Knowledge, Attitude and Practice of Obesity Among Preclinical Students of the University of Benin, Edo State, Nigeria

[*1]Bolarinde, Samuel Olufemi, [2]Oke, Kayode Israel, [3]Olukolatimi Shalom Duyilemi
[1]Physiotherapy Department, Federal Medical Centre, Owo. Ondo state Nigeria
[2, 3]Physiotherapy Department, University of Benin, Edo state

[*]Corresponding author
Phone Number: +234803377547

Abstract
Background/Objectives: Obesity is becoming a fast-rising epidemic which is affecting both developed and developing countries of the world. It is a major risk factor for numerous chronic diseases such as cardiovascular diseases (CVD), type-II diabetes, gallbladder diseases, and various malignancies and impairs quality of life. It is also a leading cause of death. This study aimed to determine the knowledge, attitude and practice of obesity among preclinical students of the University of Benin, Edo state, Nigeria. **Materials and Methods:** This cross-sectional study recruited 324 preclinical students of the University of Benin. A self-administered questionnaire on knowledge, attitude and practice of obesity among obese individuals was used to obtain information from the participants. The data was analyzed using the descriptive statistics of percentage and frequency. Inferential statistics, Mann Whitney U tests were used for significant associations between the variables. The alpha level was set at 0.05 and all analysis was carried out using SPSS version 24.0**. Results and Conclusion:** The results showed that a larger percentage of the participants 276(85.2%) had adequate knowledge of obesity while a majority of the participants 232 (71.2%) demonstrated negative attitudes towards obesity. A large number of the participants 315 (96.6%) had a poor practice regarding obesity. This study also showed that a statistically significant difference was observed between male and female preclinical undergraduates regarding knowledge, attitude and practice of obesity.

Keywords— Knowledge, Attitude, Practice, Obesity, Preclinical

Introduction

Obesity is defined as the abnormal accumulation of excess fat in the body that poses a great health risk. An index to measure obesity is the body mass index (BMI), which involves an individual's weight (in kilograms), divided by the square of his or her height (in meter square). A person with a BMI of 30 or more is said to be an obese individual obese (1). It may occur due to an increase in the intake of caloric foods or a decreased level of physical activity (2). The common methods for determining obesity are body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR) among which body mass index (BMI) is the most used. It is measured in the metric system as weight (in kilograms) divided by height (in meters squared).

Among Asian populations, the value for overweight has been lowered to greater than 23 as compared to an international limit of greater than 25 and for obesity, it has been lowered to greater than 25 as compared to an international limit of greater than 30 (3).

The factors that predispose an individual to obesity include genetic conditions, unhealthy diet, physical inactivity, and psychological as well as behavioural factors (4). Stress is seen as a crucial factor which contributes to obesity because stress results to physical inactivity which is an independent contributing factor of obesity

(5). Consumption of high-caloric foods combined with unhealthy snacking habits promotes unhealthy weight gain (6). Poor eating habits are a major public health concern for individuals who are admitted into the university system (7). The constancy of shopping malls, convenience stores, and vending machines has resulted in young adults adopting unhealthy eating habits (8). The commonly reported unhealthy habits include skipping meals, snacking, low vegetable and fruit consumption and fast-food consumption (9). Evidence from several studies has shown that obesity markedly increases the risk of several chronic diseases including cardiovascular diseases (CVD), type-II diabetes, gallbladder diseases, and various malignancies and impairs quality of life (10). The less severe but debilitating health risks that are due to obesity also include respiratory difficulties, chronic musculoskeletal problems, skin problems and infertility (11). Obesity can have a negative impact on a person's personality and also have many social effects on the mental health of obese individuals. Furthermore, the society may not comprehend the pain and challenges face by obese individual which include neglect in society, performing badly in academics, having low self-esteem and rejection during the job search (12).

Across the globe, obesity is a major contributor to ill health that affects more than 300 million people across all age groups which results in decreased life expectancy and health-related quality of life among high- and low-income countries (13-16). Published data shows that the rising epidemic of obesity in developing countries could be a result of nutritional transition in these countries across the past two decades (17-18).

