



DIETARY PATTERN AND PREVALENCE OF OBESITY AMONG NON-TEACHING STAFF IN FEDERAL POLYTECHNIC OF ILARO, OGUN STATE, NIGERIA

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ABSTRACT

The recommendation by the World Health Organization (WHO) is that individuals should follow good nutrition practices to maintain nutritional status and prevent the risk of developing other complications that may result from obesity. The study determines dietary pattern, prevalence of obesity and nutritional status of non-teaching staff in Federal Polytechnic Ilaro. A simple random sampling procedure and interview schedule with the use of questionnaire to obtain information on socio-demographic characteristics, anthropometric status, dietary intake and self-image perception of respondents were adopted in this study, SPSS version 21 was used to analyze the data obtained using descriptive and inferential statistics. The results revealed 53.3% of the respondents has BMI between 18.5 and 24.9 (Normal), 25.8% of the respondents has BMI between 25.0 and 29.9 (overweight), and 11.7% of the respondents are obese (30 and above), 40.0% of the respondents eat regularly, 49.2% skip lunch, 10.0% skip breakfast and 0.8% skip dinner. Additionally, 95.0% think that they don't contribute to their weight and 5.0% of the respondents contribute to their weight, 54.2% of the respondents like their body weight and 45.8% want to lose their bodyweight. This study demonstrated a high prevalence of unhealthy eating habits and lifestyle; together with a high prevalence of malnutrition (overweight and obesity) and bad nutritional status among individuals. Health education and other interventions are suggested to promote healthy eating habits and lifestyles, especially among high risk groups

Keywords: Dietary pattern, overweight, obesity, lifestyle and body mass i

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INTRODUCTION

Adults follow a variety of dietary habits that are influenced by a wide range of personal, sociocultural, and environmental factors as well as their life experiences (**Omage and Omuemu, 2018**). By evaluating the nutritional content of the meals and drinks that make up the pattern and comparing these features to age- and sex-specific nutrient requirements and standards for nutrient adequacy, one can ascertain the nutritional quality of a diet plan (**Luisa et al., 2017**). These days, obesity is so prevalent that it is overtaking more traditional public health issues, such as undernutrition and infectious diseases, as the leading cause of illness (**Kopelman, 2000**).

The body stores excess calories in the fat cells found in adipose tissue when an individual's calorie intake surpasses their energy expenditure. These fat cells serve as stores of energy, and they enlarge or contract depending on how people use this energy. If people do not balance energy input and output by adopting healthy eating habits and regular exercise, then fat builds up, and they may become overweight and eventually obese. On the other hand, when a person is maintaining weight, energy in equals energy out (**Romieu et al., 2017**). When the balance shifts, weight changes. The number and size of fat cells determine the amount of fat in a person's body. The number of fat cells increases most rapidly during the growing years of late childhood and early puberty. After growth ceases, fat cell numbers may continue to increase whenever energy balance is positive. Obese people have more fat cells than healthy weight people; their fat cells are also larger. When energy intake exceeds expenditure, the fat cells accumulate triglycerides and expand in size. When the cells enlarge, they stimulate cell proliferation so that their numbers increase again (**Li and Spalding, 2022**), thus obesity develops when a person's fat cells increase in number, in size or quite often both. With fat loss, the size of fat cells shrinks, but not the number. The timing of the onset of obesity is important as it determines the possibility of weight gain as well as the ease of losing the extra weight (**Salem et al., 2019**).

Obesity has emerged as a worldwide phenomenon affecting wealthy and middle-income groups, as well as residents of countries previously considered to be poor. Furthermore, as standards of living continue to rise, weight gain and obesity are posing a growing threat to the health of inhabitants from countries all over the world. The links between obesity and ill health are well established (**Fruh, 2017**). Obesity is a preventable risk factor for many chronic diseases including type 2 diabetes, cardiovascular diseases, various forms of cancer and depression (**Harrington et al., 2010**). Overweight and obesity are associated with diabetes, high blood pressure, high levels of cholesterol, asthma, arthritis and poor health status (**Factors et al., 2015**). The primary cause of obesity is known to be the imbalance between the energy intake from food and energy expenditure in activity while the secondary or indirect causes include social, cultural and economic circumstances surrounding eating and activity patterns (**Kumar et al., 2017**). Both developed and developing countries are experiencing an increase in the incidence and prevalence of type 2 diabetes and different obesity-associated diseases due to an evolving "obesogenic" lifestyle and environment (**Ruze, 2023**). One of the main factors contributing to the development of overweight and obesity has been identified as dietary intake. Populations have been adopting diets that encourage weight gain throughout time as modern diets have progressively supplanted traditional diets. Many people's diets around the world are becoming more sugary and energy dense, with processed meals taking the place of foods high in fiber. Drinks with added sugar seem to be taking the role of milk and water (**Tate et al., 2012**). The way adults feed themselves (their dietary pattern) influences their body shape and provides

