or corn), candies, instant noodles, ice cream and carbonated beverages. These foods were low in nutritive value. However, all of these foods can contribute calories in a significant amount to meeting their needs in addition to the meal provided. More importantly, this uncontrolled store can lead to undesirable eating habits.

In conclusion, the food service programme of Phramongkutklao College of Medicine is a strength point for promoting healthy nutrition to health professionals such as medical cadets. Since it is obligatory of the College for providing this kind of service. In order to achieve its goal in ensuring that medical cadets can obtain adequate energy and nutrients, more research should be done with respect to the nutrient quantity as well as the suitable budget and then the old Army Regulations should be revised. Standard recipes should be developed so that it will be easy to monitor. More attention should be put on vegetables and fruit consumption in terms of variety, quantity and frequency of consumption. To strengthen this programme, involvement of medical cadets should be continued and more involvement should be

considered. Monitoring of eating habits, nutritional status, nutrition and food sanitation standards by medical cadets along with appropriate nutrition education and food services can help medical cadets gain knowledge and skills in healthy nutrition practices that can lead to a healthy life for all. This is the so called “learning by doing”.

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การจัดบริการอาหารเพื่อส่งเสริมโภชนาการของนักเรียนแพทย์ทหาร วิทยาลัยแพทยศาสตร์พระมงกุฎเกล้า: รายงานการศึกษาเบื้องต้น

นันทพร วีรวัฒน์

วัตถุประสงค์: เพื่อศึกษารูปแบบของการจัดอาหาร และศึกษาประเภทของอาหารที่จัดให้แก่แก่นักเรียนแพทย์ทหาร
วัสดุและวิธีการ: ศึกษาย้อนหลังโดยการเก็บข้อมูลรายการอาหาร 1 เดือน ที่จัดเลี้ยงให้กับนักเรียนแพทย์ทหาร
ในปีการศึกษา 2547 ที่วิทยาลัยแพทยศาสตร์พระมงกุฎเกล้า แล้วนำมาวิเคราะห์โดยใช้สถิติเชิงพรรณนา

ผลการศึกษา: จากรายการอาหารเดือนสิงหาคม พ.ศ. 2547 ที่นำมาวิเคราะห์ พบว่ามีการจัดอาหารให้กับ
นักเรียนแพทย์ทหารชั้นปีที่ 2 และ 3 จำนวน 65 นายทุกวัน โดยนักเรียนแพทย์ทหารเป็นผู้กำหนดรายการอาหารเอง
ในแต่ละวันมีการจัดอาหารให้ 3 มื้อหลัก ในช่วงเดือนสิงหาคม พบว่า รายการอาหารที่นักเรียนแพทย์ทหารเลือก
นั้นยังขาดความเหมาะสม ดังนี้ อาหารกลุ่มข้าวและแป้ง ร้อยละ 93.5 จะเป็นข้าวขาวที่ผ่านการขัดสีแล้ว ไม่มี
การบริโภคข้าวซ้อมมือเลย และไม่พบผักเป็นส่วนประกอบเลยอย่างน้อย 5 มื้อ หรือร้อยละ 5.4 สำหรับกลุ่ม
ผลไม้พบว่าไม่ถึง 16 วัน หรือร้อยละ 51.6 ที่ไม่มีการจัดผลไม้สดเลยทั้ง 3 มื้อ

สรุป: การจัดบริการอาหารให้แก่แก่นักเรียนแพทย์ทหารเป็นจุดเด่นของการสร้างเสริมโภชนาการเพื่อสุขภาพที่ดีของ
นักเรียนแพทย์ทหาร นักเรียนแพทย์ทหารได้มีส่วนร่วมในการจัดบริการอาหารโดยเป็นผู้กำหนดรายการอาหารเอง
ซึ่งได้สะท้อนให้เห็นถึงบริโภคนิสัยที่ไม่ถูกต้องของนักเรียนแพทย์ทหารได้อย่างชัดเจน ดังนั้นการจัดกิจกรรมให้
นักเรียนแพทย์ทหารได้มีส่วนร่วมอย่างเหมาะสม จะเป็นกระบวนการที่ทำให้เกิดการเรียนรู้และมีทักษะด้าน
โภชนาการได้อย่างถูกต้อง ซึ่งจะส่งเสริมให้นักเรียนแพทย์ทหารมีสุขภาพที่ดี และสามารถเป็นแบบอย่างให้กับ
สังคมต่อไปได้
