Prevalence of obesity in Central University of Odisha students in association with personal history, dietary pattern, and physical activity

Pranay Pramod Deotale
Social Sciences, Central University of Odisha

Abstract - Introduction:- As prevalence of obesity is increasing day by day and have become a major public health problem in these days. Although growth in adult body generally follows the pattern of weight gain in young age only. Therefore the study is conducted to determine the prevalence of obesity among the students of central university of Odisha. Methods:- Cross Sectional Study was conducted among 210 students of central university of Odisha. Students were informed through consent letter. Body Mass Index was calculated and classified as per WHO classification for Asians. Other relevant data like socio demographic characteristics, personal history, dietary pattern, and Physical activity were collected by using structured questionaries. Also statistical analysis was done with help of SPSS Software version 20. Results :- Study revealed that out of total 210 participated student prevalence of obesity and overweight is 44.2% and 17.1% respectively. In study female student are predominance in obesity and male student in overweight. Most of the female students were not physically active and not having proper diet pattern. Conclusion:- Due to increase in prevalence of obesity in central university of Odisha, university should make a suitable facility for performing physical activity and strict guidelines regarding adding physical activity in the curriculum to prevent the increasing prevalence of obesity among students.

Keywords:- Obesity, BMI (Body Mass Index), Overweight, Physical Activity

INTRODUCTION

In India we all are foodie and love tasty as well as spicy food with ghee and sweet after meal, which gives us good taste and make our brain satisfied. However, it is good to eat tasty food but eating too much of food and doing too little exercise which result in gaining of weight and obesity. Looking after the situation when individual intake excess amount of food it means consuming high amount of energy, particularly fat and sugar, but don't burn energy by doing physical activity which reflect to storage of surplus amount of fat in body. Although WHO defines person is overweight when he or she is having BMI greater than or equal to 25 and obese when he/she is having BMI greater than or equal to 30.

There is no any single cause that influence obesity, and also varies from individual to individual one of the important influencer of obesity is lifestyle of current generation which have been changed a lot due to acceptance of western culture. Trending western cultures followed to influence obesity are adapting to non-physical activity (Mobiles, Computers, Laptops, X-box), attract toward fast-food or Fried food or Street food in daily routine (Processed Meat, High Fats Diary Products, Food with extra added Sugar, and processed high carbohydrate food) by missing meals freshly prepared at home, this all factors not only influence adults but also in youngers which have get surrounded around this western culture and adopted it which mainly results in increase prevalence of high risk diseases like Obesity.

In simple words "Obesity is a complex disease" because it is a main reason of increasing risk of Non-Communicable Diseases. NCDs encompasses vast group of diseases such as Diabetes, Heart Diseases, Heart stroke, Cancer, Blood Pressure, Asthma, Depression, etc. NCDs contribute to around 5.87 Million of all death in India. (WHO, 2014). Globally the prevalence of obesity get nearly tripled between1975 to 2020 and still today problem getting worse. According to WHO, if the prevalence of obesity continues than till 2030 half of world's adults will become obese. In some research it has been also proved that "A faulty gene called fat mass and obesity (FTO) associated gene responsible for some cause of obesity", Because genetic also plays important role in conversion of food into energy and sometimes these genes are also responsible for storage of fat and distribution of fat in body. An individual can be obese or can develop obesity, if one or both the parents are suffering from

obesity. Obesity not only change the physical appearance of individual but change a total lifestyle.

Therefore by looking toward Central University Odisha, University Student are at risk to suffer from dietetic illness and immobility. This study aimed to estimate the Prevalence of obesity among Students.

SIGNIFICANCE

1. To regulate good and healthy lifestyle by knowing the prevalence of obesity among university students.
2. The goal is to know various changes in lifestyle due to obesity among university students.
3. To know status of physically active students and their awareness regarding obesity.

OBJECTIVE

1. To examine obesity status among Central University of Odisha students .
2. To study somatometric difference in male and female.
3. To study active participation rate of physical activity among obese students.

METHODOLOGY

Sample selection
A field study was carried out from 3rd May 2022 to 20th May 2022. All participants recruited were students of The Central University of Odisha total of 210 Students aged 18 to 27 years, both Male and Female Students from Campus had participated in our study. Students were enrolled in the field study after obtaining written informed consent.

