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Youth obesity, lifestyle and cognitive function: A comprehensive study

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Abstract

Background and Purpose: Obesity is very common yet very mystifying domain. Various links intertwine with obesity which are yet to be established. The purpose of this study is to make an effort at understanding of these correlations. Here we interlink and comprehend a few of these components in a very systematic manner.

Material and Methodology: After getting the consent of a total of 80 willing participants consisting of both the gender as well as with the age criteria of 18-30 years participated in this study. A brief, structured questionnaire including demographic data, anthropometric measures were used.

Result: The total number of participants being 80 where male participants make 34% and female participants make 66%. Mean age is 22.68, mean BMI is 32.99 and mean WHR is 0.812. 38% find themselves fit, 87% wish to lose weight. 68% sleep for 7-8 hours where as 31% have sleeping issues. 31% also face musculoskeletal pain however 17% have pain interruption there ADL. 54% have self-perception that interferes in their social life and 28% are worried about their appearance. 31% have difficulty in remembering when they go from one part of the house to another. 24% feel indecisive. 41% have late night snacks/ meals. 35% exercise daily and 12% use diet pills.

Conclusion: Result of this study concludes that self-perception of obese people recognise themselves as fat, however not many wish to lose weight. There is also significant co-relation between obese people negative self-perception of themselves and it is affecting their social life. There is also association between obesity and self-perception where more than half of the participants get good sleep but a handful of them have sleep issues. It can also be seen that an individual has muscular pain but a few have pain affecting their daily life. Almost a quarter feeling indecisive and some forget going from one place to another. There is significant positive co-relation between obesity and late-night snacks. In this study, there is also consideration of a few individuals who opt for easier options such as particular products to lose weight.

Keywords: Obesity, self-perception, musculoskeletal pain, cognition, sleep, habits

Introduction

Obesity and being overweight are characterized by abnormal or excessive fat buildup that possess a health concern according to WHO. BMI that is body mass index of over 25 is classified as overweight and BMI of over 30 is classified as obese [1]. In 2008 more than 1.4 billion adults, 20 years or older, were overweight. Of these over 2000 million men and about 300 million women were obese. The recent epidemiology might be concerned somehow to the overwhelming increased consumptions of processed food, fast food rich in fats and carbohydrates and reduced physical activity. The psychological disorders are often associated with obesity yet no relations to cause or effect could be proven. Although the causes of rise of obesity in the world are not sufficiently clarified, it is known that it may result from the combination of genetic, physical, psychological, environmental, behavioral and family, who contributed so much to its appearance as for their maintenance [2]. Right now the biggest lack in knowledge is not about the variety of risk factors nor their individual impacts on risks but rather how they interlink with each other. Obesity is caused due to imbalance between the calories consumed by one than the calories expended by that individual creating an excess of energy and thus a positive energy balance resulting in obesity [3]. The body type can be

classified using somatotype as a parameter, somatotype is influenced by many factors like height, weight, nutrition, body mass index and several other factors [4]. Growing prevalence of obesity among young adults has been leading to risk of developing chronic disease at older age. Obesity is multifactorial metabolic disorder associated with adipose tissue, obesity is one of the major health problem of young adults in both developed and developing countries. Young adults goes through lots of changes in life and behavioral pattern like lack of physical activities, unhealthy dietary habits, and smoking tobacco which directly affects health and can be the reason for non-communicable diseases [5]. Young adults specifically defined as 18-35 years old goes from different phases in life like enrolling in college, getting married, and beginning a family, all these can be the reason for weight gain in young adults. According to recent studies the stress is also one of the major cause of obesity in young adults, as multiple responsibilities leads to high stress level and young adults try to comfort themselves by “high calorie snacking” in response to stress [6]. Stress also often renders people sleepless at nights. Obesity, daytime somnolence (EDS) along with self-observed brief sleep duration appear to be ameliorating, while there is corroboration of obesity and these sleep disorders to be interlinked. In this study, we review the data that confronts the common belief that sleep apnea and insomnia are often connected to obesity. They are the primary determinants of obesity related objective daytime sleepiness and subjective fatigue [7]. There are strong evidences that suggests that pain and obesity are correlated, and obesity can lead to more physical and psychological complications of chronic pain. According to some studies there is more prevalence of pain in obese people than overweight and normal weight people and there is more occurrence of low back pain in people with higher BMI [8]. Another factor related to obesity is the self-perception of body size. Self-perception can create a great psychological impact on an individual that includes positive and negative thoughts and attitudes related to body. The self-perception and body dissatisfaction can lead to eating disorders that is major risk factor of obesity. The body dissatisfaction is found more in women in comparison to men, overweight and obese women are more often dissatisfied with their own body size than men [9]. Overweight and obesity could result in metabolic syndrome (MetS). The syndrome is made up of a number of different components, namely high plasma glucose, high triglyceride, low density lipoprotein cholesterol, high blood pressure and enlarged waist circumference, which are all associated with excess adiposity. As a result of these metabolic abnormalities, there are four main health risks attributable to MetS, namely type 2 diabetes mellitus, cardiovascular disease, some type of cancer and all-cause mortality. In present study, we carefully assess the combined effects of smoking and alcohol consumption on MetS and its individual components among obese and overweight [10]. It is necessary to determine combined correlation of these factors with obesity. Thus, the objective of this study is to evaluate correlation between obesity, sleep pattern, body pain, self-perception, habits and cognitive function.

