

# **Dietary Patterns of Undergraduate Students with Weight Control Practice in Ekiti State University, Ado Ekiti, Nigeria: Implication on Coronavirus Pandemic Susceptibility**

**Dr. (Mrs.) Emily Oluremi Adeloye<sup>1</sup> and Hannah Omote Macaulay<sup>2</sup>**

<sup>1</sup>Department of Human Kinetics and Health Education, Faculty of Education, Ekiti State University, Ado Ekiti, Nigeria  
Email: [remiadeloye@yahoo.com](mailto:remiadeloye@yahoo.com)

<sup>2</sup>Department of Human Kinetics and Health Education, Faculty of Education, Ekiti State University, Ado Ekiti, Nigeria  
Email: [macaulayhannah58@gmail.com](mailto:macaulayhannah58@gmail.com)

**Corresponding Author:**  
**Dr. Mrs. Emily Oluremi Adeloye**

**Published: 31 March 2021**  
**Copyright © Adeloye et al.**

## Abstract

This study examined the dietary patterns of undergraduate students with weight control practice in Ekiti State University, Ado Ekiti: implication on coronavirus pandemic susceptibility. Balanced nutrients intake will enhance immunity, wellness and good physique. A sample size of 190 participants were randomly selected. The null hypothesis stipulated was tested at  $p=0.05$ . Frequency counts, percentages and Chi-Square were employed for data analysis. Most respondents were females (58.9%); age range of 20-24 years (46%). Eaters of available food obtained the highest mean of  $2.71 \pm 1.126$ . The dietary pattern results of  $X^2(1, N=190) = 95.34, p < .001$  is greater than  $X^2_{tab} = 3.84$  and weight control of  $X^2(1, N=190) = 39.92, p < .001$  is greater than  $X^2_{tab} = 3.84$  is significant and hypothesis is rejected. Reduced meal portion containing high fiber, low fat, adequate vitamins and minerals with aerobic exercises, will boost immunity, weight control and prevent coronavirus susceptibility. Avoid meal skipping.

**Key Words:** Weight control practice, Dietary pattern, Undergraduate students, immune system, Coronavirus pandemic, Susceptibility

## 1. Introduction

Adequate daily nutritional requirement is indispensable for the body to function properly, prevent infections and maintain one's health to the optimal level. Most nutritional constituents such as protein, carbohydrates, fats, oil, water, vitamins and most minerals are gotten through food sources. Each nutrient plays an important role in establishing health, metabolism, and proper functioning of the body (Brown et al., 2014). Epidemic of coronavirus 19 (COVID-19) susceptibility has been associated with low body immunity, while female offspring are weight and physique conscious. It has been reported in over 200 countries in the world. Dietary patterns of any given population should not be underestimated considering the ravaging (COVID-19) as a global epidemic, so also is the body weight consciousness of university female students.

Dietary pattern is defined as the qualities, proportions, variety or combinations of different foods, drinks and nutrients in diets, and the frequency with which they are habitually consumed. The essence of dietary patterns is that people do not eat food in isolation, but a combination of food that contains multiple nutrients. Identification of a dietary pattern may reveal a stronger association with a particular indicator of health and how patterns of consumption influence health outcomes (Dietary Guidelines Advisory Committee (DGAC), 2020). The nutritional quality of dietary pattern can be determined by assessing the nutrient contents of its constituent foods and drinks and comparing these characteristics to age- and sex-specific nutrient requirements and standard for nutrient adequacy for healthy body. Managing body weight is key to an individual's health and longevity. Weight control is a term used to express managing and maintaining healthy body weight. Being overweight means that you have excess body fat and it is considered obesity (Cleveland Clinic, 2021).

