Journal of Advances in Medicine and Medical Research

27(10): 1-14, 2018; Article no.JAMMR.44834
ISSN: 2456-8899
(Past name: British Journal of Medicine and Medical Research, Past ISSN: 2231-0614, NLM ID: 101570965)

Eating Disorder Risk and Extreme Weight-control Behaviours among Young University Students: Is the Desire to Change Eating Habit Correlated?

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Authors' contributions

This work was carried out in collaboration between all authors. Author OA designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors JO and DR managed the literature review and instrument design and validation. Author DR managed the data collection. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMMR/2018/44834
Editor(s):
(1) Dr. Kate S. Collison, Department of Cell Biology, King Faisal Specialist Hospital & Research Centre, Saudi Arabia.
Reviewers:
(1) Mary Seeman, University of Toronto, Canada.
(2) Jeffrey Guina Psychiatry, Wright State University, USA.
Complete Peer review History: http://www.sciencedomain.org/review-history/26890

Original Research Article

Received 01 October 2018
Accepted 22 October 2018
Published 29 October 2018

ABSTRACT

Background: The aim of this study was to determine the relationship between the desire to change eating habits and the risk of eating disorders and extreme weight-control behaviours among university students aged 15 to 24 years.
Methods: A cross-sectional study of 1470 randomly selected undergraduate students of four universities. Data were collected using the well-validated Eating Attitude Test (EAT-26) questionnaire. The effects of the desire to change eating habit on the outcome variables were assessed using odds ratio while possible effect modification by gender was assessed using the Mantel-Haenzsel test. Multivariate logistic regression analyses were used to build models to predict the outcome variables.

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Results: The prevalence of Eating Disorder Risk and Extreme Weight-control Behaviours were 17.01% (95% CI=15.17-19.02) and 23.33% (95% CI=21.24-25.57) respectively. The desire to change eating habits was associated with greater odds of Eating Disorder Risk (1.43; 95CI=1.08-1.90; p= 0.011). The desire to change eating habits was associated with greater odds of Extreme Weight-control Behaviours among male participants (OR=2.37; 95%CI=1.59-3.53; p<0.001). A similar relationship was not found among female participants (OR= 0.98; 95% CI=0.70-1.37; p=0.8899). The Mantel Haenzsel test of homogeneity of odds ratio showed a p-value of 0.0005.
Conclusions: Eating Disorder Risk and Extreme Weight-control Behaviours are highly prevalent among university students in Nigeria. The desire to change eating habits may be correlated with a potential risk for an eating disorder. It could be a simple and realistic initial tool for predicting eating disorders and extreme weight-control behaviours among university students.

Keywords: Eating habits; eating disorders; extreme weight-control behaviour.

ABBREVIATIONS

AUC : Area under the receiver operating characteristic curve
BMI : Body mass index
CI : Confidence interval
EDR : Eating disorder risk
EWCB : Extreme weight-control behaviours
OR : Odds ratio

1. INTRODUCTION

Young adulthood and the University period are recognised as critical periods that are associated with increased risk for the development of eating disorders and extreme weight-control behaviours [1]. Evidence suggests that while eating disorders have attained a global epidemic status, they have only achieved public health importance over the last 20 years in developing countries [2, 3]. The global prevalence is between 0.3 and 1% among young people [4]. It is estimated that between 50 and 75% of all eating disorders have their origin in young adulthood [5]. The associated mortality rate is 2 to 6 times as high as the expected population mortality rates [6]. Eating disorders account for 1.2% (0.9-1.5) of the global disability-adjusted life years (DALY) [7]. The cost of DALY attributable to eating disorders exceeds that of depression and anxiety disorder combined [8].

There is also evidence to suggest that eating disorders are becoming more common in developing countries and among the non-white population of sub-Saharan Africa [9]. However, despite growing evidence in developing countries of the world, there is a paucity of data about eating disorders among young people attending universities in Nigeria. The few existing studies focus on obesity and overweight as consequences of the eating habits of young people in Nigeria but fail to investigate eating disorders and extreme weight-control behaviours (EWCB) [10-13]. This is in spite of the fact that many of the factors that have been found elsewhere to predict eating disorders are prevalent among young Nigerian university students. These factors include being young [1,5], being in the university [1,14,15], gender [1,16], concerns about body shape and size, harmful religious practices, poor snacking habits, poor food practices, higher socioeconomic status [13], and alcohol consumption [13,17]. Other factors include the lack of dietary interventions (1) and poor mental health [18].

