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KNOWLEDGE OF OBESITY AMONG THE STAFF OF THE INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE, NIGERIA

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ABSTRACT

Background: Obesity is defined as abnormal or excessive fat accumulation that presents a risk to health. The health implication of obesity is of growing significance in public health especially in the developing nations like Nigeria and knowledge is the most powerful weapon to prevent a disorder such as obesity.

Objectives: The aim of this study was to determine the extent of the problem of obesity and people's awareness about causes, health implications and complications of obesity.

Method: A cross-sectional descriptive survey was carried out and 206 employees were selected randomly proportional to the staff categories. A pre-tested structured questionnaire was used to obtain socio-demographic data and knowledge of obesity. The weight and height of the subjects were measured.

Results: A total of 206 subjects were recruited with male to female ratio of 1.9:1. The senior and junior staff constituted 45.1% and 54.9% of the subjects respectively. The overall prevalence of obesity among the subjects was 12.1% (9.7% for male; 16.7% for female, p = 0.29) and almost two-third of the subjects (64.6%) had good overall knowledge of obesity. The prevalence of obesity among the subjects who had poor overall knowledge of obesity was 25.0% while it was 9.0% among the subjects who had good overall knowledge of obesity (p = 0.30). Conclusion: It was discovered from this study that majority of the subjects had good overall knowledge of obesity and that the prevalence of obesity was lower among the subjects who had good knowledge of obesity.

Key Words: Obesity, Knowledge, Staff, Nigeria

INTRODUCTION

Obesity is defined as abnormal or excessive fat accumulation that presents a risk to health. Body mass index (BMI), expressed as the ratio between weight (measured in kilogram) and the square of height (in metres), is used to measure the 'degree of fatness'.[1] A BMI between 25 and 29.9 is defined as overweight, whilst a value above or equals 30 is defined as obese.[1] Obesity was once considered a problem only in high income countries but is now dramatically on the rise in low- and middle-income countries, particularly in urban settings. Obesity also appears to be increasing rapidly among children and adults, implying that the health consequences will become fully apparent in the future.[2]

Overweight and obesity are the fifth leading risk for global deaths. At least 2.8 million adults die of related diseases each year as a result of being overweight or obese. In addition, 44.0% of the diabetes burden, 23.0% of the ischaemic heart disease burden and between 7.0% and 41.0% of certain cancer burdens are attributable to overweight and obesity.[3] Obesity has been found to increase the risk of developing chronic non-communicable diseases such as hypertension, diabetes mellitus, osteoarthritis, ischaemic heart diseases, hypercholesterolaemia and certain cancers.[4] The health implication of obesity is of growing significance in public health especially in the developing nations like Nigeria where it is contributing significantly to the added burden of non-communicable

diseases to the existing communicable diseases, thus resulting in a double burden of disease.[5]

Many factors have been identified as the causative agents of obesity. They include hormones, high adipose cell count, heredity, defective metabolic mechanism, large fat cell, brown fat, lack of physical exercise and over-eating. However, the most common and main cause is consumption of calories in excess of the normal body requirements.[6] Knowledge is the most powerful weapon to prevent a disorder such as obesity and many adults put on weight and get to be obese because they simply do not know simple facts, like the causes of obesity and how to prevent it.

This study was carried out to find out the extent of the problem of obesity and people's awareness about causes, health implications and complications of obesity.

Setting
The research was carried out at the International Institute of tropical Agriculture headquarter located in Ibadan, one of the two largest cities in the South Western part of Nigeria. The International Institute of Tropical Agriculture is a multinational agricultural institute involved primarily in research for development that is aimed at ensuring food security and the eradication of hunger in Africa. The headquarter at Ibadan, Nigeria has approximately 605 workers of different cadre mainly from Nigeria and few expatriates from other countries of the world. The institute has a clinic which is operates 24 hours a day and caters for the health need of the staff. The internet facility is readily available for all the staff.

Ethical considerations
The concepts of ethics were duly observed. Approval was obtained from the ethical committee of medical studies of the Institute. Consent was also obtained from the subjects before enlisting them for the study and each subject was given the liberty to decline being part of the survey if there is any personal reservation in participating in the survey. The information obtained from the subjects were handled confidentially with protection of the respondent rights.

Method
The research design was a cross-sectional descriptive survey. The employees were stratified by staff category. Two hundred and six (206) employees were selected randomly proportional to staff categories among junior and senior staff for the study to ensure proportionate representation for each staff category. Pregnant women and staff who had illnesses warranting hospital admission 2 months preceding the time of the survey were excluded from the study.