According to Bhurtun & Jeewon (2013), body weight control practices are precipitated by body weight perception of adolescents. Females are more inclined to perceive themselves as overweight and engage in undue weight lose practices. Body weight control practices include

exercise; reducing fat intake; reducing number of snacks eaten between meals; increasing fruits and vegetable consumption; consuming balanced diet; reducing the amount of food eaten at meal time; skipping meals; consumption of high fiber foods and fasting. However, unhealthy weight control practices have been reported; these include, but are not limited to meal-skipping, fasting, smoking for appetite reduction, compensatory exercise, as well as consuming stimulants such as caffeine, ephedrine, prescription drugs, energy drinks. About 12% of adolescent women and 8% of men engage in extreme weight control behaviors include taking diet pills, laxatives, diuretics, or purging (Ferraro et al., 2015).

Bogoch et al., (2020), describe COVID-19 as a disease caused by a novel coronavirus. It is now called severe respiratory syndrome coronavirus (SARS-CoV-2; formerly called 2019-nCoV), which was first identified amidst an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China. It is an infectious virus that spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. COVID-19 outbreak became a major global human threat and has been declared a global pandemic by World Health Organization (WHO) on March 11, 2020 (Cennimo, 2021).

Having a healthy diet, is a key component of a healthy lifestyle and plays a vital role in supporting a well-functioning and effective immune system, to help protect against susceptibility to acute viruses, such as coronavirus (Zhu et al., 2020; Das & Evans, 2014). Nutritional status of individuals has been considered as an indicator of resilience against destabilization. The ecology of adversity and resilience demonstrates that substantial stressors, such as inadequate nutrition, can lead to long-lasting effects that are linked to health.

Trompette et al., (2018) reported that, one of the ways to resist covid-19 infection is to follow a varied, healthy, and balanced diet with a suitable nutrient intake: low in saturated fats, simple sugars, salt, and high in monounsaturated fatty acids, complex carbohydrates, and dietary fiber. Dietary fiber and short-chain fatty acids protect against severe influenza infection by reducing tissue damage and increase antiviral immunity. Segurola et al., (2016) recommended foods with high content of vitamins A, B, C, D and folic acid, and in the case of minerals, iron, zinc, selenium, as well as in certain herbs, spices, and mushrooms. Also, fruits like mango, pineapple, cherries, strawberries, melon, oranges, as well as vegetables, nuts are some of the examples of foods that stimulate the immune system and protect the body from the novel coronavirus and other respiratory viruses.

According to Brown et al., (2014), transition into university causes significant changes in dietary options. Students are at risk for making poor dietary choices which can lead to significant health problems. Moreover, several factors also come into play as they proceed into university, many of the students have to leave the comfort of their parents and have to adapt to food availability, acknowledge new financial responsibility and the like. Hence meeting adequate nutritional requirements which is important in achieving one's good health remains a challenge (Das & Evans, 2014). They stated further that some micronutrients and dietary components such as the amino acid, arginine, vitamin A and zinc regulates cell division. They are also essential for a successful proliferative response within the immune system and maintenance of an effective immune system throughout the life course or in reducing chronic inflammation.

Lee & Han (2018) opined that, a single nutrient can also exert multiple diverse immunological effects, such as in the case of vitamin E, where it has a role as both antioxidant, inhibitor of protein kinase C activity, and potentially interacting with enzymes and transport proteins. However, Kim et al., (2019) reported that, the timing of foods intake will impact upon immune development in infancy; before they enter into the university as these early years of life are critical period in the development of the immune system, particularly for T cell function, with the thymus maturing and reaching its maximum size relative to body weight in infancy.