Sex difference in eating habits is well-recognised but the effect of these differences on the risk of eating disorders and extreme weight-control behaviour in Nigeria is not known. Several studies have shown that starting from adolescence girls tend to pay more attention to their nutrition and hence make healthier food choices [19, 20]. The barriers to proper nutrition have also been found to differ significantly between young men and women [21]. The rate of snacking is thought to be higher among female. It is also known that many young women in Nigeria are becoming conscious of their weight and in a bid to become ‘slim and beautiful’, they pursue vigorous and sometimes unhealthy eating habits [13]. Young women also tend to engage in unhealthy abstinence from food for religious reasons far beyond their male counterparts [13].

Change as it relates to chronic behaviour patterns is a very complex process. The transtheoretical model of behaviour change which has often been used to characterise the change process is fraught with many problems which have been well documented [22-27]. These issues have necessitated a call for the discarding of the theory. In the absence of a new

theory that is well validated, some authors have suggested a reversal to the previous common sense approach. The common sense approach advocates asking simple questions such as the desire to change and the ability to change behaviour. It is thought that such questions and the answers are underlined by a very wide range of personal and situational factors and that they may predict the process of behaviour change [28]. This approach has been widely applied in smoking research. The desire to change sexual behaviour has also been found to be associated with behavioural effort among homosexual men [29]. This study sought to test the common sense approach as it relates to eating habits and disorders.

The desire to change eating habits may be a proxy to an individual's overall perception of his/her eating habits. It is not very prone to information bias and recall is not particularly required.

The aim of this study was to assess the relationship between the desire to change eating habits and the risk for an Eating Disorder (EDR) and for EWCB among university students aged 15 to 24 years. The effect of gender on this relationship was also assessed. The study also assessed other socio-demographic, eating and social habits that may be associated with EDR and EWCB among young university students in Nigeria.

2. MATERIALS AND METHODS

2.1 Study Design, Population, and Location

This study was a cross-sectional study of 1470 undergraduate students of four universities in Ogun State, southwest Nigeria. There are twelve universities in Ogun State, the highest number in any of the States in Nigeria.

2.2 Sampling

A two-stage random sampling scheme was used to select 1800 undergraduate students from four randomly selected (by balloting) universities. All the duly undergraduate students aged 15 to 24 years who were enrolled in universities in Ogun State in the 2016/2017 academic session were eligible to participate in the study. A signed informed consent was compulsory for participation.

2.3 Study Instruments and Validation

The study used the Eating Attitude Test (EAT-26) to measure EDR and EWCB. The Eating Attitude Test is the most widely used and validated screening tool for the assessment of eating disorders that will require professional assessment. It has been shown to be a highly valid, reliable and cost-effective tool and is well-validated among university students. The multi-dimensional EAT-26 was designed in 1982 by Garner and Garfinkel to specifically serve as a screening tool for EDR and EWCB. It is a self-report scale that has two parts. The first part has 26 items and adopts a six-point likert scale response system. The first 25 items are scored by assigning scores of 3 to 'always', 2 to 'usually', 1 to 'often', and 0 to the other responses. The twenty-sixth item is scored in the opposite direction. Individuals with scores of 20 or higher are regarded as having EDR. The second part of the tool contains four items which measure the presence of EWCB in the preceding 6 months. Individuals with a positive response to any of the four items are regarded as exhibiting extreme weight-control behaviours [13, 30-32]. The instrument was found to be quite reliable with Cronbach's alpha of 0.93. One thousand four hundred properly filled questionnaires were returned giving a response rate of 81.7%.

2.4 Measures

The outcome measures were EDR and EWCB. Based on the criteria outlined above, the participants were determined to have an eating disorder risk and extreme weight-control behaviour or not. The main exposure variable was the desire to change eating habits. This was assessed by asking the question "Would you like to change your current eating habits?" Participants were expected to respond "Yes' or "No". The other covariates that were assessed included gender, other socio-demographic characteristics, and the participant's eating and social habits.

2.5 Data Collection and Management

Data was collected through privately completed self-administered questionnaires. Trained research assistants were on hand to address any question by the study participants. A maximum of 3 attempts was made to reach each of the selected participants. Ongoing data completeness and consistency checks were undertaken by the research assistants. Data

were entered in duplicates by two individuals into Microsoft Excel software and saved in the comma-delimited (CSV) format. It was then exported to STATA 15 software for analysis. Data was then checked by the lead investigator. Data analysis was based on 1470 properly completed questionnaires.