insight into the connection between food intake and chronic illnesses, such as obesity. Restaurant food and drink consumption, portion sizes, meal frequency, consumption, and dietary quality are all included in the feeding pattern. (Gherasim et al., 2020). An adult's eating habits may contribute to an eating disorder. An abnormal attitude toward food leads people to change their habits and behaviors. Eating disorders are physiological illnesses caused by abnormal eating habits that can involve either excessive or insufficient food intake to the detriment of a person's physical and mental health. Environmental, genetic, and/or biochemical variables may be linked to eating disorders (Rikani et al., 2013). Due to irregular eating habits that can involve adolescents consuming excessive amounts of food or insufficient amounts of food, eating disorders can result in both overnutrition and undernutrition (Interventions et al., 2023).

MATERIALS AND METHODS

Methodology

The study was carried out among non-teaching staff in Federal Polytechnic Ilaro. Data were gathered for 120 non-teaching staff, their ages were 20 years and above that were randomly selected from the Federal Polytechnic Ilaro. Study data was collected directly using a 9-hedonic scale questionnaire. The questionnaire was administered to collect socio-demographic data to characterize the sample population on the dietary pattern and prevalence of obesity among them. The questionnaire form used in the study consisted of 56 questions about general information, individual weight, height and body mass index. The aim and objective of the questionnaire is to determine the dietary pattern and nutritional status of non-teaching staff.

Sample Size Determination

A multistage sampling procedure was used to select participants for the study. In the first stage, the selection of colleges within Ilaro campus using a purposive sampling technique was done. The second stage, involved the selection of four colleges using a random sampling (balloting without replacement) technique out of five colleges. Thereafter, three departments were further selected from the three selected colleges using Proportional Probability sampling (PPS) techniques. Final stage; One hundred and forty non-teaching staff were recruited into the study using a simple random technique after obtaining verbal informed consent. A total of 140 questionnaires were given to the participants but only 120 were finally analyzed. Twenty (20) questionnaires were rejected due to poor completion and inconsistency.

Inclusion and exclusion criteria

An inclusion criterion of the participants includes non-academic staff who fell into the selected participant and were consented to participate in the study while all academic staff were excluded from the study.

Training of research assistants

Two research assistants who are human nutrition and dietetics students were recruited and trained on questionnaire administration for the study.

Method of Data Collection

For the research work, a 9-hedonic scale questionnaire was used to collect information from the respondents. The height-o-meter was used to determine the height of the respondents, and also a bathroom weighing scale was also used to determine their weight for the determination of the

respondents body mass index, which was calculated by the standard formula weight/height square. Body mass index was plotted in the age cut-off point to define the different body sizes of every respondents according to National Accepted Guidance, and World Health Organization classification (WHO 2010).

Data collection

The research employed a cross-sectional study design which cut across the area. A questionnaire was administered for data collection; questions were asked on areas peculiar to the study. Section A contains socio-demographic characteristics of the respondents which include, questions on age, sex, level of education, etc. the section B contains questions on anthropometric, while the section C contains the attitude of nutrition and dietary intake of the respondents and section D contains self-image perception of the respondents.

Data analysis

Data obtained from the study was analyzed using the SPSS (Statistical Package for Social Science) program. The study data were shown in tabular form with percentage values. The analysis was carried out based on the information gotten from the respondents which included socio-demography characteristics, dietary intake, anthropometric measurements, and self-image perception.

