

**SOCIAL DETERMINANTS OF OVERWEIGHT AMONG
COLLEGE STUDENTS IN THIRUVANANTHAPURAM DISTRICT,
KERALA: A COMPREHENSIVE ANALYSIS**

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Submitted by

Nanda Anandamohan

Exam Code: 56018405

Candidate Code: 56022115017

Subject Code: SO 245

Under the guidance of

Dr Vinumol Devassy

Assistant Professor, Department of Sociology



LOYOLA COLLEGE OF SOCIAL SCIENCES
SREEKARYAM, THIRUVANANTHAPURAM

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DECLARATION

I, Nanda Anandamohan, hereby declare that the dissertation titled “SOCIAL DETERMINANTS OF OVERWEIGHT AMONG COLLEGE STUDENTS IN THIRUVANANTHAPURAM DISTRICT, KERALA: A COMPREHENSIVE ANALYSIS” is based on the original work carried out by me and submitted to the University of Kerala during the year 2022-2024 towards partial fulfilment of the requirements for the Master of Sociology Degree Examination. It has not been submitted for the award of any degree, diploma, fellowship or other similar title of recognition before.

Place: Thiruvananthapuram

Nanda Anandamohan

Date: 30/08/2024

Student Researcher

CERTIFICATE OF APPROVAL

This is to certify that the dissertation entitled “SOCIAL DETERMINANTS OF OVERWEIGHT AMONG COLLEGE STUDENTS IN THIRUVANANTHAPURAM DISTRICT, KERALA: A COMPREHENSIVE ANALYSIS” is a record of genuine work done by NANDA ANANDAMOHAN, a fourth semester, Master of Sociology student of this college under my supervision and guidance and that is hereby approved for submission.

Dr Vinumol Devassy
Research Supervisor
Department of Sociology
Loyola College of Social Sciences
Sreekariyam, Thiruvananthapuram

Recommended for forwarding to the University of Kerala

Dr Nisha Jolly Nelson
Head, Department of Sociology,
Loyola College of Social Sciences,
Sreekariyam, Thiruvananthapuram
Forwarded to the University of Kerala

23/08/2024.

Dr Sabu P Thomas, Principal,
Loyola College of Social Sciences
Sreekariyam, Thiruvananthapuram

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MA Sociology

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ABBREVIATIONS

BMI	Body Mass Index
HOD	Head of department
GPAQ	Global Physical Activity Questionnaire
IDSP	Integrated Disease Surveillance Programme
NCD	Noncommunicable Diseases
SEP	Socio Economic Position
SES	Socio Economic Status
NFHS	National Family Health Survey
WHO	World Health Organizations
MET	Metabolic Equivalent
CI	Confidence Interval
OR	Odds Ratio
COR	Crude Odds Ratio

ABSTRACT

Background: The prevalence of overweight/obesity has reached alarming across the world. According to WHO, the global prevalence of obesity had increased three times between 1975-2016. Our perception of health and illness is also shaped by societal norms and definitions. Well-being of an individual is impacted by socioeconomic class, gender, and cultural views. Since young adulthood represent the next generation of adults, it is important to understand the social determinants of overweight among college students.

Methods: A total of 365 young adults of age 18-24 years were recruited from government and private colleges with equal weightage. The data collection involved using a self-administered questionnaire. Majority of questions were adopted from WHO STEPS Instrument. The questionnaire included questions related to sociodemographic characteristics, dietary patterns, physical activity, behavioural measurements and anthropometric measurements. Subsequently, the data was analysed using SPSS version 27. The objective of the study was to know the sociological factors associated with overweight and to estimate the prevalence among the college students.

Results: The prevalence of overweight/obesity is 24.65 percent (95% CI:20.23% to 29.07%). It was found that male students (OR=1.67, 95% C.I:1.03-2.7) had an increased odds of being overweight than females. The students of higher age group (OR=1.84, 95% C.I:1.12-3.01), students studying in private institutions (OR:1.81, 95% CI:1.11-2.97), students who use tobacco (OR:3.56, 95% CI:1.23-10.29), students who use smartphones (OR: 4.02, 95% CI:1.07-25.69), students who had frequent restaurant dining (OR:1.81, 95% CI:1.11-2.97) and aerated soda or sugar (OR: 1.94, 95% CI:1.91-3.17) were found significantly associated with overweight status (Body Mass Index more than 25).

Conclusions: The overall prevalence of overweight and obesity is comparable to studies among students of similar age groups in Kerala. The higher prevalence of overweight among males underscores the importance of considering gender-specific factors. Sociocultural expectations of body image, physical activity, and dietary habits may differ significantly between genders. Frequent restaurant dining and extensive mobile phone use are lifestyle practices associated with higher rates of overweight. These behaviours reflect broader social norms and patterns of consumption prevalent among young adults. The results from the study underscore the need for targeted interventions aimed at sociological factors, lifestyle modifications and promotion of healthy behaviours among young men and women to prevent overweight and obesity.

CHAPTER 1: INTRODUCTION

1.1 Introduction

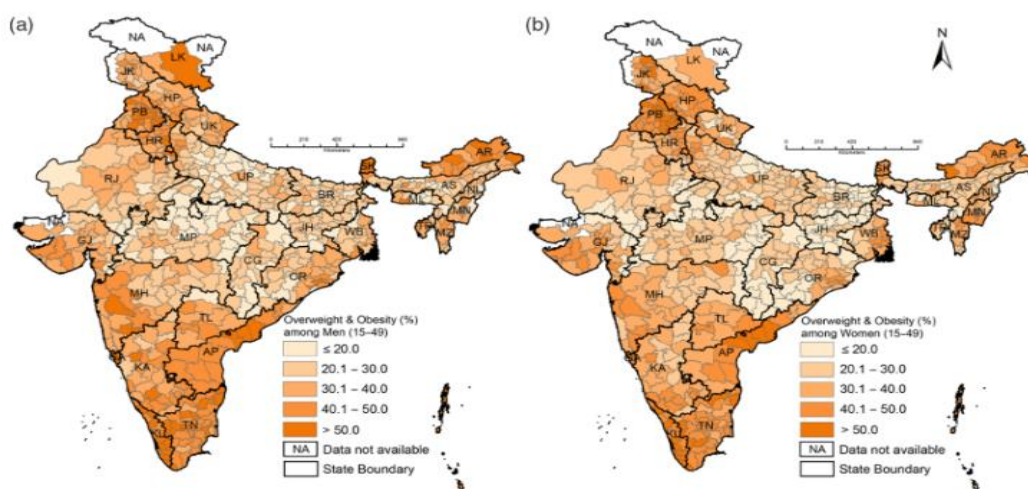
The relationship between health and sociology is multifaceted. Social determinants of health, such as income, education, culture, and community, significantly influence health outcomes. Socioeconomic status, ethnicity, and cultural beliefs impact health access, behaviours, and overall well-being. Societal definitions and norms shape our understanding of health and illness, which can vary across different cultures and communities. Social inequality contributes to disparities in healthcare quality and access, particularly affecting disadvantaged groups. Ultimately, a nation's healthcare system plays a crucial role in determining the health and well-being of its citizens.

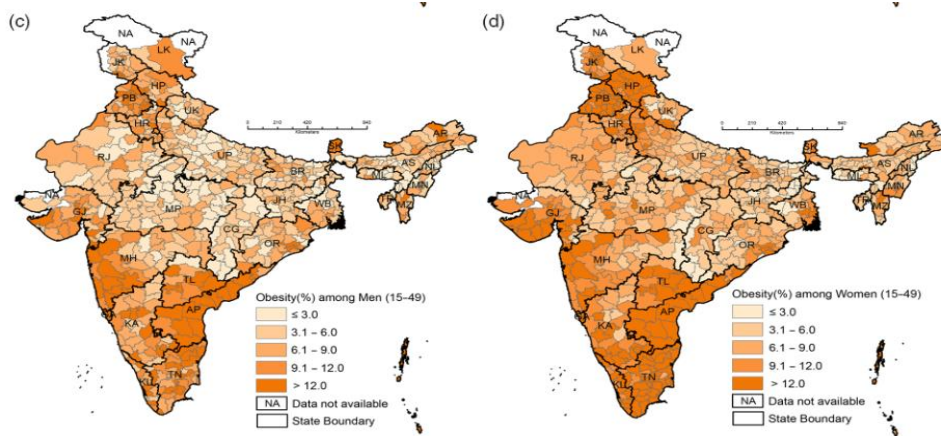
The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015. (*UNDP*, n.d.). Among the seventeen SDGs, end poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, decent work and economic growth and reduced inequality plays a very vital role in determining the health and wellbeing of the citizens especially the young adults of the country. Addressing malnutrition, which includes both undernutrition and overnutrition, is crucial for achieving several of these SDGs, as it directly impacts the health and well-being of young adults and the broader population. Malnutrition is a very serious public health problem that demands attention all across the world, impacting people of all ages. It primarily defines nutritional deficits or excesses. As a result, it encompasses two major categories of conditions: "undernutrition" and "overnutrition." The effects and problems of malnutrition are affecting many nations with low or medium incomes. Along with undernutrition, a global epidemic of overweight/obesity is sweeping across of the globe. A recent article in "Nature" has highlighted the global trends, risk factors, and policy implications regarding obesity, denoting its role as one of the major contributors to the

burden of disease across the globe and its adverse economic impact on countries.(Malik et al., 2013a)

Among underweight adults globally, India contributes one of the highest shares. However, the number of people who are overweight or obese keeps on increasing in the country. Overweight or obesity has become a serious life-threatening factor globally and millions are estimated to suffer from the serious health disorders that arise from being overweight. Obesity has grown into a global epidemic in many populations, with severe implications for public health due to the increased risk of type 2 diabetes and cardiovascular problems.(Chandalia et al., 1999). Epidemiological studies reveal that Asian Indians who have relocated to western countries and those who live in Indian subcontinent particularly in the metropolitan regions have a greater incidence of coronary heart disease due to increased truncal obesity and insulin resistance. In a study which is related with obesity among women indicated that food restriction combined with progressive and moderate intensity physical activity can lead to weight loss and lower CVD risk profiles in the obese.(Andersen et al., 1999)

Figure 1.1 Distribution of overweight adults across districts in India





(source- <https://doi.org/10.1017/S0021932020000486>)

Figure 1.2 depicts the distribution of overweight and obese (15–49 years old) men and women across districts in India in 2015–16, as well as the distribution of obese (15–49 years old) men and women. (Rai et al., 2021)

In recent years overweight or obesity become a priority health issue that affects both the younger and older population in India. Kerala ranks second among Indian states with the increased prevalence of obesity in females(Thomas and M, 2019). As observed in many middle-income countries, Kerala is also undergoing both demographic and epidemiological transitions. As a result of this, the state is confronting critical issues related to the rise of non-communicable and the continuing communicable diseases. The challenge is more due to non-communicable diseases when it comes to urban and semi urban areas.

The chances of getting obese or overweight in a person’s life starts from the foetal development. According to Baker’s hypothesis, the chance of developing obesity, diabetes and other metabolic disorders in adulthood is influenced by the environmental factors during foetal development and early life can have a profound impact on the risk of developing chronic diseases in adulthood. A study in social theory and health explores the connections between the Barker hypothesis and obesity, emphasizing the complex

processes that determine health and disease, spanning biology, social positionality, place, and generation.(Scott Yoshizawa, 2012)

The metabolic syndrome—defined by obesity, insulin resistance, dyslipidaemia, and hypertension is more likely to occur in children whose birth weight is low and whose subsequent rapid growth throughout childhood has been shown in multiple animal and human studies.(Calkins and Devaskar, 2011)

Similarly, the transition of adolescence to young adult stage influences the health status of an individual. College going young adults are more vulnerable to overweight and obesity. This age range typically corresponds to the late adolescence and early adulthood stage. During this period, individuals often experience significant lifestyle changes, including transitions from high school to college, increased independence, changes in dietary habits, changes in physical activity pattern and increased stress. Addressing health concerns during this period are crucial since they have long-term benefits in preventing chronic conditions associated with excess weight.

The probability of becoming obese when compared to a person who is overweight in his young adult age and adolescence is more than that of a person who has normal weight in his young adult age. For a person who is overweight in young adulthood faces a high risk of becoming obese. The World Health Organization (WHO) also notes that global adult obesity has more than doubled since 1990, while teenage obesity has quadrupled. This shows that weight gain practices set in early adulthood can have long-term consequences for health.

It is a critical period of growth and development where habits and behaviours that can significantly affect their entire life is established. Therefore, understanding the issues of overweight and obesity and their associated factors are important since targeted

interventions can help to promote healthy life style modifications early on and improve their long-term health outcomes.

1.2 Statement of the problem

Overweight and obesity have emerged as significant life-threatening factors on a global scale, with millions of individuals experiencing serious health disorders associated with these conditions. Among young adults aged 18–24, understanding the early onset of obesity and overweight is particularly crucial. This study aims to investigate the sociological factors contributing to overweight among college students in the Thiruvananthapuram district of Kerala. Specifically, the research will examine whether gender plays a role in the prevalence of overweight within this population and explore the potential association between socioeconomic status and overweight among young adults. Given the increasing prioritization of overweight and obesity as significant health concerns in India, this study seeks to assess the prevalence of overweight among young adults and contribute to a deeper understanding of this pressing public health issue.

1.3 Significance of the study

Baker's theory states that an individual's predisposition to become obese or overweight begins during foetal development. The crucial ages of late adolescence and early adulthood are when a person is most likely to become overweight if they are unaware of how important it is to maintain an ideal weight for their height. They are more susceptible to overweight and obesity as a result of their shift from childhood to young adulthood from independent living, which is brought on by a sedentary lifestyle, a high wealth index, a lack of physical activity, elevated stress levels, and altered eating habits. Focusing on young

adults in the 18–24 age range identifies a crucial group for comprehending the early beginnings of obesity and overweight. Lifestyle modifications at this stage can prevent long-term health consequences.

