International Journal of Humanities and Social Science Invention (IJHSSI)
ISSN (Online): 2319 – 7722, ISSN (Print): 2319 – 7714
www.ijhssi.org ||Volume 13 Issue 10 || October 2024 || PP. 151-161

A Community-Based Cross-Sectional Study on the Harmful Impact of Junk Food Consumption on Physical and Psychological Health Outcomes among Teenagers

Kshamata Dwivedi
Teacher , Home science
Janta Intermediate College Kotwa Kalan Kushinagar

Abstract
The rapid dietary transition in rural and semi-urban India has led to increased consumption of ultra-processed and energy-dense foods among adolescents. The present study investigates the harmful impact of junk food consumption on the physical and psychological health of teenagers in selected villages of Kushinagar district, Uttar Pradesh. A community-based cross-sectional research design was adopted, involving 90 adolescents aged 13–19 years, with 30 participants selected from each of three nearby villages through simple random sampling. Primary data were collected using structured questionnaires, anthropometric measurements, and observation schedules. Body Mass Index (BMI) was calculated according to WHO guidelines. Statistical analysis included descriptive statistics, Pearson correlation, independent sample t-test, one-way ANOVA, chi-square test, and multiple regression analysis at a 5% level of significance.

Findings revealed that more than half of the respondents consumed junk food four or more times per week. A strong positive correlation ($r = 0.62$, $p < 0.05$) was observed between junk food frequency and BMI. Independent sample t-test showed significant differences in BMI between high and low consumers. Regression analysis identified junk food consumption as the strongest predictor of increased BMI after controlling for age and physical activity. Additionally, a significant negative correlation was found between junk food intake and concentration levels, indicating psychological implications. Chi-square analysis confirmed significant associations between junk food consumption and health complaints such as dental issues and fatigue. The study concludes that junk food consumption significantly affects both physical and cognitive health among teenagers in Kushinagar. The findings emphasize the urgent need for school-based nutrition education, community awareness programs, and policy-level interventions to mitigate long-term non-communicable disease risks in rural adolescent populations.
Keywords: *Junk food consumption, adolescent health, Body Mass Index (BMI), rural nutrition transition, cognitive impact, public health intervention, Kushinagar district*

I. Introduction

Junk food—highly processed snacks, sugary drinks, fast-food items and ready-to-eat meals—has become increasingly common in the diets of adolescents worldwide. Teenagers are especially vulnerable because of rapid physical growth, changing metabolic needs, social influences, and greater independence in food choices. In areas like Kushinagar, where traditional diets are being supplemented or replaced by cheap, convenient processed foods, the growing popularity of junk food poses urgent public-health concerns for young people. The harmful effects of regular junk-food consumption among teenagers are wide-ranging and often interlinked. Nutritionally poor, energy-dense foods contribute to obesity and abdominal fat accumulation while simultaneously causing micronutrient deficiencies (a form of "hidden hunger"). Frequent intake of sugary and acidic products increases the risk of dental caries and oral health problems. Beyond physical outcomes, high consumption of ultra-processed food is associated with poorer concentration, mood swings, sleep disturbances, and lower academic performance—factors that can derail a teenager's educational and social development. Longer term, habitual junk-food diets established during adolescence raise the likelihood of chronic noncommunicable diseases such as type 2 diabetes, hypertension, and dyslipidemia in early adulthood. For communities in and around localities like Kushinagar, this trend threatens not only individual health but also family wellbeing and health-system resources. Addressing the problem requires awareness, school-based interventions, healthier food environments, and community engagement to help teenagers make informed, sustainable choices that protect their short- and long-term health.

Study Area: Kushinagar

Kushinagar is a predominantly rural district located in the eastern part of Uttar Pradesh, India. It is internationally known as the place where Lord Buddha attained Mahaparinirvana, making it an important Buddhist pilgrimage center. The district economy is largely agrarian, with agriculture serving as the primary occupation of the population. In recent years, increasing connectivity, market expansion, and exposure to urban lifestyle patterns have influenced local food habits, especially among adolescents. Despite rural characteristics, packaged and fast foods are increasingly available near schools and marketplaces. These socio-economic transitions make Kushinagar a relevant setting for studying changing dietary behaviors and adolescent health outcomes.

II. Objectives of the Study

The present study aims to examine the harmful impact of junk food consumption on teenagers' health in Kushinagar. The specific objectives are:

1. To assess the frequency and pattern of junk food consumption among teenagers in Kushinagar.
2. To identify common types of junk food preferred by adolescents in the region.
3. To examine the relationship between junk food intake and physical health indicators such as obesity, BMI, fatigue, and digestive issues.
4. To analyze the impact of junk food consumption on mental health aspects such as concentration, mood swings, and stress levels.
5. To study the awareness level of teenagers and parents regarding the nutritional value and health risks associated with junk food.
6. To suggest preventive measures and policy recommendations for schools and families to reduce harmful dietary habits.