Sample Size and Sampling
Our study population consist male and female students of The Central University of Odisha who were randomly selected. In total sample size was 112 males and 98 females from different Departments of University was selected.

Study place
Field practice area is Central University of Odisha, Sunabeda Campus and Hostel Premises.

Type of study

It is cross-sectional study (both qualitative and quantitative), subjects were selected randomly from the Departments of University

Data Collection
First up all Consent letter was given to participant students to inform purpose of study, guaranteeing No risk factors, assurance of confidentiality and their acceptance to voluntary participation by their own consent. After knowing all this things and understand it in well manner by students, participants Signature and date on consent letter was taken. The data collection tool was used in form of questionnaires, only of obese individual. The questionnaire is composed of four main sections. The first one was designed to collect some basic information (demographic) and personal history about the respondents student, including sex, age, faculty, education level, and type of education. Second section which the main questionnaire consisted of questions developed to assess students dietary consumption habits, third last section was related to Physical Habits or activity and General Awareness. Physical Measurements were carried out to measure the height and weight of students to know the BMI (Body Mass Index).

Body weight
Body weight was measured with the student making to stand student in erect posture on weighing scale and weight equally distributed on each leg. Students were instructed to not wear footwear and remove mobile and other things from pocket, after all this process weight was being measured and measurements were noted on measurement sheet carefully.

Height Vertex
Height was measured using a Anthropometric Rod making to stand student in erect posture against a vertical surface and face in FH Plane. Students were instructed to not wear footwear and measurements were noted on measurement sheet carefully.

Operational definitions
Body Mass Index (BMI)
BMI is a measure of body size. The results of BMI measurements helps to know whether the individual is having correct weight for height. BMI was calculated as weight in Kilograms (kg) divided by the square of the height in Meter (m) outcome will be in (Kg/m^2). Asian-

Pacific classifications for BMI was used with the following cut-offs.

To reduce subjective error in study all measurements were taken by the same principal investigator only. A female colleague accompanied the investigator while taking

Population	Range	Frequency	Percent
Female	19-21	37	17.6%
	21-25	61	29.04%
Male	18-21	43	20.4%
	21-27	69	32.85%
Total		210	100%

anthropometric measurement's for females. The approval and clearance on Consent letter from Subjects was taken prior to collect and measurement of data.

Statistical analysis

Data was entered into an MS Excel sheet. Also statistical analysis was done with help of SPSS Software version 20.

Data were analyzed by appropriate statistical techniques. Tables and diagrams were constructed and explained.

RESULTS AND ANALYSIS

The study was designed to assess the status of obesity in Central University of Odisha student. Total 210 student were studied as described in table no 2.1.

Table no 2.1 :- Tabulation of Female and Male according to age

Among the study population majority of students mother are Housewife approx. 200 (95.2%) and 2.9% mother are teacher, 0.5% Private job 0.5% other and 1% Govt. Job, (Table given below 2.2) whereas in case of Father approx. 142 (67.6%) are Farmer, 3.3% father are Private employee, 8.1% Teacher, 10.5% Business man, 5.2% are Govt Employee and 5.2%. Family Income among selected population only 1.9% family income below 25000, 72.4% family income is between 50000 to 1 lakh.

Table no :- 2.2 Distribution of students According Mother and Father Occupation

Mother	Frequency	Percent	Father	Frequency	Percent
Housewife	200	95.2	Farmer	142	67.6
Teacher	6	2.9	Private job	7	3.3
Private job	1	0.5	Teacher	17	8.1
Other	1	0.5	Business man	22	10.5
Govt job	2	1.0	Govt job	11	5.2
Total	210	100.0	Other	11	5.2
			Total	210	100.0

Table no :- 2.3 Distribution of students according to their family income.