Several sociological factors are essential, including occupation, income, and level of education. Better lifestyles, with more physical activity and better food choices, are linked to higher incomes and levels of education. Individuals with higher Socioeconomic status have better access to nutritious food and healthcare services. On the other hand, lower SES individuals may face food insecurity and limited opportunities for physical activity.

Like the Socioeconomic status of an individual, gender differences or gender-specific norms may also be associated with the overweight status of young adults. For instance, men may face pressure to be muscular, while women may strive for thinness. These norms affect exercise preferences, body ideals, and weight-related goals. Recognizing the interplay of socioeconomic factors and gender norms is very essential for effective health interventions.

Since there isn't much information regarding the sociological perspectives about overweight young adults available in the Indian context, this study is being put forward with the objective of understanding the sociological factors and determinants associated with the overweight status of college-going young adults.

CHAPTER-2
REVIEW OF LITERATURE

2.1 Introduction

The World health organization defines malnutrition as deficiencies or excesses in nutrient intake, imbalance of essential nutrients, or impaired nutrient utilization. Malnutrition has two primary categories of conditions. 'Undernutrition' refers to a “condition characterized by stunted growth, low body weight in relation to height, being underweight for one's age, and inadequate intake of specific micronutrients”. The other category comprises overweight/obesity, and noncommunicable diseases associated with diet, such as diabetes, cancer, heart disease, and stroke. The literature review peeps into the second category called overweight or obesity. The current status about the prevalence of overweight in India and around the globe has been reviewed in this chapter. This review looks at the literature in order to give a thorough picture on the sociological factors that are associated with overweight among young adults.

2.2 Prevalence of overweight- global scenario:

The prevalence of overweight or obesity has reached alarming across the world. Earlier it was more in developed countries but the pattern has shifted to developing nations like India too in the recent times. Based on WHO forecasts, by the year 2025, over 167 million individuals, including both adults and children, will experience a decline in their overall health due to being overweight or obese.(World Obesity Day 2022 – Accelerating action to stop obesity, n.d.). An obesity epidemic is affecting several populations worldwide, leading to significant implications for public health. This elevates the probability of experiencing joint complications, enduring chronic diseases, and encountering infertility in the future, hence augmenting the cost of healthcare. The World Economic Forum analyses the economic impact of obesity on healthcare systems worldwide, encompassing the

expenses incurred in treating obesity-related illnesses and the overall societal burden. (Malik et al., 2013b)

Obesity is a growing health concern in both industrialized and developing nations, including India. It has become more prevalent in recent times. The fifth largest cause of mortality worldwide is being overweight or obese. (Thomas and M, 2019). One of the most significant public health concerns of our century, particularly among children and adolescents, is the dramatically increased prevalence of obesity. (Mohammadbeigi et al., 2018)

The World Health Organization reports that between 1975 and 2016, there was a three-and-a-half-fold increase in the worldwide prevalence of obesity. This pattern is not limited to affluent individuals, countries by itself as well as the middle-class and low-income nations. The recognition of obesity as a public health concern was first in the United States, eventually spread to Europe, and is currently making its way into underdeveloped nations. (Prentice, 2006; Roth et al., 2004)

The prevalence of overweight and obesity varies by area, with greater rates in the Middle East, Central and Eastern Europe, and North America. (James et al., 2001). Polynesia and Micronesia have the highest obesity rates of 76.8 percent and 70.3 percent, respectively. In 1998, in several developing countries, there was a noticeable increase in prevalence of overweight/obesity from 2.3 percent to 19.6 percent. (Misra and Khurana, 2008). In the developing countries, a double burden exists, where underweight remains a persistent public health concern, but simultaneously countries like India are experiencing a rapid increase in overweight and obesity. It has been noted that a significant fall in underweight has occurred in countries in South and Southeast Asia with reductions up to 40.5 percentage points in the last three decades. Conversely, in most of these countries including India, the

proportion of obesity within the double burden has significantly increased and this rise is also observed among children and adolescents. (*Lancet (London, England)*, 2024)

2.3 Prevalence of overweight- Indian scenario:

Despite of the fact that India has the world's largest percentage of underweight adults, there is an ongoing increase in overweight or obesity day by day. (Dutta et al., 2019) The prevalence of overweight women in India was 13.6 percent and 9.3 percent of overweight men, according to NFHS -3 (2005). Previous NFHS data shows that the rate of overweight and obesity has been on the rise. While being overweight is widespread among some Indian states including Punjab, Kerala, Goa, Tamil Nadu, and Andhra Pradesh. It is more common among women in these states than men. Adults in the southern part of India, those living in metropolitan areas, and those aged 35–49 had the highest rates of overweight and obesity, according to NFHS-5 (2019–2021). In metropolitan areas, the overweight rate is 25.5 percent, which is three times higher than in rural areas, where it is 7.98 percent.

Based on data from NFHS-3 (2005–2006) and NFHS-4 (2015–2016), the distribution of underweight and overweight/obesity among men and women in India, there was a decline in the underweight rate for both genders. However, the data unequivocally demonstrates that the prevalence of overweight and obesity has risen among women and men, from 9.3 to 17.1 percent for males and 13.6 to 18.6 percent for women. Regrettably, the National Family Health Survey-5 (2019–2019) results also showed a growing prevalence. The percentage of overweight or obese women had risen to 24 percent, while the percentage of overweight or obese men had increased to 22.9 percent.

New research indicates that the percentage of persons in India who are overweight or obese will be doubled by the year 2040, with the highest rates expected in rural areas and among the elderly. (Luhar et al., 2020)

2.4 Prevalence of overweight- Kerala scenario:

According to Thomas and M (2019), Kerala ranks second among Indian states with the rising incidence of obesity in females. Data from the National Family Health Survey shows that, similar to the rest of the country, overweight and obesity are on the rise in Kerala.

Among men, the prevalence of overweight/obesity had increased from 19 percent to 29 percent. But during the next survey (NFHS-5) again the prevalence was increased to 36 percent which is drastic. Among women, same trend was followed. According to NFHS-3, there were 28 percent of obese women. But the prevalence had increased to 38 percent while taking NFHS-5 data. This clearly denotes that the prevalence of overweight is in increasing trend so that government and health system have to be intervened at the earliest.

2.5 Prevalence of overweight among young adults:

Overweight and obesity are more common among young adults. Generally speaking, this age range represents the late adolescent and early adult stages. Taking care of health issues now could help in the long run by preventing chronic illnesses linked to being overweight. In Victoria, Australia, Prospective 8-wave cohort research involved tracking 1,520 teenagers starting at age 14 and continuing for ten years. The study's findings indicate that the percentage of overweight people rose from 20 percent in mid-adolescence to 33 percent at the age of 24. From 3.6 percent to 6.7 percent of people were obese. (Patton et al., 2011) For a person who is overweight in young adulthood faces a high risk of becoming obese. The World Health Organization also reports that while teen obesity has doubled since 1990, adult obesity and overweight have increased globally. This demonstrates how weight gain habits developed in early adulthood can have negative long-term effects on health. Based on an article published in *The Lancet Diabetes & Endocrinology*, young adults aged 18 to 24 years are at the largest risk of being overweight or acquiring obesity in the next decade

of their life compared to adults of different age strata, hence obesity prevention initiatives should target this group.(ocf26, 2021)

2.6 Prevalence of overweight among college students in India:

Studies indicate that the prevalence of obesity in India ranges between 10 percent and 50 percent, with a noticeable nutritional change from a traditional carbohydrate diet to high-calorie fast food, which is more popular among college students.(Rekha et al., 2022)

A survey of 350 medical students in 2013 at a medical college in Trivandrum, Kerala, reported that 25.71 percent of the students had obesity (with a 95% Confidence Interval of 21.75-29.83) and 24.57 percent had overweight, as per Asia-Pacific recommendations. This survey reveals a concerning trend: college students are becoming more and more obese. It emphasizes how important it is to spread knowledge about leading a healthy lifestyle, making nutrient-dense food choices, and getting regular exercise in order to stop the rising rate of obesity and related illnesses.(Manojan et al., 2019)

More than half of Tamilnadu's first-year medical students were overweight or obese, according to a project conducted in 2022 by Rekha and colleagues as per Asia-Pacific norms. This rate is greater than the general population's rate.(Rekha et al., 2022)

According to worldwide Body Mass Index (BMI) norms, there is a significant prevalence of obesity in Kerala, a state in southern India, with 17 percent of medical students being overweight and 3.8 percent being obese. This implies that young people with higher levels of education are likewise impacted by the obesity epidemic.(Manojan et al., 2019)

University students in India are becoming more and more overweight/obese, which is a serious public health concern that calls for quick attention and action to stop the trend.

2.7 Classifying overweight/obesity

There are various reasons why the graded classification of obesity and overweight is advantageous. It helps identify people and groups who are more likely to experience health problems and pass away. It also makes meaningful comparisons of weight categories between and within various populations possible. Prioritizing treatments at the individual and community levels depends on this data, which is also useful for later evaluations. (WHO Consultation on Obesity (1999: Geneva and Organization, 2000)

2.8 Body Mass Index (BMI):

“BMI is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m²)”.(World Health Organization Technical Report Series, 2000)

$$\text{BMI} = \text{Weight (in kg)} / \text{height (in metres)}^2$$

Table 2.1 The WHO classification of adults based on BMI

Classification	Body Mass Index	Risk of co-morbidities
Underweight	< 18.50	Low(risk of other clinical problems increased)
Normal range	18.50-24.99	Average
Overweight	≥ 25.0	
Pre obese	25.00-29.00	Increased
Obese class 1	30.00-34.99	Moderate
Obese class 2	35.00-39.99	Severe
Obese class 3	More than 40.00	Very severe

(Source: WHO 2000)

These BMI levels are the same for both sexes and are not affected by aging. The potential risks that come with a rising BMI start with a BMI of more than 25 and are progressive and persistent. The Body Mass Index is a valuable tool for estimating the prevalence and associated risks of overweight and obesity at the population level. It is a basic measure of these conditions. Wide variations in the distribution of fat are not taken into account, and the computed BMI is not associated to the same levels of fatness or related health risk in people and communities.(Home - UNSCN, n.d.). The above WHO BMI cut-off points have been the agreed classification and have been recommended as the basic benchmark for international comparisons.(Pacific, 2000)

a. Body Mass Index (BMI) for Asian population

The World Health Organization's regional office for the Western Pacific has advised reducing the body mass index (BMI) threshold for Asian individuals. (Thomas and M, 2019). Asian people have lower threshold values for overweight and obesity when compared to Europeans. In Asian populations, the risk of developing diabetes and cardiovascular disorders is observed at lower body mass index (BMI) levels compared to the white population. The higher insulin resistance observed in Asian Indians, although having a slim BMI, can be related to their greater accumulation of visceral adipose tissue. The WHO also recommended a reduced threshold for appropriate body mass index in Asian Indians, as stated in the WHO report from 2000. Indians exhibit a more concentrated distribution of body fat, characterized by thick skin folds in the trunk area and significantly higher average waist-hip ratios relative to Europeans, even when considering the same body mass index (BMI). Moreover, within these individuals, there is a presence of morbidity and mortality even when their body mass indexes (BMIs) and waist circumferences are quite modest. The obesity related disorders occur at a much lower body mass index (BMI) in ethnic Asian. Obesity-related diseases manifest at a significantly lower body mass index (BMI) in ethnic Asian populations compared to ethnic Caucasian populations. Extensive documentation exists about the association between high body fat percentage and increased cardiovascular risks, even at low body mass index levels, particularly among Asian individuals, especially Indians. The reference cited is from Manojan et al. in 2019. For a significant number of Asian communities, the thresholds for taking public health measures have been determined to be a body mass index (BMI) of 23 kg/m² or higher, indicating an increased risk, and a BMI of 27.5 kg/m² or higher, indicating a high risk. The proposed categories are as follows: those with a body mass index (BMI) less than 18.5 kg/m² are classified as underweight; those with a BMI between 18.5 and 23 kg/m² are considered to

have a growing but acceptable risk; individuals with a BMI between 23 and 27.5 kg/m² are elevated risk; and those with a BMI of 27.5 kg/m² or more are classified as high risk. The consultation highlighted additional potential public health measures (23.0, 27.5, 32.5, and 37.5 kg/m²) at different places of the BMI scale. It also suggested approaches for countries to determine the thresholds for elevated risk in their populations (WHO Expert Consultation, 2004)(Bell et al., 2002)

Asia specific classification for overweight and obesity: A WHO consultation was established to analyse the findings indicating that Asian populations have a unique association with BMI, fat percentage, and health outcomes. The important observations indicated that Asians encountered heightened vulnerabilities to Type 2 diabetes and cardiovascular ailments at lower body mass indexes (BMIs) compared to the existing World Health Organization threshold for being overweight (≥ 25 kg/m²). Based on the existing data, it was determined that it is not feasible to produce a universally applicable BMI threshold especially for the Asian population. Therefore, no attempts were made to construct unique BMI cut-off points for each community. The consultation also decided to maintain the WHO BMI cut-off values as universal benchmarks for comparison. The year is 2000 in the Pacific.(Pacific, 2000).

