Food Consumption Pattern and Health and Safety of College Students in The University of Eastern Philippines Main Campus

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ABSTRACT

This study was conducted to determine the food consumption pattern and the health and safety among college students in the University of Eastern Philippines Main Campus. Specifically, this study aimed to determine the respondents' food consumption pattern as to breakfast, lunch, dinner, and snacks; their level of knowledge on the basic food groups (glow, grow, and go); and their assessment on health and safety. The descriptive-correlational method of research was utilized employing a modified questionnaire-checklist patterned from the instruments of the Cumbria County Council and the DOST Food Nutrition and Research Institute. The findings of the study showed that most of the student-respondents belonged to the adolescence group, are females, and whose mothers were housewives. Most of their father's occupations were farmers, belonged to the low-income category, received a slightly sufficient weekly allowance, were fourth year college students, and were currently residing in boarding houses. As to the food consumption pattern, the college student-respondents ate their meals every day at the ideal time of eating meals except for breakfast wherein they sometimes ate during the other mealtimes. Time limitation in preparing food was the reason for skipping their meals. The respondents' food consumption pattern was slightly intake in terms of breakfast, lunch, dinner, and snacks. A greater number of them responded that their sources of food were house, carenderia, and food stalls. Healthy food was considered as the much important factor in deciding what to eat during mealtimes. The respondents preferred buying ready-made food for their mealtimes two (2) to three (3) times per week from street food stalls and establishments because of lack of time in preparing foods. In conclusion, the food consumption pattern of the student-respondents significantly affected their assessment on the health and safety of the food services of the food stalls and establishments.

Keywords: food consumption pattern, health safety, food stall, basic food groups

I. INTRODUCTION

Consumption of healthful foods has long been an important concern to humans, particularly to students who are considered the future of the nation. College students are regarded knowledgeable and intelligent, as such, they are expected to choose the right kinds of food. However, students eat more processed foods, junk foods, fatty foods, pre-prepared food, or they crave for unhealthy food.

Over the years, the food consumption patterns and practices of the students in the University of Eastern Philippines (UEP) have evolved. It can be noted that consumption of instant and ready to eat food has become prevalent. Likewise, the eating practices of the University students are greatly influenced by their food choices and preparation practices. Sound practices

in food preparation and consumption have been neglected by most of the students especially with the issue of time constraints in the preparation of healthful and nutritious food.

Food is an essential part of everyone's lives. It gives the energy and nutrients to grow and develop, be healthy and active, to move, work, play, think and learn. The body needs a variety of the following five (5) nutrients: protein, carbohydrates, fat, vitamins, and minerals. To stay healthy, the body does not need only the above five (5) nutrients but also need to eat right amount or quantity of food and good quality food preparation. Essential knowledge to nutrition is also fundamental to be able to maintain good health and function well whatever activity in the school will be performed by the students.

According to Marcia (2010), college students most often face different schedule of activities which interfere very much in their feeding behavior. Changes in food pattern, physical exercise, stress, alcohol consumption, smoking and college lifestyle are some of the factors that have made college students more vulnerable to circumstances risky to their health.

Poor eating habit is another major public health concern among college students who experience transition into university life, during which they are exposed to stress and lack of time. Kurubaran (2010) stressed out that college students adopt poor eating habits mainly because of reduced affordability and accessibility of nutritious food on the premises and the presence of an abundance of surrounding fast food outlets. Among many factors which have impact on the food consumption patterns of young people is the school environment in which students spend most of their time. College presents an environment that has been characterized by unhealthy dietary patterns and reduced physical activity which place students at a greater risk of weight gain.

In the Philippines, street vended foods are often appreciated for their unique flavors as well as for their convenience. They are often the alternative meals taken by most college students which are affordable given their limited budget. Street food vending also provides a livelihood for many ordinary Filipinos who would not have enough capital to put up a full-blown food service business. However, it is also recognized that street-food vendors are often poor, uneducated, and lack appreciation for safe food handling. Consequently, street foods are perceived to be a major public health risk. If a community is to have the full benefits of street-vended foods with minimal risk of foodborne disease, government intervention, as well as the UEP Administration may be required to ensure that standard of safety for such foods is best attainable to protect the students and the university population. This could provide holistic intervention baseline to safeguard the health and safety of the student population.