Data from WHO between 2002 and 2016 illustrated the prevalence of obesity in Nigeria with an increase of approximately 15%. In 2020, an estimated 12 million individuals presented with obesity in Nigeria. The high rate of obesity led to an increase in non-communicable diseases (NCDs) such as diabetes mellitus (WHO, 2020). Estimated 5.8% (n= 6 million) of Nigerians adults were diagnosed with diabetes mellitus in 2018 with a consequential impact on the mortality rate (19-20).

Previous studies have investigated knowledge attitude and practice of obesity among different population (21-26). For instance, Bolarinde et al, (24) and Oyewande *et al* (26) reported adequate knowledge of obesity among obese individuals, however they concluded that adequate knowledge does not translate to good practice among the participants. The result of a study conducted in Pakistan shows the need to bridge the gap between knowledge and practice of obesity among medical student (23).

Obesity is a growing public health concern worldwide and it is important to understand the knowledge, attitude, and practice in order to develop effective prevention and intervention strategies. Therefore, the present study is designed to investigate knowledge, attitude and practice regarding obesity among preclinical students of the University of Benin.

Materials and Methods

This cross-sectional study recruited 324 preclinical students of the University of Benin, Edo state, Nigeria. Ethical approval for this study was sought and obtained from the Ethical and Research Committee of the College of Medical Sciences, University of Benin, Edo state, Nigeria (Reference Number: CMS/REC/2023/438) prior to the commencement of the study. Participants' informed consent was also sought and obtained. Data was obtained through a self-administered questionnaire. The questionnaire contains four sections: The first section contained the sociodemographic data of the respondents. The second section contained questions on the knowledge of obesity, the third section contained questions on the

attitude towards obesity and the last section

contained questions on the practice of obesity's risk behaviors

Data collected were analyzed using descriptive statistics of frequency and percentages. Inferential statistics of Mann-Whitney U Test were used to ascertain the level of significance between males' and females' knowledge, attitude and practice of obesity. Alpha level was at 0.05.

Results

Presented in Table 1 are the Sociodemographic characteristics of the respondents. The results show that 125 (38.6%) were males while 199 (61.4%) of the participants were females. Half of the respondents 162 (50.0%) were in their 2nd year of study. The majority of the participants 156 (48.1%) fell within the age range of 16 to 20 years. Out of the 324 students that participated in the study, the Nursing department had the highest representation 100 (30.9%), while the Radiography department had the lowest representation accounting for 6.8% of the total participants. The result also shows that the majority of the respondents had normal weight (84.0%), 8.4% were obese and 5.9% were overweight.

The participants were distributed across different academic years as follows: 88 (27.2%) were in their 1st year, 162 (50.0%) in their 2nd year and 74 (22.8%) in their 3rd year.

Table 2 shows the results of respondents' knowledge about obesity. The result shows that 219 (67.6%) of the respondents believed that Body Mass Index (BMI) can be used to assess obesity. 44.4% of the respondents agreed that having more fat over the abdomen is more dangerous than an overall increase in fat distribution, leading to increased cardiovascular problems. Furthermore, the majority of the respondents 283 (87.3%) agreed that obesity is linked to complications like heart diseases, such as heart attack and increased blood pressure. The result of overall knowledge regarding obesity among the respondents revealed that 276 (85.2%) of the respondents had adequate knowledge about obesity while 68 (14.8%) had inadequate knowledge.

Presented in Table 3 is the respondents' attitude to Obesity. The result shows that the majority of the respondents 272 (84.0%) do not consider themselves obese, similarly, 248 (76.5%) do not consider their current weight to be harmful to their health. 240 (74.1%) considered regular breakfast intake as part of a healthy lifestyle while 125 (38.6%) considered small and frequent meals to help in weight reduction. Furthermore, 109 (33.6%) never feel motivated to lose weight, 94 (29.0%) never find it difficult to keep their weight steady, 220 (62.9) never feel sad or depressed considering that they are obese while only 130 (40.1%) of the respondents were satisfied with their current level of physical activity. The result of the overall attitude scores showed that the majority of the respondents 232 (71.2%) had a negative attitude toward obesity while only 91 (27.9%) had a positive attitude towards obesity.

