



ASSOCIATION BETWEEN STUDENTS' DIET AND ACADEMIC PERFORMANCE AMONG SUMMER SCHOOL STUDENTS AT MARSHALL ISLANDS HIGH SCHOOL



RYBACK DOMNICK
REPUBLIC OF MARSHALL ISLANDS
HIGH SCHOOL STEP-UP



INTRODUCTION

- In RMI, there is an increasing advocacy for a healthy diet and exercise among its people for all ages.
- RMI-Public School System had mandated every school on the island to serve healthy food to all students everyday.
- At MIHS, which is the largest secondary public school in RMI, received most 8th Grade students that were in the beginning and developing level according to the MISAT result, probably due to several factors such as absenteeism, poor healthy diet, and transportation issues.
- The researcher aimed to investigate the association between students' diet and academic performance among the 2022 summer school students at Marshall Islands High School.

SIGNIFICANCE OF STUDY

- Public School System: Provides a valuable tool for reviewing the school's lunch program
- School Administrators: School stakeholders can collaborate with various non government organization to seek additional funding in providing healthy breakfast.
- Students: Provide awareness and a better understanding of how their food intake affects their academic performances

PROBLEM STATEMENT

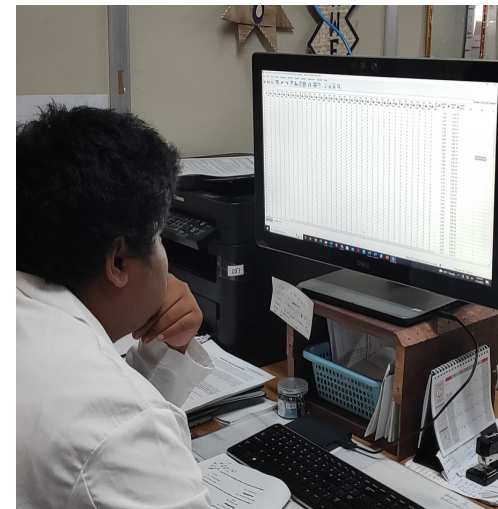
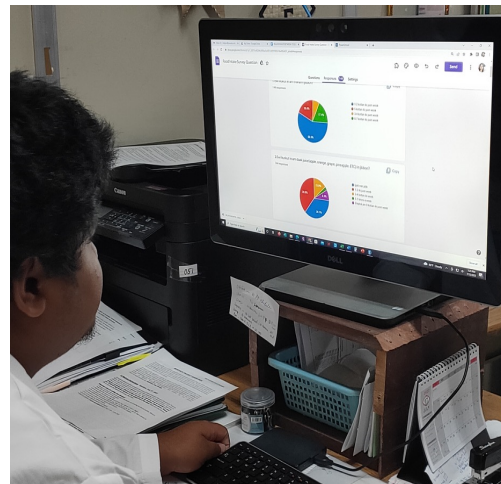
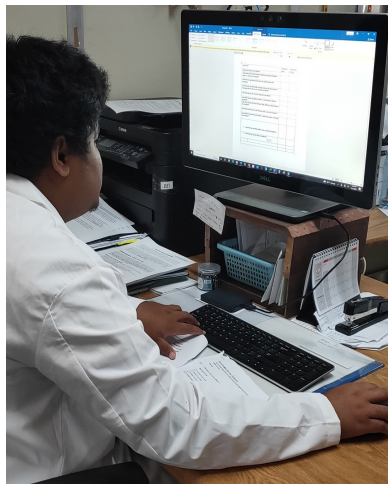
1. To what extent do the following independent variables affect the academic performances of the respondents:
 - 1.1 breakfast intake
 - 1.2 local food intake
 - 1.3 imported food intake
2. Is there any significance association between the students' academic performances and the following independent variables:
 - 2.1 breakfast intake
 - 2.2 local food intake
 - 2.3 imported food intake

HYPOTHESIS

1. There is no significant association between the students' academic performances and their breakfast intakes.
2. There is no significant association between the students' academic performances and their local food intakes.
3. There is no significant association between the students' academic performances and their imported food intakes.