Material and Methodology

Study design: A descriptive cross-sectional study was conducted among 80 participants who were obese that is people with BMI of 30 or above 30. Study includes both male and female participants in the age group of 18-30 years. A self-administered, structured, physical questionnaire has been presented to the participants. After accepting to participate in

the study and the consent letter they will administer the questionnaire. The purpose of the study is to find the correlation between obesity and self-perception, obesity and pain, obesity and cognition, obesity and sleep, obesity and habits among young adults (age 18-30). Cross sectional study design was selected for this study as this design involves identifying group of people and then collecting their information required by the researcher for their research.

Study setting

Study was conducted among young adults that is ages from 18 to 30 and are classified as obese or morbidly obese according to the BMI grading.

Sample size: 80 participants

Study duration: 6 Months.

Sample and sampling technique

Sample was taken by using convenience sampling method.

Search data base

- Google scholar

Inclusion criteria

- Voluntary to participate in study
- According to WHO criteria of BMI (BMI \geq 30)
- Age group of 18 years to 30 years
- Waist Hip ratio: men $>$ 1.03 women $>$ 0.90

Exclusion criteria

- Those not willing to participate
- Genetic disorders
- Hormonal imbalance-neurological disorders
- Mentally ill person
- Endocrine disorders
- Bariatric surgery
- Hormonal replacement

Data analysis and result

Gender

- Male
- Female

Materials and tools

- Weight scale
- Measuring tape
- Pen
- Paper

Outcome measures

- BMI Scale
- Waist to Hip ratio chart
- Pre-structure performer

Data collection and tools

A self-administered, structured, self-made questionnaire was used for data collection. It includes records of sociodemographic characteristics. The following variable were collected Name, Age, Gender, and Occupation.

Anthropometric measures such as the participant's height and weight were also recorded via which BMI was calculated. Waist and hip measurements are then recorded of participants

which will then provide with WHR. The participants have also recorded their diet i.e. vegetarian or non-vegetarian.

Time to administer

10-20 minutes

Procedure

A convenient sample of 80 participants of ages between 18 to 30 years are taken. The participants are selected based on the inclusion criteria and the exclusion criteria and their willingness to participate for this study. After which the participants were explained about the study. Participants consent was then obtained and consent form was signed. The selected population then fills the provided questionnaire.

Table 1: Age table

Age	Frequency
18	8
19	4
20	7
21	13
22	15
23	11
24	3
25	3
26	3
27	3
28	3
29	2
30	5

Table 2: BMI table

BMI	Frequency
30-30.9	19
31-31.9	18
32-32.9	17
33-33.9	6
34-34.9	4
35-35.9	3
36-36.9	4
37-37.9	2
38-38.9	0
39-39.9	4
40-40.9	2
46-46.9	1

Microsoft excel version 2402 and Microsoft word 2402 were used to analyse the data which is then also presented in the form of bar graph and pie charts.