Table 2.2 WHO classification of BMI for the Asian population

Classification	Body Mass Index (BMI)
Underweight	< 18.5 kg/m ²
Normal weight	18.5 - 22.9 kg/m ²
Overweight	≥ 23 kg/m ²
Obese	≥ 25 kg/m ²

(Source-*The Asia Pacific Perspective- Redefining Obesity and Its treatment 2000 Geneva WHO*)

2.9 Sociological factors related to overweight/obesity:

a. Age

In developed countries, both men and women see a rise in body weight as they age from 50 to 60 years. Similar situations are prevalent in developing countries; however, the highest rates of overweight occur around the age of 40. A research project in Northern India examines the rate of overweight and obesity among male and females aged 15 to 49 years in rural and urban India, including regional variations, and finds a positive relationship between age and overweight/obesity, as well as a negative relationship with normal and underweight statuses.(Rai et al., 2021)

A study conducted at a Medical College in Vadnagar, Gujarat, discovered that the overall prevalence of obesity was highest among those aged 21 to 24 years (29.64 percent).(Panchal et al., 2019a)

b. Sex

Most of the studies held in India among young adults reveals a significant association between sex and overweight status. The studies done all over the world has shown that number of women who are obese are more when compared to men. But the overweight levels are high among men.(Garg et al., 2010).

A study conducted in Kerala discovered that while males had a higher frequency of overweight than females, females had a higher prevalence of obesity (8%) than males (6%).(1521_pdf.pdf, n.d.). Another study of medical students in Kerala found that while male students had a higher prevalence of overweight/obesity based on BMI, females had a higher prevalence of abdominal obesity based on waist circumference. (Thomas and M, 2019)

c. Marital status

In India, married people are more likely to be overweight or obese. Based on a large-scale survey in India, a higher number of married respondents who are above 30 years found to be overweight and obese compared with the respondents who were single.(*Statista*, n.d.). A study of overweight and obesity among women who reside in an urban area in north India found that the level of obesity was considerably higher in married women, suggesting that married status increases the likelihood of obesity.(Girdhar et al., 2016)

d. Religion

An Indian study on the prevalence of overweight/obesity found that all Sikh sub-populations and Muslim women were more likely to be overweight or obese than the general population, highlighting the significance of cultural factors. (Siddiqui and Donato, 2016). Sikh women in India are 1.57 times more likely to be overweight/obese than Hindu women, according to a 2005 study. (Dalton et al., 2003)

e. Socio economic class

The influence of economic position on overweight/obesity has become a significant factor, especially in developing countries. (Dutta et al., 2019). There is a positive association between the level of education and wealth index and the occurrence of overweight or obesity. A study conducted using seven national datasets evaluated the association between education and wealth in relation to obesity among women in countries with middle incomes. The study concluded that both education and wealth were independently and positively associated with obesity. (Aitsi-Selmi et al., 2014). A study conducted in rural and peri-urban areas of Birbhum district, West Bengal found that males with a high income and women with a low level of education were more likely to be at risk of obesity. (Majumdar and Gorain, 2024).

f. Type of institution

One of the research projects in Guntur, Andhra Pradesh, discovered that compared to students enrolled in public schools, those attending private schools were far more likely to be overweight or obese. (Gujjarlapudi et al., 2017). In another study it was observed that the occurrence of overweight and obesity was higher among private school students compared to public and government school students.(Varghese et al., 2019).

Other factors related to overweight/obesity:

g. Physical activity

An important and crucial component in preventing overweight or obesity is physical activity. Keeping track of how many calories someone consume in relation to how many calories burns or uses is helpful. More calories are expended during intensive exercise, which can either aid sustain weight reduction or prevent weight gain. (Avenue et al., 2012) Physical activity and body fat were found to be inversely associated in an Indian population research. (Bowen et al., 2015). An additional study conducted in Kolkata among undergraduate medical students reveals a significant association between physical activity and overweight.(Chakraborty et al., 2017).

h. Sedentary lifestyle

A sedentary lifestyle is defined as a substantial decrease in physical activity and the most of one's waking hours being spent in a seated, reclined, or lying down position. The concept of leading a sedentary lifestyle or sedentary behaviour refers to any activity performed while awake, such as leaning or sitting, that involves an energy expenditure of 1.5 metabolic equivalent tasks (MET) or less. (Park et al., 2020). Sedentary activities encompass activities such as reading, engaging in phone conversations, playing computer

video games, using mobile phones for prolonged durations, and listening to music. (Thomas and M, 2019). The study conducted among college students in Gujarat revealed a notable increase in the occurrence of obesity and overweight among those who spent more than two hours daily with a computer or television. Moreover, there is a significant association between the excessive usage of mobile phones and the occurrence of overweight. Research has observed an association between individuals who lead unhealthy lifestyles, characterized by the consumption of fast food and fried snacks, and a higher likelihood of obesity. (Manojan et al., 2019). Students who had a positive family history of obesity, led a sedentary lifestyle, consumed a significant amount of junk food, and followed a high-calorie diet were at a much higher risk of being overweight or obese.(Panchal et al., 2019a).

i. Sleep

Nowadays, more and more adults are getting frustrated about their sleep and restricting back on the quality of sleep they get. Numerous epidemiological research and experimental studies have established a connection between obesity risk and insufficient sleep duration. Significant public health concerns would be raised by the possibility of a causal relationship between sleep disturbances and obesity, given the increasing incidence of chronic sleep loss.(Beccuti and Pannain, 2011).

j. Behavioural measurements

The most important risk factors, together with a family history of the disease and smoking, were far more prevalent among male participants.(Yin et al., 2021). Researchers in Ireland looked at adults to see whether there was an association between obesity and alcohol use. The study confirmed the association between alcohol use and obesity even after accounting for potential confounds.(AlKalbani and Murrin, 2023).

k. Dietary patterns

Overweight and obesity are conditions that are largely caused and controlled by dietary choices. In diets, they refer to the different foods, their amounts, proportions, and combinations of nutrients, as well as how often they are utilized. The normal diet of carbohydrates has given way to high-calorie fast food, which is especially bad for young adults eating habits. (Thomas and M, 2019). Consuming fast food may raise one's risk of obesity and diseases associated with it, which is a serious public health concern.(Mohammadbeigi et al., 2018). It has been noted that people who have unhealthy lifestyles, which include consuming fast food and fried snacks, are more likely to be obese. (Manojan et al., 2019). With a family history that was supportive of obesity, a sedentary lifestyle, high junk food consumption, and a high-calorie diet, students were much more likely to be overweight or obese. (Panchal et al., 2019b)

2.10 Research gap

Baker's theory states that an individual's predisposition to become obese or overweight begins during foetal development. The crucial ages of late adolescence and early adulthood are when a person is most likely to become overweight if they are unaware of how important it is to maintain an ideal weight for their height. They are more susceptible to overweight and obesity as a result of their shift from childhood to young adulthood from independent living, which is brought on by a sedentary lifestyle, a high wealth index, a lack of physical activity, elevated stress levels, and altered eating habits. Focusing on young adults in the 18–24 age range identifies a crucial group for comprehending the early beginnings of obesity and overweight. A number of sociological factors are important, including occupation, income, and level of education. Better lifestyles, with more physical

activity and better food choices, are linked to higher incomes and levels of education. Individuals with higher Socioeconomic status have better access to nutritious food and healthcare services. On the other hand, lower SES individuals may face food insecurity and limited opportunities for physical activity.

Like the Socioeconomic status of an individual, gender differences or gender-specific norms may also be associated with the overweight status of young adults. For instance, men may face pressure to be muscular, while women may strive for thinness. These norms affect exercise preferences, body ideals, and weight-related goals. Recognizing the interplay of socioeconomic factors and gender norms is very essential for effective health interventions. Since there isn't much information regarding the sociological perspectives about overweight young adults available in the Indian context, this study is being put forward with the objective of understanding the sociological factors and determinants of being overweight among college-going young adults.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes various ways that were taken in order to collect and analyse data that was significant to the study. The study's setting, research design, sample size, sample selection, study participation, data kinds, data collection methods and data storage are also addressed here.

3.2 Title of the study

Social determinants of overweight among college students in Thiruvananthapuram district, Kerala: A comprehensive analysis

3.3 Objectives of the study

a. General Objective

- To find out the social determinants associated with overweight among college students of Thiruvananthapuram district, Kerala.

b. Specific Objectives

- To study the prevalence of overweight among college students of Thiruvananthapuram district, Kerala.
- To investigate the relationship between socioeconomic status and the prevalence of overweight among young adults.
- To examine the influence of gender on the prevalence and patterns of overweight among young adults.

3.4 Research design

This study uses a quantitative research approach and has employed a cross-sectional design. It's a cross-sectional survey of college-going young adults thereby collecting the numerical data through a pretested self-administered questionnaire distributed among the students. The descriptive survey approach will enable the collection of a broad range of data from a diverse sample of students, providing a comprehensive view and making it suitable for unpacking the research problems. Data will be gathered from a randomly selected sample of students from various educational institutions ensuring that the sample is representative of the broader student population.

3.5 Concepts

- **Social Determinants**

Social determinants of health refer to the non-medical factors that influence health outcomes. These include the conditions in which people are born, grow, work, live, and age, as well as the wider set of forces and systems shaping the conditions of daily life. These determinants can include socioeconomic status, education, neighbourhood and physical environment, employment, social support networks, and access to healthcare. In the context this study, social determinants include factors like family income, parental education, gender equality, socioeconomic status, peer influence, and access to recreational facilities.

- **Overweight**

Overweight is a condition characterized by having more body weight than is considered normal or healthy for a certain height. It is typically measured using the

Body Mass Index (BMI), which is a person's weight in kilograms divided by the square of their height in meters. According to WHO, BMI more than or equal to 25 is classified as overweight. Overweight can lead to various health issues, including cardiovascular diseases, diabetes, and other metabolic disorders.

- **College students**

College students refer to individuals enrolled in higher education institutions, typically aged between 18 and 24 years. This period is often marked by significant lifestyle changes, including increased independence, changes in dietary habits, and varying levels of physical activity. These factors can influence their health behaviours and outcomes, making them a critical group for studying the impact of social determinants on overweight and obesity.

3.6 Variables in the study:

a. Dependent variable:

Overweight {Body Mass Index (BMI) greater than or equal to 25 kg/m²} and obesity {Body Mass Index (BMI) greater than or equal to 30 kg/m²}

Definition of the dependent variable:

Body Mass Index (BMI): The World Health Organization (WHO) defines overweight as a BMI ≥ 25 kg/m² and obesity as a BMI ≥ 30 kg/m².(Haam et al., 2023)

b. Independent variables:

Demographic variables:

Age group, sex, religion, type of institution, marital status.

Socioeconomic variables:

Education and occupation of the respondent's head of the family, Socio economic status.

Physical activity variables:

The physical activity was captured in three domains namely activity at work, travel to and from places and recreational activities. The activities were classified into vigorous and moderate activities.

Diet variables:

The number of consumption of items like vegetables, fruits, meat, fast food, restaurant food, processed food, fried local food, red meat, chicken, egg, fish, aerated soda or sugar, sweetened drinks, pizza or burgers or French fries, cakes, pastries or other bakery items, samosa, chips and meat were asked.

3.7 Pilot Study

A pilot study was conducted in February 2024 at MG college Kesavadasapuram, Thiruvananthapuram district, Kerala in which the socio-demographic details, physical activity, dietary patterns, anthropometric measurements and behavioural measurements were recorded. During the pilot study, the researcher understood some of the errors that could happen during the survey and the intensity with which it can be rectified was understood and implemented in the data collection tools.

3.8 Pre-Test

A pre-test is a small-scale trial run of the research instruments or procedures conducted with a sample of participants who are similar to the target population of the main study.

Thus, the pre-test of the interview schedule was conducted among 20 college students for checking the reliability and validity. The pre-test helped modify the interview schedule.

3.9 Area of Study

The current research was conducted in Thiruvananthapuram district, Kerala.

3.10 Universe of the Study

College students in the age group 18-24 years from all genders and of all professional and arts colleges (government, private- aided and unaided) except special colleges for disabled students in Thiruvananthapuram district. Data regarding all the colleges were obtained from all Kerala higher education survey reports. Among 155 total colleges in the district, eight colleges were included in the study.

3.11 Sample size estimation

Sample size was calculated using the formula $n = 3.84pq/d^2$

n= sample size (the proposed number of participants)

p = prevalence, q=1-p and d the desired precision.

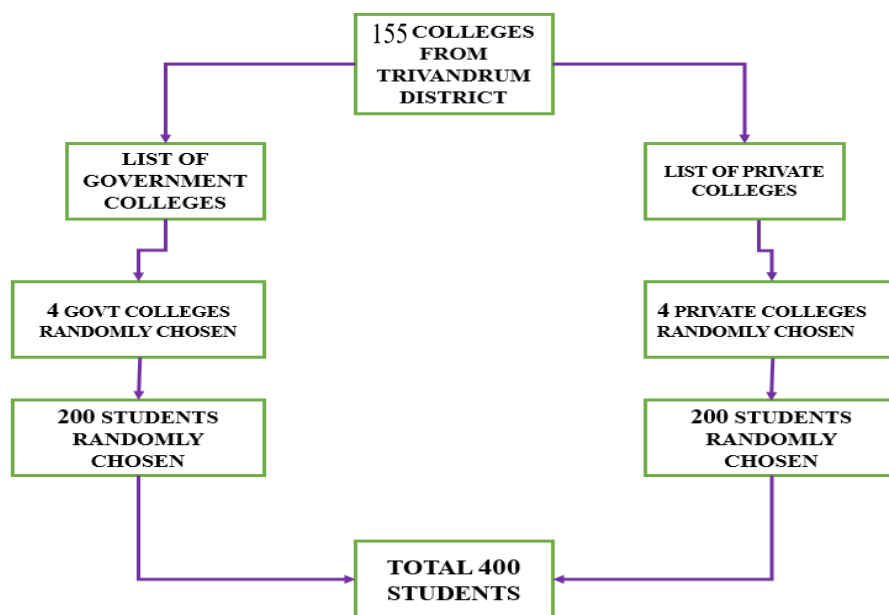
According to NFHS-5 (National Family Health Survey, 2019-21 data), taking the highest prevalence of overweight and obesity of 24 percent, precision of 5 percent over 95 percent confidence interval with a design effect of 1.3, sample size was calculated as 365. Expecting the possible non-response cases, the sample size was rounded of to 400.