Participants' characteristics were presented in frequency tables using proportions and means as appropriate for summarisation. The prevalence of EDR and EWCB with the respective 95% confidence interval (CI) were determined. The chi-square and independent sample t-tests were used to determine the association between all the exposure variables and outcome measures.

The effects of the main exposure variable on the outcome variables were estimated using the odds ratio and 95% CI. Zero-order correlation to measure the strength of effect was carried out using the tetrachoric correlation coefficient. The Mantel Haenszel test was used to assess the effect of gender on the relationship between the main exposure variable and the outcome variables.

Bivariate logistic regression analyses including the outcome variables and each of the exposure variables were carried out. The outcome variables, the main exposure variable and all the covariates that were measured were fitted into a multivariate logistic regression analysis. Backward elimination technique was then used to build a model to predict the outcome variables while retaining variables with p-value < 0.05. The area under the receiver operation characteristic (ROC) curve (AUC) was used for post-estimation assessment. Coefficient plots were used for the visualisation of the result of multivariate logistic regression analyses.

3. RESULTS

3.1 Participants' Socio-demographic and Dietary Characteristics (Table 1)

The average age of the participants was 19.7±2.06 years. About 43% of them were male and about half of them belonged to the Yoruba ethnic group. They were predominantly single Christians while about 60% of them were enrolled in non-health-related faculties. Almost 90% of the students were currently taking less fatty diet than they normally would. More students ate dinner every day of the week than lunch and breakfast. More than 80% of the participants reported that they would normally skip breakfast on some days of the week. About 87% of the participants reported that they snack. While almost 75% of the participants snack once or twice a day, about 13% snack more than twice daily. Majority of the participants eat vegetables (82.7%) and fruits (92.5%). Some of the participants (3.7%) were daily alcohol consumers. Concerning their eating habits, 48.6% of the participants would like to change their habits while the remaining 51.4% would not like to change it.

3.2 Prevalence of EDR and ECWB

The prevalence of EDR among participants in the current study was 17.01% (95% CI=15.17-19.02) while the prevalence of EWCB was 23.33% (95% CI=21.24-25.57). There was no statistically significant association between the two measures and gender (p>0.05)

3.3 Association between Socio-demographic and Dietary Characteristics and EDR and EWCB

Table 1 also shows the result of the association between the participants' characteristics and the outcome variables. Table 2 shows the result of bivariate logistic regression analysis between the outcome variables and all the independent variables. At a level of significance of 0.05, EDR was associated with increasing age, being married, not being Christians, being on a special diet, having breakfast and having dinner every day of the week. It was also associated with not snacking or snacking fewer times a day. The other associated factors were non-consumption of vegetables, daily alcohol consumption and the desire to change current eating habits.

EWCB, on the other hand, was shown to be associated with increasing age, not being Yoruba, being students in non-health-related faculties, and being university students for more than 2 years. The other associated factors were, being on a special diet, non-consumption of vegetables, daily alcohol consumption and the desire to change eating habits. These relationships were statistically significant at p<0.05.

3.4 The Effect of the Desire to Change Current Eating Habits on EDR and EWCB

Participants who desired to change their eating habits were at increased odds of EDR with an