RESULTS AND DISCUSSION

RESULTS

Table 1 revealed the respondents ages which were between 31-40 and 41-50 (30%), 20.8% of the respondents were single, while 79.2% were married. It also indicated that the majority of the respondents practice Christianity (64.2%), Islam (35.0%), and 0.8% were traditional worshippers. Most of the respondents are male (56.7%), and 43.3% are female. It was also indicated that the majority of the respondents are MSC holders (25.0%) while ND holder recorded the least 11.7%. Approximately 39.2% have spent more than 10 years in service while others spent a few years in (bursary, registry, work & service etc.) 58.3%. Additionally, it indicates that respondents who weigh from 61-80kg have the highest percentage of 43.3% while those from 101-120kg have the least percentage of 2.5%.

Table 1: Socio-Demographic Characteristics of Respondents

| VARIABLE | FREQUENCY | PERCENTAGE (%) |
|---------------|-----------|----------------|
| AGE | | |
| 20-25 years | 14 | 11.7 |
| 26-30 years | 12 | 10.0 |
| 31-40 years | 36 | 30.0 |
| 41-50 years | 36 | 30.0 |
| 51-60 years | 20 | 16.7 |
| 61-70 years | 2 | 1.7 |
| GENDER | | |
| Male | 68 | 56.7 |
| Female | 52 | 43.3 |

**DIETARY PATTERN AND PREVALENCE OF OBESITY AMONG NON-TEACHING STAFF IN
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| | | |
|-----------------------------------|----|------|
| SCHOOL | | |
| Applied science | 14 | 11.7 |
| Management studies | 17 | 14.2 |
| Environmental studies | 11 | 9.2 |
| Engineering studies | 8 | 6.7 |
| Others | 70 | 58.3 |
| RELIGION | | |
| Christianity | 77 | 64.2 |
| Islam | 42 | 35.0 |
| Traditional | 1 | 0.8 |
| MARITAL STATUS | | |
| Single | 25 | 20.8 |
| Married | 95 | 79.2 |
| LEVEL OF EDUCATION | | |
| SSCE | 14 | 11.7 |
| BSC | 29 | 24.2 |
| MSC | 30 | 25.0 |
| HND | 27 | 22.5 |
| ND | 20 | 16.7 |
| INCOME | | |
| Below 10,000 | 6 | 5.0 |
| 11,000 – 21,000 | 10 | 8.3 |
| 21,000 – 30,000 | 21 | 17.5 |
| Others | 83 | 69.2 |
| NUMBER OF CHILDREN | | |
| 0.0 | 12 | 10.0 |
| 1.0 | 12 | 10.0 |
| 2.0 | 25 | 20.8 |
| 3.0 | 35 | 29.2 |
| 4.0 | 24 | 20.0 |
| OTHERS | 12 | 10.0 |
| NUMBER OF YEARS IN SERVICE | | |
| 1.0 | 23 | 19.2 |
| 5.0 | 33 | 27.5 |
| 10.0 | 16 | 13.3 |
| OTHERS | 47 | 39.2 |

Table 2 shows that respondents with a height from 1.6-1.79 had the highest percentage of 79.2% and 1.8-1.99 had the least of 10.0%. Additionally, it revealed that 9.2% of the respondent had BMI below 18.5 (underweight), 53.3% of the respondents had BMI between 18.5-24.9 (normal), 25.8% of the respondents have BMI between 25.0-30.0 (overweight), and 11.7% of the Respondent were obese

| VARIABLE | FREQUENCY | PERCENTAGE (%) |
|---------------|-----------|----------------|
| WEIGHT | | |
| 40-60 | 41 | 34.2 |
| 61-80 | 52 | 43.3 |
| 81-100 | 24 | 20.0 |
| 101-120 | 3 | 2.5 |
| HEIGHT | | |
| 1.4-1.59 | 13 | 10.8 |
| 1.6-1.79 | 95 | 79.2 |
| 1.8-1.99 | 12 | 10.0 |
| BMI | | |
| BELOW 18.5 | 11 | 9.2 |
| 18.5-24.9 | 64 | 53.3 |
| 25-29.9 | 31 | 25.8 |
| 30 AND ABOVE | 14 | 11.7 |

Table 2: Anthropometric Status of Respondents

Table 3 indicated that 40.0% of the respondents eat regularly, 49.2% skip lunch, 10.0% skip breakfast and 0.8% skip dinner. 67.5% of the respondents take their breakfast regularly. The survey also indicated that most of the respondents take protein rich foods (47.5%), and 32.5% take cereals. 80.0% prefer homemade food to readymade food and 19.2% prefer homemade food. 20.8% do not take carbonated drinks, 66.7% sometimes take carbonated drinks, while 12.5% regularly take carbonated drinks. 70.8% do not consume chocolate bars and junks and 29.2% consume chocolate bars and junks. 31.7% do eat readymade food and 68.3% do not eat readymade food. 76.7% sometimes take in-between meals, 12.5% always take in-between meal and 10.8% of the respondent do not take in-between meal.

