Relationship between Food Addiction and Impulsive Personality Traits among Zagazig University Students

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Abstract: Food addiction is a new terminology that shares a similar neurobiological and behavioral framework with substance addiction. It was speculated that food addiction is incriminated in the current obesity epidemic. This study aims to assess the relationship between food addiction and impulsive personality traits among Zagazig University Students. Cross- sectional descriptive design was utilized in this study. The study was conducted in two health related faculties and two non-health related faculties at Zagazig University, Egypt. The sample type was purposive sample consisted of 480 students were included. Three tools were used for data collection: demographic data sheet, Yale Food Addiction Scale and Impulsive Behavior Scale. The results of the present study showed that the prevalence rate of food addiction was 39% and the prevalence rate of impulsive personality subscales (positive urgency, sensation seeking, premeditation, negative urgency and perseverance (8.8%, 10%, 0%, 5% & 0%) respectively. It also showed that food addiction has statistically significant positive correlation with impulsive personality traits. Food addiction had shown a significant effect on impulsive personality traits among Zagazig University Students. Educational programs should be encouraged for Zagazig University Students to decrease the prevalence of food addiction and its health consequences.

Keywords: Food Addiction (FA), Impulsive Personality Traits, Students.

INTRODUCTION

There is a growing interest in the role of 'food addiction' in the increasing prevalence of human obesity which has reached an epidemic degree globally [1]. Food addiction is a disease which causes loss of control over the ability to stop eating certain foods. Scientifically, food addiction is a cluster of chemical dependencies on specific foods or food in general. After the ingestion of high palatable foods such as sugar, excess fat and/or salt; the brains of some people develop a physical craving for these foods. Over time, the progressive eating of these foods distorts their thinking and leads to negative consequences which they do not want but cannot stop [2].

The top 20 most addictive foods in order from the most to least addictive are: Pizza, Chocolate, Chips, Cookies, Ice Cream, French Fries Cheeseburger, Non-Diet Soda ,Cake, Cheese, Bacon , Fried Chicken ,Rolls, Buttered Popcorn, Cereal, Gummies, Steak, Muffins, Nuts and Eggs [3].

The criteria for determining a food addiction are remarkably similar to those that define a drug or alcohol addiction. These symptoms and characteristics include: eating specific foods to the point of feeling ill, going out of your way to obtain specific foods, continuing to eat certain foods even if no longer hungry, avoiding social interactions and relationships to spend more time eating certain foods ,eating in secret and continuing to overeat unhealthy foods despite knowing the negative consequences [4].

Impulsivity is defined as a predisposition toward rapid, unplanned reactions to internal or external stimuli with diminished regard to the negative consequences of these reactions to the impulsive individual [5]. Impulsivity has been a widely explored

construct, particularly as a personality-based risk factor for addictive behaviors. Most addictive behaviors are described, in part, as impulsive.

Impulsivity has been shown to play an important role in many different forms of psychopathology [6]. Impulsive people are more likely than others to overeat, overspend, abuse drugs, interrupt, get in fights, break the law, gamble, engage in risky sexual behavior, say things they regret [7].

There are five separate aspects of impulsivity [8]:
- Positive urgency – acting rashly whilst displaying a positive mood.
- Negative urgency – acting rashly whilst in a negative mood.
- Absence of premeditation – an inability to anticipate the future consequences of actions.
- Lack of perseverance – an inability to follow through on a task.
- Sensation seeking – positive feelings towards risk.

One possible correlate of food addiction is the personality trait of impulsivity. Research on overeating and food addiction has indicated that overweight individuals with binge eating disorder who have co-occurring YFAS food addiction diagnoses were more impulsive than those who did not meet food addiction criteria [9]. In addition, some personality traits, such as impulsivity, have been associated with alcohol and drug misuse. In the context of food addiction, recent research has demonstrated that obese individuals scoring high in Yale Food Addiction Scale (YFAS) were more impulsive and displayed greater emotional reactivity than obese controls. These findings suggest that a food addiction construct shows a psycho-behavioral profile similar to conventional drug abuse disorders [10].

