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Food Habits of Primary School students and Their Association with Body Mass Index.

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***Abstract*—food habits are a representation of the cumulative impacts of the foods that people eat, and they effectively explain how nutrition may influence overall results of wellness measurements. The overall purpose of the research is really to determine whether food habits and body composition are related amongst Al-Hilla city's students in primary schools. Materials and methods: Cross-sectional descriptive study was done in Babylon Governorate (Al-Hilla District) in Iraq from 1st ofNovember 2021 to 1stof March 2022 on 384studentswho had been selected randomly and ranged in age from 6 to 13 years. The Body Mass Index (BMI)was calculated for students.Results: According to the results of the current study, 61% of individuals had normal BMI, 17% were obese, 16% were overweight, and 6% were underweight.BMI and gender have no statistically significant association.According to the survey, the majority of individuals (87%) possess neutral food patterns, while the minority (3%) has bad eating habits.Except for consuming snacks, the study have shownno significant connection between BMI and food patterns (P. value <0.001*). Conclusion:Most primary school students have neutral eating habits. Consumption of snacks and the educational level of the mother have been discovered to be significantly correlated with body weight.**

***Keywords*— Key words: food habits, body mass index, students.**

I. INTRODUCTION

Nutrition is a fundamental human necessity and key for wellbeing. Dietary nutrients affect strength and abilities, standard body function, physical exercise, and wellness. Our food must include all required nutrients. The essentials nutrients vary with age, gender, physiology, and exercise. Higher or lower dietary consumption under or excess nutrition may cause sickness (Abdulhussein et al., 2021).
The body mass index (BMI) is a weight-for-height measurement;it is calculated by multiplying the height in meters by the square of the weight in kilos. (BMI) is an easy, low-cost, and harmless proxy for bodyweight(Weir & Jan, 2019).

New worldwide shifts have resulted in significant nutritional shifts across communities, like preference for beverages and ready meals that are heavy in fat but poor in vitamins, minerals, and many other macronutrients, This is in conjunction with several variations in living standards like physically inactivity leading to an energy imbalance, and increasing number of overweight people worldwide (Liberali et al., 2020)

II. .MATERIAL AND METHOD

A cross-sectional descriptive study was conducted during period from 1stof November 2021 to 1st of March 2022 on 384male and female students in Al-Hilla who were between the ages of 6 and 13 years and were chosen randomly . Anthropometric measurement (BMI) was used to assess the nutritional status of children according to specific charts (CDC growth charts) for age and gender percentile(Kuczmarski, 2000).

A. statistical analysis

After getting permission from the parents of the kids, the researcher employed a set of questions and a direct interview with them as part of an official evaluation technique.The input was displayed using straightforward frequencies, percentages, means, variance, and ranging measurements (minimum and maximum values). Whenever the P-value was 0.05 or below, statistical significance was taken into consideration.

III.RESULTS:

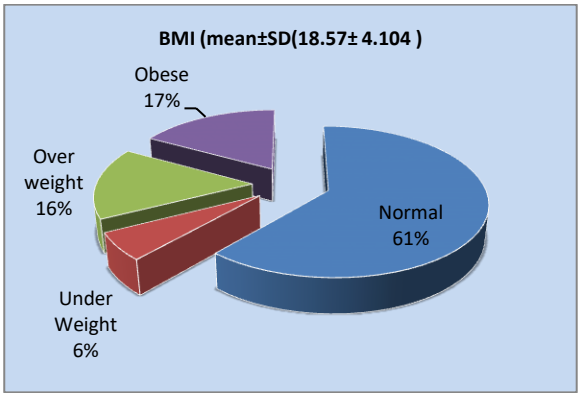

FIGURE (1):SHOWS THE DISTRIBUTION OF STUDIED SAMPLE ACCORDING TO BODY MASS INDEX

Figure (1)displays the overall results of the current study, which has revealed that (17%) of the respondents were obese and (61%) of the participants had normal BMI. Eventually, (6%) of them were underweight, whereas (16%) were overweight.

Table (1) reveals that the Mean± SD for body mass index was 18.49±3.91 for males, and 18.66±4.31 for females, which rest within the normal range of body mass index.BMI and gender don't have a statistically significant link (P. value >0.05).