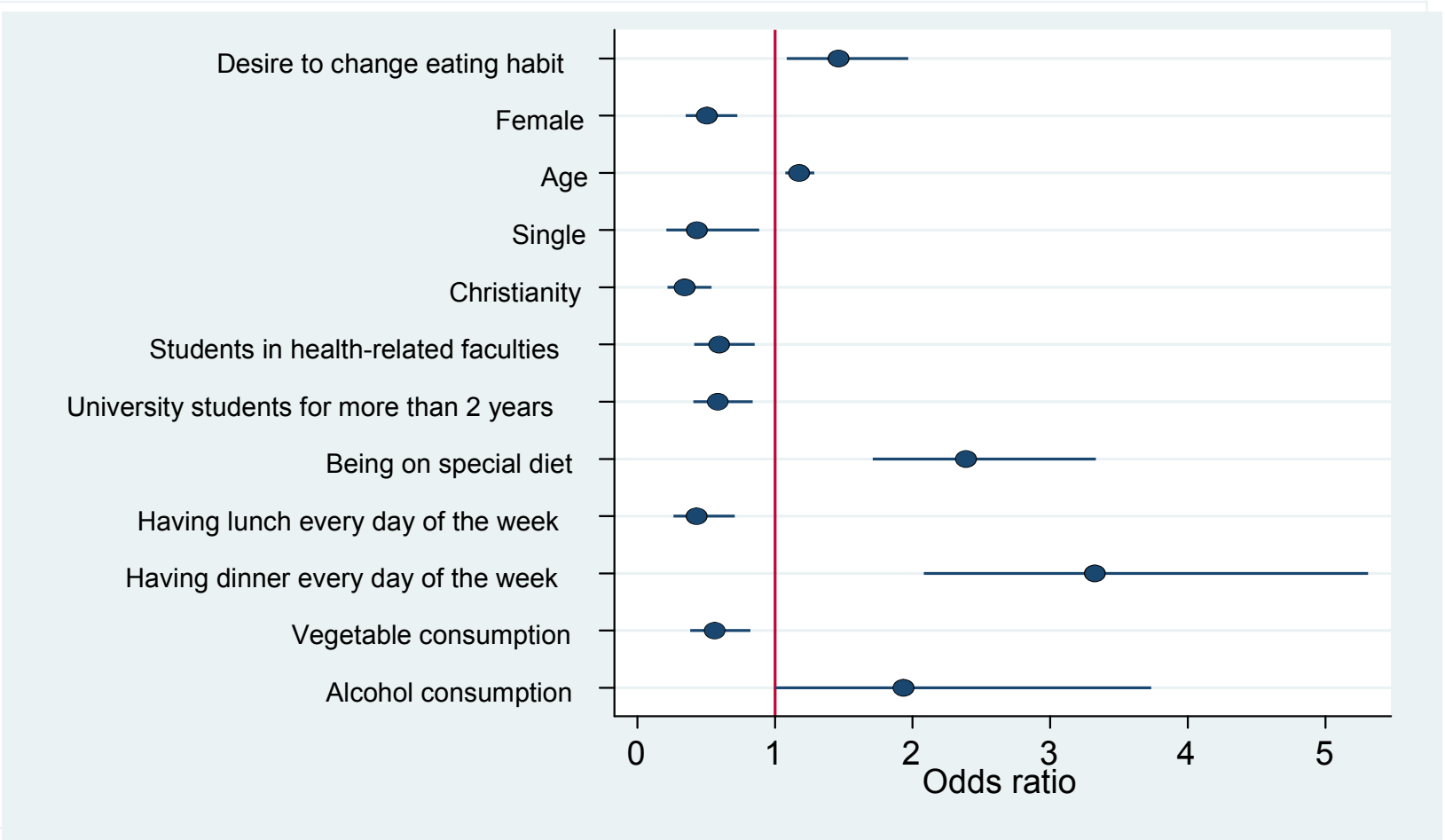

Fig. 1. Regression estimates 95% confidence interval for EDR (created with STATA 15)

