

The Influence of Eating Habits among University Students on their Academic Performances

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Abstract: Developing good eating habits among students is crucial. Healthy and balanced food would benefit in terms of boosting immunity and supporting good brain development. Although many dietary preferences are formed early, the transition to the independent living during the university years is a significant event because as people mature, they become more capable of making their own eating decisions. Bad eating patterns, consequently will burden one healthy body and mind. Achieving good academic performance while preserving a healthy mind and body during university years is one of the main goals among university student as this offer better job placement and a bright future career. This study looked at how eating habits affected undergraduate student's academic performance in higher education. A simple random sampling technique was used to select 340 respondents from undergraduate students. Cumulative Grade Point Average (CGPA) is used to measure a student's academic performance. Descriptive statistics were utilized to provide basic information about the variable in the dataset and to highlight any potential relationships between variables. A regression model was constructed to predict student academic performance. The results indicated that there was a significant relationship between undergraduate students' eating habits and their academic achievement. The findings showed that students should eat a healthy meal before participating in academic activities and classes. In addition, the educational institution also needs to ensure that their student has good access to healthy meals before the start of academic activities.

Keywords: Higher Education Institution, Eating Habits, Academic Performance

1. Introduction

The term "eating habits" relates to a person's motivations for eating, their preferred foods, and their shopping, consumption, and disposal practices. According to the healthy eating food pyramid, grains are the foods that must eat most, followed by eating more vegetables, fruits, meat, fish, and dairy products (Uwannah, 2018). Nevertheless, personal choices, behaviors, practices of the family, and the social environment play a role in determining what a person consumes (Lane et al., 2018). Eating habits are critical in teenagers because they have high metabolic needs in their brains that might affect their academic performance (Cecilia, 2018). Eating a balanced diet will make students feel more

comfortable, deal with stress, and perform much better in classrooms (Paulina Correa-Burrows, 2016). Breakfast intake has been found to improve academic success by enhancing cognitive capacities, such as memory and neurological output (Carroll, 2014). Ross and Anderson (2010) noticed that students who ate breakfast daily had a decreased chance of learning, reading, and mathematics problems and further noted that giving students the correct food options and helping them achieve good healthier eating patterns would promote the optimum functioning of their brains. Therefore, this study examines the eating habits among undergraduate students that staying in the hostel. The eating habits of students living at and away from home

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(university campus) were different (Ross and Anderson, 2010). Adopting a nutritious diet was more challenging for students who lived alone, especially on the university campus. This study also analyses the relationship between eating habits and the academic performance of undergraduate students.

2. Related Works

Research on how nutrition affects academic achievement is expanding. However, research work on the relationship between diet and academic performance has received much less attention. This is a significant field for study, despite the excess of studies that suggest unhealthful diets for university students (Burrows et al., 2017). In this research, results indicate that food can be correlated with academic performance, with the majority of evidence associating greater beneficial nutritional consumption with higher educational accomplishment. Health promotion professionals in the university environment should also recognize the beneficial role that diet can perform in the academic success of students in designing programs to encourage healthy eating habits for students.

The subject of food scarcity should also be addressed when looking at how nutrition impacts the success of students in the classroom (Farahbakhsh, Hanbazaza, Farmer, Maximova, and Willows, 2016). Due to the significant costs associated with attending universities, such as saving money for tuition, books, and other items connected to academics, students are particularly vulnerable to malnutrition. People who lack access to healthy food sources frequently become malnourished or engage in unhealthy eating habits like consuming more fast food and soda. (Deliens et al., 2013). These trends have undesirably affected academic growth, the ability to function productively, and students' complete well-being (Nasir & Tahir, 2017). Most of the students confronting food insecurity also reported an adverse influence on their academic performance and also a lack of concentration, which contributed to the failure of the examinations or the withdrawal of the lessons.