3.12 Sampling

The sample was selected using a multi-stage cluster sampling procedure. The Trivandrum district had a grand number of 155 colleges. A distinct list was created for both government

and private institutions, and four colleges were chosen at random from each category. Data was obtained from a total of 400 students from these eight selected colleges. Students were chosen from each college department based on their availability during free class periods. A total of 50 students were randomly picked from each college from their department registers. Upon obtaining authorization from the principal, a mutually agreeable time period was scheduled for data collection in collaboration with the college union members and the individual department heads. The majority of surveys were conducted during the lunch break. During the data-collecting process, the researcher delivered a concise overview of the study to the participants. The participants were given information sheets that offered details about the investigation, and written consent was obtained from them. The information sheets were available in both English and Malayalam languages. The researcher addressed any questions or inquiries from the participants during the data collection process.

Figure 3.1 Sample selection procedure



3.13 Inclusion and Exclusion Criteria

3.13.1 Inclusion criteria:

- College students from all genders aged 18 – 24 years studying in the selected colleges and present on the date of data collection.

3.13.2 Exclusion criteria:

- Students who were physically challenged.
- Students who were suffering from any acute illness.
- Pregnant women.

3.14 Sources of data collection

In the study, both primary and secondary data were used. The primary data were collected from the College students taken for the study. In order to get sufficient information concerning the issue, secondary sources like published works, census reports, the publication of the development departments, official records and publication of the voluntary organizations, archival sources, newspapers, and other related sources were used. The secondary sources gave ample evidences on the issue of overweight in Kerala.

3.15 Tools and Techniques of Data Collection

Pretested self-administered questionnaires were distributed among the students. The researcher cleared all the queries or doubts raised by the participants regarding the questionnaire.

Printed copies of the questionnaire were provided to the students. Information related to socio-demographic details, physical activity (STEPS questionnaire), dietary patterns (few

questions were adopted from STEPS and IDSP-NCD survey questionnaire), and behavioural measurements (STEPS questionnaire) were recorded.

The researcher measured each student's height and weight at the same time. Using a common three-piece anthropometric rod that was adjusted up to one millimetre in the classroom, the height of every student was measured. After instructing students to stand straight up against a wall with their heels contacting the wall and their chin held horizontally to align their eyes and tragus in a straight line, then the rod was adjusted and the height in centimetres was measured. Student's weight was recorded on bathroom scales calibrated by the Legal Metrology department and corrected with a lever balance up to 0.5 kg, and calibrated daily to ensure zero error. While the measurement was being taken, students were instructed to stand straight, barefoot, on the weighing machine. Each participant took an average of fifteen to twenty minutes to complete the survey.

3.16 Data Storage:

Along with the data collection, the data was entered in the Windows Excel and then imported to SPSS for analysis purpose. The hard copies of the interview schedule were stored in a locked chamber under the vigilance of the researcher. The privacy and the confidentiality were strictly maintained.

3.17 Data Analysis and Statistical Methods

The data was entered into Microsoft Excel on a Windows operating system. Subsequently, it was imported into licenced version of statistical software SPSS, version 27 for analysis. The baseline data were analysed using descriptive statistical methods to determine the mean age, religion, education, and occupation of the head of the family, besides other factors. The independent variables were analysed for association with the dependent variable using

cross tabulation followed by Chi square test. Strength of association was analysed using Binary logistic regression. An association was deemed statistically significant if the computed p-value was below 0.05.

3.18 Strength of the study

- This is one of the few studies focused on young adults aged 18-24 years which is a critical demographic group for targeted interventions to prevent overweight or obesity.
- Standardized Instrument: Used a questionnaire adopted from the WHO STEPS Instrument which is a standardized and validated tool.
- All the anthropometric measurements were taken by the researcher to avoid observer bias.

3.19 Limitations of the study

- Self-Administered Questionnaire: Self-reporting can introduce bias, as participants may not accurately recall or may underreport/overreport certain behaviors.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter describes about the outcomes of the data analysis in accordance with the objectives. The data was analysed through SPSS version 27 after data cleaning. At first, the baseline characteristics of the sample population was identified, followed by the prevalence of overweight or obesity. Subsequently, the associations of various independent variables with the dependent variable (overweight) were examined one by one. The findings are presented in a structured format detailing about the sample characteristics and outcomes of the bivariate analysis.

4.2 Sample Characteristics:

In this part, the study sample is described in great depth. Thus, delineating various aspects including socio-economic and demographic factors, dietary patterns, physical activity, behavioural measurements and anthropometric measurements of the respondents.

4.2.1. Baseline Characters of the Sample Population:

Total number of participants were 400. However, the data entered through ODK tool by 35 students had to be deleted since it could not retrieve. Thus, the data was taken from a total of 365 students. The mean age of the sample population is 20.69 ± 1.633 years. 45.47 percent of the population belonged to 18-20 years of age group and the remaining 54.53 belonged to 21-24 years of age. In the total sample, 39.45 percent were males and 60.54 percent were females. The mean age for male was 20.79 and female was 20.62. Among them, 69.58 percent of the respondents belongs to the Hindu religion, 20.27 percent were Christians, 8.49 percent were Muslims and the remaining were from other religion. Almost all the respondents were single 97.26 percent and the remaining 2.73 percent were married. The

sample population was selected from private and government colleges with equal weightage.

Table 4.1 Demographic characteristics of the sample population

Variable	Number (%)
Age group	
18-20 years	166 (45.47)
21-24 years	199 (54.52)
Sex	
Male	144 (39.45)
Female	221 (60.54)
Religion	
Hindu	254 (69.58)
Christian	74 (20.27)
Muslim	31 (8.49)
Others	6 (1.64)
Marital status	
Single	355 (97.26)
Married	10 (2.73)
Type of college	
Private	183 (50.1)
Government	182 (49.9)

4.2.2 Socio-economic characteristics

The socio-economic characteristics were based on modified Kuppuswamy socioeconomic status scale for the year 2023. It's the most widely used scale in India among all the SES. The families were categorized into five classes, from upper to lower class according to the total score obtained by the Kuppuswamy scale which ranges from 3-29. The total score of a family depends upon the monthly income of the family, occupation of the head of the family and education of the head of the family.

There were 5.47 percent of the respondents who's family income was greater than or equal to 249044 rupees per month, 4.38 percent who had family income between the range of 124489-249043 rupees per month, 11.78 percent had family income between the range of 93381-124488 rupees per month, 10.41 percent who had family income between the range of 62273-93380 rupees per month, 18.35 percent had family income between the range 37325-62272 rupees per month, 26.30 percent had family income between the range 12445-37324 rupees per month and 23.28 percent had family income less than or equal to 12444 rupees per month. About 9.86 percent of respondents whose occupation of the head of the family comes under Legislators, Senior Officers & Managers, 15.34 percent of respondents whose occupation of the head of the family was professionals, 9.31 percent of respondents whose occupation of the head of the family comes under technicians and associate professionals, 6.02 percent occupation comes under clerks, 18.63 percent of respondents whose occupation of the head of the family comes under the category of skilled workers and shop and market sales workers, 7.12 percent occupation comes under Skilled Agricultural & Fishery Workers, 2.46 percent of respondents whose occupation of the head of the family comes under the category of craft and related trade works, 2.19 percent comes under the category plant and mine operators.

Majority of the respondents whose occupation of the head of the family came under the category of elementary occupation that is 21.91 percent and 7.12 percent of respondents head of the family were unemployed. Among the participants, 7.39 percent of respondents head of the family were having professional degree or honours, 34.24 percent of respondents head of the family were graduates, 14.52 percent had intermediate or diploma, 36.16 percent of respondents head of the families educational qualification was high school certificate and that was majority, 4.93 percent had middle school certificate, 2.19 percent had primary school certificate and 0.54 percent of the respondents head of the family were illiterate.

Table 4.2 Socio-economic characteristics of the sample population

Variables	Number (%)
Monthly income of the family	
≥249044	20 (5.47)
124489-249043	16 (4.38)
93381-124488	43 (11.78)
62273-93380	38 (10.41)
37325-62272	67 (18.35)
12445-37324	96 (26.30)
≤12444	85 (23.28)
Occupation of the head of the family	
Legislators, Senior Officers & Managers	36 (9.86)
Professionals	56 (15.34)
Technicians & Associate Professionals	34 (9.31)

Clerks	22 (6.02)
Skilled Workers and Shop & Market Sales Workers	68 (18.63)
Skilled Agricultural & Fishery Workers	26 (7.12)
Craft & Related Trade Workers	9 (2.46)
Plant & Machine Operators and Assemblers	8 (2.19)
Elementary Occupation	80 (21.91)
Unemployed	26 (7.12)
Education of the Head	
Profession or Honours	27 (7.39)
Graduate	125 (34.24)
Intermediate or Diploma	53 (14.52)
High School Certificate	132 (36.16)
Middle School Certificate	18 (4.93)
Primary School Certificate	8 (2.19)
Illiterate	2 (0.54)

Table 4.3 Kuppuswamy socio-economic status scale 2023

Score	Socio-economic class	Number (%)
26-29	Upper (I)	22 (6.02)
16-25	Upper middle (II)	123 (33.69)
11-15	Lower middle (III)	96 (26.30)
5-10	Upper lower (IV)	124 (33.97)
<5	Lower (V)	0

According to Kuppuswamy socio-economic status scale 2023 as per the scores, 6.02 percent of the respondents belongs to upper class, 33.69 percent of the respondents belongs to upper middle class, 26.30 percent of the respondents belongs to lower middle, 33.97 percent belongs to upper lower class and no respondent belongs to lower class.

4.2.3 Physical activity of the study population

Among the study population, 10.95 percent does vigorous-intensity activities, 9.58 percent does moderate-intensity activities and 6.02 percent does both the activities during their leisure time. About 55.89 percent of them use bicycle or walking while travelling from place to place. About the sedentary behaviour, 83.28 percent of the respondents usually spend time sitting or reclining for more than two hours a day. Almost all respondents spend more than one hour with smartphones (90.95%). About sleep, 80.54 percent of the respondents had less than seven hours of sleep for the past one month. The remaining 19.45 percent only had a sleep for more than seven hours.

Adults should get at least 600 MET-minutes of exercise each week, which is defined as 150 minutes of moderate-intensity physical activity, 75 minutes of vigorous-intensity physical activity, or a mix of the two. This recommendation comes from the World Health Organization (WHO).

Based on the STEPS questionnaire, the information was collected on three domains, “the vigorous-intensity physical activity and moderate-intensity physical activity during work (college hours), during transport and leisure time throughout a week”. (q-by-q-steps-instrument-v3-2.pdf, n.d.). Thus, the physical activity was categorized into four for doing the calculations.

Table 4.4 Physical activity

Variables	Number (%)
Physical activity	
Vigorous intensity (>75 mins/week)	76 (20.82)
Moderate intensity (>150 mins/week)	58 (15.89)
Vigorous activity + moderate activity	42 (11.50)
No activity	189 (51.78)
Hours spend on sitting per day	
More than 2 hours	304 (83.28)
Less than 2 hours	61 (16.71)
Smartphone use	
More than 1 hour	332 (90.95)
Less than 1 hour	25 (6.84)
Bicycle use	
Don't use	161 (44.1)
Use bicycle	204 (55.89)
Sleep hours	
Less than 7 hours	294 (80.54)
More than 7 hours	71 (19.45)

Table 4.5 Mean sedentary time per day

TYPE OF ACTIVITY	MEAN±SD	MINIMUM	MAXIMUM
Hours spend on sitting (sedentary activity)	3.48±2.77 hours per day	30 minutes	11 hours

4.2.4 Details of the dietary activities:

About 96.16 percent of the respondents were non vegetarians, only 3.83 percent prefer vegetarian diet. Nearly 88.76 percent of the population consumes fruits less than ten servings per week while 10.68 percent of the population consumes fruits more than ten servings. Surprisingly there were no respondents who consumes fruits at least 35 servings per week as recommended by WHO. There were only 6.02 percent of the population who consumed vegetables for at least 35 servings per week. Respondents who consumed meat (excluding fish) for more than five servings per week were 34.79 percent and who consumed meat for less than five servings were 65.2 percent.

Nearly 40 percent of the population had the habit of having food from small hotels and restaurants. About 36.15 percent of the respondents have fast food at least once or twice in a week. Those respondents who have food from the restaurants at least once or twice in a week are 34.79 percent. Majority of the population had fried local foods and packaged salty snacks and bakery items. About 55.61 percent of the respondents had packaged salty snacks and bakery items at least once or twice in a week. Nearly 50 percent of the population had fried local foods at least once in a week. There was only about 23.28 percent of the respondents who had red meat at least once in a week. More than 70 percent of the population consumes red meat only occasionally. More than 70 percent of the population consumes eggs once or twice per week. About 67.66 percent consumes chicken at least once in a week. About 43.56 percent consumes fish daily. Nearly 50 percent of the respondents consumes aerated soda or sugar for at least once in a week. The case is similar with the sweetened drinks also. Nearly 50 percent consumes it at least once a week. More than 30 percent of the participants consumes cakes, pastries, other bakery items like

samosa, chips at least once per week. About 24.65 percent of population consumes pizza, burgers or French fries occasionally or once in a month.