Table 4 shows the results of the respondents regarding the practice of obesity. 102 (31.5%) of the respondents eat in response to stress while 112 (34.6%) rarely drink sugar-sweetened beverages. 97 (29.9%) had the habit of adding additional sugar to their coffee or tea while 122 (37.7%) sometimes take a sweet dish after meals. 136 (42.0%) take three major meals and two minor meals at least 3-4 times a week while 137 (42.3%) consume 1 snack per day. 127 (39.2%) do include fruits and salads in their diet once a month. Regarding exercise, 90 (27.8%) exercise once within a month while 91 (28.1%) of the respondents exercise for less than 15 minutes. The majority of the respondents 231 (71.3%) never consult their doctor or dietician for weight reduction. 132 (40.7%) respondents currently exercise but not regularly. The overall scores revealed that the majority of the respondents 315 (96.6%) had a poor practice regarding obesity only 9 (2.8%) had a good practice of obesity.

Table 5 shows the result of Man Whitney U test of significance difference in knowledge, attitude and practice of obesity between male and female respondents. A statistically significant difference was observed in knowledge (U=9230.000, p=0.001) and practice (U=10337.500, p=0.010) of obesity between male and female preclinical students. Similarly, a statistically significant difference was observed between male and female preclinical undergraduates regarding attitudes towards the risk factors for obesity (U=9744.000, p=0.001).

Discussion

The primary aim of this study was to determine the knowledge, attitude and practice of obesity among the preclinical undergraduates of the University of Benin, Edo state, Nigeria. The result of this study showed that 276(85.2%) of the respondents had adequate knowledge of obesity while 68 (14.8%) of the respondents had inadequate knowledge of obesity. This shows that, there is an adequate knowledge of obesity among the preclinical undergraduates of the University of Benin. The finding from this study is similar to the findings from other previous studies by various researchers. Bolarinde *et* al (24) in their study reported adequate level of knowledge of overweight and obesity among the participants similarly, Alhawiti *et al* (3) and Shahid , et al (25) also reported that the level of knowledge of obesity among their study participants were satisfactory.

However, the present study findings contradict Oyewande et al (26) and Xue et al's reports (21) which reported a poor or inadequate knowledge of obesity among their participants. The difference in the findings from the present study and Oyewande`s study could be due to the fact that Oyewande`s study was carried among secondary school students while the present study was carried out among the preclinical undergraduates who are studying to become health practitioners.

The present study showed that majority of the respondents 232 (71.2%) had a negative attitude towards obesity while only 91 (27.9%) had a positive attitude towards obesity. This shows that there is a negative attitude towards obesity among the preclinical undergraduate of the University of Benin. The result from the present study compares favourably with the findings of Oyewande *et al* (26) and Alhawiti *et al* (3) that observed high level of negative attitudes towards obesity among their study participants. Result from the present study however contradicts findings from a study done by Bolarinde et al (24) which reported that greater number of the participants (69.58%) demonstrated right attitudes towards overweight, weight control and weight reduction program.

Observation from this present study showed that majority of the respondents 315 (96.6%) had a poor practice regarding obesity while 9 (2.8%) had a good practice of obesity. The observed result therefore supports the findings by Bolarinde et al (24), Alhawiti *et al* (3) and Xue *et al* (21) that reported a poor practice for obesity among their respondents. Although the result of a study conducted by Jaganathan *et al* (27) among preclinical undergraduates reported that, there was a good practice of obesity among the respondents, observations from the present study shows that despite the sound knowledge of obesity demonstrated by the respondents, unhealthy practices of obesity were high among the preclinical undergraduates of University of Benin.

