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Impact of Healthy Food Consumption Practice on Normal BMI among College Girls

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ABSTRACT

Background: Food is considered a natural body defender against different diseases, and it keeps the body healthy. The lifestyles always have a great influence on both health and food consumption. College students represent a major segment of the young adult population. Young adults, in consideration of important lifestyle changes, are arranged to negatively modify their way of eating. Hence, this study aimed to predict of healthy eating Practice of college students with their Body Mass Index.
Methods: A descriptive study conducted among students from nursing college, King Khalid university to evaluate the impact of healthy food consumption on normal BMI. Healthy eating practice questionnaire distributed via online self-reported by 135 study subjects, and their anthropometric measurement height, weight, hip, and waist circumferences were measured in the nursing laboratory. 7 items questionnaire consists of 5-point frequency ranges from ‘‘Less than 1time, 2-3 times, 4-5 times and 6 or more times per day’’. The total score was 35 of the healthy eating practice, which is categorized as good (26-35), fair 16- 25 and need improvement (7-15). The responses were analyzed using SPSS IBM version 21. A binary logistic regression was performed to predict the relationship between healthy food consumption practices and normal BMI.
Results: Half of the study participants 50.37% were in normal BMI, BMI (body mass index) and WHR (waist hip ratio) was negatively correlated with healthy food practice score which infers that as Healthy food practice score increases BMI and WHR decreases. The consumption of sweetened beverages was 18.2%, Desserts was 23.3%, and Fried food/or packaged snacks was 17.6%. Meat/Fish/Beans consumption Frequency: < 1 time/ day category (P= 0.029); Sugar beverages: sodas, coffee, tea & energy sports drinks (P= 0.013) 6 or more times per day was significant predictors of keeping the body weight in normal BMI range.
Conclusion: Healthy food consumption practice has a significant impact on keeping the body weight in Normal BMI range.

Keywords: [BMI, Healthy eating practice, food practice, healthy food consumption]

INTRODUCTION

“Healthy Eating Healthy weight”
Healthy food is the food that gives you all the nutrients you need to stay healthy, feel well and have plenty of energy. Access to foods that support healthy eating patterns contributes to an individual’s health throughout his or her life. [1] The importance of making recommended healthy foods, such as fruits and vegetables, whole grains, and low-fat dairy products, [2] available to consumers has been suggested as key for improving diet quality. [3] Though healthy foods are available our environment shapes our behaviour for the food choices of healthier and less healthy snack foods.[4]
Weight gain during college is likely the transition into university life, which is a critical period when young adults’ behaviours including dietary habits are conducive to change as they gain

independence in making food choices. [5,6] More regular meal patterns, healthier snack choice and adherence to dietary guidelines may contribute to the normal BMI values.

To ensure a healthy lifestyle, WHO recommends eating lots of fruits and vegetables, reducing fat, sugar and salt intake and exercising. Based on height and weight, people can check their body mass index (BMI) to see if they are overweight. BMI is derived from a person's weight in kilograms, divided by height (squared) in centimeters. The recommended levels are adapted from the global WHO recommendation of 18.5–24.9 as a normal BMI. [7] The current health concerns are underweight, overweight and obesity among college students everywhere, and most Youngsters try dieting at some time to control weight. The availability of food varieties in the market is a kind of challenge to the young to make healthy choice, in spite of huge awareness concerning healthy food consumption's importance through several social media, people tend to make an unhealthy food choice in terms of junk foods such as snacks (cakes and biscuits hot chips) burgers, pizzas, chocolate, sweets and sugary drinks (such as sports, energy and soft drinks).[8] Hence, this study aims to assess the impact of healthy food consumption Practice of college students on their normal Body Mass Index.

Objective: This study aims to assess the impact of healthy food consumption Practice of college girls on their normal Body Mass Index

MATERIALS & METHODS

A descriptive study conducted with 135 female nursing students at the College of Applied Medical Sciences, King Khalid University (KKU), Saudi Arabia during the 2022 academic year. The calculated sample size was 192 using Roasoft online free tool based on a 5% margin of error, 95% confidence interval, a population size of 379 students. The participants were included by convenience sampling from second year till fourth year level students and data were collected via online survey using structured 7-items healthy eating practice assessment questionnaire. An anthropometric health check-up was also undertaken for the students in the nursing Laboratory for measuring height (in cm), weight (in km) waist and hip circumferences (in cm). Each question in the healthy eating practice questionnaire consists of healthy food consumption frequency stated as ''Less than 1time, 2-3 times, 4-5 times and 6 or more times per day''. Each item score was noted as minimum 1 and the maximum 5 thus the total score is 35 of the healthy food consumption practice, which is categorized as good (26-35), fair 16- 25 and need improvement (7-15). The calculated Cronbach's alpha value for the 7 items questionnaire is 0.517 which is considered acceptable reliability (Pallant, 2010).[9] The responses obtained were subjected to statistical analysis using SPSS IBM statistical software version 21. A binary logistic regression was performed to predict the relationship between healthy eating practices and normal BMI with 95% confidence interval (CI). The input binary variables were healthy weight (BMI <18.5-24.9) and unhealthy weight (BMI: obese, over, and underweight). Descriptive statistics applied for the demographic variables and anthropometric data.