Furthermore, to achieve excellent result, combination of good diet and exercise have clear health benefits for healthy individuals, people with weight control practice and for patients with various diseases. Such forms of exercise may include, lifting and carrying groceries, alternating leg lunges, walking, dancing, stair climbing, stand-to-sit and sit-to-stand using a chair and from the floor, chair squats, and sit-ups and pushups (Piercy & Troiano, 2018). Zhu (2020) also reported that at least 30 minutes of moderate physical activity every day; and/or at least 20 minutes of vigorous physical activity every other day is effective. Maintaining regular physical activities and routinely exercising in a safe home environment and good nutrition have been considered an important strategy for healthy living, and susceptibility resistance during coronavirus pandemic crisis. It has been observed that many undergraduate students who engage in weight control practice are ignorant of the basic procedure to achieve health benefits despite their weight physique consciousness. It is against this background that this study examined the dietary patterns of undergraduate students with weight control practice in Ekiti State University, Ado Ekiti. Nigeria: Implication on COVID-19 susceptibility.

## **2. Research Method**

This study is a descriptive research design of the survey type. All university undergraduate students in Ekiti State, Ado Ekiti. Nigeria forms the population for this study. The sample size consists one hundred and ninety (190) undergraduate students (male and female) who were randomly selected from the nine (9) faculties purposively selected in Ekiti State University, Ado-Ekiti. Nigeria. The instrument employed for data collection was a self-designed questionnaire. It is the Likert scale type of four ratings: Never, Sometimes, Often and Always. The items are structured to elicit information regarding the demographic characteristics, dietary patterns and weight control practice of participants. The validity of the instruments was ascertained through the universe of the literature. To ensure the reliability of the instrument, the test-retest method was employed and data was subjected to the Pearson Product Moment Correlation analysis (PPMC) which yielded a correlation coefficient of  $r = 0.75$ . The instrument was administered with the help of four trained research assistants who are familiar with the university environment within a period of three weeks. The questionnaires were retrieved immediately from the respondents after completion. There was no subject mortality. Two research questions were stated while one research hypothesis postulated for the purpose of this study, was tested at 0.05 alpha level.

## 2.1 Research Question

The following research questions were stated:

1. What would be the dietary patterns of undergraduate students with weight control practice in Ekiti State University, Ado Ekiti, Nigeria: implication on covid-19 susceptibility.
2. What would be the weight control practice of undergraduate students in Ekiti State University, Ado Ekiti, Nigeria: Implication on COVID-19 susceptibility.

## 2.2 Research Hypothesis (Ho)

There will be no significant relationship between the dietary patterns of undergraduate students and their weight control practice in Ekiti state University, Ado Ekiti, Nigeria: Implication on COVID-19 susceptibility.

## 3. 1 Findings and Discussion

Table 1 shows that most respondents were females (58.9%) and within the age range of 20-24 years (46%). Table 2 shows that most respondents never take off the skin of chicken before eating (42.7%); often eat large portion of red meat (41.1%); often remove visible fat in meat before eating (31.1%); often drink of high fat milk (38.9%); sometimes eat low-fat frozen desserts like ice-cream, yoghurt (44.2%); sometimes spread reduced fat or low-fat butter on bread often (36.8%); often use any butter I see (32.1%); often eat little of fruits (33.7%); sometimes eat vegetables like carrot and cucumber as their snack (37.4%); never prefer food made from vegetable (35.3%); always do not like vegetable soup (47.9%). Table 3 shows that most of the respondents never skip their breakfast so as to control their body weight (36.8%); never diet to lose weight (33.7%); sometimes eat food that will not make them gain weight (32.1%); never eat only small portion of food to reduce weight (35.2%); often eat whatever is available (32.6%) and always do regular exercise to control weight (31.6%). Table 4 shows that students' eating habit of whatever is available obtained the highest mean of  $2.7105 \pm 1.12633$ , while that of eating only small portion of food had the lowest mean of  $2.0947 \pm .99813$  respectively. Findings revealed that there is a significant relationship between dietary pattern and weight control practice of students in Ekiti State University, Ado-Ekiti. The Chi-Square analysis result indicated that, the dietary pattern of  $X^2 (1, N= 190) = 95.34$ ,  $p < .001$  is greater than  $X^2_{tab} = 3.84$  and weight control of  $X^2 (1, N= 190) = 39.92$ ,  $p < .001$  is greater than  $X^2_{tab} = 3.84$  at alpha level of 0 .05 is significant. Thus, the null hypothesis which stipulated that, there will be no significant relationship between dietary patterns of and weight control practice of undergraduate students in Ekiti State University, Ado-Ekiti, Nigeria is hereby rejected.