Conclusion

Observation from the present study shows that, preclinical undergraduates of University of Benin, Edo State, Nigeria, had adequate knowledge of obesity but demonstrated negative attitude and poor practice of obesity. This study therefore concluded that adequate knowledge of obesity does not translates to positive attitude and good practice of obesity.

Conflict of interest:

The authors declare no conflict of Interest in this study.

Source of Funding

The study was self-sponsored

Table 1: Socio-demographic characteristics of the respondents (N=324)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	125	38.6
	Female	199	61.4
Age	16-20	156	48.1
	21-25	138	42.6
	26-30	30	9.3
Department	Dentistry	45	13.9
	Medical Laboratory Science	41	12.7
	Medicine and Surgery	54	16.7
	Nursing	100	30.9
	Physiotherapy	62	19.1
	Radiography	22	6.8
Level	100	88	27.2
	200	162	50.0
	300	74	22.8
BMI classification	Underweight	6	1.9
	Normal weight	272	84.0
	Overweight	19	5.9
	Obese	27	8.4

Table 2: Knowledge of respondents about obesity (N=324)

Variable	Definitely N (%)	Probably N (%)	Probably Not N (%)	Definitely Not N (%)	Don't know N (%)
Obesity can be assessed by an entity called BMI	219 (67.6)	63 (19.4)	4 (1.2)	0 (0)	38 (11.7)
More fat over the abdomen is dangerous than overall increase in the distribution of fat in terms of causing increased cardiovascular problems	144 (44.4)	111 (34.3)	32 (9.9)	20 (6.2)	17 (5.2)
Obesity is associated with heart diseases, such as heart attack, increased blood pressure etc.	283 (87.3)	34 (10.5)	3 (9)	1 (3)	3 (9)
Obesity is associated with diabetes	139 (42.9)	96 (29.6)	42 (13.0)	33 (10.2)	14 (4.3)
Obesity is associated with Osteoarthritis	189 (58.3)	94 (29.0)	22 (6.8)	4 91.2)	15 (4.6)
Fasting/skipping meals is a good way to lose weight	119 (36.7)	73 (22.5)	60 (18.5)	69 (21.3)	3 (9)
Excess sugar consumption in the form of sweets; additional sugars in coffee etc., is an important risk factor which leads to overweight/obesity	212 (65.4)	74 (22.8)	20 (6.2)	14 (4.3)	4 (1.2)
Frequent consumption of sugar-sweetened beverages (pepsi/coca-cola) leads to weight gain.	211 (65.1)	73 (22.5)	20 (6.2)	16 (4.9)	4 (1.2)
Frequent fried consumption (Samosa, fries, wafers, etc) leads to weight gain.	228 (70.4)	72 (22.2)	19 (5.9)	2 (0.6)	3 (0.9)
Excessive consumption of refined foods (bread/biscuits/moms, etc.) leads to weight gain	193 (59.6)	95 (29.3)	24 (7.4)	6 (1.9)	6 (1.9)
Constant stress is a risk factor which leads to weight gain	77 (23.8)	70 (21.6)	60 (18.5)	109 (33.6)	8 (2.5)
Regular aerobic exercises such as running, jogging, swimming, playing outdoor sports etc., is an important way of losing weight	296 (91.4)	24 (7.4)	3 (0.9)	1 (0.3)	0 (0)
Anti-obesity drugs are preferred way of reducing weights	43 (13.3)	91 (28.1)	92 (28.4)	83 (25.6)	15 (4.6)
Meal replacers/supplements are a healthy way to lose weight	109 (33.6)	124 (38.3)	49 (15.1)	30 (9.3)	12 (3.7)
Respondents with adequate knowledge	**276(85.2%)**				
Respondents with inadequate knowledge	**68 (14.8%)**				

Table 3: Attitude of respondents about obesity (N=324)