A pre-tested structured questionnaire designed for the purpose was used to obtain socio-demographic data and knowledge of obesity. The weight was measured and recorded in kilogram to the nearest 0.5kg with the respondent in light clothing using the Seca model weighing scale. The height was measured in centimetres to the nearest 0.1 centimeter using a self-retaining AW tape measure fixed to the wall. The body mass index was computed to the nearest single decimal by dividing the weight in kilogram by the square of the height in meter. Body mass index of 19-24.9Kg/m^2, 25-29.9Kg/m^2 and at least 30Kg/m^2 was regarded as normal, overweight and obesity respectively.[1]

The knowledge of obesity was assessed with 26 questions, 8 questions on aetiology of obesity, 8 questions on the health implications of obesity and 10 questions on the prevention of obesity. The questions were in form of multiple choice and the expected responses were either Yes, No or do not know for each of the questions. Responses to the questions on the knowledge of obesity were scored as follows: Correct responses to the questions were scored one point each. Wrong or no responses were scored zero. Aggregate knowledge score was determined for each respondent. Percentage scores of ≤33%, 34-66% and ≥67% were rated as poor, average and good respectively in line with Smith et al classification.[7]

The data were analyzed using the Statistical Analysis System (SAS version 9.2) software. Simple descriptive and inferential statistics were employed to illustrate findings and ascertain relationships and effects. The level of significance was set at p < 0.05.

RESULTS
A total of 206 subjects were recruited with a mean age of 37.0±10.8 years. The senior and junior staff constituted 45.1% and 54.9% of the subjects respectively. Almost, two-third of subjects (65.0%) were male with a male to female ratio of 1.9:1. Overwhelming majority (97.6%) were Nigerian and more than two-third (68.0%) had tertiary education (Table 1). The overall prevalence of obesity among the subjects was 12.1 % (Figure 1). The prevalence among the female subjects (16.7%) was higher than that of male subjects (9.7%) (p = 0.29) while the proportion of the junior staff who were obese (13.3%) was higher than that of the senior staff category (10.8%) (p = 0.55). The prevalence of obesity increased with age from age 26 and the prevalence of obesity among the subjects whose educational level was below tertiary (13.4%) was greater than that of whose educational level were tertiary (11.5%) (p = 0.82) (Table 2).

Almost two-third of the subjects (64.6%) had good overall knowledge of obesity. The proportion of the subjects who had good knowledge of the causes of obesity, health implications of obesity and prevention of obesity were 49.0%, 66.5% and 64.1% respectively (Table 3). The proportion

of the senior staff that had overall knowledge of obesity (71.0%) was greater than that of the junior staff (59.3%) (p = 0.04) while the proportion of the female that had overall knowledge of obesity (66.7%) was greater than that of male subjects (63.4%) (p = 0.53). Considering the level of education, the proportion of the subjects who had good overall knowledge of obesity was higher among the subject that had tertiary education (66.9%) than those whose educational level was below tertiary (59.7%) (p = 0.22) (Table 4).

The prevalence of obesity among the subjects who had poor overall knowledge of obesity was 25.0% while it was 9.0% among the subjects who had good overall knowledge of obesity (p = 0.30) (Table 2). Considering the sources of knowledge of obesity among the subjects, hospitals/clinics was the leading (26.9%) source of information for the subjects, followed by information derived from personal search from internet and books (24.1%) (Table 5).

DISCUSSION

This study revealed that obesity increased with age among the study population and this finding is in agreement with findings from other part of the country.[1,8,9] The prevalence of obesity found was 12.1% and this finding is similar to what Amira et al[8] and Siminialayi et al[9] found in Lagos and Port Harcourt, Nigeria respectively but this value is lower than that obtain in Canada and United State of America.[10] The difference in prevalence may not be unconnected with the difference in diet, level of physical activity and socioeconomic status. In this study female subjects were found to be more obese than the male subjects and this finding is the same with what was found in other studies.[1,8,9,10]

It was discovered from this study that almost two-third of the subjects had good overall knowledge of obesity and this finding is in support of what Soriano et al[11] and Prakash et al[12] found in Mexico and Nepal respectively but differs from the findings of Ojofeitimi et al[13] in Ile-Ife Nigeria. This finding is not surprising and may not be unconnected with the level of education of the staff of the institute in which more than two-third of the staff had tertiary education. In addition, the sources of knowledge of obesity may be another factor that was responsible for the good knowledge of obesity in this study. The leading source of knowledge of obesity in this study was hospitals/clinics and the availability of a clinic at the institute may be responsible for this. The clinic is open 24 hours a day and patients usually listen to health talk at least once a week before consultation. Furthermore, next to the information received from the clinic is information derived from

personal search from internet and books and availability of the internet facility and level of education of the staff may be the factors that were responsible for this. It was discovered from this study that the prevalence of obesity among the subjects who had poor overall knowledge of obesity was greater than the prevalence found among the subjects who had good overall knowledge of obesity.