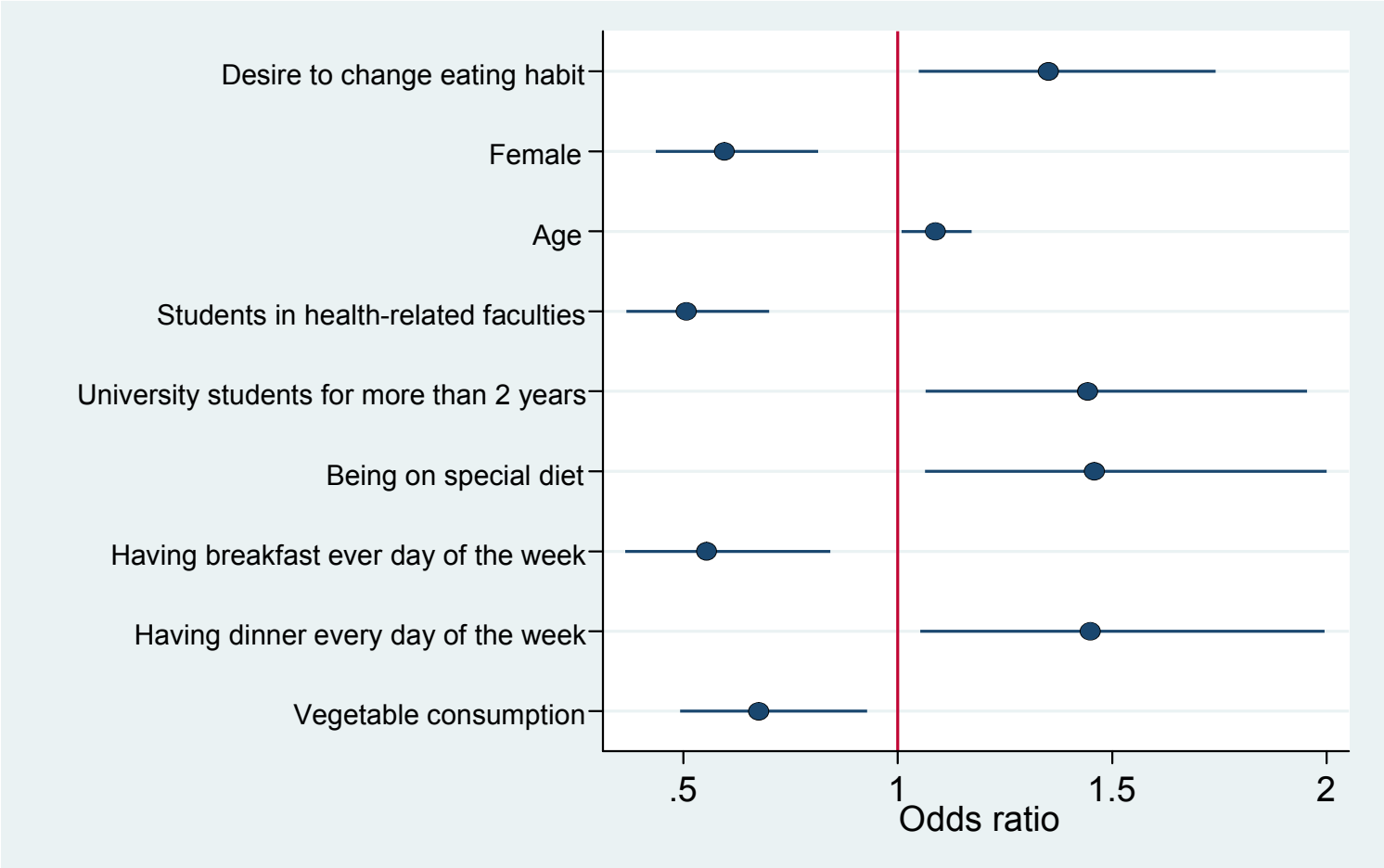

Fig. 2. Regression estimates with 95% confidence interval for Extreme Weight-control Behaviours (created with STATA 15)

Table 1. Association between socio-demographic and dietary characteristics and EDR and EWCB

Participants' characteristics		Eating risk disorder			Extreme weight-control		
	n (%)	No	Yes	p-value	No	Yes	p-value
	n = 1470	n=1220	n=250		n=1127	n=343	
Age	19.7±2.06*	19.62 ± 2.05	20.10 ± 2.05	<0.001	19.60 ± 2.10	20.05 ± 1.87	<0.001
Gender (female)	840 (57.1)	705 (57.8%)	135 (54.0%)	0.27	646 (57.3%)	194 (56.6%)	0.8
Ethnicity (Yoruba)	750 (51.0)	615 (50.4%)	135 (54.0%)	0.3	612 (54.3%)	138 (40.2%)	<0.001
Marital Status (Single)	1425 (96.9)	1190 (97.5%)	235 (94.0%)	0.003	1092 (96.9%)	333 (97.1%)	0.86
Religion (Christianity)	1355 (92.2)	1145 (93.9%)	210 (84.0%)	<0.001	1036 (91.9%)	319 (93.0%)	0.52
Faculty (Health-related)	575 (39.1)	490 (40.2%)	85 (34.0%)	0.07	465 (41.3%)	110 (32.1%)	0.002
Duration of studentship (>2 years)	860 (58.5)	715 (58.6%)	145 (58.0%)	0.86	626 (55.5%)	234 (68.2%)	<0.001
Are you on any special diet?				<0.001			0.001
No	5 (0.3)	0 (0.0%)	5 (2.0%)		0 (0.0%)	5 (1.5%)	
Yes, low fat	1315 (89.5)	1130 (92.6%)	185 (74.0%)		1032 (91.6%)	283 (82.5%)	
Yes, low salt	130 (8.8)	75 (6.1%)	55 (22.0%)		80 (7.1%)	50 (14.6%)	
Yes, diabetic diet	20 (1.4)	15 (1.2%)	5 (2.0%)		15 (1.3%)	5 (1.5%)	
How many days a week do you have breakfast? (7 days)	262 (17.8)	197 (16.1%)	65 (26.0%)	<0.001	212 (18.8%)	50 (14.6%)	0.07
How many days a week do you have lunch? (7 days)	419 (28.5)	339 (27.8%)	80 (32.0%)	0.18	330 (29.3%)	89 (25.9%)	0.23
How many days a week do you have dinner? (7 days)	485 (33.0)	370 (30.3%)	115 (46.0%)	<0.001	366 (32.5%)	119 (34.7%)	0.44
Snacking (Yes)	1280 (87.1)	1075 (88.1%)	205 (82.0%)	0.009	977 (86.7%)	303 (88.3%)	0.43
Frequency of snacking per day				0.021			0.74
Nil	180 (12.2)	135 (11.1%)	45 (18.0%)		140 (12.4%)	40 (11.7%)	
Less than or equal to twice	1100 (74.8)	925 (75.8%)	175 (70.0%)		842 (74.7%)	258 (75.2%)	
More than twice	190 (12.9)	160 (13.1%)	30 (12.0%)		145 (12.9%)	45 (13.1%)	
Timing of snacking				0.28			0.22
I don't snack	180 (12.2)	135 (11.1%)	45 (18.0%)		140 (12.4%)	40 (11.7%)	
Morning	85 (5.8)	80 (6.6%)	5 (2.0%)		70 (6.2%)	15 (4.4%)	
Afternoon	610 (41.5)	510 (41.8%)	100 (40.0%)		466 (41.3%)	144 (42.0%)	
Night	110 (7.5)	85 (7.0%)	25 (10.0%)		91 (8.1%)	19 (5.5%)	
No particular timing	485 (33.0)	410 (33.6%)	75 (30.0%)		360 (31.9%)	125 (36.4%)	
Do you eat vegetables? (Yes)	1215 (82.7)	1020 (83.6%)	195 (78.0%)	0.033	946 (83.9%)	269 (78.4%)	0.018
Do you eat fruits? (Yes)	1360 (92.5)	1130 (92.6%)	230 (92.0%)	0.73	1041 (92.4%)	319 (93.0%)	0.7
Do you take alcohol daily? (Yes)	55 (3.7)	40 (3.3%)	15 (6.0%)	0.039	35 (3.1%)	20 (5.8%)	0.02
Would you like to change your eating habits? (Yes)	715 (48.6)	575 (47.1%)	140 (56.0%)	0.011	525 (46.6%)	190 (55.4%)	0.004
Would you like to change your eating habits? (Yes)	715 (48.6)	575 (47.1%)	140 (56.0%)	0.011	525 (46.6%)	190 (55.4%)	0.004

