RESEARCH ARTICLE

Can Food Addiction Predict Weight Trend among Middle School Student?

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ABSTRACT

Background: Obesity's rapid growth has various negative implications, including decreasing possibilities to participate in educational and recreational activities, as well as rising economic burden on families and society Rapidly growing childhood and adolescent obesity rates, as well as the consequent increased burden of illness and disability, have major social and economic repercussions, contributing to rising health-care expenditures and impeding economic growth.

Objective(s): The aim of this study is to detect if food addiction predict weight trend among middle school students.

MethodologyThe descriptive correlational design has been considered a subtype of correlational research, with its primary purpose being to examine relationships between and among variables and it is referred to occasionally as simple correlational design. The study included a convenience sample of male and females middle school students who agreed to participate in this study. The study subjects were recruited from eight public middle schools. The sample size was determined using G*Power software based on an effect size of 0.25, alpha error probability of 0.05, a power of 0.95, five groups. Thus, the recommended sample size would be 304. Considering an attrition rate of 20%, additional 61 subjects would be required. As such, the recommended sample size would be 365. The final sample size is 380.

Results: There is a statistically significant difference in food addiction between gender groups (p-value = 0.001). There is no statistically significant difference in food addiction among grade groups, socioeconomic class groups, and body mass index groups.

Conclusion: Most of students were within normal weigh-to-height. More than a fifth are either overweight or have obesity class I and class II. The greater the food addiction, the greater the body mass index. The third graders have greater body mass index.

Recommendations: There is a need for the community health nurses to establish collaboration with directorates of education to raise both school administrators and students about the value of healthy weight and deleterious consequences of overweight and obesity.

Keywords: Food Addiction, Weight Trend, Middle School Students.
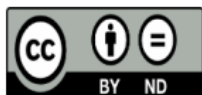
INTRODUCTION

People of all ages throughout the world are suffering from obesity, which is a growing health concern (Ghanbari & Taghi Ayatollahi, 2016). One of the most important public health challenges of our century is obesity among teenagers, according to the World Health Organization (Alper et al., 2018). Many countries' rates of childhood and adolescent obesity have climbed steadily since the 1980s. Children and adolescents aged 2 to 19 in the United States between 2017 and 2020 will have a higher prevalence of obesity. One in three children between the ages of 2 and 5 is overweight or obese, as are one in seven children aged 6 to 11 and one in twenty-two children aged 12 to 19 (Centers for Disease Control and Prevention [CDC], 2022]). Increasing rates of obesity in children and adolescents throughout the world have made it a public health issue in the last several decades (2006). Adolescent obesity is on the increase in all countries, although it is rising at a greater pace in low- and middle-income nations. More than 30 percent of adolescents in developing countries are overweight or obese, compared to less than 10 percent of adolescents in industrialized nations (Khadaee and Saeidi, 2016). An increased risk of childhood asthma and cognitive impairment, as well as obesity, diabetes, heart disease, several types of cancer, respiratory illness and mental health issues, as well as reproductive abnormalities later in life are all associated with overweight or obese children and adolescents. In addition to reducing participation in educational and recreational possibilities and increasing financial burden on families and society, obesity's rapid increase has other unfavorable consequences (Godfrey, et al., 2017). Obesity rates among children and adolescents are skyrocketing, putting a load on the health care system and restricting economic growth (World Health Organization, 2014).

Efforts to combat obesity should begin with gaining a better understanding of how people, communities, and cultures have internalized fat. While there is a wide cultural acceptance of obesity in Arab countries such as Kuwait, Qatar, and Morocco, there is a significant level of societal pressure in Europe to achieve a slim figure. People in Arab Gulf States, Sudan, and North African nations lay less emphasis on their physique size and form than people in the United States, Canada, and Europe (Musaiger, 2011). Socioeconomic considerations, nutritional literacy within families, availability and affordability of healthy foods, inappropriate marketing of foods and beverages to members and families, lack of education, and reduced opportunities for physical activity through healthy play and recreation are contextual and wider societal factors in an increasingly urbanized and digital world (World Health Organization, 2016).

