CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
SJIF Impact Factor: 7.187
https://doi.org/10.5281/zenodo.19613882

Available online at: http://www.iajps.com Case Report

SOCIOECONOMIC AND LIFESTYLE CORRELATES OF OBESITY: AN OBSERVATIONAL STUDY ON JUNK FOOD CONSUMPTION IN ANDHRA PRADESH

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Abstract:

Background: *Obesity has become a worldwide health crisis and India holds the position of the third most obese country. The trend is primarily driven by people who eat junk food which contains high calories but lacks essential nutrients. The study investigated how junk food consumption affects obesity rates across Andhra Pradesh India. This study will examine how different demographic groups in Guntur consume food while assessing risk factors and health effects of obesity and studying how cultural, urban development, and economic status elements shape food selection.*

Materials and Methods: *Structured questionnaires were used to conduct a cross-sectional observational study which collected data about participants food habits and physical activity and demographic details. The survey was distributed online and offline to ensure inclusivity. The researchers used one-way ANOVA to analyze data which helped them find significant statistical associations. Data were analyzed using one-way ANOVA to identify statistically significant relationships.*

Results: *The ANOVA analysis showed that people who ate junk food frequently had higher body mass index levels because of their eating habits. The study found that most participants belonged to the age group of 20 years and younger while they showed moderate levels of physical activity. The most common pattern of junk food consumption occurred when people ate junk food seven times each week 45.85 of participants reported this pattern while 50.55 of people experienced cravings multiple times throughout the week. The majority of participants (51.75%) stated that they followed a balanced diet while 42.55% of participants reported sleeping for 7 to 8 hours.*

Conclusion: *People who eat junk food on a regular basis face higher risks of developing obesity and increasing weight. The research findings highlight the immediate necessity to encourage healthy eating patterns among young people to reduce the escalating obesity problem in India.*

Keywords:

Obesity, World Health Organization, Ultra-Processed Foods, Urbanization, Healthcare System, Junk Food Consumption, Dietary Education, Appetite Regulation.

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Please cite this article in press Satheesh S Gottipati et al., Socioeconomic And Lifestyle Correlates Of Obesity: An Observational Study On Junk Food Consumption In Andhra Pradesh., Indo Am. J. P. Sci, 2026; 13(04).

Abbreviations
BMI = Body Mass Index
WHO = World Health Organization
NCDs = Non-Communicable Diseases
UPFs = Ultra-Processed Foods
U.S. = United States.

INTRODUCTION:

The Indian economy currently experiences rapid growth but faces an increasing public health emergency due to rising obesity rates. The nation experiences two simultaneous health problems which result from research progress in healthcare and education and poverty reduction initiatives but lead to ongoing undernutrition and growing obesity rates and non-communicable disease (NCD) development (Aggarwal et al.,2023). India currently ranks third globally in obesity prevalence which follows the United States and China as the two countries with higher rates (Aggarwal et al.,2023). Obesity defines a health condition which occurs when people develop excessive fat accumulation that endangers their well-being. Body Mass Index (BMI) evaluates obesity according to the standard that people become obese when their BMI reaches 30 kg/m² or higher (Wallace & Fordahl, 2022). The World Health Organization recommends a healthy BMI range of 18.5–24.9 kg/m². The global obesity epidemic commonly known as "globesity" causes more than 5 million premature deaths each year while it imposes major financial demands on healthcare systems and leads to decreased economic output in nations (Carter et al.,2019). The United States reports extremely high rates of adolescent obesity which now affect urban and rural youth populations across India (Sildén, 2018; Boylan et al.,2017).