Table 4.6 Diet pattern among the study population:

Variables	Number (%)
Diet preference	
Non-vegetarian	351 (96.16)
Vegetarian	14 (3.83)
Fruit consumption	
<10 servings/week	324 (88.76)
>=10 servings/week	39 (10.68)
Vegetable consumption	
<35servings/week	343 (93.97)
>= 35 servings/week	22 (6.02)
Meat consumption	
>=5 servings/week	127 (34.79)
<5 servings/week	238 (65.2)
Fast food consumption	
More than three times in a week	37 (10.13)
Once or twice in a week	95 (26.02)
Occasionally	233 (63.83)
Restaurant food consumption	
More than three	36 (9.86)

Once or twice in a week	91 (24.93)
Occasionally	238 (65.2)
Packaged salty snacks, bakery items	
More than three	104 (28.49)
Once or twice in a week	99 (27.12)
Occasionally	162 (44.38)
Fried local foods	
Daily	35 (9.58)
At least once in a week	144 (39.45)
Once a month	26 (7.12)
Occasionally or rarely	139 (38.08)
Never	21 (5.75)
Red meat consumption	
At least once in a week	85 (23.28)
Once a month	70 (19.17)
Occasionally or rarely	129 (35.34)
Never	79 (21.64)
Egg consumption	
Daily	57 (15.61)
At least once in a week	224 (61.36)
Once a month	21 (5.75)
Occasionally or rarely	51 (13.97)

Never	10 (2.73)
Chicken consumption	
Daily	13 (3.56)
At least once in a week	234 (64.1)
Once a month	57 (15.61)
Occasionally or rarely	46 (12.6)
Never	14 (3.83)
Fish consumption	
Daily	159 (43.56)
At least once in a week	134 (36.71)
Occasionally or rarely	48 (13.15)
Never	23 (6.3)
Aerated Soda or sugar	
Daily	70 (19.17)
At least once in a week	114 (31.23)
Once a month	41 (11.23)
Occasionally or rarely	107 (29.31)
Never	32 (8.76)
Sweetened drinks	
Daily	46 (12.6)
At least once in a week	132 (36.16)
Once a month	47 (12.87)
Occasionally or rarely	119 (36.6)
Never	19 (5.2)

Pizza or burgers or French fries	
At least once in a week	26 (7.12)
Once a month	64 (17.53)
Occasionally or rarely	197 (53.97)
Never	78 (21.36)
Cakes, Pastries or other bakery items	
Daily	14 (3.83)
At least once in a week	107 (29.31)
Once a month	68 (18.63)
Occasionally or rarely	161 (44.1)
Never	14 (3.83)
Samosa, Chips etc	
Daily	32 (8.76)
At least once in a week	155 (42.46)
Once a month	53 (14.52)
Occasionally or rarely	112 (30.68)
Never	9 (2.46)

4.2.5 Behavioural measurements of the study population

Among the study population, only 4.11 percent of the total respondents are having tobacco use presently. About 10.68 percent had used tobacco during the past. The respondents who consume alcohol presently are 38.08 percent and those who had consumed alcohol within the past twelve months are 27.67 percent.

Table 4.7 Anthropometric measurements

Variable	Mean \pm SD
Height (in cm)	162.63 \pm 9.253
Weight (in kg)	59.54 \pm 13.616

4.3 Prevalence of overweight/obesity:

According to WHO classification, the prevalence of overweight (BMI \geq 25 kg/m²) was found to be 24.65 percent (95% CI:20.23% to 29.07%). Among them, obesity (BMI \geq 30 kg/m²) level is 2.46 percent (95% CI:1.2% to 4.79%). Prevalence of overweight was significantly more among males (30.55%) than in females (22.25%). While splitting, the prevalence of pre-obesity (BMI = 25.0–29.9 kg/m²) was found to be 22.19 percent and obesity (BMI \geq 30 kg/m²) was 2.46 percent. The prevalence of pre-obesity among males was 28.47 percent and obesity were 2.08 percent. Among females, the prevalence of pre-obesity and obesity was found to be 18.09 percent and 2.71 percent. Obesity among females were slightly more than that of males.

Table 4.8 Descriptive Statistics of BMI for the study sample

Variable	Mean \pm SD	Median (IQR)	Minimum	Maximum
BMI (Weight in kg/height in m ²)	22.35 \pm 3.94	22 (5.3)	12.6	37.9

Table 4.9 Distribution of the sample by Body Mass Index (BMI category)

BMI	Number (%)	Females (%)	Males (%)
Underweight (<18.5 kg/m ²)	61 (16.71)	45 (20.36)	16 (11.11)
Normal (18.5-24.9 kg/m ²)	214 (58.63)	130 (58.82)	84 (58.33)
Overweight (>=25 kg/m ²)	90 (24.65)	46 (20.8)	44 (30.55)
Pre-obese (25-29.9 kg/m ²)	81 (22.19)	40 (18.09)	41 (28.47)
Obese (>=30 kg/m ²)	9 (2.46)	6 (2.71)	3 (2.08)

According to the Western Pacific regional office of the World Health Organization (WHO) has recommended lower BMI cut off values for Asian people.(Thomas and M, 2019). In Asians, the cut-offs for overweight are greater than or equal to 23.0 kg/m² and obesity greater than or equal to 25.0 kg/m².

Table 4.10 Proposed classification of weight by BMI in adult Asians

BMI	Number (%)	Females (%)	Males (%)
Underweight (<18.5 kg/m ²)	61 (16.71)	45 (20.36)	16 (11.11)
Normal (18.5-22.9 kg/m ²)	163 (44.65)	106 (47.96)	57 (39.58)
Overweight (>=23 kg/m ²)	141 (38.62)	70 (31.65)	71 (49.3)
At risk (23-24.9 kg/m ²)	51 (13.97)	24 (10.85)	27 (18.75)
Obesity (>=25 kg/m ²)	90 (24.65)	46 (20.8)	44 (30.55)

Figure 4.1

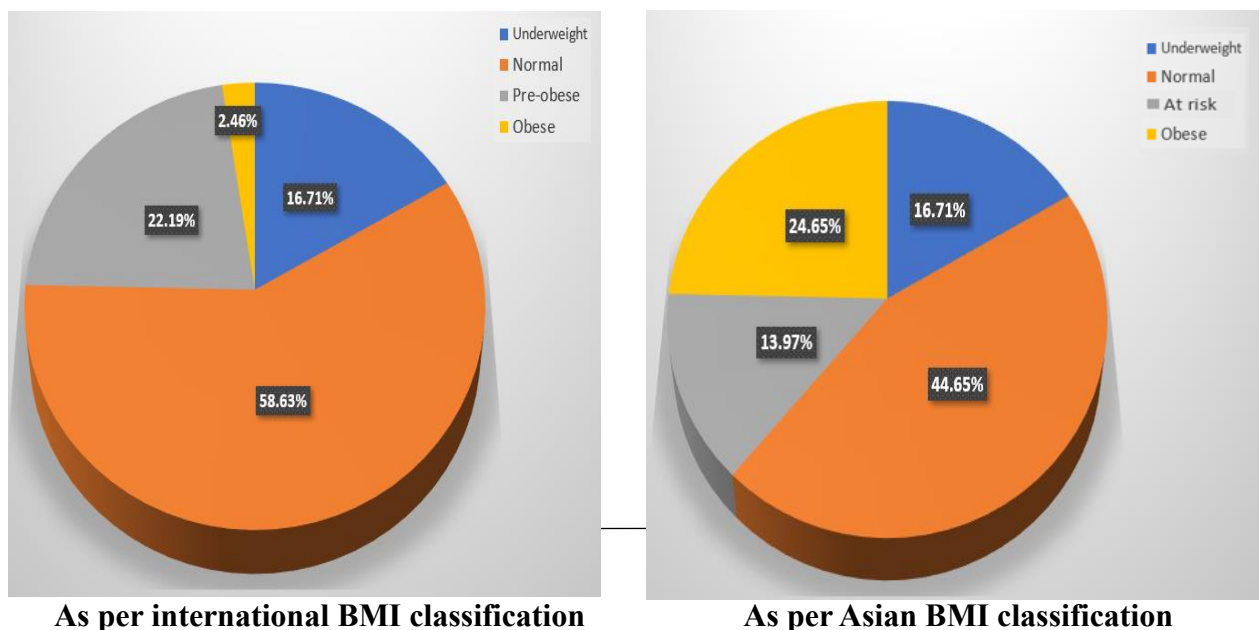


Figure 3.1: Distribution of BMI according to international classification and classification for Asian population

Figure 3.1 shows the classification of participants according to international BMI cut-off values and cut-offs of BMI for Asian population according to the Western pacific regional office (WHO). Only 2.46 percent of respondents comes under obese category as per international cut-off, whereas 24.65 percent are obese as per cut-offs of BMI for Asian population.

Table 4.11 Distribution of the sample with BMI and age group

BMI category	Age group		Total (%)
	18-20 years N (%)	21-24 years N (%)	
Underweight	35 (21.08)	26 (13.06)	61 (16.71)
Normal	100 (60.24)	114 (57.28)	214(58.63)
Pre-obese	27 (16.26)	54 (27.13)	81 (22.19)
Obese	4 (2.40)	5 (2.51)	9 (2.46)
Total	166	199	365

The prevalence of overweight and obesity was more among the respondents of the age category 21-24 years. The overall prevalence of overweight or obesity was 29.64 percent among the age group 21-24 years and 18.66 percent among the age group 18-20 years.

4.4 Bivariate analysis- for overweight

Bivariate analysis has been done to find the association between the independent variables and the dependent variable overweight. Bivariate analysis for each variable estimating the unadjusted odds ratio with 95 percent confidence interval and p value were noted. Those independent variables with p value less than 0.05 were found to be significant. A binary logistic regression was done in order to find the strength of association.

Table 4.12 Bivariate analysis of overweight with the Socio-economic and demographic factors

Variables		Overweight (%)	Unadjusted OR (95 % C.I)	p value
Sex	Female	20.81	1	0.03
	Male	30.55	1.67 (1.03-2.7)	
Age group	18-20	18.67	1	0.01
	21-24	29.64	1.84 (1.12-3.01)	
Marital status	Single	23.94	1	0.14
	Married	50	0.31 (0.08-1.11)	
Religion	Hindu	21.65	1	0.06
	Others	31.53	0.6 (0.36-0.98)	
Socio economic class	Upper middle	24.82	1	0.69
	Lower middle	27.08	0.88 (0.46-1.59)	

	Upper lower	22.58	1.13 (0.64-1.99)	0.66
Type of institution	Government	19.78	1	0.03
	Private	29.5	1.69 (1.04-2.75)	

Among the socioeconomic and demographic variables considered, sex, age group and type of institution were found to be significantly associated with overweight status with a p value less than 0.05. Results from the binary logistic regression reveals that male (OR=1.67, 95% C.I:1.03-2.7) had an increased odds of being overweight than females. The students of higher age group (OR=1.84, 95% C.I:1.12-3.01) have nearly two times odds of developing overweight than the lower age group. Students studying in private colleges (OR=1.69, 95% C.I:1.04-2.75) have a higher odd of having overweight than the students from government institutions.

Table 4.13 Association between BMI Categories and Health risk behaviours of the respondents

Variables		Overweight (%)	Unadjusted OR (95% C.I)	p value
Physical activity	No activity	25.09	1	0.51
	Vigorous intensity (>75 mins/week)	30	0.78 (0.37-1.62)	
	Moderate intensity (>150 mins/week)	22.85	1.13 (0.48-2.61)	
	Vigorous moderate	22.72	1.13 (0.40-3.21)	
Hours spend on Sitting	Less than 2 hours	19.67	1	0.32
	More than or equal to 2 hours	25.62	1.40 (0.71-2.78)	
Bicycle use	Yes	22.05	1	0.24
	No	27.95	1.37 (0.85-2.21)	
Smartphone use	Less than one hour	8	1	0.04
	More than one hour	25.9	4.02 (1.07-25.69)	
Sleep hours	Less than 7 hours	25.85	1	0.35
	More than 7 hours	19.71	1.41 (0.74-2.69)	
Tobacco use	Yes	23.42	1	0.02
	No	53.33	3.73 (1.31-10.61)	
Alcohol use	Yes	24.24	1	0.87
	No	25.74	1.08 (0.63-1.83)	

Among the health risk behaviours considered, tobacco use and smartphone use had found to be significantly associated with overweight with a p value less than 0.05. Students who spend more time on smartphones and those who use tobacco presently had an increased odds of developing overweight.

Table 4.14 Association between BMI Categories and dietary behaviours of the respondents

Variables		Overweight/obesity (%)	Unadjusted OR (95% C.I)	p value
Diet preference	Vegetarian	7.14	1	0.21
	Non vegetarian	25.35	4.41 (0.56-34.23)	
Fruit consumption	<10 servings per week	24.07	1	0.47
	>=10 servings per week	30.76	0.71 (0.34-1.47)	
Vegetable consumption	<14 servings/week	27.21	1	0.38
	>=14 servings/week	22.7	1.27 (0.78-2.05)	
Meat consumption	Less than 5 servings	22.68	1	0.28
	More than or equal to 5 servings	28.34	1.34 (0.82-2.20)	
Fast food consumption	Occasionally	21.88	1	0.13
	Once or twice in a week	29.54	1.49 (0.92-2.43)	
Restaurant food consumption	Occasionally	20.58	1	0.01
	Once or twice in a week	32.28	1.83 (1.13-2.99)	
Processed food consumption	Occasionally	22.83	1	0.55
	Once or twice in a week	26.10	1.19 (0.73-1.93)	
Fried local food consumption	Occasionally or rarely	23.11	1	0.56
	At least once in a week	26.25	1.18 (0.73-1.90)	
Red meat consumption	Occasionally or rarely	22.59	1	0.07
	At least once in a week	32.94	1.68 (0.98-2.87)	

Egg consumption	Occasionally or rarely	26.82	1	0.73
	At least once in a week	24.19	0.87 (0.49-1.52)	
Chicken consumption	Occasionally or rarely	21.36	1	0.37
	At least once in a week	26.31	1.31 (0.77-2.22)	
Fish consumption	Occasionally or rarely	22.53	1	0.74
	At least once in a week	25.25	1.16 (0.62-2.15)	
Aerated Soda or sugar	Occasionally or rarely	18.75	1	0.01
	At least once in a week	30.97	1.94 (1.91-3.17)	
Sweetened drinks	Occasionally or rarely	23.24	1	0.56
	At least once in a week	26.40	1.18 (0.73-1.90)	
Pizza or burgers or French fries	Occasionally or rarely	24.48	1	0.96
	At least once in a week	26.92	1.13 (0.46-2.79)	
Cakes, Pastries or other bakery items	Occasionally or rarely	23.45	1	0.42
	At least once in a week	27.27	1.22 (0.74-2.01)	
Samosa, Chips etc	Occasionally or rarely	23.56	1	0.64
	At least once in a week	26.20	1.15 (0.71-1.85)	

Among the health dietary behaviours considered, frequent restaurant food consumption and aerated soda or sugar consumption had found to be significantly associated with overweight status with a p value less than 0.05. Study showed increased odds of developing overweight among the students who consumed large amounts of carbonated soft drinks and ate out from restaurants frequently.