METHOD

Study Design

The descriptive correlational design has been considered a subtype of correlational research, with its primary purpose being to examine relationships between and among variables and it is referred to occasionally as simple correlational design.

The Setting of the Study

The study was carried out at public middle schools for males and females in Baquba City.

Sample and Sampling

The study included a convenience sample of male and females middle school students who agreed to participate in this study. The study subjects were recruited from eight public middle schools. The sample size was determined using G*Power software based on an effect size of 0.25, alpha error probability of 0.05, a power of 0.95, five groups. Thus, the recommended sample size would be 304. Considering an attrition rate of 20%, additional 61 subjects would be required. As such, the recommended sample size would be 365. The final sample size is 380.

Statistical Analyses:

Data were analyzed using the statistical package for social science (SPSS) for windows, version 28. The statistical measures of frequency, percent, mean, standard deviation, linear regression, One-way analysis of variance (ANOVA), and independent-sample t-test were used.

Ethical Considerations

After receiving the approval of the College of Nursing, University of Baghdad for the study, the Directorate of Education in Baquba City, the student researcher discussed study details with schools' administrators. The student researcher explained to the participants the general purpose of the study, as well as the method by which they can answer the study instrument, to ensure that they understand that participation is optional and that they can withdraw at any time. The student researcher assured subjects that he will securely safeguard and maintain the confidentiality of their data during and following study participation. The student researcher further assured study participants that he will

keep their identities in the presentation, reporting, and/or any eventual publication of the study.

RESULTS

Table 1. Difference in food addiction between gender groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Food Addiction	Equal variances assumed	6.215	.013	6.641	378	.000	17.22821	2.59408	12.12757	22.32884
	Equal variances not assumed			7.205	216.675	.000	17.22821	2.39127	12.51508	21.94134

There is a statistically significant difference in food addiction between gender groups (p-value = 0.001).

Table 2. Difference in food addiction among grade groups

ANOVA					
Food Addiction					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	208.618	2	104.309	.185	.832
Within Groups	213058.129	377	565.141		
Total	213266.747	379			

There is no statistically significant difference in food addiction among grade groups.

Table 3. Difference in food addiction among socioeconomic class groups

ANOVA					
Food Addiction					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3804.288	4	951.072	1.703	.149
Within Groups	209462.460	375	558.567		
Total	213266.747	379			

There is no statistically significant difference in food addiction among socioeconomic class groups.

Table 4. Difference in food addiction among body mass index groups

ANOVA					
Food Addiction					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3288.202	4	822.051	1.468	.211
Within Groups	209978.545	375	559.943		
Total	213266.747	379			

There is no statistically significant difference in food addiction among body mass index groups.

DISCUSSION

With regard to BMI, the majority of participants (n = 236; 62.1 percent) fall within the normal range, followed by those who are underweight (n = 65; 17.1%), overweight (n = 63; 16.6%), obese (n = 11; 2.9%), and underweight (n = 5; 1.3%). Obesity and food addiction had a statistically significant positive correlation. After accounting for the energy content of each nutrient, the literature from both animal tests and human research provides adequate information to answer the issue of whether particular energy-generating nutrients influence the body mass index differently (Slattery et al, 1992; Stubbs et al, 1997; West & York, 1998; Willett, 1998). Obesity is a complex disease, and the function of macronutrients in the development of the disease must be examined. Contrary to previous findings in animals, human research looking at the link between obesity and dietary composition have been unable to come up with any conclusive results (Buchholz &Schoeller, 2004; Davies, 1997; Powell et al., 1994; Racette et al., 1995; Schoeller & Buchholz, 2005).

The general consensus is that persons who are fat or overweight use more energy than people who are lean. According to research, obese individuals consume more calories than healthy individuals do (Bertéus Forslund et al., 2002; Bertéus Forslund et al., 2005), while other studies suggest that an imbalance in the intake of energy-generating substances may contribute to obesity (Tucker et al., 1997). (Garaulet et al., 2000; Mitchell et al., 2003).