TABLE (1):DISTRIBUTION OF MEAN± SD FOR BMI AMONG THE STUDIED SAMPLE ACCORDING TO GENDER

Gender	Male	Female	Total	t. test (P. value)
	Mean± SD	Mean± SD	Mean± SD	
Body mass index	18.49± 3.91	18.66±4. 31	18.57± 4.10	-.403- (0.687)

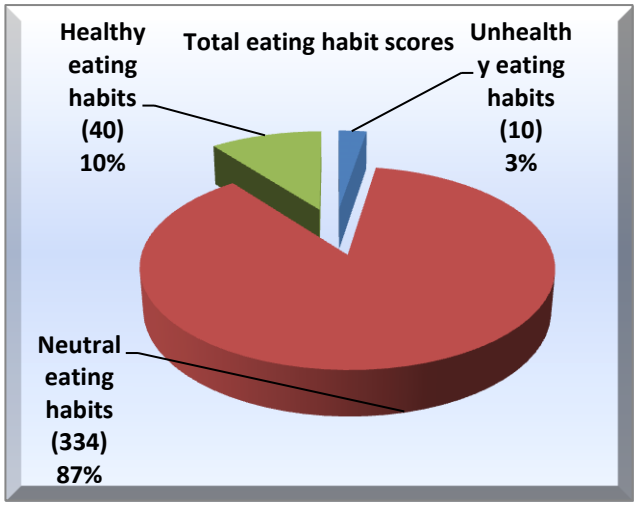

FIGURE (2):SHOWS THE DISTRIBUTION OF STUDIED SAMPLE BYUNVERSAL HABITS SCORE

Figure (2) shows indicates overall majority of individuals (87%) had neuter eating habits, while just (3%) have unhealthful ones.

Table (2)depicts the relationship between the body mass index and the demographic features of the analyzed samples. With the exception of the mother's degree of education, the study finds no statistically significant correlation between demographic factors and body mass index.

TABLE(2) DEMONSTRATE THE ASSOCIATION BETWEEN DEMOGRAPHIC CHARACTERISTICS OF STUDIED SAMPLES AND BODY MASS INDEX

Association between demographic data and BMI			BMI Categories				P. value
			Normal	Under Weight	Over weight	Obese	
Age groups	6-7 years	N0	67	6	8	10	0.063
		%	73.6%	6.6%	8.8%	11.0%	
	8-9 years	N0	73	10	18	25	
		%	58%	7.9%	14.3%	19.8%	
	10-11 year	N0	89	5	29	26	
		%	59.7%	3.4%	19.5%	17.4%	
	12-13 year	N0	7	2	5	4	
		%	38.9%	11.1%	27.8%	22.2%	
sex	Male	N0	124	13	30	37	0.861
		%	60.8%	6.4%	14.7%	18.1%	
	Female	N0	112	10	30	28	
		%	62.2%	5.6%	16.7%	15.5%	
Socio economic status	Low	N0	100	9	28	27	0.219
		%	61.0%	5.5%	17.1%	16.4%	
	Moderate	N0	100	8	16	28	
		%	65.8%	5.3%	10.5%	18.4%	
	High	N0	36	6	16	10	
		%	53%	8.8%	23.5%	14.7%	
Father level of education	Illiterate	N0	18	2	7	2	0.253
		%	62.1%	6.9%	24.1%	6.9%	
	Primary	N0	58	7	17	12	
		%	61.7%	7.4%	18.1%	12.8%	
	Secondary	N0	70	4	12	15	
		%	69.3%	4.0%	11.9%	14.8%	
	High education	N0	90	10	24	36	
		%	56.3%	6.2%	15.0%	22.5%	

Occupation of the father	Employed	N0	101	11	22	25	0.462
		%	63.6%	6.9%	13.8%	15.7%	
	Self-employed	N0	102	9	24	33	
		%	60.7%	5.4%	14.3%	19.6%	
	Not employed	N0	33	3	14	7	
		%	57.9%	5.3%	24.6%	12.3%	
Mother level of education	Illiterate	N0	10	0	0	10	0.004*
		%	50.0%	0.0%	0.0%	50.0%	
	Primary	N0	76	7	15	11	
		%	69.7%	6.4%	13.8%	10.1%	
	Secondary	N0	73	8	19	19	
		%	61.3%	6.7%	16.0%	16.0%	
	High education	N0	77	8	26	25	
		%	56.6%	5.9%	19.1%	18.4%	
Occupation of the mother	Employed	N0	52	7	20	15	0.315
		%	55.3%	7.4%	21.3%	16.0%	
	Self-employed	N0	8	1	0	4	
		%	61.5%	7.7%	0.0%	30.8%	
	Not employed	N0	176	15	40	46	
		%	63.5%	5.5%	14.4%	16.6%	

Table (3) shows the association between BMI categories and dietary habits of the sample:This investigation has discovered no statistically meaningful link.between BMI categories and dietary habits, except eating snacks which was found to have a significant association (P. value <0.001*.