Several variables influence what people consume that have consequences for school achievement. Such factors may be dependent on ethnic, human, financial, religious, fiscal, environmental, and political pressures (Naillon, 2017). Healthy nutrition would help reduce the detrimental impact of deprivation on academic growth as it occurs early in life (Chinyoka, 2014). Long-term effects of unhealthy eating patterns, such as weight gain can eventually lead to obesity, including eating late at night, consuming a lot of junk food, skipping meals, eating excessive portions, and drinking sugary soft beverages. Obesity poses a lot of harm to a person's safety and downgrading one healthy body and mind (Boyers, 2018). Hamdan Mohammed Al-Shehri (2017) enumerated the challenges faced by college students,

particularly when they are away from home, particularly in adopting a better lifestyle and caring for oneself nutritionally. University time often involves tension among students seeking to achieve achievement in their academic goals, given the financial pressures that many mentions. Such stressors, in combination with the experience of "independence" from parental constraints, may promote the creation of unhealthy behaviors, such as high alcohol and drug consumption, low regard for healthy nutrition, and restless sleep. The literature shows that entry to university is a new stage in life for students who are typically correlated with education, social interactions, and lifestyle and behavioral changes, including improvements in eating patterns (Flegal, Graubard, Williamson & Gail, 2005). In light of this context, careful consideration should be given to university students as a category that is especially vulnerable to bad dietary habits.

3. Methodology

The research methodology of the current study consists of several steps, as depicted in Figure. 1. The details of each step are explained in the subsequent sections.

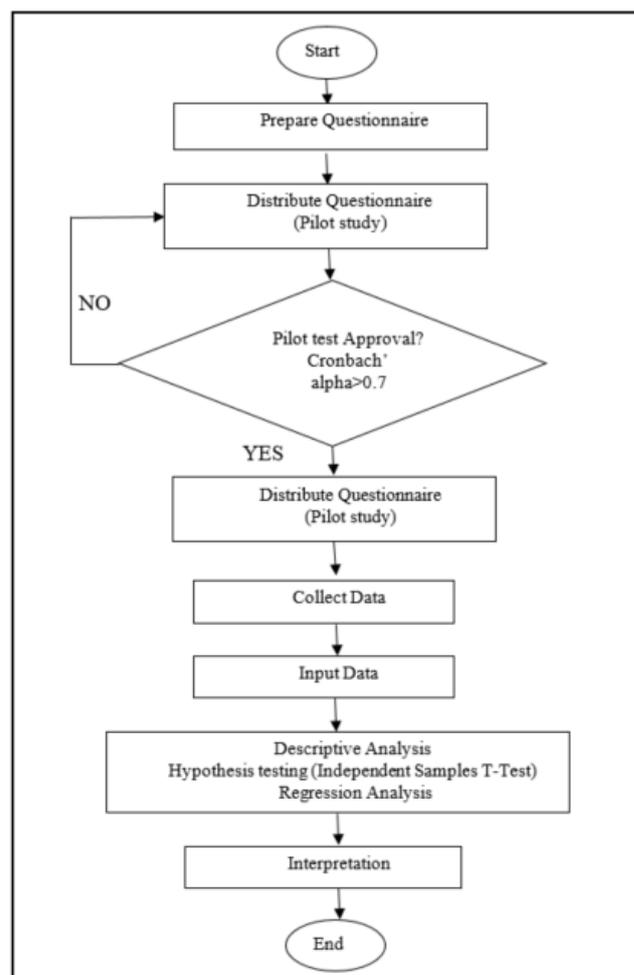


Figure 1. Flow Chart of the Research

The activities of this research started with collecting information through a systematic literature review to identify eating habits and academic performance. For data collection, questionnaires using the Google Form application was developed and disseminated among undergraduate student for feedback. Random sampling is applied to the strata group of undergraduate students to identify the sample. From the calculation, the sample of respondents from the strata of undergraduate students is 340 with 90% confidence and 10% error margins. Table 1 lists the description of each variable involved in this study.

Table 1: Variables Description

Variables	Data Type	Description
Age	Nominal	Age of the respondent
Gender	Nominal	Gender of the respondent
Ethnicity	Nominal	Race of respondent
College	Nominal	College of respondent
Hometown	Nominal	Hometown of respondent
Diet	Nominal	Whether the respondent is vegetarian or not
Family Income	Ordinal	Family income of the respondent
Current CGPA	Ordinal	Current CGPA of respondent

Reliability analysis was employed to determine the internal reliability or internal consistency of the questions used for dependent and independent variables. With variables ranging from 0.712 to 0.758 through the analysis, the study's overall Cronbach Alpha values were acceptable. The outcome demonstrates the high, respectable, and moderate reliability of the study's variables.