RESULTS

A total of 135 female nursing college students were included with their age ranging from 19 to 24 year (mean age, 11.91 ± 1.00 years); 41% of the students were belong to 4th year; and their parents body built with normal weight only 23% (Father) and 23% (mother). The participants' age, father, and mother body weight not associated with BMI (Table 1).

Second, the college girls were, in average weight and height (BMI 21.42 and ±2.6) and waist hip ratio in no risk category (WHR .78 and ±.08) respectively. The Anthropometric data BMI (body mass index) and WHR (waist hip ratio) was negatively correlated with healthy food

practice score which infers that as Healthy food practice score increases BMI and WHR decreases (Table 2).

Third, the less consumption frequency (1 time or < 1 time / day) of the certain foods such as Juice, energy drinks, coffee, or sweetened beverages was 18.2%, Desserts, like chocolate or ice cream, and other sweet foods was 23.3%, and Fried food/or packaged snacks was 17.6% (Table 3).

In addition, the half of the study participants 50.37% were in normal BMI (Figure 1). Not only that 49% of the study subjects were reported fair and 14% of them were having a good healthy food practice category (Figure 2).

Table 1: Demographic findings of college girls' association with their body mass Index (BMI): N=135

		Frequency	Percent	Chi-square P value
Age in years	19	6	4.5	P= 0.144
	20	76	56.7	
	21	33	24.6	
	22	9	6.7	
	23	9	6.7	
	24	1	.7	
Father's body built	Normal weight	31	23	P= .501
	overweight / obese	104	77	
Mother's body built	Normal weight	31	23	P= 0.579
	overweight / obese	104	77	

Table: 2
Anthropometrics and healthy food practice score relationship: N= 135

	Minimum	Maximum	Mean	Std. Deviation	Pearson correlation value
Weight	33.00	103.40	51.62	13.16	
Height	143.00	172.00	155.3	5.18	r= -0.05
BMI	14.10	50.56	21.42	5.62	
Waist circumference	19.00	104.00	68.26	15.39	
Hip circumference	24.00	132.00	87.43	18.92	r=-0.14
WHR	.42	1.03	.78	.08	

Table: 3 Healthy food consumption frequency among College Girls. N=135

Food Items	N	Percent
1. Fruits: Fresh, canned, frozen, or dried 4 >6 times/day	9	2.7%
2. Vegetables: Fresh, canned, frozen, or dried 4 >6 times/day	12	3.6%
3. Dairy products: (milk, yogurt, low fat cheese) 4 >6 times/day	19	5.7%
4. Meat/fish/beans 1 3 times/day	97	29.0%
5. Fried food/or packaged snacks 1 time or < 1 time / day	59	17.6%
6. Juice, energy drinks, coffee, or sweetened beverages 1 time or < 1 time / day	61	18.2%
7. Desserts, like chocolate or ice cream, and other sweet foods 1 time or < 1 time / day	78	23.3%

Figure 1 - College Girls ' BMI_CATEGORY

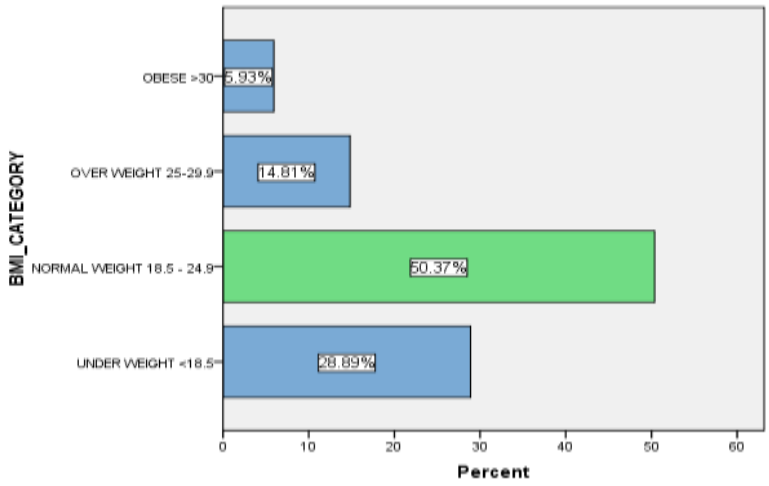

Figure 2- Healthy Food consumption pracitce and Normal BMI

Table: 4- Binary Logistic Regression Odds of Normal BMI (normal body weight) associated with selected healthy foods consumption frequency amongst college girls.