University of Eastern Philippines college students tend to frequently buy food from the sidewalk vendors because of ease of access, limited time, busy schedule, convenience, taste, time, and price. These unhealthy practices of students may compromise their health conditions and academic performance. As a matter of fact, the data in the University Medical and Dental Health Services Unit for Fiscal Year 2018 showed that 1,269 students (senior high school and college) sought medical consultations and treatments while 505 students sought medical attention for the first quarter of 2019. However, the unit failed to present documents to prove such consultations and treatment.

With all this, it is a necessity to understand and properly practice food health and safety knowledge and behavior in preventing foodborne illnesses. Accordingly, the study conducted by Tonelada (2018) showed that unsanitary environment, the lack of awareness of food safety regulations, poor knowledge of hygiene, and improper food handling practices among the food vendors can contribute to outbreaks of foodborne illnesses.

Preventing unhealthy and unsafe food in the university-based food service industry requires the development of food selling policies to ensure that all food services and activities carried out in the UEP Main Campus are following all relevant health and safety legislations. It is the primary duty of the University to pay particular attention to reasonable, necessary steps in safeguarding students' health and safety during their stay in the institution.

Thus, the researcher was prompted to conduct this study to determine the food consumption pattern and the health and safety of the college students in the University of Eastern Philippines (UEP) Main Campus, as basis in designing food selling policies in the University.

II. METHODOLOGY

A modified survey questionnaire-checklist was used in gathering data on the food consumption pattern and health and safety of the college students at the University of Eastern Philippines. The researcher first sought some possible instruments that could be used in this study. Hence, the instruments of the Cumbria County Council, the DOST Food Nutrition and Research Institute, and the questionnaire used in Ubane's dissertation. She modified the cited instruments to ensure that the survey questionnaire-checklist was complete in all aspects and captured all the objectives of this study. Prior to the finalization of the questionnaire-checklist, the researcher conducted an ocular visit to the food stalls and establishments in the UEP Main Campus to determine if the contents of the said checklists suited to the actual locale setting.

As a final point, the survey questionnaire was composed of four (4) parts. The first part determined the college student-respondents' socio-demographic profile, in terms of age, sex, parent's occupation, family monthly income, weekly allowance, year level, and nature of residence. The second part focused on the food consumption pattern of the college student-respondents, in terms of breakfast, lunch, dinner, and snacks. This part of the modified questionnaire was patterned from the instrument used by the Cumbria County Council. The third part assessed the knowledge of the college student-respondents on the basic food groups. This part of the modified questionnaire was patterned from the instrument used by the DOST Food Nutrition and Research Institute. The fourth part assessed the health and safety of the foodservices of the different food stalls and establishments in the campus in terms of aesthetic, nutritional, and safety values. This part of the modified questionnaire was patterned from the instrument used by Ubane in her dissertation.

The researcher, with the assistance of trained research assistants, conducted the survey to the college student-respondents who were buying foods from the various food stalls and establishments in the campus with the used of the questionnaire. Senior high school to senior college students were considered in this study.

Moreover, the researcher also conducted ocular survey to the food stalls and establishments which was also used as basis in developing insights for UEP's food selling policy. The survey focused on the foods they were selling, how these foods were prepared, the manner of selling, the utensils used, and the quality and quantity of foods.

No time limit was imposed on them to enable the respondents to have sufficient time answering such questions. A week period was allotted in gathering the necessary information for this study in which the researcher along with the trained research assistants went to the various food stalls and establishments in the University Campus during breakfast, snacks, lunch, and dinner. Hence, after the questionnaires were accomplished, the researcher retrieved all copies distributed and they were properly tabulated for easy reference in the administration of statistical treatment and analysis.

III. RESULTS AND DISCUSSION

Table 1 presents the responses of the college student-respondents whether or not they take their breakfast every day. The table shows that 265 or 69.37 percent responded "yes" while 117 or 30.63 responded "no". Based on the results, a greater number of college students of UEP Main Campus take their breakfast every day. Healthy nutritional choices are necessary for maintaining a healthy lifestyle. According to a survey conducted by Food Insight as cited by Allard (2019), over 90% of Americans agreed that breakfast is the most important meal of the day, and yet a mere 44% eat breakfast every day.