Table 2. Reliability Analysis

Variables	No. of Items	Cronbach's Alpha
Academic Performance	3	0.758
Dietary Habits	15	0.712

4. Results, Analysis, and Discussions

4.1. Descriptive Statistics Analysis

Descriptive analysis using the frequency and percentage values were used to analyze and summarize the demographic data collected. Table 3 showed the frequency of age of respondents from the 4 groups which are 18 – 19 years old, 20 – 21 years old, 22 – 23 years old, and 24 and above. Based on the frequency analysis, the majority of the respondents that participated in this research are between 22 – 23 years old, which contributed 72%. Followed by those between 24 and above years old and 20 – 21 years old groups which contributed 16.2% and 7.4% respectively. While there was

only a small fraction of 4.4% of respondents between the ages of 18 – 19 years old.

Table 3: Frequency of Age

Age	Frequency	Percentage (%)
18 – 19	15	4.4
20 – 21	25	7.4
22 – 23	245	72
24 and above	55	16.2
Total	340	100

The number of male and female participants in this study was shown in Table 4. There are 70 male respondents, or 20.6%, out of a total of 270 female respondents, or 79.4%. The findings indicate that there were more female respondents than male respondents. The fact that there are more female students than male students in the majority of Malaysia's public universities is what led to this situation.

Table 4: Frequency of Gender

Gender	Frequency	Percentage (%)
Female	270	79.4
Male	70	20.6
Total	340	100

The frequency of respondents' races who took part in this study is shown in Table 5. The aforementioned table revealed that 105 respondents (30.9%) were Malay. In addition, 205 respondents (60.3%) are of Chinese descent, followed by 25 respondents (7.4%) of Indian descent and 5 respondents (1.4%) of other races.

Table 5: Frequency of Ethnicity Group

Ethnicity	Frequency	Percentage (%)
Malay	105	30.9
Chinese	205	60.3
Indians	25	7.4
Others	5	1.4
Total	340	100

The College of respondents who took part in this study was displayed in Table 6. 200 respondents, or 58.8%, came from Collage of Arts and Sciences (CAS), Collage of Business(COB), and Collage of Law, Government and International Studies (COLGIS) contributing the remaining 29.4% and 11.8%, respectively.

Table 6. Frequency of College

College	Frequency	Percentage (%)
CAS	200	58.8
COB	100	29.4
COLGIS	40	11.8
Total	340	100

Table 7 displayed the respondents' places of residence (hometown) for this study. According to the table above, 140 respondents (41.18%) are from urban areas, which make up the majority of respondents. Other respondents were from rural and suburban areas, and their contributions were respectively 39.70% and 19.12%.

Table 7. Frequency of Hometown

Hometown	Frequency	Percentage (%)
Rural	65	19.12
Sub Urban	135	39.70
Urban	140	41.18
Total	340	100

Table 8 showed 315 of the respondents are non-vegetarian people 92.65% and only 25 of the respondents are vegetarian people which contributed 7.35%.

Table 8. Vegetarian Status

Vegetarian	Frequency	Percentage (%)
No	315	92.65
Yes	25	7.35
Total	340	100

Table 9 lists the respondents who took part in this study's survey's frequency of family monthly income. There are 165 respondents (48.53%) in the RM1,001–RM3,000 monthly income category, which accounts for the majority of the respondents. Following closely after are the respondents with monthly salaries between RM3,001 and RM5,000, who make up 85 respondents (25%). The next group of respondents, with 50 respondents (14.70%), are those with monthly incomes of RM5,000 and higher. 45 respondents (11.77%) are from households with less than RM1,000.

Table 9: Family Income

Family Income	Frequency	Percentage (%)
RM1,001 – RM3,000	165	48.53
RM3,001 – RM5,000	85	25.00
RM5,000 and above	50	14.70
Below RM1,000	45	11.77
Total	340	100

Table 10 showed the current CGPA of the respondents. Most of the respondents have a higher pointer which is between 3.33-3.66 and 3.67-4.00 with 33.82%. Followed by the range 3.00-3.32, 2.67-2.99 and 2.32-2.66 which contributed 20.59%, 7.35% and 2.95%. Only one of the respondents has the lowest pointer which is a range of 2.00-2.32 with 1.47%.