Variables	Frequency	B	S.E.	P <0.05	OR	95.0% C.I	
						Lower	Upper
Sugar sweetened beverages: soda, sweet tea, juice, energy/ sports drinks, sweetened coffee.	6 or more times /day	-3.75	1.51	.013*	.023	.001	.45
Meat/Fish/Beans	< 1 time/ day	1.57	.72	.029*	4.84	1.17	19.94

$\chi 2$ (7, N=135) =14.96; P=0.036

(Table 4) The overall model was significant $\chi 2$ (7, N=135) =14.96; P=0.036 suggesting that consumption of fruits, vegetables, beverages, sweet foods, dairy products and meat/fish//beans had a significant impact on the odds of having a normal Body Mass Index. The R2 =27.1 % - 36.1 % of the variance is in the dependant variable: normal body weight is explained by our model. The model overall accuracy (PAC) of predicting to have normal BMI by practicing healthy foods eating practice is 74.1%. The regression coefficient of Sugar beverages: sodas, coffee, tea & energy sports drinks, was significant 6 or more times /day category, the odds of normal body weight (BMI 18.5-24.9) (B= -3.75, OR = 0.23, P= 0.013; CI = 0.01- .45), indicating that for a one unit decrease in sugar beverages 6 or more times category, the odds of normal body weight would increase 0.23 times than un healthy weight college girls. The OR of Meat/Fish/Beans consumption Frequency: < 1 time/ day category was significant, B= 1.57, OR = 4.84, P= 0.029; CI = 1.17- 19.94, infers that Meat/Fish/Beans consumption Frequency < 1 time/ day is more likely to have a normal BMI 4.84 times than unhealthy weight category.

DISCUSSION

In the current study, we conducted a descriptive survey to assess the weight status (Body Mass Index) and healthy eating practices of the college students in Saudi Arabia. Based on the results, we explored the influence of healthy eating practice on the likelihood of being in normal weight. We revealed that participants' age, father, and mother body weight not associated with BMI (Table 1).

Second, the Anthropometric data BMI and WHR were negatively correlated with healthy food practice score (Table 2) This results emphasizes that as Healthy food practice score increases BMI and WHR decreases (Table 2). Our results are like study conducted by Gutiérrez et.al that relationship between BMI and dietary patterns in which the higher the score of unhealthy patterns, the higher the BMI, and conversely, the higher the score in prudent pattern, the lower was the BMI.[10, 17] However, it was not a statistically significant increase in BMI on the basis of healthy food consumption in terms of quantity of milk, 100% fruit juice, fruit drink, or soda consumed stated by O'Connor, et al. [11]

In addition, The Half of the study participants 50.37% were in normal BMI. (Figure 1). Perhaps this also could be the westernization of Saudi youngsters' particularly the females, more mindful about their weight and body image. 49% of the study subjects were reported fair and 14% of them good healthy food practice category (Figure 2). This could be possibly due to awareness of healthy diet as they know the importance of keeping the normal body weight. Weerasekara cited alike results that fewer than 50% of the reproductive age women had normal weight.[12] Van erpecum et.al found evidence that participants who had one fast-food outlet had a higher BMI than participants with no fast-food outlets. [13] Furthermore Newby PK et,al. detailed in their study that the consumption of meat and potatoes caused an annual change in BMI (0.30+/_ /0.06) and in waist circumference was more than 3 times as great for subjects in the white-bread cluster. [14]

Third, the less consumption frequency (1 time or < 1 time / day) of the certain foods such as Juice, energy drinks, coffee, or sweetened beverages was 18.2%, Desserts, like chocolate or ice cream, and other sweet foods was 23.3%, and Fried food/or packaged snacks was 17.6% noted among the college girls (Table 3). On the contrary, in spite of half (50 .37%) a strength study participant were being in healthy weight category, only few were reported to less consumption of unhealthy foods (Figure 1). The unhealthy eating practice (57.3%) of the university students reported eating fried food more than three times per week was reported by Yahia, N. et al. [15]

Finally, (Table 4) suggesting that consumption of fruits, vegetables, beverages, sweet foods, dairy products and meat/fish//beans had a significant impact on the odds of predicting to have normal BMI by practicing healthy foods eating practice is 74.1%. This is emphasizing healthy foods are essential to have a normal body built. Surprisingly, we found that a Sugar beverage: sodas, coffee, tea & energy sports drinks consumption frequency 6 or more times /day category, indicating that reducing the consumption frequency would increase 0.23 times to have a normal body weight. Also, Meat/Fish/Beans consumption Frequency: < 1 time/ day infers that is more likely to have a normal BMI 4.84 times. Syed, N. K. et al. were also able to find a similar finding with regards to the different consumption of food/snacks along with sweet beverages was comparatively higher amongst the obese and the overweight participants. [16]

CONCLUSION

We found that there is a significant impact of maintaining healthy food consumption practice with normal BMI. Meat/Fish/Beans consumption Frequency: < 1 time/ day category, Sugar beverages: sodas, coffee, tea & energy sports drinks were significant predictors of keeping the body weight in normal BMI range. The college girls those who belong to unhealthy eating practice needs improvement category that they must take necessary healthy eating action plan for being in Normal BMI to prevent chronic diseases in future.

Limitation & Future Scope of the Study

Only girls were included in the study. The impact of healthy food practice on boys can be added in the future study. Healthy food consumption practice is checked only by self-reported form.

Declaration by Authors

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