Table 1. Respondents' Responses Whether or Not They Take Their Breakfast Every Day

Responses	Frequency	Percentage	
Yes	265	69.37	
No	117	30.63	
Total	382	100	

Table 2 presents the responses of the college student-respondents on how frequent they eat their breakfast. It shows that 146 or 38.22 percent responded that they sometimes ate their breakfast while there were six (6) respondents or 1.57 percent responded that they never ate their breakfast.

Based on the results, most of the college students of the UEP Main Campus sometimes ate their breakfast. This finding was confirmed during the interviews that some college students occasionally eat their breakfast because of their early class schedules and limited weekly allowance. The study of Betts et al. as cited by Murdoch, Marsden, and Banks reported positive views on healthful foods and negative views of fattening foods. Within the student group, convenience was more important than nutrition when making dietary decisions, however, inadequate money to buy foods and lack of time were found to be barriers in food preparation.

Also, Murdoch, Marsden, and Banks (2000) cited that when students enter college, their diets deteriorate and they gain or lose weight due to class and work schedules which change daily as well as every semester.

Table 2. Respondents' Frequency of Eating Their Breakfast

Responses	Frequency	Percentage	
Everyday	137	35.86	
Most Days	60	15.71	
Sometimes	146	38.22	
Rarely	33	8.64	
Never	6	1.57	
Total	382	100	

Table 3 presents the reasons of the student-respondents in skipping their breakfast. Multiple responses show that 263 responded that they do not have time in the mornings, 102 responded they do not feel hungry, 23 responded they are on a diet, 17 responded that their families cannot afford it, 17 responded they think that skipping breakfast will help them manage their weight, and 11 responded that the school does not offer a breakfast that they like.

It can be gleaned from the data that a greater number of the college students of the UEP Main Campus skipped their breakfast because they do not have time in the mornings to prepare their meals. During the interview, the college students always reasoned out that the early class schedules were the main factor for them to skip breakfast. They also added that commuting from their hometown to the university at early mornings resulted for them to skip their breakfast.

According to a survey conducted by Food Insight as cited by Allard (2019), skipping breakfast can lead to an array of health problems including stress, fatigue, and increased susceptibility to obesity and diabetes. In addition, ditching mealtimes frequently hampers one's focus, alertness, and productivity. Over time, it also increases the risk of cardiovascular disease and nutrient deficiencies.

The results of the study conducted by McIntyre (2013) showed that those males and young child especially those from low-income families, are more frequent breakfast-skippers than other groups due to lack of money and food.

Table 3. Respondents' Reasons of Skipping Breakfast

Reasons	Frequency	Rank
Because I do not have time in the mornings	263	1
Because I do not feel hungry	102	2
Because I am on a diet	23	3
Because me or my family cannot afford it	17	4.5

Because I think skipping breakfast will help me	17	4.5
manage my weight		
Because my school does not offer a breakfast that I	11	6
like		

^{*} Multiple Responses

Table 4 presents the responses of the college student-respondents whether they take their lunch every day. Out of 382 respondents, 338 or 88.48 percent responded that they take their lunch every day while 44 or 11.52 percent responded not. Based on the results, a greater number of the college students of the UEP Main Campus take their lunch every day.

Table 4. Respondents' Response Whether or Not They Take Their Lunch Every Day

Responses	Frequency	Percentage	
Yes	338	88.48	
No	44	11.52	
Total	382	100	

Table 5 presents the responses of the college students' respondents on how frequent they eat their lunch. The table shows that 309 or 80.89 percent of the respondents ate their lunch every day while four (4) or 1.05 percent responded rarely. Based on the results, most of the college students of the UEP Main Campus ate their lunch every day.

Table 5. Respondents' Frequency of Eating Lunch

Responses	Frequency	Percentage	
Everyday	309	80.89	
Most Days	43	11.26	
Sometimes	26	6.81	
Rarely	4	1.05	
Total	382	100	

Table 6 presents the reasons of the college student-respondents of skipping their lunch. Multiple responses show that 173 responded that they do not have time in noon, 151 responded they do not feel hungry, 25 responded they were on a diet, 14 responded that their families cannot afford it and they think that skipping breakfast will help them manage their weight, and 13 responded that the school does not offer a breakfast that they like.