TABLE 3: Dietary intake of the respondents

| VARIABLE | FREQUENCY | PERCENTAGE (%) |
|-------------------------------------------|-----------|----------------|
| NUMBER OF MEAL PER DAY | | |
| 1:1:1(Breakfast, lunch and Dinner) | 48 | 40.0 |
| 1:0:1 | 59 | 49.2 |
| 0:1:1 | 12 | 10.0 |
| 1:1:0 | 1 | 0.8 |
| FREQUENCY OF BREAKFAST | | |
| Never | 1 | 0.8 |
| Sometimes | 38 | 31.7 |
| Always | 81 | 67.5 |
| CHOICE OF FOOD | | |
| 0.0 | 1 | 0.8 |
| CHO sources | 33 | 27.5 |
| CHON sources | 57 | 47.5 |
| Fat | 6 | 5.0 |
| Fruit And Vegetable | 23 | 19.2 |
| FAVOURTIE FOOD | | |
| Cereals | 39 | 32.5 |
| Legumes | 27 | 22.5 |
| Fruit And Vegetable | 9 | 7.5 |

**DIETARY PATTERN AND PREVALENCE OF OBESITY AMONG NON-TEACHING STAFF IN
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| | | |
|---------------------------------------|-----|------|
| Tubers | 34 | 28.3 |
| Poultry | 4 | 3.3 |
| Dairy | 7 | 5.8 |
| FREQUENCY OF HOME MADE FOOD | | |
| Never | 0.0 | 0.0 |
| Sometimes | 23 | 19.2 |
| Always | 97 | 80.8 |
| FREQUENCY OF CARBONATED DRINKS | | |
| Never | 25 | 20.8 |
| Sometimes | 80 | 66.7 |
| Always | 15 | 12.5 |
| CHOCOLATE BARS | | |
| Yes | 35 | 29.2 |
| No | 85 | 70.8 |
| JUNKS | | |
| Yes | 35 | 29.2 |
| No | 85 | 70.8 |
| READY MADE FOOD | | |
| Yes | 38 | 31.7 |
| No | 82 | 68.3 |
| IN BETWEEN MEAL | | |
| Never | 13 | 10.8 |
| Sometimes | 92 | 76.7 |
| Always | 15 | 12.5 |

Table 4 indicated that 91.7% of the respondents think they are not obese and 8.3% are obese, 95.0% think they don't contribute to their weight and 5.0% contributes to their weight. 93.3% of the respondents think others do not contribute to their weight and 6.7% believe that others contribute to their weight. 83.3% of the respondents are normal eaters and 16.7% eat irregularly. 54.2% of the respondents like their body weight and 45.8% want to lose their bodyweight. 61.7% of the respondents do not prefer restricting diet and 38.3% want to restrict their diet. 93.3% of the respondents prefer normal meal while 1.7% like taking junks. 87.5% of the respondents prefer homemade food and 12.5% prefer readymade food.

TABLE 4: Self-image perception of respondents

| VARIABLE | FREQUENCY | PERCENTAGE (%) |
|-------------------------------------|------------------|-----------------------|
| OBESE PERSON | | |
| Yes | 10 | 8.3 |
| No | 110 | 91.7 |
| EATING HABIT | | |
| Yes | 10 | 8.3 |
| No | 110 | 91.7 |
| SELF CONTRIBUTION TO OBESITY | | |
| Yes | 6 | 5.0 |
| No | 114 | 95.0 |