CHAPTER 5: FINDINGS AND CONCLUSIONS

5.1 Introduction

The objective of the study was to find out the social determinants of overweight among college students of Thiruvananthapuram district and to estimate the prevalence of overweight among them. This chapter discusses the major findings in the light of the existing literature. It is organised under three sections namely: sample characteristics, prevalence of overweight or obesity and review of factors associated with overweight and obesity.

5.2 Sample characteristics

The study included 365 respondents. Majority of the sample were females, that is 60.54 percent. About 54.52 percent of students were from the age group 21-24 years. The mean age of the population is 20.69 ± 1.633 years. As per the Kuppaswamy socio-economic status scale 2023 scores, 6.02 percent of the respondents belonged to upper class, 33.69 percent of the respondents belonged to upper middle class, 26.30 percent of the respondents belonged to lower middle, 33.97 percent belonged to upper lower class and there were no respondents in the lower class.

5.3 Prevalence of overweight:

The prevalence of overweight/obesity in the study population was 24.65 percent. The prevalence of overweight/obesity among male and female students were 30.55 percent and 20.8 percent respectively. A study done among the medical and allied science students of Karnataka reported a prevalence of overweight and obesity of 23.4 percent and 5.2 percent among the students. Their prevalence rates among male students was 34.2 percent of overweight and 23.6 among female students which is comparable from this study.(Parajuli et al., 2019).

The overall prevalence revealed from the present study go in concurrence with the studies carried out in similar age groups in the country but still the numbers are high denoting a serious health emergency among the college students.

When the BMI is reclassified according to the suggested classification of BMI for Asian populations(WHO Expert Consultation, 2004), which is greater than or equal to 23.0kg/m² for overweight and greater than or equal to 25.0 kg/m² for obesity , the prevalence rates had further increased to a higher level especially the prevalence of obesity from 2.46 percent to 24.65 percent which is comparatively very high. In a study done among medical students in Kerala based on Asia-Pacific guidelines, where the prevalence of overweight was 24.57 percent and the prevalence of obesity was 25.71 percent.(Manojan et al., 2019). The prevalence of overweight in this study was higher, however the prevalence of obesity was almost similar. Since Asians have a higher predisposition to diabetes and cardiovascular diseases at a lower level of BMI, public health action is warranted among young people to prevent avoidable morbidity and mortality.

In another study done among 330 medical students in government medical college, Kottayam, based on Asia-Pacific guidelines, the overall prevalence of overweight and obesity obtained was 30.6 percent which is lesser than the overall prevalence of 38.62 percent from this study. (Thomas and M, 2019).

5.4 Factors related to overweight:

a. Socio-demographic characters:

The study found out that the prevalence of overweight was significantly more among males than females. Study further revealed that there exists a strong association between the independent variable gender and the outcome variable overweight shows the importance of

gender specific factors or gender differences which impacts overweight among the students. In the study held in Karnataka among the college students, among females, 18.6 percent were overweight and 5 percent were obese. Out of 439 males, 28.7 percent were overweight and 5.5 percent were obese. There was significant association between BMI and sex which shows the similarities with this study on the association between overweight and sex.(Parajuli et al., 2019)

Prevalence of overweight was significantly more among males from a study done at Kottayam medical college which is similar to this study where the prevalence is more among males. (Thomas and M, 2019).

In this study, the prevalence of obesity and overweight was significantly higher in the higher age categories and the combined prevalence of obesity was found to be highest (29.64%) among the 21-24 years age group which is comparable to the prevalence of overweight in the 21-24 year age group in a study held at GMERS Medical College, Vadnagar, Gujarat.(Panchal et al., 2019b). However, the prevalence of overweight was only 15.8% in that study.

In a study done in India where the students studying in private and government school were compared, the study reported a higher prevalence of overweight/obesity among students in private schools compared to those in government schools.(Patnaik et al., 2015)

b. Dietary pattern:

The study revealed that there was a significant association of the prevalence of overweight with the dietary patterns of the students. These behaviours reflect broader social norms and patterns of consumption prevalent among young adults. The students who had frequent

restaurant dining and those who consumed aerated soda/sugar had showed a significant association with overweight and obesity. The same observation has been reported by a study done in a private medical college in Thiruvananthapuram, Kerala wherein the habit of consumption of high energy foods (fast foods) were found to be influencing significant factor affecting obesity. (George et al., 2012)

A community-based study among adolescents in Madhya Pradesh also showed a positive association between the prevalence of overweight and obesity and an increased frequency of consumption of carbonated soft drinks, non-vegetarian food, and less consumption of fruits and vegetables (Seifu et al., 2021). This trend is also observed in this study too, that the respondents who consumed higher quantity of aerated soda or sugar were more likely to get obesity when compared with the students who consumed lesser quantity of aerated soda or sugar showing a significant association with overweight and obesity.

c. Behavioural measurements

The results of analysis showed that smoking among adolescents was a significant predictor of overweight and obesity. Similar finding has been reported by a study among medical students of South-East Europe which found that lifestyle factors such as tobacco use was associated with overweight and obesity among young people, (Ilić et al., 2024). Another study on tobacco users among adolescents from 23 low-income and middle-income countries had also reported a significant association between weight categories and tobacco. (Wang, 2021)

c. Physical activity and sedentary lifestyle:

In this study, there was no significant association between physical activity and overweight. However, it may be due to the fact that detailed metabolic equivalents could not be captured

due to time constraints and only surrogate measures of physical activity was used. A study done under graduate medical students at Kolkata has reported that there was a significant association between physical activity and overweight.(Chakraborty et al., 2017)

The current study finding is that sedentary behaviour can influence overweight. The prevalence of overweight was associated with over use of smart phones which is comparable with the study done among the college students of Gujarat where the prevalence of obesity and overweight was significantly higher in the group of students who spent more than 2 hours daily in front of television or computers. (Panchal et al., 2019b) A study published in BMC Public Health investigated the relationship between excessive smartphone use and weight status among youth in India and found that excessive smartphone use is associated with higher weight status and BMI.(Brodersen et al., 2023). A research article that examined the association between obesity and problematic smartphone use among school-age children and adolescents in Shanghai, also highlighted that problematic smartphone use is positively associated with obesity status.(Ma et al., 2021)

5.5 Conclusions

The overall prevalence of overweight and obesity is comparable to studies among students of similar age groups in Kerala. The higher prevalence of overweight among males underscores the importance of considering gender-specific factors. Sociocultural expectations related to body image, physical activity, and dietary habits may differ significantly between genders. Frequent restaurant dining, aerated soda/sugar consumption and extensive mobile phone use are lifestyle practices associated with higher rates of overweight. These behaviours reflect broader social norms and patterns of consumption prevalent among young adults.

The results from the study underscore the need for targeted interventions aimed at sociological factors, lifestyle modifications and promotion of healthy behaviours among young men and women to prevent overweight and obesity.

5.6 Recommendations

The study results emphasize the need for interventions specifically aimed at life style modifications, promotion of healthy dietary habits and healthy behaviors among young adults. Recognizing the higher prevalence of overweight based on gender highlights the need for gender-sensitive strategies. Tailoring interventions to address gender-specific norms and behaviours can enhance effectiveness.

These interventions must also promote healthy dietary habits among young men and women in the society. Comprehensive life style modification programs in colleges, physical activity and prevention of health risk behaviours such as smoking and alcohol would be helpful. Initiatives to promote sports and games and physical activity through walking and cycling in colleges and reduction in sedentary activities like mobile phone use also needs to be promoted.

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APPENDIX

**SOCIAL DETERMINANTS OF OVERWEIGHT AMONG COLLEGE STUDENTS
IN THIRUVANANTHAPURAM DISTRICT, KERALA: A COMPREHENSIVE
ANALYSIS**

INTERVIEW SCHEDULE

SL NO	QUESTIONS	CODING CRITERION	CODE OPTION	VARIABLES
A	IDENTIFICATION OF PARTICIPANT			
1	Participant id:			
2	Name of college:			
	Type of institution			
B	DEMOGRAPHIC INFORMATION			
3	Age of the participant:	Completed age as on 01.01.2024		AGE
4	Sex of the participant:	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender	0 1 2	GENDER
5	Educational status: (Highest level attained so far)	<input type="checkbox"/> Plus two <input type="checkbox"/> Diploma <input type="checkbox"/> Graduation <input type="checkbox"/> Post- Graduation	0 1 2 3	EDU
6	What is your marital status?	<input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced	0 1 2 3	MARITAL

7	Religion or Belief System	<input type="checkbox"/> Hindu <input type="checkbox"/> Muslim <input type="checkbox"/> Christian <input type="checkbox"/> Others	0 1 2 Please specify	RELIGION
MODIFIED KUPPUSWAMY SOCIOECONOMIC STATUS SCALE (2023)				
8	Monthly income of the family	<input type="checkbox"/> ≥ 249044 <input type="checkbox"/> 124489 – 249043 <input type="checkbox"/> 93381 – 124488 <input type="checkbox"/> 62273 – 93380 <input type="checkbox"/> 37325 – 62272 <input type="checkbox"/> 12445 – 37324 <input type="checkbox"/> ≤ 12444	0 1 2 3 4 5 6	INCOME
9	Occupation of the head of the family	<input type="checkbox"/> Legislators, Senior Officers & Managers <input type="checkbox"/> Professionals <input type="checkbox"/> Technicians & Associate Professionals <input type="checkbox"/> Clerks <input type="checkbox"/> Skilled Workers and Shop & Market Sales Workers <input type="checkbox"/> Skilled Agricultural % Fishery Workers <input type="checkbox"/> Craft & Related Trade Workers	0 1 2 3 4 5 6	OCCUPATIONHHD

		<input type="checkbox"/> Plant & Machine Operators and Assemblers	7	
		<input type="checkbox"/> Elementary Occupation	8	
		<input type="checkbox"/> Unemployed	9	
10	Education of the head of the family	<input type="checkbox"/> Profession or Honours	0	EDUCATIONHD
		<input type="checkbox"/> Graduate	1	
		<input type="checkbox"/> Intermediate or Diploma	2	
		<input type="checkbox"/> High School Certificate	3	
		<input type="checkbox"/> Middle School Certificate	4	
		<input type="checkbox"/> Primary School Certificate	5	
		<input type="checkbox"/> Illiterate	6	
C	DIETARY HABITS:			
11	What is your diet preference?	<input type="checkbox"/> Vegan	0	VEGNONVEG
		<input type="checkbox"/> Vegetarian	1	
		<input type="checkbox"/> Non- vegetarian	2	
		<input type="checkbox"/> Vegetarian +egg	3	
12	How many meals do you typically eat in a day? (meals include breakfast, lunch and dinner)	<input type="checkbox"/> One	0	MEALS
		<input type="checkbox"/> Two	1	
		<input type="checkbox"/> Three	2	
		<input type="checkbox"/> More than three	3	
13	Have you ever followed a specific meal plan or dieting to address your weight gain or loss?	<input type="checkbox"/> No	0	PLAN
		<input type="checkbox"/> Yes	1	
14	If yes, what was the need target if specific meal pan or dieting was done?	<input type="checkbox"/> Weight loss	0	WGT
		<input type="checkbox"/> Weight gain	1	

15	In a typical week, on how many days do you eat fruit?	Number of days		FRUITS
16	How many servings of fruit do you eat on one of those days? (servings means number of times)	Number of servings		FRUITSERV
17	In a typical week, on how many days do you eat vegetables?	Number of days		VEG
18	How many servings of vegetables do you eat on one of those days? (servings means number of times)	Number of servings		VEGESERVE
19	If you are a non-vegetarian how many days do you eat meat in a typical week?	Number of days		NVEG
20	How many servings of meat do you eat on one of those days? (servings means number of times)	Number of servings		NVEGSERVE
21	How often do you have fast food? (fast food- food prepared and served quickly and inexpensively eg: pizza, burger, French fries etc)	<input type="checkbox"/> Occasionally <input type="checkbox"/> Once/twice in a week <input type="checkbox"/> More than thrice <input type="checkbox"/> Daily <input type="checkbox"/> Never	0 1 2 3 4	FASTFOOD
22	How often do you have restaurant food ie, food that is prepared and served for immediate consumption?	<input type="checkbox"/> Occasionally <input type="checkbox"/> Once/twice in a week <input type="checkbox"/> More than thrice <input type="checkbox"/> Daily <input type="checkbox"/> Never	0 1 2 3 4	RESTFOOD