Table 10: Current CGPA

Current CGPA	Frequency	Percentage (%)
2.00 – 2.32	5	1.47
2.32 – 2.66	10	2.95
2.67 – 2.99	25	7.35
3.00 – 3.32	70	20.59
3.33 – 3.66	115	33.82
3.67 – 4.00	115	33.82
Total	340	100

4.2. Independent Sample t-Test

Figure 2 represents the test of normality for data distribution. The test of Normality is statistically significant as most of the results showed is p-value < 0.05 (except for Males' V5, V6, V8, and V9 are not significant). This result indicates that the data is a normal distribution.

Test of Normality (Shapiro-Wilk) ▼		W	p
V1. Has your eating habit changed since you started attending university?	Female	0.789	< .001
	Male	0.792	0.004
V2. Do you usually eat breakfast every day?	Female	0.849	< .001
	Male	0.837	0.015
V3. Do you usually eat lunch every day?	Female	0.729	< .001
	Male	0.576	< .001
V4. Do you usually eat dinner every day?	Female	0.687	< .001
	Male	0.627	< .001
V5. Do you usually eat supper?	Female	0.897	< .001
	Male	0.892	0.086
V6. Do you usually eat a cake or a dessert at meals?	Female	0.902	< .001
	Male	0.891	0.083
V7. Do you usually drink soft drinks?	Female	0.866	< .001
	Male	0.868	0.039
V8. Do you usually eat fast food as meals?	Female	0.916	0.001
	Male	0.901	0.116
V9. Do you eat fruit every day?	Female	0.873	< .001
	Male	0.903	0.127
V10. Do you eat vegetables every day?	Female	0.868	< .001
	Male	0.638	< .001
V11. Do you drink coffee every day?	Female	0.774	< .001
	Male	0.867	0.038
V12. Do you drink at least 2 - 2.5 litre of mineral water every day?	Female	0.886	< .001
	Male	0.679	< .001
V13. Do you follow the Atkins diet?	Female	0.874	< .001
	Male	0.749	0.001
V14. Do you follow the Ketogenic diet?	Female	0.838	< .001
	Male	0.554	< .001
V15. Do you follow the Paleo diet?	Female	0.870	< .001
	Male	0.668	< .001

Note: Significant results suggest a deviation from normality.

Figure 2. Test of Normality between Gender and Eating Habits

As shown in Figure 3, the Independent Samples T-Test findings suggest that there are no statistically significant differences in eating patterns between males and females.

The eating habits of both males and female have not much different from each other. Different gender does not affect much on dietary habits much.

Independent Samples T-Test				
	t	df	p	Cohen's d
V1. Has your eating habit changed since you started attending university?	-0.128	66	0.898	-0.038
V2. Do you usually eat breakfast every day?	0.060	66	0.953	0.018
V3. Do you usually eat lunch every day?	-1.725	66	0.089*	-0.517
V4. Do you usually eat dinner every day?	-0.866	66	0.390	-0.260
V5. Do you usually eat supper?	-1.761	66	0.083	-0.528
V6. Do you usually eat a cake or a dessert at meals?	-1.416	66	0.162	-0.425
V7. Do you usually drink soft drinks?	-0.960	66	0.341*	-0.288
V8. Do you usually eat fast food as meals?	-0.055	66	0.956	-0.017
V9. Do you eat fruit every day?	-0.913	66	0.365	-0.274
V10. Do you eat vegetables every day?	-2.030	66	0.046	-0.609
V11. Do you drink coffee every day?	-3.078	66	0.003	-0.923
V12. Do you drink at least 2 - 2.5 litre of mineral water every day?	-2.852	66	0.006	-0.855
V13. Do you follow the Atkins diet?	0.174	66	0.862*	0.052
V14. Do you follow the Ketogenic diet?	1.171	66	0.246	0.351
V15. Do you follow the Paleo diet?	1.211	66	0.230	0.363

Note. Student's t-test.
* Levene's test is significant ($p < .05$), suggesting a violation of the equal variance assumption

Figure 3. Independent Samples T-Test between Gender and Eating Habits

Figure 4 represents the Test of Normality between Gender and Academic Performance. The test of normality is statistically significant as all the result p-value < 0.05 for

both males and females. This result indicates that the data is a normal distribution.