OTHERS INFLUENCE TO OBESITY

| | | |
|-----|-----|------|
| Yes | 8 | 6.7 |
| No | 112 | 93.3 |

NORMAL EATER

| | | |
|-----|-----|------|
| Yes | 100 | 83.3 |
| No | 20 | 16.7 |

LOOSING WEIGHT

| | | |
|-----|----|------|
| Yes | 65 | 54.2 |
| No | 55 | 45.8 |

RESTRICTION OF DIET

| | | |
|-----|----|------|
| Yes | 46 | 38.3 |
| No | 74 | 61.7 |

SELF CONCIOUS OF BODY SIZE

| | | |
|-----|----|------|
| Yes | 25 | 20.8 |
| No | 95 | 79.2 |

PREFERRED FOOD

| | | |
|-------------|-----|------|
| Junks | 2 | 1.7 |
| Normal Meal | 118 | 98.3 |

EATARY OR HOME MADE FOOD

| | | |
|-----|-----|------|
| Yes | 15 | 12.5 |
| No | 105 | 87.5 |

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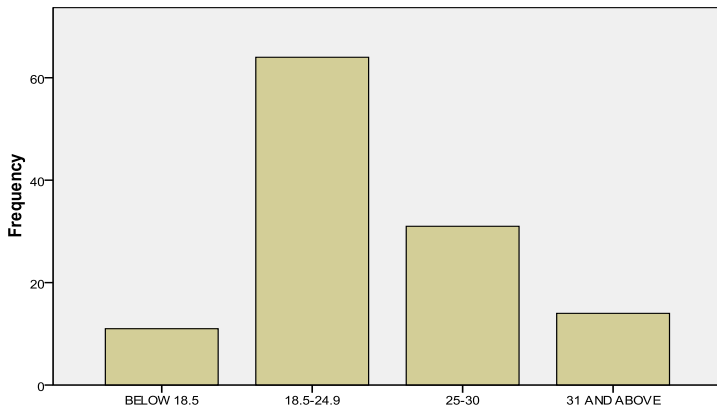


Figure 1: Body mass index

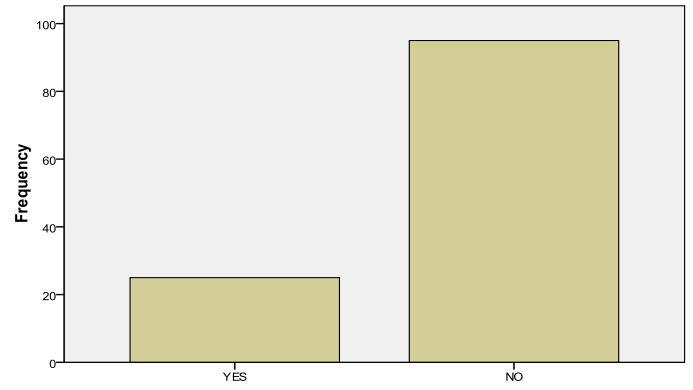


Figure 2: Self-conscious of body size

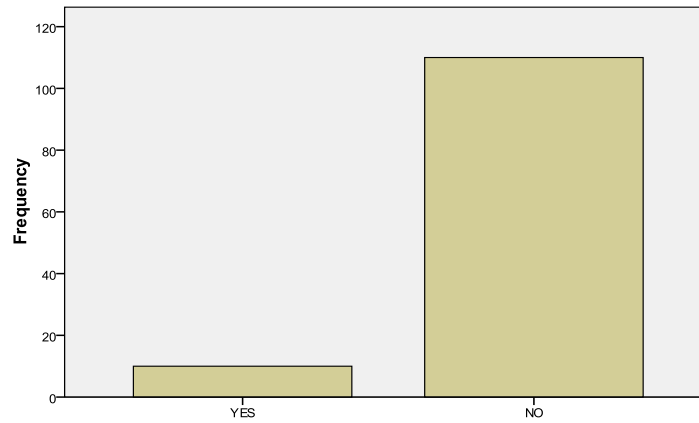


Figure 3: Obese person

Reference: Field Survey

The figures show body mass index, self-conscious of the body size and obese people chart

Discussion

Maintaining a healthy weight significantly affects various aspects of physical and mental health, increases energy levels, and improves self-esteem. These factors can contribute to a more active, fulfilling lifestyles, making daily activities easier. Several studies have consistently shown that maintaining a healthy weight is associated with a longer lifespan (**Luisa et al., 2017**), the socio-demographic and economic aspects of this study conform with (**Sanusi et al., 2015**), from their

Report on factors associated to overweight and obesity among civil servants in Lagos, Nigeria This make it an evidence due to the large of numbers of Christianity religious worshipers in the western part of the country and the great zeal they show towards education.