## 3:2 Discussion

Findings from this study revealed that most respondents were females (58.9%). This is in line with Leblanc et al. (2015) report that women are more aware of diet, the implications of health–diet relationship, and embrace suggested dietary changes to a greater degree than men. Women also show higher dietary restraint and disinhibition levels than men. This assertion was supported by Skoyen et al., (2018) that gender-specific attitudes and behaviors towards

eating are often reflected by the food intake patterns. Compared to men, women generally tend to gravitate towards healthier food choices and are more concerned with maintaining healthy eating behaviors to stay in good physical shape. The findings which revealed that most participants (42.7%) never not take off the skin of chicken before eating, contradicts Sacks (2009)'s view that, not eating large portions of red meat, removing visible fat in meat before eating are the weight control practice of students. Respondents who never skip breakfast to control their weight recorded (36.8%). This habit is common among students with weight control practice as most of them find it difficult to cook breakfast before going for lectures and probably use this opportunity for means of losing weight. Ferraro et al., (2015) are of the opinion that breakfast skipping is a risk factor for unhealthy metabolic disease and that skipping of breakfast may lead to being overweight instead weight loss. Breakfast skipping should be discouraged among undergraduate students as well as in other populations. Only 36.6% of respondents always engage in regular exercise. Zhu (2020) reported that at least 30 minutes of moderate physical activity every day; and/or at least 20 minutes of vigorous physical activity every other day should be maintained routinely. In this study, the relationship between dietary pattern and respondents's weight control practice is significant. Poor diet quality and wrong intake pattern part of the prominent risk factors of overweight. This agrees with Harris et al., (2010) who reported that students who do not have enough quality foods to eat and those who focus majorly on fast's food suffer weight problem than students who eat the proper amount of food, thus suggesting the inevitability of balanced dietary pattern.

#### **4. Conclusion**

This study examined the dietary patterns of undergraduate students with weight control practice in Ekiti State university, Ado Ekiti. Nigeria: Implication on coronavirus pandemic susceptibility. The significant relationship result between the dietary patterns and weight control practice of respondents, implies that dietary pattern is a strong determinant factor in body weight control. This may impact on COVID-19 pandemic susceptibility in case of low immunity. Balanced diet with regular 30 minutes aerobic exercises (with an exercise class or video), jogging, walking, swimming, bicycling and rowing; is recommended for body weight control and COVID-19 pandemic susceptibility prevention. Teenagers and adolescents should consume less of fatty and sugary foods and increase their intake of high fiber foods, legumes, nuts, leafy and non- leafy vegetables. Fruits that are naturally endowed for good health and weight control with no side effect, to be taken before each meal is recommended. Meal skipping should be discouraged. Dietary patterns, weight control practices and their health implications should be included in the basic school health curriculum to impact on university students' life, later on campus.

**Table 1.** Distribution of respondents by demographic characteristics

Item	Variables	F	%
Sex	Male	78	41.1
	Female	112	58.9
	<b>Total</b>	<b>190</b>	<b>100.00</b>
Age	15 - 19 years	33	18.00
	20 - 24 years	89	46.00
	25 - 29 years	45	24.00
	30 - 34 years	21	11.00
	Above 34 years	2	1.00
	<b>Total</b>	<b>190</b>	<b>100.00</b>