It can be gleaned from the data that most of the college students of the UEP Main Campus skipped their lunch because they do not have time in noon in preparing their foods. The interview indicated that the college students always reasoned out that the class schedules during lunch time were the main factor for them to skip their lunch. However, they indicated that after classes they tried to take their lunch especially if they already skipped their breakfast.

This affirms with the results of the study conducted Huntsinger and Luecken (2004) that poor eating habits among college students include a higher perception of stress, and low self-esteem resulted from skipping their lunch. Meals are often skipped by college students, and management of weight and food intake is often nonexistent or disordered due to class and work schedules that is change daily or every semester.

Yet, in a study by Soliah, Walter, and Antosh (2006), it was found out that the college students were not taught or not interested in learning how to prepare foods as the reasons why they were unable to prepare certain foods. The least common answers were limited kitchen resources and not enough money to purchase the foods.

Table 6. Respondents' Reasons of Skipping Lunch

Reasons	Frequency	Rank
Because I do not have time in noon	173	1
Because I do not feel hungry	151	2
Because I am on a diet	25	3
Because me or my family cannot afford it	14	4.5
Because I think skipping lunch will help me manage	14	4.5
my weight		
Because my school does not offer a lunch that I like	13	6

^{*} Multiple Responses

Table 7 presents the responses of the college student-respondents whether they take their dinner every day. The table shows that 329 or 86.13 percent responded that they take their dinner every day while 53 or 13.87 percent responded not. Based on the results, a greater number of the college students of the UEP Main Campus take their dinner every day.

Table 7. Respondents' Response Whether or Not they Take Their Dinner Every Day

Responses	Frequency	Percentage	
Yes	329	86.13	
No	53	13.87	
Total	382	100	

Table 8 presents the responses of the college student-respondents on how frequent they eat their dinner. Out of 382 respondents, 276 or 72.25 percent responded every day while seven (7) or 1.83 percent responded never. Based on the results, a greater number of the college students of the UEP Main Campus ate their dinner every day.

Table 8. Respondents' Frequency of Eating Their Dinner

Responses	Frequency	Percentage	
Everyday	276	72.25	
Most Days	56	14.66	
Sometimes	33	8.64	
Rarely	10	2.62	
Never	7	1.83	
Total	382	100	

Table 9 presents the reasons of the college student-respondents of skipping their dinner. Moreover, 168 responded that they do not feel hungry, 127 responded that they do not have time in the evenings, 36 responded that they are on a diet, 30 responded that their families cannot afford it, 13 responded that skipping dinner will help them manage their weight, and nine (9) responded that their school does not offer a dinner that they like.

It can be gleaned from the data that most of the college students of the UEP Main Campus skipped their dinner because they do not feel hungry. This can be attributed to the fact that some college students took heavy snacks late in the afternoon and opted to take their dinner anymore.

According to the study of Shaw (2018), the gender seems to make a significant difference of not eating meals. Females skip meals three times more often than males, mainly because they do not have time and are not hungry in the evening.

Table 9. Respondents' Reasons of Skipping Dinner

Reasons	Frequency	Rank
Because I do not feel hungry	168	1
Because I do not have time in the evenings	127	2
Because I am on a diet	36	3
Because me or my family cannot afford it	30	4
Because I think skipping dinner will help me	13	5
manage my weight		
Because my school does not offer a dinner that I like	9	6

^{*} Multiple Responses

Knowledge of the College Student-Respondents on the Basic Food Groups

Glow Foods. Table 10 presents the level of knowledge of the college-student respondents in terms of glow food groups. The table shows that water received the highest weighted mean of 4.47 interpreted as "very much knowledgeable" while fruits received the lowest weighted mean of 3.42 interpreted as "much knowledgeable".

As shown in the grand weighted mean of 3.823, the college students of the UEP Main Campus were "much knowledgeable" on the glow foods based on the indicated food items. This disconfirms the findings of the studies conducted by the Centers for Disease Control and Prevention that young adults' knowledge and adherence of the national dietary guidelines are at a very low rate. The findings disconfirm the study of Muchee (2003) that the college students had a poor knowledge of the energy regulating foods.