Test of Normality (Shapiro-Wilk) ▼			
		W	p
V1. I am able to achieve the academic goal that I have set.	Female	0.872	< .001
	Male	0.778	0.003
V2. I am good in most of my subjects.	Female	0.874	< .001
	Male	0.837	0.015
V3. I have never ever failed an examination since I started attending university.	Female	0.661	< .001
	Male	0.759	0.002

Note. Significant results suggest a deviation from normality.

Figure 4. Test of Normality between Gender and Academic Performance

The results of the Independent Samples T-Test between Gender and Academic Performance shown in Figure 5 indicate that the differences in academic performance are

not significantly different since the p-value is greater than 0.05. Thus, different gender does not affect much academic performance.

Independent Samples T-Test				
	t	df	p	Cohen's d
V1. I am able to achieve the academic goal that I have set.	-1.185	66	0.240	-0.355
V2. I am good in most of my subjects.	-1.186	66	0.240*	-0.356
V3. I have never ever failed an examination since I started attending university.	1.038	66	0.303	0.311

Note. Student's t-test.
* Levene's test is significant ($p < .05$), suggesting a violation of the equal variance assumption

Figure 5. Independent Samples T-Test between Gender and Academic Performance

4.3. Multiple Regression

As shown in Figure 3, the Independent Samples T-Test findings suggest that there are no statistically significant differences in eating patterns between males and females. The eating habits of both males and female have not much different from each other. Different gender does not affect much on dietary habits much. Figure 2 represents the test of normality for data distribution. The test of Normality is

statistically significant as most of the results showed is p-value < 0.05 (except for Males' V5, V6, V8, and V9 are not significant). This result indicates that the data is a normal distribution., with six different parameters as shown in Figure 6, have been developed and compared to find the significant model. Figure 6 shows that Model 6 is significant compared to other models. Model 6 with two variables (Hometown and Income) of this model are linearly related and they do help explain the variation in CGPA. In conclusion, the most significant variable for the prediction of

the CGPA of an undergraduate student is the hometown of the student and the family income of the student. The multiple regression equation is:

$$CGPA=2.541-0.504(Hometown)+0.314(Income) \quad (1)$$

The CGPA of rural students will be higher than students from urban and suburban. The higher the family income of the student, the higher the CGPA of the student. Besides that, after the test assumption, the results are still constant.