Result

Table 3: WHR table

WHR	Frequency
0.4	1
0.5	0
0.6	7
0.7	24
0.8	28
0.9	20

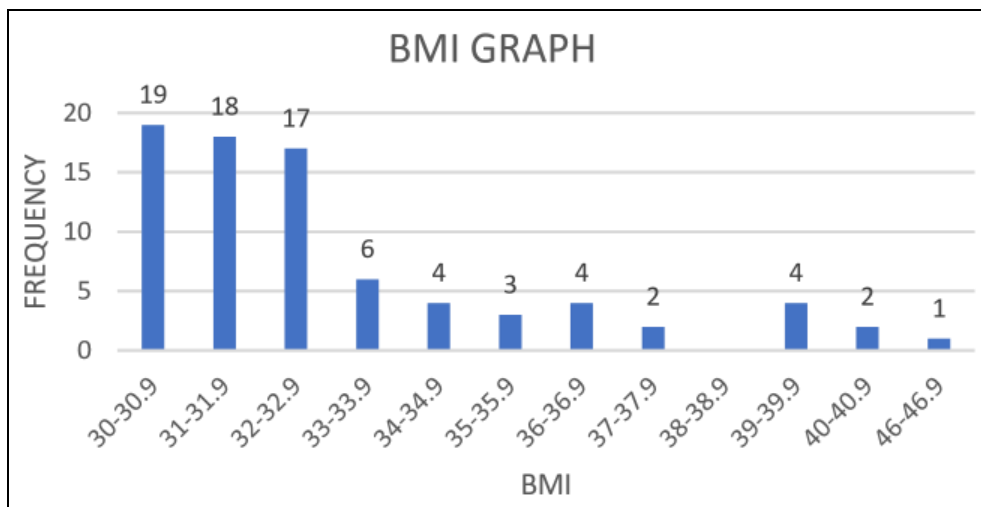


Fig 5: BMI graph

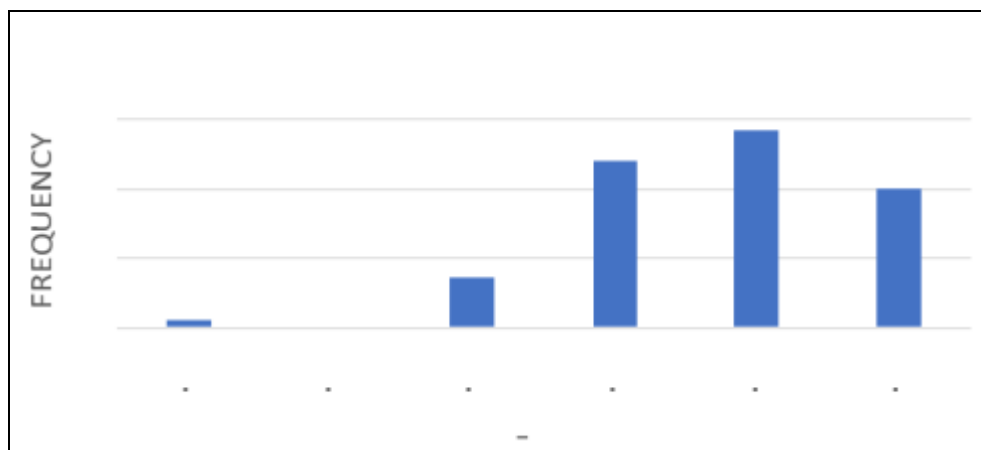


Fig 6: WHR graph

Total number of participants who willingly partake in the study are 80, The male participants are 27 (34%) and the female participants are 53(66%). Mean age being 22.68 (Fig

1). Mean BMI is 32.99 (fig 2) and Mean WHR (Fig 3) is 0.814.

Table 4: Shows the answers of the participants in percentage

Questionnaire	Yes	No
Do you see yourself as a fit person	38%	62%
Do you feel the need to lose extra kgs?	87%	13%
Do you sleep for 7-8 hours daily?	68%	32%
Is your sleep often interrupted?	31%	69%
Did you find any kind of MSPT p at particular area of body during the last 3 months despite any injury	31%	69%
Does body pain interrupt your daily life activity?	17%	83%
Are you worried about your appearance?	54%	46%
Do the perception of your own body interfere with your social life?	28%	72%
Do you find you forget why you went from on part of house to other?	31%	69%
Do you have trouble making decision very often?	24%	76%
Do you have habit of eating late night snacks or meals?	41%	59%
Do you exercise daily?	35%	65%
Do you use any kind of particular products every day?	12%	88%

Discussion

To our knowledge this is the first study to correlate obesity and sleep pattern, obesity and body pain, obesity and self-perception, obesity and habits, obesity and sleep pattern, obesity and cognition in young adults collectively. A questionnaire was made and selected keeping in mind all the parameters. An appropriate and fitting questionnaire was then selected, anthropometric measures and demographic measures were taken from participants. The selection of all participants was based on inclusion criteria. In this study it was found that obese people musculoskeletal pain is 31%, it was also found that obese people having difficulty in ADL is 17%. There are many sub-studies that show correlation between pain and obesity. One of such studies shows that as deposition of adipose tissue increases in body, there is subsequently loading on the weight bearing joints which then translates to pain. Joints such as hip, knee, ankle are more involved. As these joints are the common weight bearing joints and points of pain. Back pain is also more common.