Table 10. Level of Knowledge of the College Student-Respondents in terms of Glow Food Groups

Glow Foods	Weighted Mean	Interpretation	
Water (6-8 glasses)	4.47	Very Much	
		Knowledgeable	
Green leafy and yellow vegetables (3 servings)	3.58	Much Knowledgeable	
Fruits (3 servings)	3.42	Much Knowledgeable	
Grand Weighted Mean	3.823	Much Knowledgeable	

Grow Foods. Table 11 presents the level of knowledge of the college-student respondents in terms of grow food groups. It shows that the highest weighted mean was on the chicken with a weighted mean of 3.53 interpreted as "much knowledgeable" while the lowest weighted mean was on yogurt with 2.40 "less knowledgeable". The grand weighted mean of 3.140 shows that the college students of the UEP Main Campus were "moderately knowledgeable" on the indicated food items as part of the grow food groups. The findings disconfirm the study of Muchee (2003) that the college students had a poor knowledge of the body building foods.

Table 11. Level of Knowledge of the College Student-Respondents in terms of Grow Food Groups

Grow Food	Weighted Mean	Interpretation
Chicken (2 ½ servings)	3.53	Much Knowledgeable
Fish (2 ½ servings)	3.52	Much Knowledgeable
Eggs (1 piece)	3.50	Much Knowledgeable
Meat (2 ½ servings)	3.43	Much Knowledgeable
Milk (1 glass)	3.34	Moderately
		Knowledgeable
Shellfish (2 ½ servings)	2.76	Moderately
		Knowledgeable
Cheese	2.64	Moderately
		Knowledgeable
Yogurt	2.40	Less Knowledgeable
Crand Waighted Maan	3.140	Moderately
Grand Weighted Mean	J.140	Knowledgeable

Go Foods. Table 12 presents the level of knowledge of the college-student respondents in terms of go food groups. It shows that rice received the highest weighted mean of 4.33 interpreted as "very much knowledgeable" while margarine received the lowest weighted mean of 2.32 interpreted as "less knowledgeable". Based on the grand weighted mean of 2.797, the college students of the UEP Main Campus were "moderately knowledgeable" of the indicated food items as part of the go food group. The study of Muchee (2003) confirms the findings of the study, in which it found out that the college students had a good knowledge of the energy giving foods.

Table 12. Level of Knowledge of the College Student-Respondents in terms of Go Food Groups

Go Food	Weighted Mean	Interpretation
Rice (1 cup)	4.33	Very Much
		Knowledgeable
Bread and cereals (6-8 servings)	3.07	Moderately
		Knowledgeable
Noodles or instant noodles (6-8	2.91	Moderately
servings)		Knowledgeable
Sugar/sweets (6-8 teaspoon)	2.73	Moderately
		Knowledgeable
Potato (6-8 servings)	2.63	Moderately
		Knowledgeable
Corn (6-8 servings)	2.62	Moderately
		Knowledgeable
Peanuts (6-8 teaspoon)	2.52	Less Knowledgeable
Cheese (6-8 teaspoon)	2.51	Less Knowledgeable
Butter (6-8 teaspoon)	2.33	Less Knowledgeable
Margarine (6-8 teaspoon)	2.32	Less Knowledgeable
Grand Weighted Mean	2.797	Moderately
		Knowledgeable

Table 13 presents the assessment of the college student-respondents on the health and safety of the food services in terms of aesthetic value. The table shows that the college student-respondents assessed the aesthetic value of the food services of the food stalls and establishments in the UEP Main Campus as "much healthy and safe" as reflected in the grand weighted mean of 3.694.

This means that the food services of the food stalls and establishments in the UEP Main Campus were considerably healthy and safe in terms of taste, texture, color, size and digestibility of food, overall rating of establishments in terms of dining utensils, kitchen equipment, and physical appearance (building, design of the establishment), plating and

presentation of food, promptness of serving the meals and snacks, and overall rating of establishments in terms of foods and services.

The findings of the study are in accordance with the fundamental standards of the ISO 22000 in providing and improving food safety management and food nutritional quality.