People with food addiction consume more fat in their diet than people without it, according to research in the field (Ayaz et al., 2018; Pursey et al., 2015). According to Lopez-Lopez et al., (2021), more participants with excess body weight had higher scores on the food addiction scale (54.1 versus 38.6 percent). Similarly, Lin et al., (2021) found that the diagnosis of food addiction was associated with a higher BMI and that the average BMI level of the food addiction group was considerably higher than that of the non-food addiction group. In the same vein, Mirmiran et al., (2006) found that carbohydrate intake had a non-significant negative correlation with BMI in various age groups of males, which is consistent with this study. We found that grade groups had a statistically significant difference in body mass index. The third students had a higher BMI than the first and second pupils, according to further post hoc study. This might be due to the fact that third graders have higher academic demands, which could lead to their sitting at their desks for long periods of time, which could lead to weight gain. Gender differences in food addiction were statistically significant. Male students scored higher on the Yale Food Addiction Scale, as shown by additional independent-sample t-test group data. According to this result, men in Iraq have more opportunities than women to share food in a communal setting. As a result, male students are more free to eat together at restaurants, social gatherings, picnics, etc. than female students, who are more constrained. This conclusion is nearly identical to that of Mirmiran et al., (2006), who found that the percentage of energy from protein was lower in girls aged 10-18 years than in females aged 51 and older.

CONCLUSIONS

Most of students were within normal weigh-to-height. More than a fifth are either overweight or have obesity class I and class II. The greater the food addiction, the greater the body mass index. The third graders have greater body mass index.

RECOMMENDATIONS

There is a need to conduct similar studies for as many schools across Iraq as possible. There is a need for the community health nurses to establish collaboration with directorates of education to raise both school administrators and students about the value of healthy weight and deleterious consequences of overweight and obesity.

ETHICAL CONSIDERATIONS COMPLIANCE WITH ETHICAL GUIDELINES

This study was completed following obtaining consent from the University of Baghdad.

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AUTHOR'S CONTRIBUTIONS

Study concept, Writing, Reviewing the final edition by all authors.

DISCLOSURE STATEMENT:

The authors report no conflict of interest.

REFERENCES

Alper, Z., Ercan, İ., & Uncu, Y. (2018). A Meta-Analysis and an Evaluation of Trends in Obesity Prevalence among Children and Adolescents in Turkey: 1990 through 2015. *Journal of Clinical Research in Pediatric Endocrinology*, *10*(1), 59–67. https://doi-org.ezproxy.okcu.edu/10.4274/jcrpe.5043

Ayaz, A., Nergiz-Unal, R., Dedebayraktar, D., Akyol, A., Pekcan, A. G., Besler, H. T., & Buyuktuncer, Z. (2018). How does food addiction

influence dietary intake profile?. *PloS one, 13*(4), e0195541.
https://doi.org/10.1371/journal.pone.0195541

Bertéus Forslund, H., Lindroos, A. K., Sjöström, L., & Lissner, L. (2002). Meal patterns and obesity in Swedish women-a simple instrument describing usual meal types, frequency and temporal distribution. *European journal of clinical nutrition, 56*(8), 740–747.
https://doi.org/10.1038/sj.ejcn.1601387

Bertéus Forslund, H., Torgerson, J. S., Sjöström, L., & Lindroos, A. K. (2005). Snacking frequency in relation to energy intake and food choices in obese men and women compared to a reference population. *International journal of obesity (2005), 29*(6), 711–719.
https://doi.org/10.1038/sj.ijo.0802950

Buchholz, A. C., & Schoeller, D. A. (2004). Is a calorie a calorie?. *The American journal of clinical nutrition, 79*(5), 899S–906S.
https://doi.org/10.1093/ajcn/79.5.899S

Centers for Disease Control and Prevention. (2012b). Overweight and obesity. Retrieved from http://www.cdc.gov/obesity

Garaulet, M., Martínez, A., Victoria, F., Pérez-Llamas, F., Ortega, R. M., & Zamora, S. (2000). Difference in dietary intake and activity level between normal-weight and overweight or obese adolescents. *Journal of Pediatric Gastroenterology and Nutrition, 30*(3), 253–258.
https://doi.org/10.1097/00005176-200003000-00008

Ghanbari, S., & Taghi Ayatollahi, S. M. (2016). Comparing the role of standard references on the prevalence of Iranian children and adolescents' overweight and obesity: A systematic review and meta-analysis. *Journal of Research in Medical Sciences, 21*, 1–8.