Significance of the study
Obesity is a chronic disease that affects the quality of life in a negative way and may cause psychological, social, and medical problems. It is one of the most serious health problems in developed and developing countries [11]. Obesity is also a complex condition, and there is a pressing need to better understand possible underlying factors contributing to its development in order to identify more effective management strategies. There has been increasing scientific interest in the potential role that addictive-like eating behaviors may play in over eating and weight gain. As a result, college students are recognized to be vulnerable to weight management problems. Additionally impulsive behaviors may lead some people to abuse alcohol and other drugs may also be an important contributor to an unhealthy relationship with food. Therefore, this study will assess the relationship between food addiction and impulsive personality traits among Zagazig University Students.

SUBJECTS AND METHODS
Study Design
Cross- sectional descriptive design was conducted to achieve the aim of the study. The study was conducted in two health related faculties (Pharmacy and Physical Education) and two non-health related faculties (Arts and Education) at Zagazig University. These faculties were randomly selected from Zagazig University.

Participants
A purposive sample included (480) students were recruited in this study. The sample size is calculated to estimate a prevalence rate of food addition of 20% or higher [12], with 5% absolute precision at 95% level of confidence, with a design effect "1.5" for the multi-stage sampling and population size about 104,317 students. Using the sample size equation for single proportion, the required sample size is 369. This will be increased to 480 to account for a dropout rate of about 20%. This sample size is large enough to demonstrate a correlation coefficient of 0.2 or higher with 95% power and at a 95% level of confidence between the scores of students' food addiction and personality impulsivity, using the sample size equation for correlation in open Epi statistical software package [13].

Sampling technique: a stratified multi-stage sampling technique was used in recruiting students in the study sample, with a fixed allocation for better statistical reliability.

Stage 1: selection of faculties:
Based on the students estimation of the General Department of Education Affairs at Zagazig University, the number of non- heath related faculties were 9 and number of health related faculties were 8.
- The faculties were stratified by type into health-related and non-health related. Two faculties were randomly selected from each group.
- Grade: Years 1 and 4 were selected

Stage II: selection of students:
Students were selected from each of the strata by purposive sampling. To fulfill the required sample size (480), each of the 8 selected strata would provide an average of 60 students.

Subjects who participated in this study were all first & fourth year students in the academic year 2016/2017.The study comprised 480 students randomly selected from the above mentioned setting who fulfilled the following inclusion criteria:
- Age ranged from 18 to 22 years.

- Both sexes.

Tool of data collection

Three tools were used to measure the current study's variables

Tool 1: Demographic data sheet for students:

This tool was developed by researcher to assess the personal characteristic of the students and their parents including age, gender, residence, marital status, education level of parents, the number of educated members, the job of parents, family size, the number of family workers, the number of educated members, the family income, the source of gaining information and the university grade.

Tool II: Yale Food Addiction Scale (YFAS):

It was designed by Yale to identify those who are most likely to be exhibiting markers of substance dependence with the consumption of high fat/high sugar foods. The scale consists of 27 questions that ask particularly about the food intake control to certain types of food and about certain occasions in the past 12-month duration. The scale questions fall under specific criteria that resemble the symptoms for substance dependence as stated in the Diagnostic and Statistical Manual of Mental Disorders IV-R and operationalized in the Structured Clinical Interview for DSM-IV Axis I Disorders. Scoring: the first 16 items are on a 5-point Likert scale response (Never; Once a month; 2-4 times/month; 2-3 times/week; 4 or more times/week). These are scored from 0 to 4 respectively. The last item (question No. 25) are on a 5-point Likert scale response (1or fewer times; two times; 3 times; 4 times; 5 or more times). The remaining 8 items are Yes/No, and are scored 1 or 0. The items are grouped into eight groups, and the cutoffs and norms are done according to the tool instructions. [14]

Tool III: Impulsive Behavior Scale (UPPS-P):

It was designed by Cyders *et al.*, [33] as well as Whiteside & Lynam This scale consists of a 59-item inventory designed to measure five distinct personality pathways to impulsive behavior: (Negative) Urgency, (Lack of) Perseverance, (Lack of) Premeditation, Sensation Seeking, and Positive Urgency. Scoring: This scale consists of 59 statements with 4-point Likert scale (strongly agree; agree some; disagree some; and strongly disagree). These are scored from 1 to 4 respectively, with reverse scoring for negative items. The items are classified into five traits according to tool instructions [15].