Variable	Definitely N(%)	Probably N(%)	Probably Not N(%)	Definitely Not N(%)	Don't know N(%)
I consider myself obese	8 (2.5)	19 (5.9)	19 (5.9)	272 (84.0)	6 (1.9)
I consider my current weight to be harmful for my health	14 (4.3)	25 (7.7)	35 (10.8)	248 (76.5)	2 (0.6)
I consider regular breakfast intake to be part of healthy lifestyle	240 (74.1)	49(15.1)	20 (6.2)	14 (4.3)	1 (0.3)
I consider small and frequent meals help in weight reduction	125 (38.6)	114(35.2)	57 (17.6)	21 (6.5)	7 (2.2)
Variable	**Always N(%)**	**Very Often N(%)**	**Sometimes N(%)**	**Rarely N(%)**	**Never N(%)**
I am motivated to lose weight	33 (10.2)	28 (8.6)	82 (25.3)	72 (22.2)	109 (33.6)
I find it difficult to keep my weight steady	32 (9.9)	39 (12.0)	74 (22.8)	85 (26.2)	94 (29.0)
I feel sad/depressed considering that I am obese/overweight	20 (6.2)	20 (6.2)	29 (9.0)	35 (10.8)	220 (67.9)
Variable	**Extremely Confident N(%)**	**Very Confident N(%)**	**Moderately Confident N(%)**	**Slightly Confident N(%)**	**Not at all Confident N(%)**
I am confident that I would reduce sugars/sweets in my diets	59 (18.2)	65 (20.1)	102 (31.5)	70 (21.6)	28 (8.0)
I am confident that I would avoid fried foods	33 (10.2)	37 (11.4)	104 (32.1)	76 (23.5)	74 (22.8)
I am confident that I would prefer salads/low calorie snacks instead of sweets/fried foods/refined foods in my diet.	47 (14.5)	58 (17.9)	90 (27.8)	64 (19.8)	65 (20.1)
I am confident that I would do physical activities such as jogging, running etc., or any other activity that makes me healthy	64 (19.8)	83 (25.6)	91 (28.1)	61 (18.8)	25 (7.7)
I am confident that I would engage in some sort of household activities when I am free	100 (30.9)	121 (37.3)	59 (18.2)	32 (9.9)	12 (3.7)
I am confident that I would use the stairs instead of lift.	81 (25.0)	80 (24.7)	72 (22.2)	54 (16.7)	37 (11.4)
Variable	**Very Satisfied N(%)**	**Satisfied N(%)**	**Neither N(%)**	**Dissatisfied N(%)**	**Very Dissatisfied N(%)**
I am satisfied of my current physical activity level	66 (20.4)	130 (40.1)	64(19.8)	52 (16.0)	12 ((3.7)

Respondents with Overall positive attitude 91 (27.9%)
Respondents with Overall negative attitude 232 (71.2%)

Table 4: Practice of respondents about obesity (N=324)

Variable					
I add additional sugar in my coffee/tea/buttermilk	Always 58(17.9%)	Very often 55(17.0%)	Sometimes 97(29.9%)	Rarely 66(20.4%)	Never 48(14.8%)
I eat in response to stress	All the time 18(5.6%)	Most often 53(16.4%)	Some of the time 102(31.5%)	Seldom 90(27.8%)	Never 61(18.8%)
How often do you take three major meals and two minors' meals in a week?	All 7 days a week 48(14.8%)	5-6 times a week 77(23.8%)	3-4 times a week 136(42.0%)	Once a week 37(11.4%)	Never 26(8.0%)
Apart from the three major meals and two minor meals, how many snacks do you consume in a day?	0 meal 55(17.0%)	1 meal 137(42.3%)	2 meal 89(27.5%)	3 meal 23(7.1%)	>3 meal 20(6.2%)
I include fruits/salads in my diet More than once a day	More than once a day 23(7.1%)	4-6 times a week 18(5.6%)	1-3 times a week 111(34.3%)	Once a month 127(39.2%)	Never 45(13.9%)
How frequently do you exercise?	Everyday 54(16.7%)	4-6 times a week 23(7.1%)	1-3 times a week 82(25.3%)	Once a month 90(27.8%)	Never 75(23.1%)
For how long do you exercise in a day?	Not at all 87(26.9%)	<15 mins 91(28.1%)	15– 30 mins 82(25.3%)	30-60 mins 36(11.1%)	> 60 mins 28(8.6%)
I consult my doctor/dietician for weight reduction	Always 8(2.5%)	Very often 13(4.0%)	Sometimes 28(5.6%)	Rarely 54(16.7%)	Never 231(71.3%)
Good practice	**9 (2.8%)**				
Poor practice	**315 (96.6%)**				