Lin, C.-Y., Cheung, P., Imani, V., Griffiths, M. D., & Pakpour, A. H. (2020). The Mediating Effects of Eating Disorder, Food Addiction, and Insomnia in the Association between Psychological Distress and Being Overweight among Iranian Adolescents. *Nutrients, 12*(5), 1371. https://doi-org.ezproxy.okcu.edu/10.3390/nu12051371

Lopez-Lopez, D. E., Saavedra-Roman, I. K., Calizaya-Milla, Y. E., & Saintila, J. (2021). Food addiction, saturated fat intake, and body mass index in Peruvian adults: A cross-sectional survey. *Journal of Nutrition & Metabolism*, 1–7. https://doi-org.ezproxy.okcu.edu/10.1155/2021/9964143

Luma, G. B., & Spiotta, R. T. (2006). Hypertension in children and adolescents. *American Family Physician, 73*(9), 1558–1568.

Mitchell, D., Haan, M. N., Steinberg, F. M., & Visser, M. (2003). Body composition in the elderly: the influence of nutritional factors and physical activity. *The journal of nutrition, health & aging, 7*(3), 130–139.

Powell, J. J., Tucker, L., Fisher, A. G., & Wilcox, K. (1994). The effects of different percentages of dietary fat intake, exercise, and calorie restriction on body composition and body weight in obese females. *American Journal of Health Promotion: AJHP, 8*(6), 442–448.
https://doi.org/10.4278/0890-1171-8.6.442

Pursey, K. M., Collins, C. E., Stanwell, P., & Burrows, T. L. (2015). Foods and dietary profiles associated with 'food addiction' in young adults. *Addictive Behaviors Reports, 2*, 41–48.
https://doi.org/10.1016/j.abrep.2015.05.007

Racette, S. B., Schoeller, D. A., Kushner, R. F., Neil, K. M., & Herling-Iaffaldano, K. (1995). Effects of aerobic exercise and dietary carbohydrate on energy expenditure and body composition during weight reduction in obese women. *The American Journal of Clinical Nutrition, 61*(3), 486–494.
https://doi.org/10.1093/ajcn/61.3.486

Schoeller, D. A., & Buchholz, A. C. (2005). Energetics of obesity and weight control: does diet composition matter?. *Journal of the American Dietetic Association, 105*(5 Suppl 1), S24-S28.
https://doi.org/10.1016/j.jada.2005.02.025

Slattery, M. L., McDonald, A., Bild, D. E., Caan, B. J., Hilner, J. E., Jacobs, D. R Jr. & Liu, K. (1992). Associations of body fat and its distribution with dietary intake, physical activity, ethanol, and smoking in blacks and whites. *American Journal of Clinical Nutrition, 55*, 943-949.

Stubbs, R. J., Prentice, A. M. & James, W. P. (1997). Carbohydrates and energy balance. *Annals of the New York Academy of Sciences, 819*, 44-69.

Tucker, L. A., Seljaas, G. T., & Hager, R. L. (1997). Body fat percentage of children varies according to their diet composition. *Journal of the American Dietetic Association, 97*(9), 981–986. https://doi.org/10.1016/S0002-8223(97)00237-X

West, D. B., & York, B. (1998). Dietary fat, genetic predisposition, and obesity: lessons from animal models. *The American Journal of Clinical Nutrition, 67*(3 Suppl), 505S–512S.
https://doi.org/10.1093/ajcn/67.3.505S

Willett, W. C. (1998). Is dietary fat a major determinant of body fat? *American Journal of Clinical Nutrition, 67,*(Suppl 3), 556S-562S.