**Table 2.** Descriptive analysis of respondents' dietary pattern

s/n	Item	Never (%)	Sometimes (%)	Often (%)	Always (%)
1	take off skin of chicken before eating	81 (42.7)	36 (18.9)	19 (10.0)	54 (28.4)
2	eat large portion of red meat	22 (11.6)	48 (25.2)	78 (41.1)	42 (22.1)
3	do not remove visible fat before eating	29 (15.3)	46 (24.1)	59 (31.1)	56 (29.5)
4	drink high fat milk	27 (14.3)	55 (28.9)	74 (38.9)	34 (17.9)
5	eat low fat frozen dessert	13 (6.8)	84 (44.2)	61 (32.2)	32 (16.8)
7	spread low fat butter on bread	24 (13.6)	70 (36.8)	60 (31.6)	36 (18.9)
8	use any butter i see	45 (23.7)	41 (21.6)	61 (32.1)	43 (22.6)
9	eat little of fruit	50 (26.4)	51 (26.8)	64 (33.7)	25 (13.1)
10	eat vegetables as snacks	16 (8.5)	66 (34.7)	55 (28.9)	53 (27.9)
11	prefer vegetable foods	11 (5.8)	55 (28.9)	57 (30.0)	67 (35.3)
12	do not like eating vegetable soup	35 (18.4)	23 (12.1)	41 (21.6)	91 (47.9)

**Table 3: Descriptive analysis of respondents' weight control practice**

Item	Never (%)	Sometimes (%)	Often (%)	Always (%)
Skip breakfast	70(36.8)	52(27.4)	28(14.7)	40(12.1)
Diet to lose weight	64(33.7)	47(24.7)	42(22.1)	37(19.5)
Eat food that will not make me lose weight	47(24.7)	61(32.1)	47(24.7)	35(18.4)
Eat only small portion of food	67(35.2)	57(30.1)	47(24.7)	19(10.0)
Eat whatever is available	34(17.9)	49(25.8)	45(23.7)	62(32.6)
Do regular exercise	39(20.5)	44(23.2)	47(24.7)	60(31.6)

**Table 4. Descriptive statistical analysis of respondents' weight control practice**

	N	Minimum	Maximum	Mean	Std. Deviation
Skip breakfast	190	1.00	4.00	2.2000	1.15103
Diet to lose weight	190	1.00	4.00	2.2737	1.12633
Eat food that will not make me lose weight	190	1.00	4.00	2.3684	1.04959
Eat only small portion of food	190	1.00	4.00	2.0947	.99813
Eat whatever is available	190	1.00	4.00	2.7105	1.10573
Do regular exercise for weight control	190	1.00	4.00	2.6737	1.12633
Valid N (listwise)	<b>190</b>				

**Table 5: Chi-Square analysis of respondents' dietary pattern and weight control practice**

Items	Chi-Square	Df	X <sup>2</sup> tab	p- value/ asympt. Sig.	Decision
Dietary pattern	95.34 <sup>a</sup>	1	3.84	.000	Significant
Weight control	39.92 <sup>a</sup>	1		.000	