METHODOLOGY

- The study used a descriptive correlation design and convenience sampling techniques to select 143 respondents from pre-9th to 11th grade.
- A survey questionnaire was administrated to the student respondents to gather data.
- For statistical analysis: Five point Likert scale, frequency distribution, weighted mean, and Chi-square test



Food Intake Survey Question

Jouj im uwaaki kajitok kein kon kelet eo emool nan kwe. Ejjelok bwod im Jimwe, uwaaki kajojo kajitok ilo mool.

* Required

1. 1. Ewi ikukut in am mona in jibbon? *

Mark only one oval.

- ☐ 1-2 kottan ilo juon week
☐ 5 kottan ilo juon week
☐ 3-4 kottan ilo juon week
☐ 6-7 kottan ilo juon week

2. 2.Ewi ikutkut in am daak juice(apple, orange, grape, pineapple, ETC) in jibbon? *

Mark only one oval.

- ☐ Ijab nan jidik
☐ 1-2 ilo juon week
☐ 3-4 kottan ilo week
☐ 5-7 times a week
☐ Elaplok jen 8 kottan ilo juon week

Na _____, jinen im jemen/guardian eo an _____ . Ij lewoj melim eo bwe ajri e neju en jipan ak jerbal ippam ikijjen Step Up Research Projects eo. Ijoke, melele ko boki jen ekatak in renaaj nojak im ban letoletak nan jabrewot.

Parent/Guardian Signature

RESULTS AND DISCUSSION

To what extent do the following independent variables affect the academic performances of the respondents:

1.1 Frequency and Percentage of Breakfast Intake

Statement	Never 1	1-2 times/Wk. 2	3-4 times/Wk. 3	5-7 times/Wk. 4	More than 8 times/Wk. 5
1.How often do you eat breakfast?	0 0%	81 33.5%	10 4.1%	27 11.2	25 10.3
2. How often do you drink fruit juice (apple juice, grape, pineapple, prune, or others) for breakfast?	51 21.1%	56 23.1%	20 8.3%	4 1.7%	12 5.0%
3. How often do you drink tomato juice or vegetable juice for breakfast?	83 34.3%	38 15.7%	11 4.5%	8 3.3%	3 1.2%
4. How often do you drink milk, chocolate milk, or hot chocolate as a beverage (Not in coffee or in cereal) for breakfast?	26 10.7%	70 28.9%	22 9.1%	13 5.4%	12 5.0%
5. How often do you eat cereal or oatmeal for breakfast?	49 20.2%	53 21.9%	25 10.3%	9 3.7%	7 2.9%
6. How often do you eat apples, bananas, or other kinds of fruit for breakfast?	22 9.1%	58 24.0%	25 10.3%	15 6.2%	23 9.5%
7. How often do you eat bread with jam, jelly, Nutella, or peanut butter for breakfast?	12 5.0%	53 21.9%	36 14.9%	19 7.9%	23 9.5%
8.How often do you eat rice with chicken, pork, or beef for breakfast?	20 8.3%	48 19.8%	28 11.6%	13 5.4%	34 14.0%
9. How often do you eat rice with ramen, canned tuna, spam, or hotdog for breakfast?	20 8.3%	55 22.7%	24 9.9%	15 6.2%	29 12.0%
10.How often do you drink coffee, cola, or soda for breakfast?	28 11.6%	56 23.1%	20 8.3%	18 7.4%	21 8.7%