Table 13. Assessment of the College Student-Respondents on the Health and Safety of the Foodservices in terms of Aesthetic Value

Aesthetic Value	Weighted Mean	Interpretation
Taste, texture, color, size and digestibility of food.	3.90	Much Healthy and Safe
Plating and presentation of food.	3.66	Much Healthy and Safe
The promptness of serving the meals and snacks.	3.65	Much Healthy and Safe
The overall rating of establishments in terms of foods and services.	3.59	Much Healthy and Safe
The overall rating of establishments in terms of dining utensils, kitchen equipment, and physical appearance (building, design of the establishment).	3.67	Much Healthy and Safe
Grand Weighted Mean	3.694	Much Healthy and Safe

Table 14 presents the assessment of the college student-respondents on the health and safety of the foodservices in terms of nutritional value. The grand weighted mean of 3.694 shows that nutritional value of the foodservices of the food stalls and establishments in the UEP Main Campus was "much healthy and safe" as assessed by the college student-respondents.

This shows that the foodservices of the food stalls and establishments in the UEP Main Campus in terms of handling and cooking of food, the freshness and variety of food served, adequacy of nutrients present in the food, promotion of healthy meal, and providing food they need, and they eat were considerably healthy and safe for consumption. The findings of the study are in accordance with the fundamental standards of the ISO 22000 in providing and improving food safety management and food nutritional quality.

Table 14. Assessment of the College Student-Respondents on the Health and Safety of the Food Services in terms of Nutritional Value

Nutritional Value	Weighted Mean	Interpretation
Handling and cooking the food.	3.73	Much Healthy and
		Safe
Freshness and variety of the food served.	3.72	Much Healthy and
		Safe
Adequacy of nutrients present in food.	3.71	Much Healthy and
		Safe
The promotion of healthy meal.	3.66	Much Healthy and
		Safe
The food we need and the food we eat.	3.65	Much Healthy and
		Safe
Grand Weighted Mean	3.694	Much Healthy and
		Safe

Table 15 presents the assessment of the college student-respondents on the health and safety of the foodservices in terms of safety value. The college student-respondents assessed the safety value of the foodservices of the food stalls and establishments in the UEP Main Campus as "much healthy and safe" based on the grand weighted mean of 3.632. It shows that the foodservices of the food stalls and establishments in the UEP Main Campus were considerably healthy and safe as to the personal hygiene habits of foodservice worker, management, and supervisory responsibilities of the establishment manager in terms of food safety, storing and labeling of cooking materials and ingredients, storing and keeping the tools and equipment, and use of mobile equipment for efficient handling and storing of food.

The findings of the study are in accordance with the fundamental standards of the ISO 22000 in providing and improving food safety management and food nutritional quality.

Table 15. Assessment of the College Student-Respondents on the Health and Safety of the Food Services in terms of Safety Value

Safety Value	Weighted Mean	Interpretation
The personal hygiene habits of	3.65	Much Healthy and
foodservice worker.		Safe
The management and supervisory	3.65	Much Healthy and
responsibilities of the establishment		Safe
manager in terms of food safety.		
Storing and labeling of cooking	3.63	Much Healthy and
materials and ingredients.		Safe
Storing and keeping the tools and	3.63	Much Healthy and
equipment.		Safe

The use of mobile equipment for	3.60	Much Healthy and
efficient handling and storing of food.		Safe
Grand Weighted Mean	3.632	Much Healthy And Safe

IV. CONCLUSION

The college students of the UEP Main Campus have a slight daily food intake of breakfast, snacks, lunch, and dinner. This implies that the college students somewhat considered the nutritional value, taste, time sufficiency, convenience, and budget in taking foods in each time. The college students of the UEP Main Campus are much knowledgeable on the basic food groups such as go, grow, and glow foods. This implies that the nutritional knowledge and requirements directly contributes to the status of the college students for good dietary practices and sustaining healthy lifestyle. The health and safety of the foodservices of the food stalls and establishments in the UEP Main Campus are much healthy and safe. This implies that the foodservices in the campus are in accordance with the standards on the food safety management as to hygiene, sanitation, vendors' attitude, and preparation and storage of the food. It is recommended also that the University Health Services Unit, the College of Education Home Economics Department, and the Municipal Health Office shall conduct health education practices which can help guide the students at the University in their food consumption pattern and promote overall health. Providing health, nutrition related courses, and using technology as a means to educate the new generation could be effective and used for future learning.

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