Although there are many such studies linking pain and obesity. Although there are conflicting results between obesity and pain sensitivity^[11]. Another study suggests that pain sensitivity does not differ based on obesity. Pain is multi-dimensional experience consisting of many variables such as sensory, affective and cognitive components. The mechanism that links obesity and pain can be mechanical behavioral or physiological^[12]. This study found that 38% view themselves as fit. Studies show that individuals with high self-esteem see themselves accurately where as people with low self-esteem have wrong self-perception^[13]. There are many variants in weight perception due to different social and cultural attitudes regarding weights. In some regions excess weight has been traditionally regarded as a status of good health as prosperity. Excess in body mass is conventionally viewed as a sign of wealth. These ideologies may also factor in some individuals accepting and getting comfortable with the idea of being obese therefore avoiding to lose or even attempt weight loss^[14]. 87% feel the need to lose weight. Here the participants did accurately see themselves as overweight and wanted to lose weight. Acceptance of being overweight and perceiving themselves as overweight has also shown to engage in negative habits^[15]. In this study 68% participants have no trouble in sleeping for 7-8 hours daily and 31% have had their sleep often break or find disturbances in their sleep. Association between sleep and obesity have been explored for quiet a few years now, yet there is no clarity in sleep and its association with obesity. A tangent between poor sleep and

obesity is proposed that the less the sleeping hours the more the risk of being overweight. Changes of increase in weight does correlate to the sleep hours^[16]. The definition of normal sleep hours or short sleep hours vary from individual to individual. For Somone 6-7 hours of sleep may be ample of time to sleep and rest whereas for another individual 8-9 hours of sleep is there ideal goal for a good and restful sleep. Area of sleep deprivation is grey and a variable that changes from one to another. Hence this variable without any defying parameters is not very reliable for judgment or bases of assumption^[17]. Obesity is very complex and multifaceted, so are the risk factors for obesity as complex. Factors such as genetics cannot be modified but factors such as diet & lifestyle can be modified. Habits, good or bad both have effect on obesity^[18]. One such habit is late night snacks or meal. In this study there is noticeable 41% who engage in late night snacks or meal. One such reason for people to engage in this behaviour could be altered sleep pattern or sleep deprivation. Reduction in sleep causes hormonal/ physiological changes responsible for such behaviours. Ghrelin that is hunger hormone and leptin are considered as major factor for late night cravings and increase in ghrelin which in return makes the individual hunger and crave foods. This craving then results in bingeing or increase in caloric intake thus leading to obesity^[19].

Another such habit is exercising daily in this study 35% exercise daily. Enthusiasm in fitness can have varying reasons such as improving body composition, improving cardiorespiratory fitness or even muscular fitness or simply shedding few pounds. Exercising has shown positive outcome in all ages. Condition such as obesity can also be tackled by exercising. Obese people as people from any other group can be physically active and try to improve their health but with some special consideration. Obesity is related with comorbidities such as arthritis, cardiac or even pulmonary condition, so it is best to adjust plan of care and exercise routine with these in mind^[20]. Cognition is not something commonly associate with obesity. In this study 31% forget when they go from one part of house to another. Cardiovascular disease, brain atrophy and decline in cognition is related to excess of truncal or abdominal obesity. Further more common diet of obese people such as consumption of fatty food or refined meals also shown to accelerate memory lose and increase chance of Alzheimer's. Obesity is shown to negatively impact memory and the ability to recall^[21].

24% have trouble making decision obesity is also associated with poor memory and difficulty recalling however these

finding are not consistent and these claims disappear when other variants such as years of education are factored in^[22]. In this study 12% of participants use particular products for weight loss. These can be herbal teas, diet pills, diet supplements etc. dietary supplements have many courses of action one of which is via suppression of appetite or even reducing lipid that is fat cells absorption.

This study concludes that self-perception of obese populus see themselves as fat, however not many wish to lose weight. A significant co-relation between their negative self-perception and social life is seen. Association between and obesity and sleep is established where a lot of participants get good sleep but some have issues. An iota have musculoskeletal pain but a few have pain affecting their life, some are indecisive while some forget going from one place to another. A positive co-relation is seen between obesity and late-night snacks. Considerable number of people opt for easier options such as particular products.

Limitations & Future scope

Limitations

- Different anthropometric methods could be included.
- Unequal ratio of male and female.

Future scope

- Questionnaire can be translated in various languages to access wider populus / population.
- Cluster sampling could be used to get better hold and understanding of different regions and states.

Conclusion

Results of this study concludes that self-perception of obese populus recognize themselves as fat, however not many wish to lose weight. There is also significant correlation between obese people's negative self-perception of themselves and it affecting their social life. There is also association between obesity and sleep where more than half of the participants get good sleep but a handful of them have sleep issues. It can also be seen that an iota has muscular pain but a few have pain affecting their daily life. Almost a quarter feeling indecisive and some forget going from one place to another. There is also significant positive co-relation between obesity and late-night snacks. In this study, there is also consideration of few individuals who opt for easier options such as particular products to lose weight.

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