The junk food consumption which involves eating foods that contain high sugar , saturated fat and salt content but lack essential nutrients has become a significant problem in this crisis (Keshari & Mishra, 2016; Gupta et al.,2018). Young people especially face dietary changes which urbanization and globalization and active food promotion and inactive living patterns bring about (Singh et al.,2021; Dixon et al.,2007; Singh & Pandey, n.d.). The current trends in human eating habits show a more extensive pattern of "nutrition transition" which involves people losing their traditional eating patterns to consume energy-dense ultra-processed foods (UPFs) (Lane et al.,2024; Touvier et al.,2023). UPFs are designed to taste good while providing minimal satisfaction which leads people to eat more because their body systems lose control of their hunger cues and their brain experiences dopamine-related changes (Wallace & Fordahl, 2022). The brain reward system effects lead people to develop patterns of unhealthy eating (Hall et al.,2019). The growing prevalence of UPFs has established a connection between higher consumption rates of these products and the development of obesity and metabolic syndromes and cardiovascular diseases and mental health disorders (De Amicis et al.,2022; Lane et al.,2024). Multiple studies conducted in India and other countries have demonstrated that the presence of junk food in school environments leads to increased obesity rates which requires implementation of food sale restrictions within educational institutions (Datar & Nicosia, 2012; Sildén, 2018). Researchers discovered that rural areas of Himachal Pradesh and Kangavar County in Iran experienced detrimental effects on academic performance and physical health because residents had access to unhealthy food options (Gupta et al.,2018; Khazai et al.,2024). The presence of food swamps which contain extensive amounts of unhealthy food items offers better predictions for obesity rates than food deserts (Cooksey, Stowers et al.,2017). Urban adolescents face challenges because they lack knowledge about both obesity and healthy dietary practices (Pencil et al.,2023; Sekyi et al.,2024). Youth face health risks because alcohol abuse and psychological disorders and poor dietary habits tend to occur together which damages both their liver function and overall health (Tarantino et al.,2022).

The solution to these challenges needs public health policy changes and nutritional education programs and limits on junk food advertising and better food access for adolescents and school-age children. The population-level benefits of junk food taxation as an intervention strategy lead to better cost effectiveness and higher productivity according to research by Carter et al. 2019 and Juul and Hemmingsson 2015. The current bibliometric analyses and meta-analyses establish an urgent need to use evidence-based methods to fight obesity caused by junk food consumption according to research by Zhang et al. 2024 and Batubo et al. 2023.

Table 1 : Estimated Daily Calorie Requirements by Age, Gender, and Activity Level

Category	Sedentary	Moderately Active	Active
Women (19-30 yrs)	1,800–2,000 kcal	2,000–2,200 kcal	2,400 kcal
Women (31-50 yrs)	1,800 kcal	2,000 kcal	2,200 kcal
Women (51+ yrs)	1,600 kcal	1,800 kcal	2,000–2,200 kcal
Men (19-30 yrs)	2,400–2,600 kcal	2,600–2,800 kcal	3,000 kcal
Men (31-50 yrs)	2,200–2,400 kcal	2,400–2,600 kcal	2,800–3,000 kcal
Men (51+ yrs)	2,000–2,200 kcal	2,200–2,400 kcal	2,400–2,800 kcal

A person's daily calorie needs are determined by their age and gender and their level of physical activity. Women aged 19 to 30 years generally need 1,800 to 2,400 kcal per day. Women aged 31 to 50 require approximately 1,800 to 2,200 kcal per day. Women 51 years and older need between 1,600 and 2,200 kcal. Men require more energy because they have higher muscle mass and engage in more physical activities. Men aged 19 to 30 typically require 2,400 to 3,000 kcal daily. Men between 31 and 50 years old require between 2,200 and 3,000 kcal whereas men above 51 years old need between 2,000 and 2,800 kcal based on their activity level. People who do not exercise need to eat less food while people who exercise require increased food intake. As people grow older their body requires fewer calories to function normally. People require different amounts of energy throughout the day based on their level of physical activity. Proper calorie intake is necessary for maintaining body functions and supporting good health.