23	How often do you eat processed food like packaged salty snacks, bakery items	<input type="checkbox"/> Occasionally <input type="checkbox"/> Once/twice in a week <input type="checkbox"/> More than thrice <input type="checkbox"/> Almost Daily <input type="checkbox"/> Never	0 1 2 3 4	BAKERY
24	Do you eat in response to stress or emotions?	<input type="checkbox"/> Eat more quantity <input type="checkbox"/> Eat less quantity <input type="checkbox"/> No change	0 1 2	STRESS
25	How often do you consume each of the following? (USE CODE: DAILY-1; ATLEAST ONCE IN A WEEK-2; ONCE A MONTH-3 OCASSIONALLY OR RARELY-4 NEVER-5) NOT APPLICABLE-8) Enter 1 or 2 or 3 or 4 or 5 against the appropriate response	<input type="checkbox"/> Fried local foods <input type="checkbox"/> Red meat <input type="checkbox"/> Eggs <input type="checkbox"/> Chicken <input type="checkbox"/> Fish <input type="checkbox"/> Aerated Soda or sugar <input type="checkbox"/> Sweetened drinks <input type="checkbox"/> Pizza/burgers/ French fries <input type="checkbox"/> Cakes, Pastries or other bakery items <input type="checkbox"/> Samosa, Kachori, Chips Narnkeen, etc	1 1 3 4 5 6 7 8 9 10	FOOD
D	PHYSICAL ACTIVITY			
26	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football,] for at least 10 minutes Continuously?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	FITNESS
27	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days		FITNESSTIME

28	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours: minutes	0 1 2	FITHOURS
Think of one day you can recall easily. Consider the total amount of time doing vigorous recreational activities for periods of 10 minutes or more. Probe very high responses (over 4hrs)				
29	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause small increases in breathing or heart rate such as brisk walking (cycling, swimming, volleyball etc.) for at least 10 minutes continuously?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	MODRECREATN
Activities are regarded as moderate intensity if they cause a small increase in breathing and/heart rate				
30	In a typical week, on how many days do you do moderate-intensity sports, fitness, or recreational activity?	Number of days		DAYMODREC
31	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours: minutes		HOURSMODREC
Sedentary behaviour : The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping.				
32	How much time do you usually spend sitting or reclining on a typical day?	Hours: minutes		SEDENTARY
33	Do you walk or use a bicycle (<i>pedal cycle</i>) to get to and from places?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	CYCLE
34	In a typical week, on how many days do you walk or bicycle to get to and from places?	Number of days		BICYCLEDAYS

	“Typical week” means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.			
35	How much time do you spend walking or bicycling for travel on a typical day?	Hours: minutes		BICYCLEHOUR
36	Do you spend your leisure time with smartphones?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	PHN
37	If yes, how many hours do you spend?	<input type="checkbox"/> <1 hour <input type="checkbox"/> 1 to 3 hours <input type="checkbox"/> >3 hours	0 1 2	PHNHOURS
PITTSBURGH SLEEP QUALITY INDEX				
38	During the past month, what time have you usually gone to bed at night?.....	TIME:		BEDTIME
39	During the past month, how long (in minutes) has it usually takes you to fall asleep each night?	<input type="checkbox"/> < 15 minutes <input type="checkbox"/> 16-30 minutes <input type="checkbox"/> 31-60 minutes <input type="checkbox"/> > 60 minutes	0 1 2 3	SLEEPLATENCY
40	During the past month, what time have you usually gotten up in the morning?	TIME		WAKEUPTIME
41	During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed).	<input type="checkbox"/> > 7 hours <input type="checkbox"/> 5-6 hours <input type="checkbox"/> 6-7 hours <input type="checkbox"/> < 5 hours	0 1 2 3	SLEEPDURATION

F	BEHAVIOURAL MEASUREMENTS			
	SMOKING/TOBACCO USE			
42	Do you currently smoke any tobacco products, such as cigarettes, cigars or pipes?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	CURRENTSMOKE
43	In the past, did you ever smoke any tobacco products such as cigarettes, cigars or pipes?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	PASTSMOKE
G	ALCOHOL CONSUMPTION			
44	Have you ever consumed any alcohol such as beer, wine, spirits	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	ALCOHOL
45	Have you consumed any alcohol within the past 12 months?	<input type="checkbox"/> No <input type="checkbox"/> Yes	0 1	PASTALCOHOL
E	ANTHROPOMETRIC MEASUREMENTS			
46	Height (in cms)			
47	Weight (in kg)			

തിരുവനന്തപുരം ജില്ലയിലെ കോളേജ് വിദ്യാർത്ഥികളുടെ കിടപ്പിലെ അമിതഭാരം- ഒരു സാമൂഹിക വീക്ഷണം

ഇൻറർവ്യൂ ഷെഡ്യൂൾ

SL NO	ചോദ്യങ്ങൾ	കോഡിംഗ് മാനദണ്ഡം	കോഡ് ഓപ്ഷൻ	വേരിയബിളുകൾ
A	പങ്കെടുക്കുന്നയാളുടെ തിരിച്ചറിയൽ			
1	പങ്കെടുക്കുന്നയാളുടെ ID			
2	കോളേജിന്റെ പേര്:			
	സ്ഥാപനത്തിന്റെ തരം			
B	ഡെമോഗ്രാഫിക് വിവരങ്ങൾ			
3	പങ്കെടുക്കുന്നയാളുടെ പ്രായം:	വയസ്സ്:		AGE
4	പങ്കെടുക്കുന്നയാളുടെ ലിംഗഭേദം:	<input type="checkbox"/> പുരുഷൻ <input type="checkbox"/> സ്ത്രീ <input type="checkbox"/> ട്രാൻസ്ജെൻഡർ	0 1 2	GENDER
5	വിദ്യാഭ്യാസ നില: (ഇതുവരെ നേടിയ ഏറ്റവും ഉയർന്ന നില)	<input type="checkbox"/> പ്ലസ് ടു <input type="checkbox"/> ഡിപ്ലോമ <input type="checkbox"/> ബിരുദം <input type="checkbox"/> ബിരുദാനന്തര ബിരുദം	0 1 2 3	EDU
6	താങ്കളുടെ വൈവാഹിക നില എന്താണ്?	<input type="checkbox"/> അവിവാഹിതൻ/ അവിവാഹിത <input type="checkbox"/> വിവാഹിതൻ/വിവാഹിത <input type="checkbox"/> വേർപിരിഞ്ഞു നിൽക്കുന്നു <input type="checkbox"/> വിവാഹമോചനം നേടി	0 1 2 3	MARITAL

7	മതം അല്ലെങ്കിൽ വിശ്വാസ സംവിധാനം	<input type="checkbox"/> ഹിന്ദു <input type="checkbox"/> മുസ്ലീം <input type="checkbox"/> ക്രിസ്ത്യൻ <input type="checkbox"/> മറ്റുള്ളവ	0 1 2 ദൈവായി വ്യക്തമാക്കുക	RELIGION
സാമൂഹിക സാമ്പത്തിക സ്ഥിതി സ്കെയിൽ (2023)				
8	കുടുംബത്തിന്റെ പ്രതിമാസ വരുമാനം	<input type="checkbox"/> ≥ 249044 <input type="checkbox"/> 124489 – 249043 <input type="checkbox"/> 93381 – 124488 <input type="checkbox"/> 62273 – 93380 <input type="checkbox"/> 37325 – 62272 <input type="checkbox"/> 12445 – 37324 <input type="checkbox"/> ≤ 12444	0 1 2 3 4 5 6	INCOME
9	കുടുംബനാമന്റെ തൊഴിൽ	<input type="checkbox"/> നിയമസഭാംഗങ്ങൾ, സീനിയർ ഉദ്യോഗസ്ഥർ <input type="checkbox"/> പ്രൊഫഷണലുകൾ <input type="checkbox"/> സാങ്കേതിക വിദഗ്ദ്ധർ <input type="checkbox"/> ഗുമസ്തന്മാർ <input type="checkbox"/> വിദഗ്ദ്ധ തൊഴിലാളികളും കട നടത്തുന്നവർ <input type="checkbox"/> നൈപുണ്യമുള്ള കാർഷിക അല്ലെങ്കിൽ മത്സ്യബന്ധന തൊഴിലാളികൾ <input type="checkbox"/> കരകൗശലവും അനുബന്ധ വ്യാപാര തൊഴിലാളികളും <input type="checkbox"/> പ്ലാന്റ് ആൻഡ് മെഷീൻ ഓപ്പറേറ്റർമാരും അസംബ്ലർമാരും <input type="checkbox"/> പ്രാഥമിക തൊഴിൽ	0 1 2 3 4 5 6 7 8	OCCUPATIONHDI

		<input type="checkbox"/> തൊഴിൽരഹിതൻ	9	
10	കുടുംബനാമന്റെ വിദ്യാഭ്യാസം	<input type="checkbox"/> തൊഴിൽ അല്ലെങ്കിൽ ബഹുമതികൾ <input type="checkbox"/> ബിരുദധാരി <input type="checkbox"/> ഇന്റർമീഡിയറ്റ് അല്ലെങ്കിൽ ഡിപ്ലോമ <input type="checkbox"/> ഹൈസ്കൂൾ സർട്ടിഫിക്കറ്റ് <input type="checkbox"/> മിഡിൽ സ്കൂൾ സർട്ടിഫിക്കറ്റ് <input type="checkbox"/> പ്രൈമറി സ്കൂൾ സർട്ടിഫിക്കറ്റ് <input type="checkbox"/> നിരക്ഷരൻ	0 1 2 3 4 5 6	EDUCATIONHD
C	ഭക്ഷണ ശീലങ്ങൾ:			
11	നിങ്ങളുടെ ഭക്ഷണക്രമം എന്താണ്?	<input type="checkbox"/> സസ്യഹാരം <input type="checkbox"/> വെജിറ്റേറിയൻ <input type="checkbox"/> നോൺ വെജിറ്റേറിയൻ <input type="checkbox"/> വെജിറ്റേറിയൻ+ മുട്ട	0 1 2 3	VEGNONVEG
12	ഒരു ദിവസം നിങ്ങൾ സാധാരണയായി എത്ര തവണ ഭക്ഷണം കഴിക്കും?	<input type="checkbox"/> ഒന്ന് <input type="checkbox"/> രണ്ട് <input type="checkbox"/> മൂന്ന് <input type="checkbox"/> മൂന്നിൽ കൂടുതൽ	0 1 2 3	MEALS
13	നിങ്ങളുടെ ശരീരഭാരം കൂട്ടുവാനോ കുറയ്ക്കുവാനോ നിങ്ങൾ എപ്പോഴെങ്കിലും ഒരു പ്രത്യേക ഭക്ഷണ പദ്ധതിയോ ഭക്ഷണക്രമമോ പാലിച്ചിട്ടുണ്ടോ?	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	PLAN
14	ഉണ്ടെങ്കിൽ, എന്തായിരുന്നു ആവശ്യം	<input type="checkbox"/> ശരീരഭാരം കൂട്ടാൻ <input type="checkbox"/> ശരീരഭാരം കുറയ്ക്കാൻ	0 1	WGT
15	ഒരു സാധാരണ ആഴ്ചയിൽ, എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ പഴങ്ങൾ കഴിക്കുന്നത്?	ദിവസങ്ങളുടെ എണ്ണം		FRUITS

16	ആ ദിവസങ്ങളിലൊന്നിൽ നിങ്ങൾ എത്ര തവണ പഴം കഴിക്കും?	തവണകളുടെ എണ്ണം		FRUITSERV
17	ഒരു ആഴ്ചയിൽ സാധാരണ എത്ര ദിവസങ്ങളിൽ നിങ്ങൾ പച്ചക്കറികൾ കഴിക്കും?	ദിവസങ്ങളുടെ എണ്ണം		VEG
18	ആ ദിവസങ്ങളിലൊന്നിൽ നിങ്ങൾ എത്ര തവണ പച്ചക്കറികൾ കഴിക്കും?	തവണകളുടെ എണ്ണം		VEGESERVE
19	നിങ്ങൾ ഒരു നോൺ വെജിറ്റേറിയൻ ആണെങ്കിൽ ഒരു ആഴ്ചയിൽ സാധാരണ എത്ര ദിവസം മാംസം കഴിക്കും?	ദിവസങ്ങളുടെ എണ്ണം		NVEG
20	ആ ദിവസങ്ങളിലൊന്നിൽ നിങ്ങൾ എത്ര തവണ മാംസം കഴിക്കും?	തവണകളുടെ എണ്ണം		NVEGSERVE
21	നിങ്ങൾക്ക് എത്ര തവണ ഫാസ്റ്റ് ഫുഡ്?	<input type="checkbox"/> ഇടയ്ക്കിടെ <input type="checkbox"/> ആഴ്ചയിൽ ഒരിക്കൽ/രണ്ട് തവണ <input type="checkbox"/> മൂന്നിലധികം തവണ <input type="checkbox"/> ദിവസേന <input type="checkbox"/> ഒരിക്കലുമില്ല	0 1 2 3 4	FASTFOOD
22	നിങ്ങൾക്ക് എത്ര തവണ റെസ്റ്റോറന്റ് ഭക്ഷണം(ഉടനടി ഉപയോഗത്തിനായി തയ്യാറാക്കി വിളമ്പുന്ന ഭക്ഷണം) കഴിക്കാറുണ്ട്?	<input type="checkbox"/> ഇടയ്ക്കിടെ <input type="checkbox"/> ആഴ്ചയിൽ ഒരിക്കൽ/രണ്ട് തവണ <input type="checkbox"/> മൂന്നിലധികം തവണ <input type="checkbox"/> ദിവസേന <input type="checkbox"/> ഒരിക്കലുമില്ല	0 1 2 3 4	RESTFOOD
23	പാക്കേജ് ചെയ്ത ഉപ്പിട്ട ലഘുഭക്ഷണങ്ങൾ, ബേക്കറി ഇനങ്ങൾ തുടങ്ങിയ സംസ്കരിച്ച ഭക്ഷണം നിങ്ങൾ എത്ര തവണ കഴിക്കാറുണ്ട്?	<input type="checkbox"/> ഇടയ്ക്കിടെ <input type="checkbox"/> ആഴ്ചയിൽ ഒരിക്കൽ/രണ്ട് തവണ <input type="checkbox"/> മൂന്നിലധികം തവണ <input type="checkbox"/> ദിവസേന <input type="checkbox"/> ഒരിക്കലുമില്ല	0 1 2 3 4	BAKERY