Content validity and reliability

Once the tools were prepared, their face and content validity were ascertained by a panel of five experts, through distribution of the three tools with a covering letter and explanation sheet that explains the

study purpose. One professor of psychiatric & mental health nursing at Ain-shams University, one professor of psychiatry medicine at Zagazig University, one professor of medical surgical nursing at Zagazig university, a professor of psychology at the Faculty of Arts and a professor of mental health at the Faculty of Education who revised the tools for clarity, relevance, applicability, comprehensiveness, and ease of implementation. The In light of their assessments, minor modifications were applied. The reliability of the YFAS was assessed in the present study, showing excellent reliability with a Cronbach's alpha coefficient (r = 0.800), and UPPS-P questionnaire showing excellent reliability with a Cronbach's alpha coefficient (r = 0.822). All recommended modifications according to pilot study and experts opinions were performed as follows:

In food addiction scale

Some items no 26 were removed such as Broccoli & Cookies because they do not fit with the culture of the community.

In impulsive behavior scale

Items no 10,15, 20,40,44,42 and 45 were removed from the original scale according to the expertise's opinion and also the repetition of these items with item no 5 and 27 in the scale were observed by students who participated in the pilot study. In the same scale, items no 18, 26 and 46 were removed because they do not fit with the culture of the community. The scale consists of a 49-item after modifications.

Description of the intervention

The data collection phase was executed in three months starting in October 2016 and was completed by the end of December 2016. The first phase of the work was the preparatory phase. Once permission was granted to proceed with the study, the researcher met with the vice deans for the Students Affairs and Education in each selected faculty, explained to them the study aim and procedures as well as the data collection forms including obtaining an official permission for the approval to conduct the study and get access to students .The second phase included obtaining a list of health-related and non-health related faculties. Two faculties were randomly selected from each group. the first and fourth year schedule and a list of students of a selected year from each College Administration Department. The Third phase was the actual contact with the students. The researcher met students with a list of their names. Then, the researcher introduced herself, the purpose and nature of the study, the importance of the study to the students, and then the data collection forms were explained. The researcher selected students from the list randomly and took their consent to participate verbally. The students were asked

to fill in the questionnaire sheet under the guidance of the researcher. All questions were answered and a detailed explanation was given to obtain their consent and cooperation during filling the tools of the study. The time in which the tools were distributed to the subjects ranged from 11 AM to 3 PM according to students free time. The questionnaire sheet was completed in the same time of distribution, and it took about 10 to 15 minutes/student for answering the questions. The same procedure was repeated by the researcher with the students in the first and fourth years at the four faculties.

Pilot study

A pilot study for tools of data collection was carried out on 80 students in order to test for clarity, relevance, comprehensiveness, understandable, feasible, applicability and ease for implementation. The results of the data obtained from the pilot study helped in modification of the tools, items were then corrected or deleted as needed. Patients who shared in the pilot study were excluded from the main study sample.

Ethical considerations

The agreement for participation in the study was taken from the subjects after fully explaining the aim of the study. Participants were given the opportunity to refuse the participation, and they were notified that they could withdraw at any stage of filling the questionnaire; also they were assured that the information would be confidential and used only for the research purpose. Confidentiality was confirmed by not writing names.

Statistical analysis

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the developed tools through their internal consistency. Quantitative continuous data were compared using the non-parametric Mann-Whitney or Kruskal-Wallis tests. Qualitative categorical variables were compared using chi-square test. Spearman rank correlation was used for the assessment of the inter-relationships among quantitative variables and ranked ones. To identify the independent predictors of the risk of food addition, multiple logistic regression analysis was used. Statistical significance was considered at p-value <0.05.