Fig no 2.1 Highlights that 202 (96.2) student are Hindu in religion, 5 (2.4)are Christian in religion and 3 (1.4) student are Muslim in religion. In fig no 3.2 when Hindu religion students categories wise distribution was done Other

Backward Classes is 92 (43.8%), General category student 70 (33.3%), Schedule Caste Category Student 41 (19.5%), and Schedule Tribe Category Student 7 (3.3%).
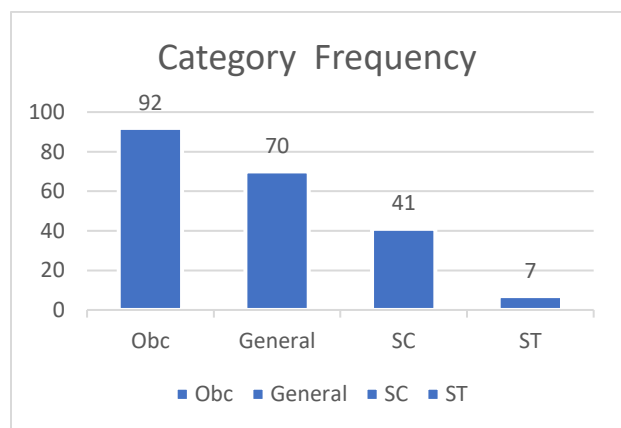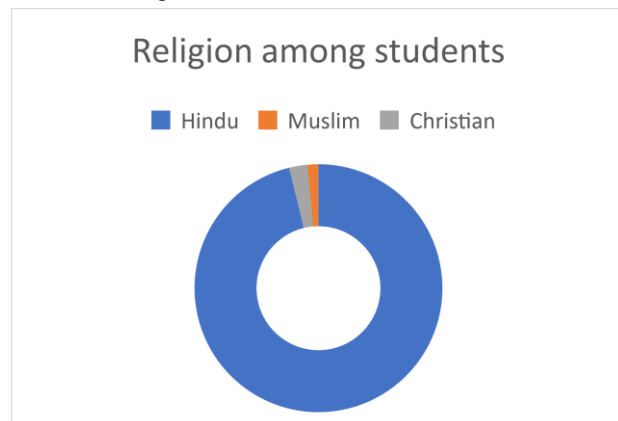

Fig 2.1 Distribution of Students on Religion and Category Basis

Table no 2.4 represents educational status of participated student, in which 40 student were pursuing Under Graduate degree out of which 20 are male and 20 are female, whereas 170 students were pursuing master degree out of which 92 are male and 78 are female these all the Student of various department have participated in our study.

Table no 2.4 Educational Characteristics of study Population and their Hometown

Variables		Frequency		Percent
Education Level	Gender			
UG	Male	20	40	19.0%
	Female	20		
PG	Male	92	170	81.0%
	Female	78		
Department students				
Odia		15		7.1%
English		16		7.6%
Hindi		8		3.8%
Sanskrit		6		2.9%
Anthropology		28		13.3%
sociology		23		11.0%
Economics		24		11.4%
JMC		2		1.0%
Education		28		13.3%
Mathematics		15		7.1%
Computer Science		14		6.7%
Biodiversity		13		6.2%
M.B.A		8		3.8%
Statistics		10		4.8%
Hometown Type				
Rural		124		59.0%
Urban		86		41.0%

Below table no 2.5 represents physical measurements taken by us in which Weight, Height, were measured of both male and female. Minimum height vertex was found in total population is 141.3 cm and maximum height 187.5 cm, Mean. Weight in total population is maximum 102 kg and minimum 44 kg Mean of total population is 62.9 kg and Standard deviation is 10.0 kg.

Table no 2.5 Physical measurements statistical analysis of male and Female and total Population.

Measurements	Male		Female		Total Population			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mini.	Max.
Height	165.1580	6.6	153.6	5.4	159.7	8.3	141.3	187.5
WEIGHT	63.7679	9.6	61.9	10.5	62.9	10.0	44.0	102.0

Operational Measurement of total students is calculated and has been seen that in male student BMI mean is 23.39 kg/m^2 which is overweight. Female student is having BMI mean 26.27 kg/m^2 which is First obese condition. It was observed that 36% of the student belong to normal category (BMI=18.5-22.9), and 17.1% of student belongs to Overweight category (BMI=23-24.9), thirty four percent of the student belongs to 1st Obese category (BMI=25-29.9). 10% of the student belongs to 2nd Obese category (BMI=30-39.9) and 0.4 % of the student belongs to 3rd Obese category (BMI=40 – above).