Table 2. Bivariate logistic regression analyses

Participants' characteristics	Eating disorder risk			Extreme weight-control behaviour		
	Odds ratio	95%CI	p-value	Odds ratio	95%CI	p-value
Age	1.12	1.05-1.20	0.001	1.11	1.05-1.18	<0.001
Gender (female)	0.86	0.65-1.13	0.271	0.97	0.76-1.24	0.803
Ethnicity (Yoruba)	1.15	0.88-1.52	0.301	0.57	0.44-0.72	<0.001
Marital Status (Single)	0.39	0.21-0.75	0.004	1.07	0.52-2.18	0.858
Religion (Christianity)	0.34	0.23-0.52	<0.001	1.17	0.73-1.86	0.516
Faculty (Health-related)	0.77	0.58-1.02	0.069	0.67	0.52-0.87	0.002
Duration of studentship (> 2 years))	0.97	0.74-1.29	0.859	1.72	1.33-2.22	<0.001
Are you on any special diet?						
No						
Yes, low fat diet	2.44	1.80-3.33	<0.001	1.53	1.13-2.06	0.006
Yes, low salt diet						
Yes, diabetic diet						
How many days a week do you have breakfast? (7 days)	1.82	1.32-2.52	<0.001	0.74	0.53-1.03	0.074
How many days a week do you have lunch? (7 days)	1.22	0.91-1.64	0.179	0.85	0.64-1.11	0.231
How many days a week do you have dinner? (7 days)	1.96	1.48-2.58	<0.001	1.1	0.86-1.43	0.444
Snacking (Yes)	0.61	0.43-0.89	0.009	1.16	0.80-1.69	0.426
Frequency of snacking per day						
Nil						
Less than or equal to twice	0.73	0.55-0.95	0.021	1.04	0.82-1.32	0.743
More than twice						
Timing of snacking						
I don't snack						
Morning						
Afternoon	0.93	0.84-1.03	0.143	1.05	0.97-1.16	0.229
Night						
No particular timing						
Do you eat vegetables? (Yes)	0.7	0.50-0.97	0.034	0.7	0.51-0.94	0.019
Do you eat fruits? (Yes)	0.92	0.55-1.52	0.733	1.1	0.69-1.76	0.696
Do you take alcohol daily? (Yes)	1.88	1.02-3.46	0.042	1.93	1.10-3.39	0.022
Would you like to change your eating habits? (Yes)	1.42	1.08-1.88	0.011	1.42	1.17-1.82	0.004