Table 5: Mann Whitney U test of significance difference in knowledge, attitude and practice of obesity between male and female respondents (N=324)

	Gender	N	Mean Rank	Sum of Ranks	U	P
Knowledge	Male	125	136.84	17105.00	9230.000	<0.001
	Female	199	178.62	35545.00		
Practice	Male	125	179.30	22412.50	10337.500	<0.010
	Female	199	151.95	30237.50		
Attitude	Male	125	184.05	23006.00	9744.000	<0.001
	Female	199	148.96	29644.00		

References

1. World Health Organization. Obesity. 2017. [cited 2017 October]. Available at: https://www.who.int/topics/obesity/ en/
2. James, P.T., Leach, R., Kalamara, E. and Shayeghi, M., 2001. The worldwide obesity epidemic. *Obesity research*,*9*(S11), pp.228S-233S
3. Alhawiti, R.M., 2021. Knowledge, attitude, and practice about obesity among adults (18-45 years) in primary health care in Medina, KSA 2019. *Age*, *18*(28), p.101
4. Ellulu, M., Abed, Y., Rahmat, A., Ranneh, Y. and Ali, F., 2016. Epidemiology of obesity in developing countries: challenges and prevention. *Global Epidemic Obesity*, *2*(1), p.2.
5. Kumar, S., Mahabalaraju, D.K. and Anuroopa, M.S., 2007. Prevalence of Obesity and Its Infl uencing Factor among Affl uent School Children of Davangere City. *Indian journal of community medicine*, *32*(1), pp.15-17.
6. World Health Organization, International Association for the Study of Obesity. The Asiapacific perspective. Redefining obesity and its treatment. Australia: Western Pacific Region: Health Communications Australia; 2003
7. Sajwani, R.A., Shoukat, S., Raza, R., Shiekh, M.M., Rashid, Q., Siddique, M.S., Panju, S., Raza, H., Chaudhry, S. and Kadir, M.M., 2009. Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi, Pakistan. *Journal of the Pakistan Medical Association*, *59*(9), p.650.
8. Nelson, M.C., Story, M., Larson, N.I., Neumark-Sztainer, D. and Lytle, L.A., 2008. Emerging adulthood and college-aged youth: an overlooked age for weight-related behavior change.*Obesity*, *16*(10), p.2205.
9. Baldini, M., Pasqui, F., Bordoni, A. and Maranesi, M., 2009. Is the Mediterranean lifestyle still a reality? Evaluation of food consumption and energy expenditure in Italian and Spanish university students. *Public health nutrition*, *12*(2), pp.148-155.z
10. Popkin, B.M., Adair, L.S. and Ng, S.W., 2012. Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition reviews*, *70*(1), pp.3-21.
11. Dehghan, M., Akhtar-Danesh, N. and Merchant, A.T., 2006. Childhood obesity, prevalence and prevention. *Heart Views*,*7*(2), p.74.
12. Wilborn, C., Beckham, J., Campbell, B., Harvey, T., Galbreath, M., La Bounty, P., Nassar, E., Wismann, J. and Kreider, R., 2005. Obesity: prevalence, theories, medical consequences, management, and research directions. *Journal of the international society of sports nutrition*, *2*(2), p.4.