This study revealed that the proportion of the senior staff that had good overall knowledge of obesity was greater than that of the junior staff. This is not unexpected because of the level of education of senior staff and access to internet facility. The disparity in the overall knowledge of obesity may be one of the factors that was responsible for the higher prevalence of obesity among the junior staff than the senior staff. However, it is surprising that female who had higher prevalence of obesity than male had greater proportion of subjects who had good overall knowledge of obesity than male. Though, physical activity was not considered in this study but it has been established that female are generally less active than male and this may be a factor that was responsible for this findings.

CONCLUSION

It was discovered from this study that majority of the subjects had good overall knowledge of obesity and that the prevalence of obesity was lower among the subjects who had good knowledge of obesity. It is imperative to intensify health education about the causes, health implications of obesity and prevention of obesity in order to bring down rising prevalence of obesity in this community.

ACKNOWLEDGEMENT

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Table 1: Socio-Demographic Distribution of the Subjects

Socio-Demographic	Factors	Frequency	Percentage
Gender	Male	134	65.0%
	Female	72	35.0%
	Total	206	100%
Staff Category	Junior	113	54.9%
	Senior	93	45.1%
	Total	206	100%
Ethnicity	Yoruba	153	74.3%
	Igbo & Hausa	25	12.1%
	Others	28	13.6%
	Total	206	100%
Nationality	Nigerian	201	97.6%
	Others	5	2.4%
	Total	206	100%
Level of formal education	Primary	7	3.0%
	Secondary	60	29.0%
	Tertiary	139	68.0%
	Total	206	100%
Age groups	≤25	39	18.9%
	26-35	51	24.8%
	36-45	63	30.6%
	≤46	53	25.7%
	Total	206	100%

Table 2: Association between BMI, socio-demographic characteristics and overall knowledge of obesity

Socio-Demographic Characteristics		Body Mass Index Classification			
		Normal Weight	Overweight	Obese	Row Total & Row percentage
Staff Category	Junior	66 (58.4%)	32 (28.3%)	15 (13.3%)	113 (100%)
	Senior	48 (51.6%)	35 (37.6%)	10 (10.8%)	93 (100%)
	Column Total	114	67	25	206
	Statistical analysis: Chi-square 3.0, df 4, p value 0.55				
Gender	Male	78 (58.2%)	43 (32.1%)	13 (9.7%)	134 (100%)
	Female	36 (50.0%)	24 (33.3%)	12 (16.7%)	72 (100%)
	Column Total	114	67	25	
	Statistical analysis: Chi-square 2.5, df 2, p value 0.29				
Level of Education	Below Tertiary	39 (58.2%)	19 (28.4%)	9 (13.4%)	67 (100%)
	Tertiary	75 (54%)	48 (34.5%)	16 (11.5%)	139 (100%)
	Column Total	114	67	25	206
	Statistical analysis: Chi-Square 1.54, df 3, p value 0.82				
Age	≤25	30 (76.9%)	6 (15.4%)	3 (7.7%)	39 (100%)
	26-35	29 (56.9%)	20 (39.2%)	2 (3.9%)	51 (100%)
	36-45	31 (49.2%)	23 (36.5%)	9 (14.3%)	63 (100%)
	≤46	24 (45.3%)	18 (34.0%)	11 (20.7%)	53 (100%)
	Column Total	114	67	25	206
	Statistics analysis: Chi-square 16.22, df. 6, p value 0.01.				
Overall knowledge of obesity	Poor	6 (37.5.9%)	6 (37.5.9%)	4 (25.0%)	16 (100%)
	Average	30 (52.6%)	18 (31.6%)	9 (15.8%)	57 (100%)
	Good	78 (58.7%)	43 (32.3%)	12 (9.0%)	133 (100%)
	Column Total	114	67	25	206
	Statistical analysis: Chi-square 4.9, df 4, p value 0.30				

Table 3: Frequency and percentage distribution of the knowledge of obesity

| Knowledge of Obesity		Frequency	Percentage
Knowledge of the definition and causes of obesity	Good	101	49.0
	Average	91	44.2
	Poor	14	6.8
	Total	206	100.0

Knowledge of the health implications of obesity	Good	137	66.5
	Average	53	25.7
	Poor	16	6.8
	Total	206	100.0
Knowledge of the prevention and control of obesity	Good	132	64.1
	Average	60	29.1
	Poor	14	6.8
	Total	206	100.0
Overall knowledge of obesity	Good	133	64.6
	Average	57	27.7
	Poor	16	7.7
	Total	206	100.0

Table 4: Association between overall knowledge of obesity and the socio-demographic characteristics