RESULTS

Table-1: Demographic characteristics of students in the study sample (n=480)

Demographic characteristics	Frequency	Percent
Age:		
18-20	246	51.3
21-22	234	48.8
Range	17.0-23.0	
Mean±SD	19.9±1.5	
Median	20.0	
Gender:		
Male	51	10.6
Female	429	89.4
Faculty:		
Pharmacy	120	25.0
Arts	120	25.0
Physical education	120	25.0
Education	120	25.0
Grade:		
1	240	50.0
4	240	50.0
Marital status:		
Single	450	93.8
Married	30	6.3

Table -1 shows that the age of the studied sample ranged from 18-22 with mean ±SD (19.9±1.5) and 51.3 % of the studied sample aged <21 years. The majority of the studied sample were females and single (89.4% & 93.8%) respectively. The same table indicated that 25% of the studied sample were from these faculties (Pharmacy, Arts, Physical Education and Education). An equal percentage of the studied sample was from grade 1 and grade 4.
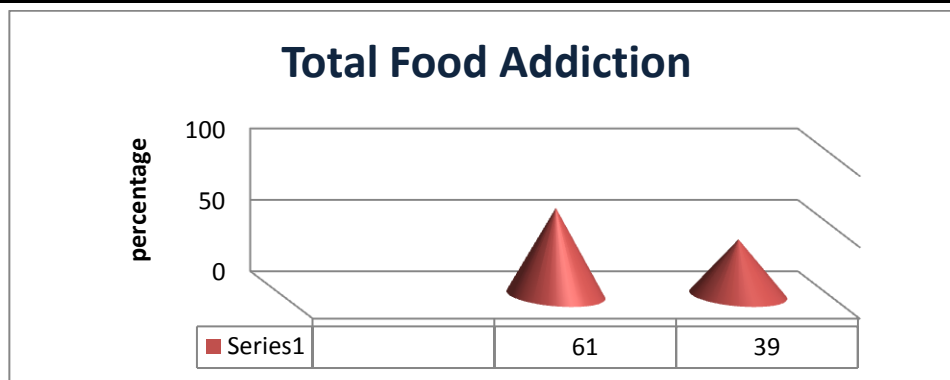
Fig-1: Distribution of total food addiction among students in the study sample (n=480)

Figure-1 Reveals that 61% of the studied sample don't have food addiction and only 39% of them have food addiction.

Figure-2 demonstrates that the 10 Most Addictive Foods was potato ships, Chocolate, soda, fried potatoes, Ice cream, Bananas, Stuffed food, Pizza, Crackers and macaroni.
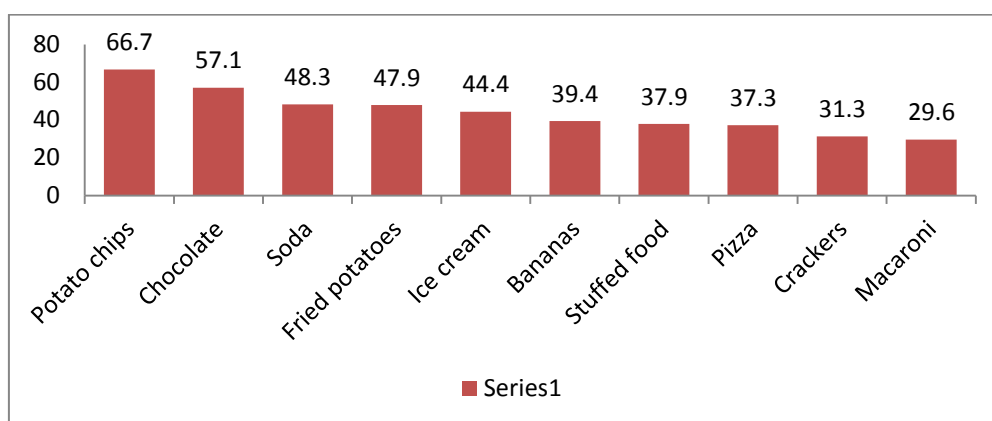

Fig-2: The 10 Most Addictive Foods as reported by students in the study sample (n=480)

Table-2: Impulsive personality traits (UPPS-P) among students in the study sample (n=480)

UPPS-P (high: 60%+)	Frequency	Percent
Positive urgency	42	8.8
Sensation seeking	48	10.0
Premeditation	0	0.0
Negative urgency	24	5.0
Perseverance	0	0.0

Table-2 Displays that 10% of the studied sample had sensation seeking, 8.8 % had positive urgency, 5% had negative urgency and 0 % had perseverance and lack of premeditation according to impulsive personality traits scale.