24	<p>സമ്മർദ്ദമോ മാനസികപിരിമുറുക്കാമോ കാരണനിങ്ങൾ ഭക്ഷണം കഴിക്കാറുണ്ടോ? ഉണ്ടെങ്കിൽ അത് എങ്ങനെ നിങ്ങളെ സ്വാധീനിക്കുന്നു?</p>	<input type="checkbox"/> കൂടുതൽ അളവിൽ കഴിക്കും <input type="checkbox"/> കുറഞ്ഞ അളവിൽ കഴിക്കും <input type="checkbox"/> മാറ്റമില്ല	0 1 2	STRESS
25	<p>ഇനിപ്പറയുന്നവയിൽ ഓരോന്നും നിങ്ങൾ എത്ര തവണ ഉപയോഗിക്കുന്നു? (കോഡ് ഉപയോഗിക്കുക: ദിവസേന-1; ആഴ്ചയിൽ ഒരിക്കലേകിലും-2; മാസത്തിലൊരിക്കൽ-3 വല്ലപ്പോഴും അല്ലെങ്കിൽ അപൂർവ്വമായി-4 ഒരിക്കലും-5) ബാധകമല്ല-8) ഉചിതമായ പ്രതികരണത്തിനെതിരെ 1 അല്ലെങ്കിൽ 2 അല്ലെങ്കിൽ 3 അല്ലെങ്കിൽ 4 അല്ലെങ്കിൽ 5 നൽകുക</p>	<input type="checkbox"/> വറുത്ത നാടൻ ഭക്ഷണങ്ങൾ <input type="checkbox"/> ചുവന്ന മാംസം <input type="checkbox"/> മുട്ടകൾ <input type="checkbox"/> ചിക്കൻ <input type="checkbox"/> മത്സ്യം <input type="checkbox"/> ഏയറേറ്റഡ് സോഡ അല്ലെങ്കിൽ പഞ്ചസാര <input type="checkbox"/> മധുരമുള്ള പാനീയങ്ങൾ <input type="checkbox"/> പിസ്ത/ബർഗറുകൾ/ ഫ്രഞ്ച് ഫ്രൈകൾ <input type="checkbox"/> കേക്കുകൾ, പേസ്ട്രികൾ അല്ലെങ്കിൽ മറ്റെന്തെങ്കിലും ബേക്കറി ഇനങ്ങൾ <input type="checkbox"/> ഗുസ, കച്ചോരി, ചിപ്സ്	1 2 3 4 5 6 7 8 9 10	FOOD
D	ശാരീരിക പ്രവർത്തനങ്ങൾ, വ്യായാമം			
26	<p>കുറഞ്ഞത് 10 മിനിറ്റുകളിലും തുടർച്ചയായി [ഓട്ടം അല്ലെങ്കിൽ ഫുട്ബോൾ,] പോലുള്ള ശ്വസനത്തിലോ ഹൃദയമിടിപ്പിലോ വലിയ വർദ്ധനവിന് കാരണമാകുന്ന ഏതെങ്കിലും ഊർജ്ജസ്വലമായ സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ (വിശ്രമ) പ്രവർത്തനങ്ങൾ നിങ്ങൾ ചെയ്യുന്നുണ്ടോ?</p>	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	FITNESS
27	<p>ഒരു ആഴ്ചയിൽ, സാധാരണ എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ ഊർജ്ജസ്വലമായ സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ (വിശ്രമ) പ്രവർത്തനങ്ങൾ ചെയ്യുന്നത്?</p>	ദിവസങ്ങളുടെ എണ്ണം		FITNESSTIME
28	<p>ഒരു ദിവസത്തിൽ ഊർജ്ജസ്വലമായ സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ പ്രവർത്തനങ്ങൾ എന്നിവയ്ക്കായി നിങ്ങൾ എത്ര സമയം ചെലവഴിക്കുന്നു?</p>	മണിക്കൂർ: മിനിറ്റ്	0 1 2	FITHOURS
<p>നിങ്ങൾക്ക് എളുപ്പത്തിൽ ഓർക്കാൻ കഴിയുന്ന ഒരു ദിവസത്തെ കുറിച്ച് ചിന്തിക്കുക. 10 മിനിറ്റോ അതിൽ കൂടുതലോ സമയത്തേക്ക് ഊർജ്ജസ്വലമായ വിനോദ പ്രവർത്തനങ്ങൾ ചെയ്യുന്ന ആകെ സമയം പരിഗണിക്കുക. വളരെ ഉയർന്ന പ്രതികരണങ്ങൾ അന്വേഷിക്കുക (4 മണിക്കൂറിൽ കൂടുതൽ)</p>				

29	<p>കുറഞ്ഞത് 10 മിനിറ്റുകളിലും വേഗത്തിലുള്ള നടത്തം (സൈക്ലിംഗ്, നീന്തൽ, വോളിബോൾ മുതലായവ) ശ്വസനം അല്ലെങ്കിൽ ഹൃദയമിടിപ്പിൽ ചെറിയ വർദ്ധനവിന് കാരണമാകുന്ന മിതമായ തീവ്രതയുള്ള സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ (വിശ്രമ) പ്രവർത്തനങ്ങൾ നിങ്ങൾ തുടർച്ചയായി ചെയ്യുന്നുണ്ടോ?</p>	<p><input type="checkbox"/> ഇല്ല</p> <p><input type="checkbox"/> ഉണ്ട്</p>	<p>0</p> <p>1</p>	MODRECREATN
<p>ശ്വസനത്തിലും/ഹൃദയമിടിപ്പിലും ചെറിയ വർദ്ധന വരുത്തുന്ന പ്രവർത്തനങ്ങൾ മിതമായ തീവ്രതയായി കണക്കാക്കപ്പെടുന്നു</p>				
30	<p>ഒരു ആഴ്ചയിൽ, സാധാരണ എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ മിതമായ തീവ്രതയുള്ള സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ പ്രവർത്തനങ്ങൾ ചെയ്യുന്നത്?</p>	ദിവസങ്ങളുടെ എണ്ണം		DAYMODREC
31	<p>ഒരു സാധാരണ ദിവസത്തിൽ മിതമായ തീവ്രതയുള്ള സ്പോർട്സ്, ഫിറ്റ്നസ് അല്ലെങ്കിൽ വിനോദ (വിശ്രമ) പ്രവർത്തനങ്ങൾ ചെയ്യാൻ നിങ്ങൾ എത്ര സമയം ചെലവഴിക്കുന്നു?</p>	മണിക്കൂർ: മിനിറ്റ്		HOURSMODREC
<p>താഴെപ്പറയുന്ന ചോദ്യം ജോലിസ്ഥലത്തോ വീട്ടിലോ ഇരിക്കുകയോ ചാരികിടുകയോ, കുട്ടുകാരുടെ കൂടെ സമയം ചിലവഴിക്കുകയോ ചെയ്യുന്നതിനെ കുറിച്ചാണ് (കാറിലോ, ബസിലോ, ട്രെയിനിലോ സഞ്ചരിക്കുന്നത്, പുസ്തകം വായന, ടീവീ കാണുന്നത്) എന്നാൽ ഉറങ്ങാൻ ചെലവഴിച്ച സമയം ഉൾപ്പെടുത്തരുത്.</p>				
32	<p>ഒരു ദിവസത്തിൽ നിങ്ങൾ സാധാരണയായി എത്ര സമയം ഇരിക്കുകയോ ചാരിയിരിക്കുകയോ ചെയ്യുന്നു?</p>	മണിക്കൂർ: മിനിറ്റ്		SEDENTARY
33	<p>ഏതെങ്കിലും സ്ഥലങ്ങളിലേക്ക് പോകാനും തിരിച്ചു വരാനും നിങ്ങൾ നടക്കുകയോ സൈക്കിൾ (പെഡൽ സൈക്കിൾ) ഉപയോഗിക്കുകയോ ചെയ്യാറുണ്ടോ?</p>	<p><input type="checkbox"/> ഇല്ല</p> <p><input type="checkbox"/> ഉണ്ട്</p>	<p>0</p> <p>1</p>	CYCLE
34	<p>ഒരു സാധാരണ ആഴ്ചയിൽ, എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ സ്ഥലങ്ങളിലേക്കും തിരിച്ചും നടക്കാനോ സൈക്കിളിലോ നടക്കുന്നത്?</p> <p>"സാധാരണ ആഴ്ച" എന്നാൽ പങ്കെടുക്കുന്നയാൾ അവൻ/റെ അവളുടെ സാധാരണ പ്രവർത്തനങ്ങളിൽ ഏർപ്പെട്ടിരിക്കുന്ന ഒരു ആഴ്ച എന്നാണ് അർത്ഥമാകുന്നത്. സാധുവായ പ്രതികരണങ്ങൾ 1-7 വരെയാണ്.</p>	ദിവസങ്ങളുടെ എണ്ണം		BICYCLEDAYS
35	<p>സാധാരണ ഒരു ദിവസത്തിൽ യാത്രയ്ക്കായി നിങ്ങൾ എത്ര സമയം നടക്കുകയോ സൈക്കിൾ ചവിട്ടുകയോ ചെയ്യുന്നു?</p>	മണിക്കൂർ: മിനിറ്റ്		BICYCLEHOUR
36	<p>നിങ്ങളുടെ ഒഴിവു സമയം സ്മാർട്ട്ഫോണുകൾക്കൊപ്പം ചിലവഴിക്കാറുണ്ടോ?</p>	<p><input type="checkbox"/> ഇല്ല</p> <p><input type="checkbox"/> ഉണ്ട്</p>	<p>0</p> <p>1</p>	PHN

37	ഉണ്ടെങ്കിൽ, നിങ്ങൾ എത്ര മണിക്കൂർ ചിലവഴിക്കും?	<input type="checkbox"/> 1 മണിക്കൂറിൽ കുറവ് <input type="checkbox"/> 1 to 3 മണിക്കൂറുകൾ <input type="checkbox"/> 3 മണിക്കൂറിൽ കൂടുതൽ	0 1 2	PHNHOURS
പിറ്റ്സ്ബർഗ് സ്ലീപ്പ് ക്വാളിറ്റി ഇൻഡക്സ്				
38	കഴിഞ്ഞ ഒരു മാസത്തിനിടെ, നിങ്ങൾ സാധാരണയായി രാത്രി എത്ര മണിക്കാണ് ഉറങ്ങാൻ പോയത്?.....	സമയം:		BEDTIME
39	കഴിഞ്ഞ മാസത്തിൽ, ഓരോ രാത്രിയും ഉറങ്ങാൻ നിങ്ങൾ സാധാരണയായി എത്ര സമയം (മിനിറ്റുകൾക്കുള്ളിൽ) എടുക്കും?	<input type="checkbox"/> 15 മിനുട്ടിൽ കുറവ് <input type="checkbox"/> 16-30 മിനുട്ട് <input type="checkbox"/> 31-60 മിനുട്ട് <input type="checkbox"/> 60 മിനുട്ടിൽ കൂടുതൽ	0 1 2 3	SLEEPLATENCY
40	കഴിഞ്ഞ മാസത്തിൽ, നിങ്ങൾ സാധാരണയായി രാവിലെ എത്ര മണിക്കാണ് എഴുന്നേറ്റത്?	സമയം:		WAKEUPTIME
41	കഴിഞ്ഞ മാസത്തിൽ, രാത്രിയിൽ നിങ്ങൾക്ക് എത്ര മണിക്കൂർ യഥാർത്ഥ ഉറക്കം ലഭിച്ചു? (നിങ്ങൾ കിടക്കയിൽ ചെലവഴിച്ച മണിക്കൂറുകളുടെ എണ്ണത്തേക്കാൾ ഇത് വ്യത്യസ്തമായിരിക്കാം).	<input type="checkbox"/> 7 മണിക്കൂറിൽ കുറവ് <input type="checkbox"/> 5-6 മണിക്കൂറുകൾ <input type="checkbox"/> 6-7 മണിക്കൂറുകൾ <input type="checkbox"/> 7 മണിക്കൂറിൽ കൂടുതൽ	0 1 2 3	SLEEPDURATION
F	പെരുമാറ്റ അളവുകൾ			
പുകവലി/പുകയില ഉപയോഗം				
42	നിങ്ങൾ നിലവിൽ സിഗരറ്റ്, ചുരുട്ട് അല്ലെങ്കിൽ പൈപ്പുകൾ പോലുള്ള ഏതെങ്കിലും പുകയില ഉൽപ്പന്നങ്ങൾ വലിക്കുന്നുണ്ടോ?	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	CURRENTSMOKE

43	<p>പണ്ട്, നിങ്ങൾ എപ്പോഴെങ്കിലും സിഗരറ്റ്, ചുരുട്ട്, പൈപ്പ് തുടങ്ങിയ പുകയില ഉൽപ്പന്നങ്ങൾ വലിച്ചിട്ടുണ്ടോ ?</p>	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	PASTSMOKE
G മദ്യ ഉപഭോഗം				
44	<p>ബിയർ, വൈൻ, സ്പിരിറ്റ് തുടങ്ങിയ ഏതെങ്കിലും മദ്യം നിങ്ങൾ എപ്പോഴെങ്കിലും കഴിച്ചിട്ടുണ്ടോ?</p>	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	ALCOHOL
45	<p>കഴിഞ്ഞ 12 മാസത്തിനുള്ളിൽ നിങ്ങൾ ഏതെങ്കിലും മദ്യം കഴിച്ചിട്ടുണ്ടോ?</p>	<input type="checkbox"/> ഇല്ല <input type="checkbox"/> ഉണ്ട്	0 1	PASTALCOHOL
E ആന്ത്രോപോമെട്രിക് അളവുകൾ				
46	<p>ഉയരം (സെ.മീ.)</p>			
47	<p>ഭാരം (കിലോയിൽ)</p>			