Coefficients											
Model	Unstandardized	Standard Error	Standardized	t	p	90% CI		Collinearity Statistics			
						Lower	Upper	Tolerance	VIF		
1	(Intercept)	2.560	1.193		2.146	0.036	0.567	4.553			
	Age	-0.102	0.253	-0.053	-0.403	0.689	-0.524	0.320	0.844	1.184	
	Gender	-0.337	0.393	-0.110	-0.858	0.394	-0.994	0.320	0.877	1.140	
	Ethnicity	0.190	0.257	0.097	0.739	0.463	-0.240	0.620	0.839	1.191	
	College	0.118	0.225	0.066	0.525	0.601	-0.257	0.493	0.907	1.103	
	Hometown	-0.453	0.219	-0.270	-2.065	0.043	-0.819	-0.086	0.844	1.184	
	Vegetarian	0.273	0.610	0.057	0.447	0.656	-0.746	1.291	0.876	1.142	
2	(Intercept)	2.239	0.883		2.537	0.014	0.765	3.713			
	Gender	-0.337	0.390	-0.110	-0.864	0.391	-0.989	0.315	0.877	1.140	
	Ethnicity	0.218	0.246	0.111	0.887	0.378	-0.193	0.629	0.906	1.104	
	College	0.109	0.222	0.061	0.492	0.625	-0.262	0.480	0.915	1.093	
	Hometown	-0.459	0.217	-0.274	-2.115	0.039	-0.822	-0.097	0.849	1.178	
	Vegetarian	0.330	0.589	0.070	0.561	0.577	-0.653	1.313	0.927	1.079	
	Income	0.268	0.189	0.190	1.417	0.162	-0.048	0.584	0.790	1.265	
3	(Intercept)	2.334	0.856		2.728	0.008	0.905	3.763			
	Gender	-0.335	0.388	-0.109	-0.863	0.391	-0.983	0.313	0.878	1.139	
	Ethnicity	0.249	0.237	0.127	1.050	0.298	-0.147	0.644	0.966	1.035	
	Hometown	-0.457	0.216	-0.273	-2.119	0.038	-0.818	-0.097	0.849	1.177	
	Vegetarian	0.295	0.581	0.062	0.508	0.613	-0.675	1.265	0.940	1.064	
	Income	0.274	0.188	0.194	1.459	0.150	-0.039	0.587	0.793	1.261	
	4	(Intercept)	2.445	0.823		2.971	0.004	1.071	3.819		
Gender		-0.369	0.380	-0.120	-0.970	0.336	-1.003	0.266	0.904	1.106	
Ethnicity		0.244	0.235	0.125	1.039	0.303	-0.148	0.637	0.967	1.034	
Hometown		-0.469	0.213	-0.279	-2.195	0.032	-0.825	-0.112	0.858	1.165	
Vegetarian		0.261	0.185	0.185	1.413	0.163	-0.047	0.570	0.807	1.239	
5		(Intercept)	2.007	0.687		2.919	0.005	0.859	3.154		
		Ethnicity	0.282	0.232	0.144	1.218	0.228	-0.105	0.669	0.995	1.005
	Hometown	-0.486	0.213	-0.289	-2.284	0.026	-0.841	-0.131	0.864	1.157	
	Income	0.309	0.178	0.219	1.733	0.088	0.011	0.606	0.868	1.152	
	6	(Intercept)	2.541	0.531		4.781	< .001	1.654	3.428		
		Hometown	-0.504	0.213	-0.300	-2.368	0.021	-0.859	-0.149	0.868	1.151
		Income	0.314	0.179	0.223	1.757	0.084	0.016	0.613	0.868	1.151

Figure 6. Coefficient of Multiple Regression Model

5. Conclusion

Based on the reliability test, it can be concluded that every variable in this study is reliable and consistent because its reliability score exceeds 0.70. Thus, the factors used in this investigation were trustworthy. As a result of data gathered from 240 students at one of Malaysia's public universities, this study advances our understanding of the relationship between students' dietary practices and academic achievement as indicated by their cumulative grade point averages (CGPA).

The result shows that eating habits do not affect much academic performance while the demographic family income and hometown do affect academic performance. There is a relationship that different situation of family income and hometown will affect their eating habits and because of this will also influence their academic performance. For example, one person who has a low family income and from a rural area whose family couldn't afford the student's expenses will cause students to lack food nutrition since they don't have enough money to eat healthily. Lack of food nutrition, this will affect student's academic performance.

Another analysis is that we use the independent samples t-test to test the relationship between gender and eating habits, and the relationship between gender and academic performance. The result shows that different gender does not

affect many eating habits and academic performance. The summary of the overall result is shown in Table 11.

Table 11: Summary of Results

Hypothesis	Independent Samples T-test	
	Results (sig)	Remarks
1. Eating habits of males and females are different.	> 0.05	Not significant
2. Differences in academic performance between males and females.	> 0.05	Not significant
Hypothesis	Multiple Linear Regression	
Academic performance is influenced by demographic.	Results (sig)	Remarks
	< 0.1 Family Income and Hometown	Significant

It's possible that survey respondents didn't provide accurate information in their answers. Some of them mentioned a CGPA they aspired to achieve by the end of the semester or expressed shame about their poor CGPA. Although this aspect might have affected the findings of a study with smaller sample size, the study population of 240 participants reduced the potential impact that inaccurate information might have on our study findings.

The future work for this study is to extend the research model in this study to have a better understanding of the relationship between eating habits and academic performance. We can collect more responses from the respondents since our study only has 240 respondents. The more respondents the result might more accurate. Besides that, other factors that may play role in eating habits and academic performance should include in this study.

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