## References

- [1] Bogoch, I.I., Watts, A., Thomas-Bachli, A., Huber, C., Kraemer, M., U., & Khan, K. (2020). Pneumonia of unknown etiology in Wuhan, China: potential for international spread via commercial air travel. *Journal of Travel Medicine*, 27(2), 272:1-3. doi.org/10.1093/jtm/taaa008
- [2] Bhurtun, D. D., & Jeewon, R. (2013). Body weight perception and weight control practices among teenagers. *ISRN Nutrition*. <http://dx.doi.org/10.5402/2013/395125>
- [3] Brown, O. N., O'Connor, L.E., & Savaiano, D. (2014). Mobile MyPlate: A pilot study using text messaging to provide nutrition education and promote better dietary choices in college students. *Journal of American College Health*, 62(5),320-27. doi.org/10.1080/07448481.2014.899233
- [4] Cennimo, D.J. (2021). COVID-19 vaccines. Medscape drug and diseases. (COVID-19) Q and answer. Retrieved from <https://www.emedicine.medscape.com/answers/2500114-19740/what-is-covid-19-?11>
- [5] Cleveland Clinic. (2021). *Obesity and weight control: Health risks, weight loss and bariatric surgery*. Retrieved from <https://www.my.clevelandclinic.org>diseases>
- [6] Das, B.M., & Evans, E. (2014). Understanding weight management perceptions in first-year college students using the health belief model. *Journal of American College Health*. 62(7), 488-97. doi.org.10.1080/07448481.2014.923429
- [7] Dietary Guidelines Advisory Committee. (2021, March 6). *Dietary guidelines for Americans. Scientific report of the 2020 Dietary Guideline Advisory Committee (DGAC)*. Department of Agriculture, Agriculture Research Service, Washington, DC. Retrieved from <https://www.dietaryguidelines.gov>
- [8] Ferraro, Z. M., Patterson, S., & Chaput, J-P. (2015). Unhealthy weight control practices: culprits and clinical recommendations. *Clinical Medicine Insights: Endocrinology and diabetes*. Retrieved from <https://www.ncbi.nlm.nih.gov>
- [9] Harris, J.L., Schwartz, M.B., & Brownwell, K.D. (2010). Fast food facts: Evaluating fast food nutrition and marketing to youth. Retrieved from <https://www.fastfoodmarketing.org/>
- [10] Kim, H., Sitarik, A., R., Woodcroft, K., Johnson C. C., & Zoratti, E. (2019). Birth Mode, Breastfeeding, pet exposure, and antibiotic use: associations with the gut microbiome and sensitization in children. *Current Allergy and Asthma Reports*.19, 22. doi.org/10.1007/s11882-019-0851-9

- [11] Leblanc, V., Begin, C., Corneau, L., Dodin, S., & Lemieux, S. (2015). Gender differences in dietary intakes: what is the contribution of motivational variables? *Journal of Human Nutrition Diet.* 28(1),37-46. doi.org/10.1111/jhn.12213
- [12] Lee, G.Y., & Han, S. N. (2018). The Role of Vitamin E in Immunity. *Nutrients*. National library of Medicine. National Center for biotechnology information.1; 10(11), doi.org/10.3390/nu10111614
- [13] Piercy, K.L., & Troiano, R.P. (2018). *Physical activity guidelines for Americans. Cardiovascular benefits and recommendations*. US Department of Health and Human Services 2nd ed. Retrieved from <https://www.ahajournals.org>
- [14] Segurola, G.H. (2016).“Nutrientes e inmunidad” Nutrients and immunity. *Nutrición Clínica en Medicina*.ss10(1),119.Retrieved from <http://www.aulamedica.es/nutricionclinicamedicina/pdf/5034.pdf>
- [15] Skoyen, J. A., Rentscher, K. and Butler, E. A. (2018). Relationship quality and couples' unhealthy behaviors predict body mass index in women. *Journal of Social and Personal Relationships* 35(2), 1–22. doi.org/10.1177/0265407516680909
- [16] Trompette, A., Gollwitzer, E.S., Pattaroni, C., Lopez-Mejia, I.C, Riva, E., Pernot, J., Ubags, N., Fajas, L., Nicod, L.P., & Marsland, B.J. (2018). Dietary fiber confers protection against flu by shaping Ly6c<sup>+</sup> patrolling monocyte hematopoiesis and CD8<sup>+</sup> T cell metabolism. *Journal of Immunity*. 15; 48(5), 992-1005.e8. doi.10.1016/J.immuni.2018.04.022
- [17] Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., & Song, J. (2020). A novel coronavirus from patients with pneumonia in China, 2019. *New England Journal of Medicine*. 382,727-733. doi.10.1056/nejmoa2001017
- [18] Zhu, W. (2019). If you are physically fit, you will live a longer and healthier life: An interview with Blair, S.N. *Journal of Sport Health Science*. 8(6),524–526. doi.10.1016/j.jshs.2019.09006