Table-3: Relations between students' food addition and their personality traits

Personality traits	Food addict				Mann-Whitney Test	p-value
	No		Yes			
	Mean±SD	Median	Mean±SD	Median		
Positive urgency	2.7±0.6	2.67	2.8±0.5	2.89	5.43	0.02*
Sensation seeking	2.9±0.4	2.89	2.9±0.4	3.00	0.84	0.36
Lack o Premeditation	1.9±0.4	1.91	1.9±0.4	1.91	2.30	0.13
Negative urgency	2.6±0.5	2.55	2.8±0.5	2.73	12.59	<0.001*
Lack of Perseverance	2.0±0.3	2.00	2.0±0.4	2.00	2.68	0.10

(*) Statistically significant at p<0.05; Table-3 Demonstrates that food addiction has a statistically positive relation with positive urgency and negative urgency (p= 0.02 * and 0.001 *) respectively.

Table-4: Correlation between food addition and personality traits scales and students' characteristics

Characteristics	Spearman's rank correlation coefficient					
	Food Addiction	Personality traits				
		+ve urgency	Sensation seeking	Lack of Premeditation	-ve urgency	Lack of Perseverance
Age	-0.01	-0.09	0.01	0.00	-.154**	-0.02
Grade	-0.04	-.097*	0.01	-0.03	-.150**	-0.05
Father education	-0.02	-0.03	-0.07	0.07	-0.04	0.01
Mother education	0.02	-0.01	-0.09	0.07	-0.04	0.06
Family size	0.00	0.03	0.00	0.05	0.07	0.08
Income	0.00	-0.03	-0.02	0.07	-0.04	-0.01
No. of rooms	-0.07	-0.08	-0.01	-0.04	-.102*	-.126**
Crowding index	0.02	0.02	-0.05	0.00	0.05	0.07

(*) Statistically significant at p<0.05 (**) Statistically significant at p<0.01

Table-4 Reveals that the negative urgency has a highly statistically significant negative relation with age and grade and has a statistically significant difference with the number of rooms; and that +ve urgency has a statistically significant negative relation with grade. The same table shows that lack of perseverance has a highly statistically significant negative relation with number of rooms.

Table-5: The best fitting multiple logistic regression model for the food addiction

Items	Wald	Df	P	Odds Ratio (OR)	95.0% CI for OR	
					Upper	Lower
Constant	13.698	1	<0.001	0.10		
School: Pharmacy (ref.)	10.065	3	0.018			
Arts	8.547	1	0.003	2.26	1.31	3.91
Physical education	1.196	1	0.274	1.36	0.78	2.37
Education	0.285	1	0.594	1.17	0.66	2.05
Grade	5.264	1	0.022	0.86	0.75	0.98
Father education: University (ref.)	8.886	3	0.031			
None formal	5.836	1	0.016	2.39	1.18	4.85
Basic	1.736	1	0.188	1.66	0.78	3.54
Intermediate	0.354	1	0.552	0.87	0.56	1.37
Employed mother	3.212	1	0.073	1.48	0.96	2.26
Negative urgency score	9.745	1	0.002	1.85	1.26	2.72
Nagelkerke R Square: 0.103						
Hosmer and Lemeshow Test: p=0.565						
Omnibus Tests of Model Coefficients: p<0.001						
Variable not in the equation: age, gender, marital status, residence, mother education, other personality traits scale components						

Table-5 Reveals that the Faculty of Arts has a high risk factor for food addiction with odd ratio 2.26 compared to that of the Faculty of Pharmacy. The same table demonstrates that Grade 4 is high risk than grade 1 with odds ratio 0.86. Students whose father has non-formal education have a high risk factor for food addiction with odd ratio 2.39. The table demonstrated also that students who have employed mother is high tendency for food addiction and students who have high negative urgency had higher risk for food addiction.