TABLE (3)*:* ASSOCIATION BETWEEN BMI CATEGORIES AND DIETARY HABITS OF THE STUDIED SAMPLE

Association between BMI and dietary habits			**BMI Categories**				**P. value**
			Normal	**Under Weight**	**Over weight**	**Obese**	
eating while watching T V	**Usually**	No	45	4	8	13	0.719
		%	19.1%	17.4%	13.3%	20.0%	
	Sometimes	No	107	9	28	34	
		%	45.3%	39.1%	46.7%	52.3%	
	Never	No	84	10	24	18	
		%	35.6%	43.5%	40.0%	27.7%	
eating sugary food and drink	**Usually**	No	101	10	25	30	0.086
		%	42.8%	43.5%	41.6%	46.2%	
	Sometimes	No	121	9	34	34	
		%	51.3%	39.1%	56.7%	52.3%	
	Never	No	14	4	1	1	
		%	5.9%	17.4%	1.7%	1.5%	
drinking milk	**Usually**	No	125	14	27	34	0.210
		%	53.0%	60.9%	45.0%	52.3%	
	Sometimes	No	65	8	17	23	
		%	27.5%	34.8%	28.3%	35.4%	
	Never	No	46	1	16	8	
		%	19.5%	4.3%	26.7%	12.3%	
eating snack	**Usually**	No	51	2	15	17	<0.001*
		%	21.6%	8.7%	25.0%	26.2%	
	Sometimes	No	156	11	40	32	
		%	66.1%	47.8%	66.7%	49.2%	
	Never	No	29	10	5	16	
		%	12.3%	43.5%	8.3%	24.6%	
eating immediately before sleep	**Usually**	No	39	5	8	8	0.686
		%	16.5%	21.7%	13.3%	12.3%	
	Sometimes	No	57	6	10	15	
		%	24.2%	26.1%	16.7%	23.1%	
	Never	No	140	12	42	42	
		%	59.3%	52.2%	70.0%	64.6%	
eating fruit and	**Never**	No	7	1	2	4	0.606

vegetables		%	3.0%	4.3%	3.3%	6.2%	
	Sometimes	No	75	8	14	15	
		%	31.8%	34.8%	23.3%	23 %	
	Usually	No	154	14	44	46	
		%	65.2%	60.9%	73.4%	70.8%	

IV. DISCUSSION :

This research have shown that (61%) of samples possessed healthy BMI, followed by (17%) who were obese, (16%) who were overweight, and (6%) who were underweight. These outcomes corroborated those of Demir (2020), earlier study, which has shown that 59.1% of students in private schools were normally, followed by 17.3% of obese students, 15.3 % of the respondents of overweight students, and 8.3% of underweight students.

The survey additionallyhas discovered that the relationship between BMI and gender is not statistically significant(P. value >0.05). These results agree with the study resultsthat has been conducted in Iran *(Ghobadi et al*., 2018), which has revealed that the Mean± SD for body mass index was 16.45 ±2.94 for boys, and 16.0 ±2.70 for girls. The explanation for this might be the close eating habits of both gendersince (87%) of the samples having neutral eating habits, as well as the ongoing growth of this age category.

The results have also found that the highest percentage (87%) of participants have neutral eating habits, while the lowest percentage (3%) of them has unhealthy eating habits. These results disagree with the research's results made by Mebonia *et al*., (2015), which has found that the dietary habits of school-age children in Tbilisi are unhealthy.

As regarding the associations between BMI and demographic characteristic, the study demonstrates that, with the exception of the mother's degree of education (P. value=0.004), there is no significant correlation between demographic factors and body mass index .The reason may be related to the fact that moms are fully accountable for their children's dietary intake and physical activity more than fathers,mothers with a higher level of education help children to consume healthy diets. These results agree with the study by (Karadeniz & Can, 2019), which has revealed no link was found between sex and BMI (P= 0.179). In Turkey, Istanbul (Demir, 2020) revealed that there is no significant association between BMI categories and gender, which (P. value =0.231). While these results disagreed with the study findings conducted by (Badawi *et al*., 2013), which has found that there was significant association between socio-economic class and BMI (p= 0.047) <0.05.

The results have shown that, eating habits and BMI categories do not significantly correlate with one another, except eating snacks which was found to have a significant association (P. value <0.001*). Such outcomes are consistent with the study findings conducted in China (Sun *et al*., 2020), which has found that, most items of dietary habits had no significant association with BMI categories. Furthermore, such findings are congruent with the published research conducted in Makkah City (Ashour *et al*., 2018), which revealed that there is no significant association between BMI categories and sugar consumption (P. value =0.11) .Possibly it's attributed to the increased fat content of snacking, compared to carbs, which supply just 4 kcal of fuel per gram, fat delivers 9 kcal of energy per gram. When digested fuel exceeds expended fuel, fat is stored in fat cells.

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