Socio-Demographic Characteristics		Overall Knowledge of Obesity			
		Good	Average	Poor	Row Total & Row percentage
Staff Category	Junior	67 (59.3%)	37 (32.7%)	9 (8%)	113 (100%)
	Senior	66 (71.0%)	20 (21.5%)	7 (7.5%)	93 (100%)
	Column Total	133	57	16	206
	Statistical analysis: Chi-square 10.1, df 4, p value 0.04				
Gender	Male	85 (63.4%)	40 (29.9%)	9 (6.7%)	134 (100%)
	Female	48 (66.7%)	17 (23.6%)	7 (9.7%)	72 (100%)
	Column Total	133	57	16	206
	Statistical analysis: Chi-square 1.28, df 2, p value 0.53				
Level of Education	Below Tertiary	40 (59.7%)	21 (31.3%)	6 (9%)	67 (100%)
	Tertiary	93 (66.9%)	36 (25.9%)	10 (7.2%)	139 (100%)
	Column Total	133	57	16	206
	Statistical analysis: Chi-Square 5.73, df 3, p value 0.22				
Age	≤25	26 (66.7%)	10 (25.6%)	3 (7.7%)	39 (100%)
	26-35	26 (51.0%)	20 (39.2%)	5 (9.8%)	51 (100%)
	36-45	42 (66.7%)	18 (28.6%)	3 (4.7%)	63 (100%)
	≤46	39 (73.6%)	9 (17.0%)	5 (9.4%)	53 (100%)
	Column Total	133	57	16	206
	Statistics analysis: Chi-square 8.11, df. 6, p value 0.23.				

Table 5: Distribution of the sources of knowledge of obesity among the respondents

Sources knowledge	Frequency	Percentage
Radio and TV	100	23.2
Newspaper	82	19.0
Hospitals/clinics	116	26.9
Personal search from internet and books	104	24.1
Church/Mosque	18	4.2
Others	11	2.6
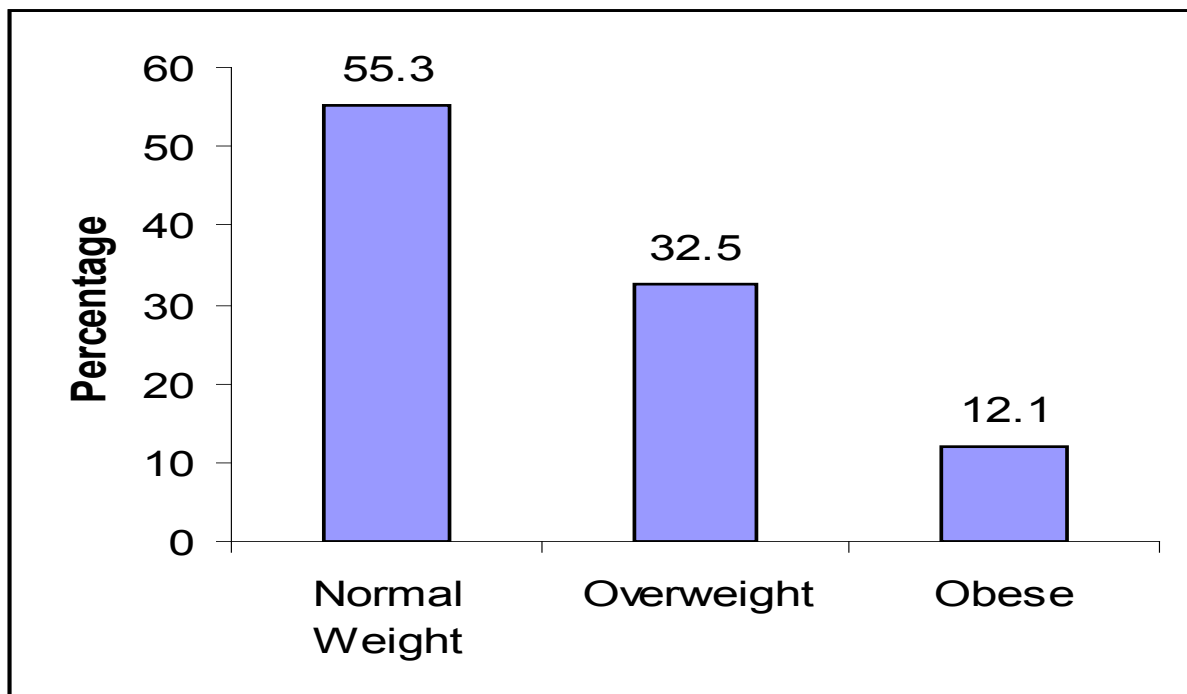
Figure 1: Distribution by the Body Mass Index (BMI) Classification