DISCUSSION
Regarding the Demographic characteristics of students, the current study results showed that the majority of the studied sample consists of females. This

might be due to the fact that Zagazig University is predominantly attended by females more than males. This result was in agreement with Yu & Tan [16] who found that female students represented 72.7% of the studied sample. In addition, similar findings were supported by Obregon *et al*., [17] who found that the study sample consists of 65% female Chilean college students. Furthermore, Coel *et al.*, [18] reported that 80.1% of respondents were females.

As regards the faculty, the current study findings revealed that half of the studied sample were from health related faculties and the other half were from non-health related faculties. Therefore, the current study distinguished these two groups and included two

academic major groups. Similar findings were supported by Yu &Tan, [16] who classified the participants into three groups: nutrition major (students majoring in Nutrition and Dietetics), non-nutrition health majors (students studying other majors in the College of Health, e.g., nursing, public health, health administration, and clinical and movement science), and other majors (all other majors outside College of Health).

Regarding the university grade of students, the current study findings revealed that half of the students were at the1st university grade (n=240) and the other half were at the 4th university grade (n=240).This could be attributed to that eating habits for college students are a topic of interest because the greatest increase in overweight and obesity occurs between the ages of 18–29 according to the Behavioral Risk Factor Surveillance System.

As regards the marital status, the current study findings revealed that more than majority of students were unmarried. This could be attributed to that marriage during the study was considered an overload for students, and some people prefer to postpone the marriage of their sons until they terminate their study.

Concerning the residence of students, the present study results showed that more than half of students were from rural areas. This finding might be attributed to the setting of data collection in Zagazig University at El-Sharkia governorate which is characterized by its agricultural nature and most of its cities are rural areas.

Concerning prevalence of food addiction among students, the results of the present study illustrated that the prevalence of food addiction among students was 39% .This might be because the number of sample size was large and involves students from different faculties and age groups, which makes statistics more representative. The large percentage of food addicts may be due to the fact that more than the majority of participants were females, and females are two times more likely to be food addicts than males. This finding was in accordance with Meule *et al*., [19] study in University of Salzburg, Austria showed that 30% of those with a history of Bulimia Nervosa (BN) could be classified as 'food addicted' according to the Yale Food Addiction Symptoms (YFAS). This was in contrast with, Pedram *et al.*, [20] study in Canada found that the prevalence of 'food addiction' was 5.4% (6.7% in females and 3.0% in males).

Regarding Problematic food items as reported by students in the study sample, the current study revealed that more than two thirds of the studied sample have problematic food most commonly with potato ships. This might be might be due to the availability of potato ships, its suitable price and the fact that it is easy to cook. Furthermore, the human brain evolved to crave foods that provide quick energy. Moreover, hyper palatable foods produce a far more pleasurable response in people than less processed foods and It has rewarding and reinforcing properties which increase motivation to seek out and obtain an adequate and nutritionally diverse energy supply. Such properties are not confined to simple taste (saltiness) but encompass more complex blends of taste, flavor, smell, texture and even the sounds produced by preparation or consumption. This was on the contrary with, Lewis *et al*., [21] study in Bowling Green, Ohio, United States and they found that Students identified problem with foods, most commonly ice cream in more than one third of respondents . Similarly, Schulte *et al*., [22] in U.S.A found that the average frequency count of how often a food was selected as problematic was Chocolate (27.60) followed by Ice cream (27.02), French fries (26.94) and pizza (26.73). In the same line, Stangl [23] study in College of Saint Benedict, U.S.A found that that the foods of which participants have struggled to control consumption in the past year were chocolate(60%) in more than half of studied sample followed by cookies (48%) and candy (46%).

Concerning prevalence of impulsive personality traits among students, the current study revealed that 10% of the studied sample had sensation seeking, 8.8% had positive urgency, 5% had Negative urgency and 0 % had lack of perseverance and lack of premeditation according to impulsive personality traits scale. This might be attributed to the fact that college students are in an age that need varied, novel and complex sensations and experiences and the willing to take physical and social risks for the sake of such experiences. It may be also due to the peer effect to seek novel things. Finally impulsive personality traits five constructs follow their roles in an impulsive behavior and should be studied separately, rather than combining the scales to produce a single score. This was in contrast with, Chamorro *et al*., [24] in United States found that the lifetime prevalence of self-reported impulsivity in the general population was 16.9% particularly among males and younger individuals.