Table no 2.6 Distribution of the study students according to their BMI Status

Body –mass index	sex		Total (%)
BMI Kg/m2	Male (%)	Female (%)	
Underweight < 18.4	5 (4.5)	1 (1)	6 (2.8)
NORMAL < 22.9	52 (46.4)	23 (23.5)	75 (36)
Over Weight < 24.9	21 (18.8)	15 (15.3)	36 (17.1)
1nd Obese <29.9	28 (25.0)	43 (43.9)	71 (34)
2rd Obese < 39.9	6 (5.4)	15 (15.3)	21 (10)
3rd Obese > 40	-	1 (1.0)	1 (0.4)
Total	112 (100)	98 (100)	210 (100)

After analyzing the data we found total 129 students were obese and overweight and while analyzing the data it

confirmed that only 20% obese are unhappy with their health and about 60.4% obese student think that little overweight don't have much impact on health. Also 13% of student think that it is due to their race and ethnicity.

Dietary History Findings

Table no: 2.7 highlights the dietary history of the obese student and it is revealed that female student are found more episodes of excessive eating than the male students.

Table no: 2.7 table describing Dietary History of Obese Students

S. no.	Variables	Sex		Total (%)
		Male (%)	Female (%)	
1	Getting healthy and sufficient food	40 (72.7)	48 (64.9)	88 (68.2)
2	Eat snack in your daily routine	26 (47.3)	40 (54.1)	66 (51.2)
3	Drink milk in your daily routine	11 (20)	6 (8.1)	17 (13.2)
4	Drink juice in your daily routine	6 (10.9	9 (12.2)	15 (11.6)
5	Consume alcoholic beverages	5 (9.1)	6 (8.1)	11 (8.5)
6	Keeps track of the daily diet	22 (40)	20 (27)	42 (32.5)
7	Episodes of excessive overeating	20 (36.4)	31 (41.9)	51 (39.5)
8	Feeling distressed due to excessive overeating	19 (35.1)	27 (36.5)	46 (35.6)
9	Follow a special diet	7 (12.7)	9 (12.2)	16 (12.4)
10	Skips breakfast 3 or more times a week	9 (16.4)	18 (24.3)	27 (20.9)
11	Skips lunch 3 or more times a week	5 (9.1)	12 (16.2)	17 (13.2)
12	Skip dinner 3 or more times a week	5 (9.1)	18 (24.3)	23 (17.8)
13	Eat at restaurant 2 or more times a week	18 (32.7)	26 (35.1)	44 (34.1)
14	Non-vegetarian	41 (74.5)	54 (73.0)	95 (73.6)
15	Feeling hungry all the time	13 (23.6)	21 (28.4)	34 (26.3)
16	Eat medicines or dietary supplements	5 (9.1)	22 (29.7)	27 (20.9)

When we try to check the awareness among the student and asked them questions to know most effective way to control morbid obesity in which 72% students were in support of doing exercise and 41% were thinking lack of physical activity is cause of obesity.

After knowing the response from obese Student about their physical activity we get to know that 64.3% of students are getting time but 41.3% are only getting actively participated in it and 34.1% are having positive impact due to physical activity still 39.5% students think that their studies are important than performing or participating in any physical activities.

Physical Activity status among students

Table no 2.10 Physical Activity status among students

S. no.	Variables	Sex		Total (%)
		Male (%)	Female (%)	
1	Students getting time for physical activity	43 (78.2)	40 (54.1)	83 (64.3)
2	Student think my studies are important than physical activity.	18 (32.7)	33 (44.6)	52 (39.5)
3	Currently exercise done fulfilled the requirement of body.	39 (70.9)	34 (45.9)	73 (56.5)
4	Positive impact due to physical activity among student.	30 (54.5)	14 (18.9)	44 (34.1)
5	Students actively participating in sports activity.	34 (61.8)	20 (27)	54 (41.8)

In study when we categorized obese students department wise to know the obesity status in among 14 department of Central University Odisha it was found that that maximum obesity is seen in Anthropology (15.5%) and Education Departments (15.5%). Afterall Minimum Obesity is found in Sanskrit (0.7%) and Mass communication (0.7%) Department.