Despite its limitations, BMI continues to play a vital role in public health, especially in resource-limited settings where more advanced body composition analysis tools are not readily available (**District, 2013**). Several studies reveal that individuals with a BMI above 24.9 (overweight) or 29.9 (obese) are more likely to suffer from conditions like hypertension, dyslipidemia, and insulin resistance, all of which are precursors to more severe diseases (**Fruh, 2017**). In this study, 9.2% of the respondents has BMI below 18.5 (underweight), 53.3% of the respondents have BMI between 18.5-24.9 (Normal), 25.8% of the respondents has BMI between 24.9-29.9 (overweight), and 11.7% of the respondents are obese (29.9 and above). However, this agrees with the report from (**Ogunlade and Asafa, 2018**)

BMI is used to track changes in weight and fat distribution as well as identify adults who may be at an elevated risk of CVD, diabetes, and premature mortality from all cause (**Benefits, 2016**). Furthermore, BMI serves as an early screening tool for obesity-related risks. Regular tracking of BMI allows healthcare providers to identify individuals who are at risk of moving into higher BMI categories, which correspond to elevated disease risk (**Ogunlade and Asafa, 2018**) and (**Omage and Omuemu, 2018**). Studies show that BMI tracking can be particularly valuable in population-level surveillance, helping public health officials monitor obesity trends and intervene through policy changes and health promotion efforts (**Fruh, 2017**).

Contrary to the belief that skipping meals can help with weight loss, studies suggest that it may lead to weight gain and adverse changes in body composition. Skipping meals often results in increased hunger later in the day, which can lead to overeating or the consumption of high-calorie, nutrient-poor foods (**Zeballos and Todd, 2020**), skipping a meal leads to greater energy intake at subsequent meals: skipping breakfast led individuals to eat more energy content at lunch, and skipping lunch led individuals to consume more energy content at dinner (**Tate et al., 2012**). However, the findings conform to (**Agric, 2017**), in their report on dietary diversity and nutritional status of street food consumers in oyo, south western Nigeria.

According to (**Factors, 2015**) focusing on hunger cues, savoring food, and eating slowly helps prevent overeating. Emotional and stress-related eating are also managed with mindfulness-based interventions. However, 91.7% of the respondents think that they are not obese while 95.0% think that they don't contribute to their weight. The findings are in accordance with the report from **District (2013) and Nuttall (2015)** which found that both obese and non-obese individuals often hold implicit negative attitudes towards uncontrolled or overeating and that people with obesity may have a blunted response to internal hunger and satiety signals, leading to unconscious eating beyond the body needs. Contrary to (**Ogunlade and Asafa, 2018**) in their study of pattern and prevalence of underweight, overweight and obesity among young Nigerian adults reported high value of adult with self-conscious of their weight. Furthermore, normal body weight do not only prevent the high risk of non-communicable diseases alone but also reduce frequent hospital visit regarding ill-health, also help individuals to improve their physical function, endurance, and overall quality of life. It is as well crucial to know that overweight and obesity can negatively impact self-esteem and body image, leading to mental health issues such as depression and anxiety (**Sanusi et al., 2015**).

Conclusion

Although this finding unveils a healthy eating pattern and normal weight from most of the participants, it is crucial to maintain a balance between energy intake and energy expenditure so as to reduce the risk of developing complications of obesity and other related nutritional disorders. This study also reveals that sedentary lifestyle or physical inactivity contributes to the

increase in body weight leading to obesity, it is therefore important to engage in more physical activity to curtail the high risk of obesity and other non-communicable diseases. Health education and other interventions to promote healthy eating habits and lifestyles, especially among high risk groups are suggested

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Conflict Of Interest

The authors declare no conflict of interest.

Authors' Contributions

This study was carried out in collaboration between all authors. All the authors contributed substantially to the conceptualization and design of the study, data collection, and analysis, and drafting and reviewing the manuscript.

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**DIETARY PATTERN AND PREVALENCE OF OBESITY AMONG NON-TEACHING STAFF IN
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