1.1 Respondents' Responses on Breakfast Intake

Statement	Weighted Mean	Descriptive Rating
1.How often do you eat breakfast?	2.97	3-4 times a week
2. How often do you drink fruit juice (apple juice, grape, pineapple, prune, or others) for breakfast?	2.09	1-2 times a week
3. How often do you drink tomato juice or vegetable juice for breakfast?	1.67	Never
4. How often do you drink milk, chocolate milk, or hot chocolate as a beverage (Not in coffee or in cereal) for breakfast?	2.41	1-2 times a week
5. How often do you eat cereal or oatmeal for breakfast?	2.10	1-2 times a week
6. How often do you eat apples, bananas, or other kinds of fruit for breakfast?	2.71	3-4 times a week
7. How often do you eat bread with jam, jelly, Nutella, or peanut butter for breakfast?	2.92	3-4 times a week
8.How often do you eat rice with chicken, pork, or beef for breakfast?	2.95	3-4 times a week
9. How often do you eat rice with ramen, canned tuna, spam, or hotdog for breakfast?	2.85	3-4 times a week
10.How often do you drink coffee, cola, or soda for breakfast?	2.64	3-4 times a week
Overall Weighted Mean	2.53	1-2 times a week

RESULTS AND DISCUSSION

1.2 Frequency and percentage of Local Food Intake

Statement	Never 1	1-2 times/Wk. 2	3-4 times/Wk. 3	5-7 times/Wk. 4	More than 8 times/Wk. 5
11. How often do you eat meh or breadfruit?	24 9.9%	50 20.7%	26 20.7%	17 7.0%	26 10.7%
12. How often do you eat papaya and bananas?	19 7.9%	59 24.4%	28 11.6%	14 5.8%	23 9.5%
13. How often do you eat bwiro or beru?	56 23.1%	45 18.6%	20 8.3%	6 2.5%	16 6.6%
14. How often do you eat makmok, jukjuk, or iaraj?	67 27.7%	42 17.4%	10 4.1%	12 5.0%	12 5.0%
15. How often do you eat bob?	19 7.9%	50 20.7%	29 12.0%	21 8.7%	24 9.9%
16. How often do you eat local produce bachoy, corn or tomatoes?	51 21.1%	49 20.2%	22 9.1%	11 4.5%	10 4.1%
21. How often do you eat local fish, salt tutu, or maro?	11 4.5%	46 19.0%	29 12.0%	30 12.4%	27 11.2%
27. How often do you eat sushi or raw seafood (including oysters, and clams)?	57 23.6%	51 21.1%	17 7.0%	8 3.3%	10 4.1%
33. How often do you eat locally made donut with chocolate cream?	46 19.0%	16 6.6%	22 9.1%	58 24.0%	1 .4%
38. How often do you drink fresh lime juice?	46 19.0%	56 23.1%	20 8.3%	9 3.7%	12 5.0%

1.2 Respondents' Responses on Local Food Intake

Statement	Weighted Mean	Descriptive Rating
11. How often do you eat meh or breadfruit?	2.80	3-4 times a week
12. How often do you eat papaya and bananas?	2.74	3-4 times a week
13. How often do you eat bwiro or beru?	2.17	1-2 times a week
14. How often do you eat makmok, jukjuk, or iaraj?	2.02	1-2 times a week
15. How often do you eat bob?	2.87	3-4 times a week
16. How often do you eat local produce bachoy, corn or tomatoes?	2.16	3-4 times a week
21. How often do you eat local fish, salt tutu, or maro?	3.11	3-4 times a week
27. How often do you eat sushi or raw seafood (including oysters, and clams)?	2.04	1-2 times a week
33. How often do you eat locally made donut with chocolate cream?	2.66	3-4 times a week
38. How often do you drink fresh lime juice?	2.20	1-2 times a week
Overall Weighted Mean	2.48	1-2 times a week