Odds ratio of 1.43 (1.08-1.90) and a p-value of 0.011. There was no evidence to suggest that gender modified this effect. The Mantel Haenzsel test of homogeneity of odds ratio showed a p-value of 0.372. The male participants who desired to change their eating habits had increased odds of EWCB with an odds ratio of 2.37 (1.59-3.53) and p<0.001 while among female participants, the desire to change eating habits had no effect on EWCB with an odds ratio of 0.98 (0.70-1.37) and p=0.8899. The Mantel Haenzsel test of homogeneity of odds ratio showed a p-value of 0.0005. Tetrachoric correlation testing showed that the desire to change eating habits had a weak positive correlation with EDR (tetrachoric rho=0.1238; p=0.012) and a mildly positive correlation with EWCB among the male participants (tetrachoric rho=0.3064; p<0.001). However, there was no correlation between the desire to change eating habits and EWCB among the female participants (tetrachoric rho=-0.0083; p=0.9348).

3.5 Factors Associated with EDR and EWCB

Fig. 1 shows the factors that are associated with EDR based on the final model following multivariate logistic regression analysis after adjusting for possible confounders. Being female, single, Christian, students in health-related faculties and being university students for more than 2 years were found to be protective (odds ratio less than 1). Having lunch every day of the week and the consumption of vegetables were also found to be protective. On the contrary, the desire to change eating habits, increasing age, being on a special diet, having dinner every day of the week and daily consumption of alcohol were found to be related to an increased odd of EDR. The adjusted outcome variable model showed good discrimination (AUC =0.71 (95% CI= 0.67-0.75)).

Fig. 2 shows the predictors of EWCB based on the final model following multivariate logistic regression analysis after adjusting for possible confounders. It was found that being a female, being students in health-related faculties, having breakfast every day of the week and consumption of vegetables were protective. Whereas, the desire to change eating habits, increasing age, being students for more than 2 years, being on a special diet and having dinner every day of the week were found to associated with an increased risk of EWCB. The adjusted outcome variable model showed fair discrimination (AUC =0.67 (95% CI= 0.64-0.70)).

4. DISCUSSION

The current study found that EDR and EWCB are quite prevalent among university students in Nigeria and that the desire to change eating habits is related to EDR. We also found that the desire to change eating habits was also associated with EWCB among male students. The prevalence of EDR in the current study corroborates that of other studies which show that eating disorders are highly prevalent among university student [33, 34]. While about 42% of adult population report attempting to lose weight, a composite assessment for EWCB is not readily available. Some extreme weight control behaviours that are prevalent among adult population include fasting or vomiting (0.90%), smoking (5.15%), and use of laxative or diuretics (6.19%) [35]. Evidence suggests that about 11.3% of non-overweight university students attempt to lose weight through unhealthy dieting practices. It is, therefore, possible that eating disorder risk and extreme weight-control behavior are major concerns among university students requiring urgent interventions that are based on evidence-based strategies including those that emphasise improved nutritional knowledge, fruit and vegetable consumption and daily eating of breakfast. The participants were more likely to skip breakfast than lunch and they were least likely to skip dinner. This is in spite of the fact that breakfast is regarded as the most important meal because it provides sustenance and caloric need for the daily activities.[36, 37]. The consumption of breakfast also reduces weight gain and lowers BMI by increasing satiety and leading to a reduction in snacking [37]. This may account for the high rate of snacking found among the participants. Available evidence suggests that skipping of breakfast is commoner among young people compared to adults [36]. The current study reveals that some of the participants do not consume fruits and vegetables although the proportion who consume fruits and vegetable was found to be higher than what obtained among secondary school students in Nigeria [38]. This could be due to the fact that undergraduates are generally more enlightened than secondary school students and they tend to be more interested in their nutrition and tend to make better food choices [19,20]. The measurement of the magnitude of alcohol is often inconsistent especially in developing countries. The current study assessed the

prevalence of daily alcohol consumption (3.7%) as a proxy for alcohol abuse in the absence of a consistent and coherent measure in Nigeria.

Our study shows that the desire to change eating habits may be correlated to a potential risk for eating disorder in both male and female university students whereas it may be a moderate indicator of extreme weight-control behaviour among male university students (OR=2.37; 1.59-3.53). The desire to change eating habits might be a realistic proxy for eating habit that is worthy of further investigation. It is likely to be a reflection of the individual's perception of his/her eating habit and is simpler and not quite prone to information and recall biases. However, the desire to change eating behaviour is not related to extreme weight-control behaviour among the female participants. This might be related to the fact that female students are generally more concerned about eating habits and might be more desirous of modifying their eating habit irrespective of how far they would actually go to ensure weight-control [13,19,20]. The apparent modification of the effect of the desire to change eating habits on EDR and EWCB requires further evaluation.