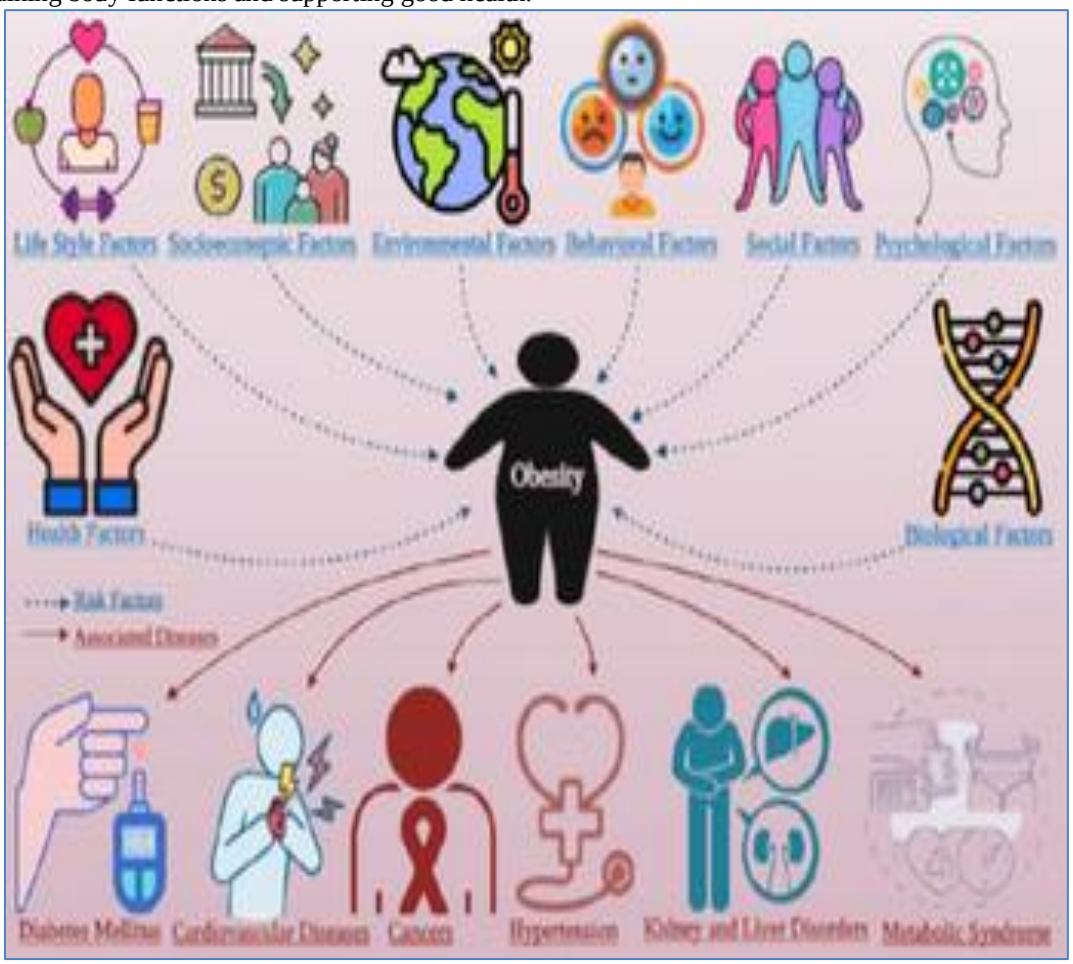

Figure 1: Multifactorial Causes and Health Impacts of Obesity

Table 2: Recommended Daily Nutrient Intake and Their Functions

Nutrient	Recommended Daily Intake	Function
Carbohydrates	45–65% of total daily calories (~225–325g)	Primary energy source
Proteins	10–35% of daily calories (~50–70g)	Muscle repair, enzymes, hormones
Fats	20–35% of daily calories (~44–77g)	Energy, cell structure, hormone regulation
Water	~2–3 liters per day	Hydration, digestion, circulation

A balanced diet includes essential nutrients in the right proportions. The main energy source for the body comes from carbohydrates which should make up 45 to 65 percent of daily caloric intake. The body uses proteins which comprise 10 to 35 percent of total dietary intake to repair muscles and produce enzymes and hormones. Fats (20–35%) support energy storage, cell structure, and hormone regulation. Humans need 2 to 3 liters of water each day because it helps with hydration and digestion and circulation. Each nutrient plays a unique role in maintaining health and body functions. Proper intake helps prevent nutritional deficiencies and supports overall well-being.