13. Akinola, I., Jarrett, O., Oduwole, A., Senbanjo, I.O., Njokanma, O.F. and Rogol, A.D., 2016. Prevalence of overweight and obesity among secondary school adolescents in an urban area of Lagos, Nigeria. *African Journal of Diabetes Medicine*, *1*, pp.24-32.
14. Mabiala Babela, J.R., Nika, E.R., Nkounkou Milandou, K.G.C., Missambou Mandilou, S.V., Bouangui Bazolana, S.B.A., Monabeka, H.G. and Moyen, G., 2016.
15. Peeters, A., 2003. NEDCOM, the Netherlands Epidemiology and Demography Compression of Morbidity Research Group. Obesity in adulthood and its consequences for life expectancy: a life-table analysis. *Ann Intern Med.*, *138*, pp.24-32.
16. Ndahayo, S., 2018. Overweight and obesity: Prevalence and level of awareness among adolescents in selected urban and peri-urban secondary schools in Monze, Zambia. *Texila Intern J Public Health*, *6*(Suppl 1), pp.1-14.
17. Popkin, B.M., Adair, L.S. and Ng, S.W., 2012. Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition reviews*, *70*(1), pp.3-21.
18. Ali, M.M. and Zaki, N.A.E., 2017. Assessment of prevalence, knowledge, attitude and practices of obesity among college students in Sohag Governorate. *Int. J. Curr. Res. Med. Sci*,*3*(4), pp.87-96
19. Nkpozi M (2020) Emerging trends in the burden of noncommunicable diseases in the southeast region of Nigeria. Journal of drug delivery & therapeutics 10: 78-85
20. Wilborn, C., Beckham, J., Campbell, B., Harvey, T., Galbreath, M., La Bounty, P., Nassar, E., Wismann, J. and Kreider, R., 2005. Obesity: prevalence, theories, medical consequences, management, and research directions. *Journal of the international society of sports nutrition*, *2*(2), p.4.
21. Xue, B., Zhang, X., Li, T., Gu, Y., Wang, R., Chen, W., Ren, X., Liu, X., Chen, G., Lin, Y. and Pan, C., 2021. Knowledge, attitude, and practice of obesity among university students.Ann Palliat Med, 10, pp.4539-4546.
22. Alhawiti, R.M., 2021. Knowledge, attitude, and practice about obesity among adults (18-45 years) in primary health care in Medina, KSA 2019. *Age*, *18*(28), p.101
23. Sajwani, R.A., Shoukat, S., Raza, R., Shiekh, M.M., Rashid, Q., Siddique, M.S., Panju, S., Raza, H., Chaudhry, S. and Kadir, M.M., 2009. Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi, Pakistan. *Journal of the Pakistan Medical Association*, *59*(9), p.650.
24. Bolarinde, S., Henry, M. and Daniel, I., 2018. Knowledge, attitude and practice of weight reduction among overweight and obese individuals. *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, *1*(4), pp.59-62.
25. Shahid, R., Naeem, A., Riaz, M.M.A. and Ehsan, S.B., 2020. Knowledge, Attitude and Practices Regarding Obesity Among Medical Students in Faisalabad, Pakistan. *Annals of Punjab Medical College (APMC)*, *14*(1), pp.50-53
26. Oyewande, A.A., Ademola, A., Okuneye, T.A., Sanni, F.O., Hassan, A.M. and Olaiya, P.A., 2019. Knowledge, attitude and Perception regarding risk factors of overweight and obesity among secondary school students in Ikeja Local Government Area, Nigeria. *Journal of Family Medicine and Primary Care*, *8*(4), p.1391
27. Jaganathan, R., Ramachandran, V., Ravindran, R., Suganthan, S., Ibrahim, N.A.B., Hisham, M.A.B.B., Akib, M.Z.B.M. and Zulkifli, M.R.B., 2019. Preclinical Students' knowledge, Attitude and Practice Towards Obesity And Overweight. *Malaysian Journal of Public Health Medicine*, *19*(1), pp.41-46.

How to cite this article: Bolarinde, S. O., Oke, K. I., & Olukolatimi, S. D. (2023). Knowledge, Attitude and Practice of Obesity Among Preclinical Students of the University of Benin, Edo State, Nigeria. *Journal of Basic and Applied Medical Sciences, 3(2),* 40-49.