RESULTS AND DISCUSSION

1.3 Frequency and Percentage of Imported Food Intake

Statement	Never 1	1-2 times/Wk. 2	3-4 times/Wk. 3	5-7 times/Wk. 4	More than 8 times/Wk. 5
17. How often do you eat raw ramen with koolaid?	61 25.2%	15 6.2%	17 7.0%	50 20.7%	143 58.1%
18. How often do you drink cola or soda?	42 17.4%	20 8.3%	81 33.5%	143 59.1%	99 40.9%
19. How often do you eat bread or pancake?	10 4.1%	73 30.2%	20 8.3%	40 16.5%	143 59.1%
20. How often do you eat canned tuna, spam, or any other can goods?	30 12.4%	31 12.8%	33 13.6%	40 16.5%	9 3.7%
22. How often do you eat rice?	4 1.7%	35 14.5%	19 7.9%	25 10.3%	60 24.8%
23. How often do you eat pizza with pepperoni, sausage, or other meat?	20 8.3%	73 30.2%	19 7.9%	20 8.3%	11 4.5%
24. How often do you eat biscuits, cookies, or pretzels?	31 12.8%	62 25.6%	23 9.5%	17 7.0%	10 4.1%
25. How often do you eat potato chips, tortilla chips, or corn chips?	21 8.7%	53 21.9%	31 12.8%	19 7.9%	19 7.9%
26. How often do you eat peanuts, walnuts, seeds, or other nuts?	64 26.4%	48 19.8%	16 6.6%	9 3.7%	6 2.5%
28. How often do you eat tofu, soy burgers, or soy meat- substitutes?	66 27.3%	40 16.5%	25 10.3%	4 1.7%	8 3.3%
29. How often do you eat granola bars and yogurt?	83 34.3%	34 14.0%	16 6.6%	6 2.5%	4 1.7%
30. How often do you eat ice cream?	14 5.8%	19 7.9%	23 9.5%	77 31.8%	10 4.1%
31. How often do you eat pie or cake?	14 5.8%	26 10.7%	16 6.6%	25 10.3%	62 25.6%
32. How often do you eat chocolate or any kind of candy?	28 11.6%	22 9.1%	23 9.5%	51 21.1%	19 7.9%
34. How often do you eat boiled/ fried eggs?	17 7.0%	52 21.5%	34 14.0%	20 8.3%	20 8.3%
35. How often do you eat mayonnaise as a spread or as part of food mixtures?	36 14.9%	52 21.5%	20 8.3%	24 9.9%	11 4.5%
36. How often do you eat popcorn?	12 5.0%	76 31.4%	22 9.1%	1 .4%	32 13.2%
37. How often do you drink beer or vodka?	5 2.1%	11 4.5%	8 3.3%	32 13.2%	87 36.0%

1.3 Respondents' Responses on Imported Food

Statement	Weighted Mean	Descriptive Rating
17. How often do you eat raw ramen with koolaid?	2.39	1-2 times a week
18. How often do you drink cola or soda?	2.98	3-4 times a week
19. How often do you eat bread or pancake?	2.91	3-4 times a week
20. How often do you eat canned tuna, spam, or any other can goods?	2.77	3-4 times a week
22. How often do you eat rice?	2.71	3-4 times a week
23. How often do you eat pizza with pepperoni, sausage, or other meat?	2.50	1-2 times a week
24. How often do you eat biscuits, cookies, or pretzels?	2.39	1-2 times a week
25. How often do you eat potato chips, tortilla chips, or corn chips?	2.73	3-4 times a week
26. How often do you eat peanuts, walnuts, seeds, or other nuts?	1.92	1-2 times a week
28. How often do you eat tofu, soy burgers, or soy meat- substitutes?	1.94	1-2 times a week
29. How often do you eat granola bars and yogurt?	1.70	1-2 times a week
30. How often do you eat ice cream?	3.35	3-4 times a week
31. How often do you eat pie or cake?	3.66	5-7 times a week
32. How often do you eat chocolate or any kind of candy?	3.08	3-4 times a week
34. How often do you eat boiled/ fried eggs?	2.82	3-4 times a week
35. How often do you eat mayonnaise as a spread or as part of food mixtures?	2.45	1-2 times a week
36. How often do you eat popcorn?	2.76	3-4 times a week
37. How often do you drink beer or vodka?	4.29	More than 8 times a week
Overall Weighted Mean	2.74	3-4 times a week

RESULTS AND DISCUSSION

Crosstabs

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Breakfast * Letter Grade	242	100.0%	0	0.0%	242	100.0%