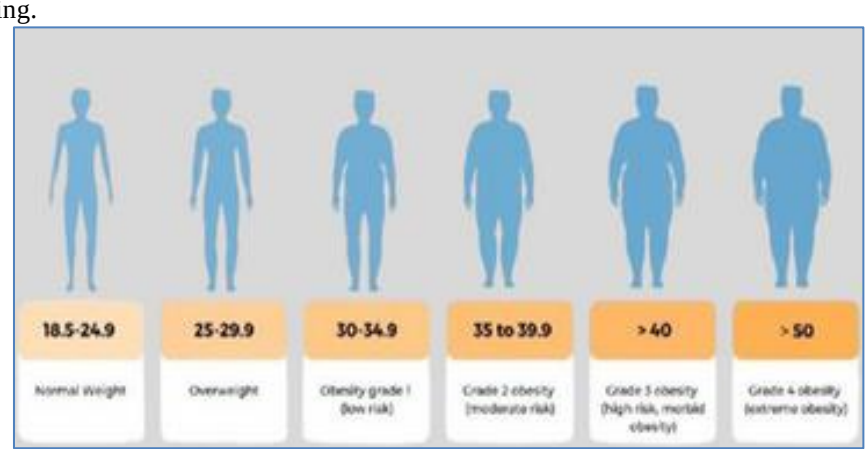

Figure 2: Body Mass Index (BMI) Classification Chart

METHODS:

We collected data using surveys and questionnaires that focused on participants' food habits, physical activity, and basic demographic information. To make sure we reached as many people as possible and included a diverse group, the surveys were shared both online and through in-person interactions. This approach helped us gather a strong and reliable dataset, which allowed for a deeper understanding of how junk food consumption is linked to obesity across different groups. The entire study, including both data collection and analysis, was carried out over a period of six months.

The study took place in Guntur, Andhra Pradesh, India, and aimed to include people from varied backgrounds to ensure a representative sample. In total, 1,377 participants were included, selected based on specific inclusion and exclusion criteria. Individuals between the ages of 15 and 70 took part in the study, which helped capture a wide range of experiences and eating habits related to junk food. All participants were from urban and semi-urban areas of India, allowing us to better understand how lifestyle and food choices differ across these settings.

Pregnant women, individuals below 15 years of age, and those above 70 years were excluded from the study. Participants diagnosed with Cushing's syndrome were also not included.

The collected data were analyzed using the ANOVA test, a statistical method that helped us examine and clearly interpret the findings. By combining this analytical approach with a well-structured data collection process, the study provided a clearer and more comprehensive understanding of the relationship between junk food consumption and obesity.

RESULTS:

Table 1: Demographic and Anthropometric Characteristics

Variable	n (%)	P-value
Age Group		
Below 20	685 (49.74%)	0.00010.0001
21–40	589 (42.77%)	
41–60	90	
>60	13	
Gender		
Male	648	0.003
Female	721	
Prefer not to say	8	
Weight (kg)		
20–40	44	0.002
40–60	765	
60–80	423	
80–100	132	
>100	9	
NA	3	
Height (cm)		
91–121	18	0.0001
122–149	191	
152–181	923	
182–213	237	
>213	8	
BMI Category		
<18	19	0.001
18.5–24.9	122	
25–29.9	32	
30–34.9	17	
>35	2	

Table 1 presents the demographic and anthropometric profile of participants. Nearly half were below 20 years (685; 49.74%), followed by 21–40 years (589; 42.77%). Females (721) slightly outnumbered males (648). Most participants weighed 40–60 kg (765) and had heights between 152–181 cm (923). BMI distribution showed 122 participants within the normal range (18.5–24.9), with fewer in overweight (32) and obese categories (17). Waist circumference <37" was observed in 189 individuals, while most had hip circumference <42" (171). All variables showed strong statistical significance ($p \leq 0.002$), indicating meaningful variation across demographic and physical health parameters.