As regards relationship between food addiction and impulsive personality traits: The current study revealed that food addiction has a statistically positive relation with positive urgency and negative urgency. This might be because the predicted impulsivity was associated with the addictive consumption of food. In particular, individuals who reported acting more rashly when experiencing strong levels of positive (Positive Urgency) and negative (Negative Urgency) emotions, endorsed more symptoms of addictive eating. Similarly,

individuals who reported more food addiction symptoms indicated that they often did things without thinking (lack of premeditation) and that they had difficulty following through with boring and/or challenging tasks (lack of perseverance).Furthermore, negative urgency significantly predicted food addiction symptoms. Thus, individuals with a tendency to act rashly when feeling upset or angry may be more likely to engage in addictive eating to alleviate negative mood states. They may consume certain foods to prevent feelings of anxiety, dysphoria, and/or physical symptoms resembling a food withdrawal syndrome and lead to weight gain. This goes on line with, Davis *et al*., [25] in North America found that food addicts reported more impulsive traits. similarly, Wolz *et al*., [26] found that both Negative Urgency and lack of Perseverance remained significant predictors of food addiction symptoms.

Regarding correlation matrix of personality traits scale components ,this study reveals that sensation seeking has a highly statistically significant positive correlation with +ve urgency, negative urgency, and a highly statistically significant positive correlation with +ve urgency and sensation seeking. This might be due to the fact that positive urgency was the most robust predictor of risky outcome. Furthermore, students have +ve urgency tendency to engage in impulsive risky behaviors, especially in response to intense positive emotion. This reflects a correlation between +ve urgency and sensation seeking. In the same line, Murphy *et al.*, [27] study in Georgia found that the various facets of impulsivity as measured by the UPPS-P were all significantly interrelated, with the exception of the Sensation Seeking scale which is only significantly correlated with Positive Urgency and Premeditation. Aside from the Sensation Seeking scale, significant positive associations were found between all facets of impulsivity and the number of food addiction symptoms endorsed. Similarly, Smith & Cyders [28] found that the two urgency traits (positive and negative Urgency) correlate highly with each other.

Concerning best fitting multiple logistic regression model for the food addiction, the current study reveals that the students at Faculty of Arts has a high risk factor for food addiction compared to those at the Faculty of Pharmacy; that the student whose father is illiterate or reads and writes, the student who have an employed mother, the student at grade 1 and had negative urgency were all more liable to have food addiction. The fact that the students whose fathers are illiterate or read and write have a high risk for food addiction can be attributed to their little awareness about food addiction and its consequence on health and they do not study any health related courses .Students who have an employed mother have also a high risk for food addiction because they are often busy and they

tend to cook fast foods more frequently. This might be due to the fact that both non-formal educated fathers and the Faculty of arts have little awareness about addictive food and its consequence on health, and also students with negative urgency tend to engage in impulsive risky behaviors. In the same line, Kaiser *et al*., [29] in united states study suggested that Negative Urgency is an important factor to consider in developing prevention and intervention efforts aimed at reducing substance use and problems. Similarly, *Dir et al.,* [30] study found that Negative urgency is the only impulsivity-related trait that is a common risk factor associated with increased self-harm, problematic alcohol use, and eating problems. On contrary, Bailey *et al*., [31] studied the relationship between food addictive behavior and physical activity in college-aged students found that the resultsof this investigation suggest that high levels of physical activity may be associated with more symptoms of food addiction. Similarly, Coel *et al*., [32] in Australia showed that a history of dieting appears to be the most significant risk factor for food addiction.

CONCLUSION
In light of the current study results, the reported rates of food addiction had shown a significant effect on impulsive personality traits among Zagazig University Students.

RECOMMENDATIONS
It is recommended to apply Educational programs for Zagazig University Students to decrease the prevalence of food addiction and its health consequences. Future studies should evaluate the effects of nutrition education on addictive food behaviors in college students. Further research should be done to assess risk factors for food addiction and the effects of food addiction on college students.

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