LIMITATION

As this research was a part of the investigator's master program, there was a limited time period in which data collection was done and analyzed. And due to this, the sample size of UG students is very small. Also, one of the important concerns was that the participants in the study were only from one university.

CONCLUSION

The world today is consuming large amount of carbohydrate and fat which cause strong impact on various other health related issues by increasing prevalence of NCDs like obesity, heart problem, blood pressure, asthma, depression, cancer, metabolic syndrome, mental illness, type 2 diabetes, heart diseases, gastrointestinal diseases,

body pain and difficulty in functioning etc. As per the current study evidence, the prevalence of overweight and obesity in university students is found at an alarming level, in which obesity and overweight were found to be 44.2% and 17.1%, respectively, and this may be due to the fact that 60.4% of students think that being a little overweight will not harm their body and well-being or health status. I may think that these study findings will draw attention towards university students' lifestyles and the university should start an awareness programmed for students regarding obesity and related NCDs and should take action as soon as possible to reduce these risk factors.

According to this study, only 27 percent of females and 61.8% of males actively engage in physical activity. As a result, universities should offer students access to activities like gyms, sports, and yoga classes, as well as a separate place for exercising, in order to reduce the prevalence of obesity among students.

ACKNOWLEDGEMENT

REFERNCES

[1] Amani F et al., Prevalence of overweight and obesity among students of Ardabil University, Iran, Int J Community Med Public Health. (2016 Jun), Accessed on 4rd march 2022\|http://www.ijcmph.com (Access at 28/03/2022).

[2] Bakr EM, Ismail NA, Mahaba HM (2002) Impact of lifestyle on the nutritional status of medical student at Ain Shams University. J Egypt Public Health Assoc (Accessed on 3rd March 2022).

[3] Castro IR, Cardoso LO, Engstorm EM, Monteiro CA. (2008) Surveillance of risk factors for non-communicable diseases among adolescents: The experience in Rio de Janeiro, Brazil. Cad Saude Publica (Access at 28/03/2022).

[4] Chhaya S, Jadav P (2012) Dietary and lifestyle pattern in relation to overweight and obesity among the medical and nursing people. The Indian J Res Rep Med Sci 2. (Access at 30/03/2022).

[5] Chingale A et al., Prevalence of obesity among elderly residing in an urban area of Belgaum, Int J Community Med Public Health. (2019 Oct) http://www.ijcmph.com.

[6] Choo V. WHO reassesses appropriate body-mass index for Asian populations. Lancet. (2002). (Access at 2/04/2022).

[7] Karthik RC et al. Evaluation of obesity and its risk factors among rural adults in Tamil Nadu, India, Int J Community Med Public Health. (2018,Aug) http://www.ijcmph.com

[8] Manojan KK, Benny PV, Bindu A (2014) Prevalence of obesity and overweight among medical people based on new Asia-Pacific BMI guideline. Int J PrevTher Med

[9] Misra et al., Effects of physical activity and its barriers on overweight/obesity, among medical students of Rama medical college Kanpur (U.P.), Indian Journal of Forensic and Community Medicine, January-March (2018).

[10] Nath A, Garg S, Deb S, Ray A, Kaur R. Profile of behavioral risk factors of non-communicable disease in an urban setting in New Delhi. Indian J Public Health (2009).

[11] Sulania A, Setu Y and Goel SK, Determinants of Obesity among Medical College Students of Delhi-a Cross Sectional Study, www.openscience publications.com (Access at 28/03/2022).

[12] World Health Organization, International Association for the Study of Obesity, International Obesity Task Force. The Asia-Pacific Perspective: Redefining obesity and its treatment. Sydney: Health Communications, 2000. http://www.wpro.who.int /nutrition/documents/ docs/Redefiningobesity.pdf.

[13] World Health Organization. Obesity and Overweight. Available at: http://www.who.int/mediacentre/ factsheets/fs311/en (Accessed on 3rd March 2022).

[14] Yamasani B et al., Cross sectional study on obesity prevalence in cardiovascular risk factor, International Journal of Community Medicine and Public Health | October 2016 | Vol 3 | Accessed on 3rd March 2022.