Table 2. Lifestyle and Health-Related Factors

Variable	n (%)	P-value
Comorbidities		
Anaemia	1	0.002
HTN	1	
Irregular periods	3	
PCOD	1	
None	202	
Alcohol Consumption		
None	110	0.004
Moderate	71	

Heavy	27	
Family History of Obesity		
None	110	0.0005
One relative	86	
Multiple relatives	12	
Stress Level		
Low	90	0.004
Moderate	79	
Severe	39	
Physical Activity		
Low	46	0.003
Moderate	134	
Active	28	
Sleep Pattern		
Consistent	391	0.001
Inconsistent	504	
Irregular	233	
Very irregular	41	

Table 2 summarizes lifestyle and health-related characteristics. Most participants reported no comorbidities (202), with very few cases of anaemia (1), hypertension (1), PCOD (1), and irregular periods (3). Alcohol consumption was predominantly absent (110), with moderate (71) and heavy (27) intake less common. A considerable proportion had no family history of obesity (110), while 86 reported one affected relative. Moderate stress levels (79) and moderate physical activity (134) were most common. Sleep patterns were largely inconsistent (504), and 522 participants reported 5–6 hours of sleep. All variables demonstrated statistical significance ($p \leq 0.004$), highlighting important lifestyle influences.

Table 3. Dietary Habits and Behavioral Patterns

Variable	n (%)	P-value
Junk Food Consumption Frequency		
Daily	228	0.001
Weekly	536	
Rarely	380	
Never	25	
Homemade Food Consumption		
Daily	703	0.001
Weekly	234	
Rarely	210	
Never	22	
Read Nutrition Labels		
Always	198	0.003
Sometimes	591	
Rarely	249	
Never	131	
Diet Quality		
Balanced	605	0.002
Mostly healthy	332	

Unhealthy	206	
Very unhealthy	26	
Craving Frequency		
Daily	173	0.002
Weekly	591	
Rarely	368	
Never	37	
Preferred Junk Food		
Fried Rice	299	0.0002
Panipuri	241	
Pizza	191	
Noodles	161	
Biryani	137	
Others	140	

Table 3 highlights dietary habits and behavioral patterns. Weekly junk food consumption was most common (536), followed by rare consumption (380) and daily intake (228). Homemade food was consumed daily by 703 participants. Nutrition label reading was inconsistent, with most reporting "sometimes" (591). Balanced diets were reported by 605 individuals, while 206 consumed unhealthy diets. Cravings occurred weekly in 591 participants, and 484 managed them through distraction. A large majority (1159) had attempted to reduce junk food intake. Fried rice (299) and panipuri (241) were popular choices. Significant associations were observed across variables ($p \leq 0.002$), indicating strong links between diet and behavior.