Breakfast * Letter Grade Crosstabulation

Count		Letter Grade						Total	
		B	B-	B+	C	C-	C+		
Breakfast		93	0	0	0	0	0	93	
	1-2 times a week	1	0	0	1	32	20	62	
	2-4 times a week	1	1	1	0	28	15	53	
	5-7 times a week	1	0	0	0	10	2	16	
	Description	1	0	0	0	0	0	1	
	More than 8 times a week	1	0	0	0	0	1	2	
	Never	1	0	0	0	7	7	15	
Total		99	1	1	1	77	45	18	242

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	243.741 ^a	36	<.001
Likelihood Ratio	305.757	36	<.001
N of Valid Cases	242		

a. 36 cells (73.5%) have expected count less than 5. The minimum expected count is .00.

There is a significant association between breakfast intakes and students' academic performances.

RESULTS AND DISCUSSION

Crosstabs

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Description * Letter Grade	242	100.0%	0	0.0%	242	100.0%

Description * Letter Grade Crosstabulation

Count

		Letter Grade						Total
		B	B-	B+	C	C-	C+	
Description		99	0	0	0	0	0	99
	1-2 times a week	0	0	1	1	36	13	62
	2-4 times a week	0	1	0	0	24	14	42
	5-7 times a week	0	0	0	0	6	8	16
	More than 8 times a week	0	0	0	0	1	1	2
	Never	0	0	0	0	10	9	21
Total		99	1	1	1	77	45	242

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	265.714 ^a	30	<.001
Likelihood Ratio	342.526	30	<.001
N of Valid Cases	242		

a. 28 cells (66.7%) have expected count less than 5. The minimum expected count is .01.

There is a significant association between local food intakes and students' academic performances.

RESULTS AND DISCUSSION

Crosstabs

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Description * Letter Grade	242	100.0%	0	0.0%	242	100.0%

Description * Letter Grade Crosstabulation

Count		Letter Grade						
		B	B-	B+	C	C-	C+	Total
Description		99	0	0	0	0	0	99
	1-2 times a week	0	0	0	19	8	8	35
	2-4 times a week	0	0	1	55	37	9	103
	5-7 times a week	0	1	0	3	0	1	5
Total		99	1	1	77	45	18	242

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	302.632 ^a	18	<.001
Likelihood Ratio	344.077	18	<.001
N of Valid Cases	242		

a. 17 cells (60.7%) have expected count less than 5. The minimum expected count is .02.

There is a significant association between imported food intakes and students' academic performances.

SUMMARY AND CONCLUSION

Based on the analysis of the results gathered, the following findings are hereby presented:

- The imported food intake obtained the highest overall weighted mean of 2.74 (3-4 times a week), breakfast intake of 2.53 (1-2 times a week), and local food intake with a lowest weighted mean of 2.48(1-2 times a week).
- Data revealed that there is a significant association between students' diets and academic performances.

REFERENCES

MacLellan, D., Taylor, J., & Wood, K. (2008). Food Intake and Academic Performance Among Adolescents. *Canadian Journal of Dietetic Practice and Research*, 69(3), 141–144. <https://doi.org/10.3148/69.3.2008.141>

NHANES Food Questionnaire. (2005).

https://www.cdc.gov/nchs/data/nhanes/nhanes_03_04/tq_fpq_c.pdf

UKEssays. (November 2018). *Relationship between Student Diet and Academic Performance*. Retrieved from

<https://www.ukessays.com/essays/nutrition/academic-performance-nutritional-status-8263.php?vref=1>

ACKNOWLEDGEMENTS

- ❖ **George Hui, PhD:** Pacific STEP-UP Program Director, John A. Burns School of Medicine UH, Manoa
- ❖ **Aneesa Golshan:** Program Coordinator, Pacific STEP-UP
- ❖ **Sali Andike:** Pacific STEP-UP Program Coordinator, Republic of the Marshall Islands
- ❖ **Barbara Ned:** Principal, Marshall Islands High School
- ❖ **Kathy Digno (STEP-UP Mentor):** MedM, Marshall Islands High School