The current study identified socio-demographic and dietary factors that are associated with EDR and EWCB among university students. These factors are similar to those that have been identified by other studies. They include age, gender [1,16,18], religion, being married, being on a special diet, daily breakfast and dinner consumption, snacking, vegetable [13] and alcohol consumption [17]. The other factors are ethnicity [13], faculty in which the students are enrolled and the duration of studentship [1,14,39].

After adjusting for confounders the factors that were associated with EDR and EWCB are shown in Figs. 1 and 2 respectively. The desire to change eating habits is related to both EDR and EWCB. Being students in health-related faculties was also found to be associated with both EDR and EWCB. This may be due to the fact that being in health-related faculties exposes the students to accurate nutrition information which in turns helps them to make better dietary decisions. This would underline the potency of proper nutrition knowledge in the control of EDR and EWCB. Male participants were more prone to both EDR and EWCB. This finding has been corroborated by findings among Indian university students [18]. Having dinner daily was found to be associated with the presence of EDR and EWCB while daily breakfast and lunch were found to be protective. Apparently, the pattern of skipping meals among young people may be a driver of EDR and EWCB. Studies have shown that skipping breakfast increases the incidence of snacking and is a risk factor for eating disorders [36,37]. This has implications for university students who, unfortunately, are more likely to skip breakfast and lunch and less likely to skip dinner. However, university students have often been found to skip breakfast for a number of reasons that include the lack of time and being asleep until much after breakfast [40]. Besides, some recent studies have found a relationship between the skipping of breakfast and weight gain [41]. Our study also found that vegetable consumption was negatively correlated while increasing age and being on a special diet was associated with both outcome measures while daily alcohol consumption was related to EDR. These findings align with those of many other studies around the world have [13,17-20]. The current study also suggests that being single and being a Christian are negatively correlated with EDR. Unhealthy religious practices have been shown to be related to eating disorders but it remains unclear why Christians would be at reduced risk of eating disorders. This study also shows that while having been university student for more than two years was inversely related to EDR, it was associated with EWCB. This relationship does not seem plausible and therefore, needs further evaluation.

This is a cross-sectional self-report study and as such, temporality is not guaranteed and there is a risk of the presence of bias and confounding. However, sampling (power and method) was conducted in a way to increase the validity of the study. The findings of the current study align with findings from other studies including cohort studies and clinical trials. This suggests that the study findings may be reliable and valid. Besides, the rigorous logistic regression analysis might have controlled for the effect of confounding to a great extent. The main exposure variable (the desire to change eating habits) has not been widely explored as a tool to predict the existence of eating disorders. It is plausible, easy to use and not quite prone to information or recall bias. It might be worthy to explore the possibility and effectiveness of its use as an initial screening question for eating disorders and EWCB among university students, especially in very busy clinical settings.

5. CONCLUSION

In conclusion, the prevalence of EDR and EWCB are high among university students in Nigeria. This is probably because many of the risk factors for eating disorders are highly prevalent among them. Their dietary consumption pattern and socio-demographic characteristics factors favor the occurrence of eating disorders. It is, therefore, possible that eating disorder risk and extreme weight-control behavior are major concerns among Nigerian university students. This requires further investigation.

In the current study, we found that the desire to change eating habits is associated with eating disorder risk in both male and female university students while it was also found to be related to extreme weight-control behaviours among male university students. The desire to change eating habits might be a simple and realistic proxy for eating habit that is worthy of further investigation as an initial tool for predicting EDR and EWCB among university students.

ETHICS AND CONSENT TO PARTICIPATE

The study was approved by the Babcock University Human Research Ethics Committee (BUHREC/546/16). The objectives and procedure of the study were explained to the participants who were assured of confidentiality. Signed informed consent was obtained from all the participants. The study participants were given reasonable privacy during the filling of the questionnaire which was carried out at their convenience. However, the research assistants were on hand to make clarification when required. Personal identification data were not required by the study. The obtained data were kept confidentially by the lead investigator. Necessary permissions were obtained from the authorities of the involved universities.

AVAILABILITY OF DATA AND MATERIALS

The data set supporting the conclusions of this article will be available in the researchgate repository,[https://www.researchgate.net/profile/Olumide_Abiodun].

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/26890