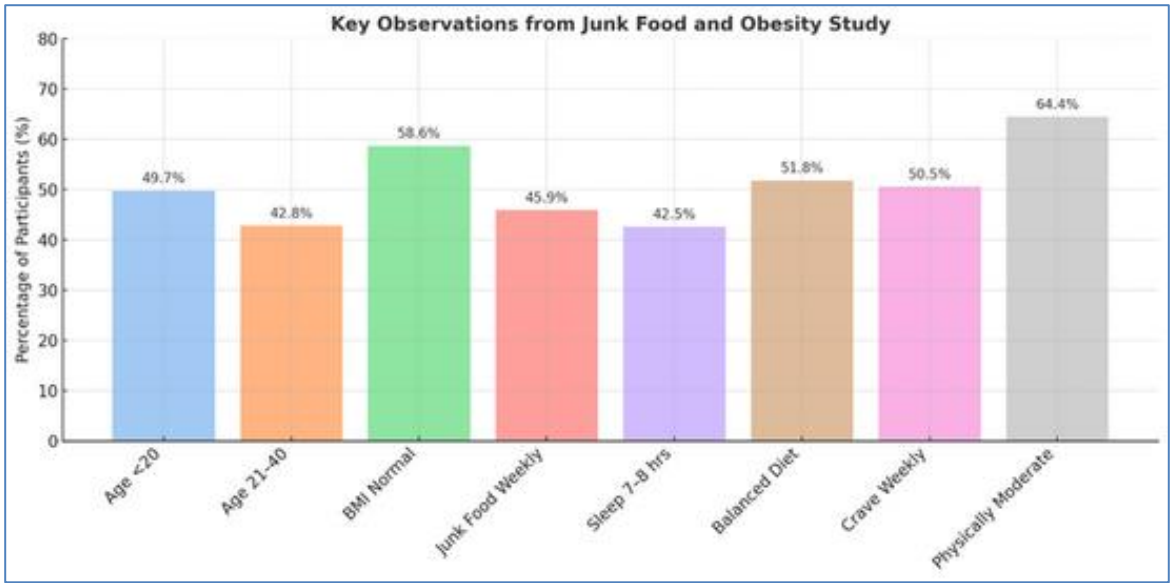

Figure 3: Key Findings on Demographic, Behavioral, and Dietary Patterns Related to Junk Food Consumption

The figure presents the principal interpretation of demographic, behavioral, and dietary patterns among study participants. A large proportion of participants were aged below 20 years (49.7%), while 42.8% belonged to the 21–40 years group. Most individuals had a normal BMI (58.6%). Weekly junk food consumption was reported by 45.9% of participants, indicating moderate intake patterns. Sleep duration of 7–8 hours was observed in 42.5% of respondents. Balanced diet practices were reported by 51.8%, while 50.5% experienced weekly food cravings. A majority (64.4%) reported moderate physical activity, suggesting generally acceptable lifestyle behavior despite frequent junk food consumption patterns.

DISCUSSION:

The present study highlights important associations between junk food consumption, lifestyle behaviors, and obesity-related parameters among

participants in Guntur, Andhra Pradesh. The findings indicate that a majority of participants were young (below 20 years) and had a normal BMI, yet a considerable proportion reported regular exposure to junk food, particularly on a weekly basis. This suggests that even in individuals with normal BMI, unhealthy dietary habits are prevalent and may act as early risk factors for future metabolic complications. Moderate physical activity levels and relatively balanced dietary practices were also commonly observed, indicating a transitional lifestyle pattern influenced by urban and semi-urban food environments.

Significant associations were observed between dietary behaviors and lifestyle factors such as cravings, sleep patterns, stress levels, and body image perception. Frequent junk food consumption, coupled with irregular sleep and moderate stress, reflects a clustering of behavioral risk factors that may contribute to obesity over time. The high proportion of participants attempting to reduce junk food intake suggests increasing awareness, although inconsistent dietary discipline remains a concern. Overall, the study emphasizes the need for targeted nutritional education and lifestyle interventions to prevent long-term obesity risk, especially among young populations.

CONCLUSION:

The present study highlights that regular consumption of junk food plays a major role in increasing Body Mass Index (BMI) and the risk of obesity. Junk foods, being high in calories, unhealthy fats, and sugars while low in essential nutrients, contribute to excessive weight gain and disrupt normal energy balance, leading to fat accumulation over time. This pattern is particularly concerning among younger populations, who are more likely to consume fast food due to convenience and changing lifestyle habits. In addition, the rising prevalence of obesity in India reflects the growing impact of these dietary behaviors, along with other lifestyle factors identified in the study. The findings emphasize the urgent need to promote healthier eating habits, focusing on balanced diets rich in fruits, vegetables, and whole grains. Strengthening nutrition awareness and encouraging positive lifestyle modifications are essential strategies to reduce obesity-related health risks and improve overall public health outcomes.

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