Significance of the Study

This study holds significant academic and social importance. Adolescence is a critical developmental stage marked by rapid physical growth and psychological changes. Poor dietary habits during this period can have long-lasting consequences.

1. The findings will help identify emerging nutritional risks among teenagers in Kushinagar and contribute to local public health planning.
2. Schools can use the study outcomes to design nutrition awareness programs and regulate the sale of unhealthy food items near campuses.
3. The research will inform parents about dietary risks and encourage healthier home-based food practices.
4. The study can support local government initiatives in framing regulations related to fast-food outlets near schools.
5. It adds region-specific empirical data to the broader discourse on adolescent nutrition and lifestyle diseases.

Research Hypotheses: The study proposes the following hypotheses:

H_0 (Null Hypothesis): There is no significant relationship between junk food consumption and the health status of teenagers in Kushinagar.

H_1 (Alternative Hypothesis): There is a significant relationship between junk food consumption and adverse physical and mental health outcomes among teenagers in Kushinagar.

Additional sub-hypotheses may include:

- H_1a: Higher frequency of junk food intake is positively associated with increased BMI among teenagers.
- H_1b: Regular consumption of junk food significantly affects concentration and academic performance.
- H_1c: Awareness level about junk food risks is negatively correlated with its consumption frequency.

Scope of the Study: The scope of this study includes:

1. The research focuses on teenagers (aged 13–19 years) studying in selected schools and colleges within Kushinagar district.
2. It examines both physical and psychological health indicators.
3. The study considers socio-economic background, lifestyle habits, and family dietary practices as influencing factors.
4. Data collection may involve surveys, questionnaires, BMI measurement, and interviews.
5. The research is confined geographically to Kushinagar and does not generalize findings beyond similar socio-cultural contexts without further validation.

Limitations of the Study: Despite its importance, the study may face certain limitations:

1. The study is restricted to Kushinagar; results may not represent other districts or urban metropolitan areas.
2. Teenagers may underreport or overreport junk food consumption.
3. Cross-sectional data collection limits long-term causal interpretation.
4. Limited participants may affect generalizability.

5. Factors such as genetics, physical activity, and medical history may influence health outcomes independently of junk food consumption.

III. Review of Literature

Junk food consumption among adolescents has emerged as a serious global public health concern. Junk foods are typically high in saturated fats, refined sugars, sodium, and artificial additives while lacking essential micronutrients (Monteiro et al., 2019). Adolescence is a critical period of rapid growth and hormonal change, making nutritional quality particularly important (Sawyer et al., 2012). Poor dietary habits during this stage can result in long-term metabolic and psychological consequences. Globally, adolescent obesity has increased dramatically over the past three decades (World Health Organization [WHO], 2022). Studies indicate that ultra-processed foods significantly contribute to excessive calorie intake and weight gain among teenagers (Monteiro et al., 2019). Research conducted in developed nations shows that adolescents consuming fast food more than three times per week exhibit higher Body Mass Index (BMI) and elevated cholesterol levels (Bowman et al., 2004). Sugary beverage consumption has also been directly linked to increased risk of type 2 diabetes and insulin resistance (Malik et al., 2010).

In the Indian context, dietary transitions have been influenced by urbanization, globalization, and changing lifestyle patterns (Popkin, 2015). Data from the National Family Health Survey (NFHS-5) indicate a rising prevalence of overweight and obesity among Indian adolescents (International Institute for Population Sciences [IIPS] & ICF, 2021). Studies conducted in North India report that more than 60% of adolescents consume junk food multiple times per week, with significant associations observed between junk food intake and obesity (Rathi et al., 2017). Frequent consumption of junk food has also been linked with micronutrient deficiencies. Despite high caloric intake, adolescents often suffer from iron deficiency anemia and inadequate intake of vitamins and minerals (Black et al., 2013). This dual burden of malnutrition — overnutrition combined with hidden hunger — is increasingly observed in both urban and semi-urban India (Popkin et al., 2020). Beyond physical health, dietary patterns influence psychological well-being. Diets rich in refined sugars and saturated fats have been associated with depressive symptoms and mood instability among adolescents (Jacka et al., 2010). Poor diet quality has also been linked to reduced cognitive performance and academic outcomes (Nyaradi et al., 2014). Excessive intake of sugar may impair attention span and increase fatigue, affecting classroom productivity (Benton, 2010).

Dental health is another major concern. High consumption of carbonated beverages and sugary snacks significantly increases the risk of dental caries among adolescents (Moynihan & Kelly, 2014). Furthermore, high sodium intake from processed foods contributes to early hypertension risk (He et al., 2008). Socio-environmental factors play a crucial role in shaping adolescent dietary behavior. Peer influence, media exposure, and availability of fast food outlets near schools significantly impact food choices (Story et al., 2002). Aggressive marketing strategies specifically target youth populations, increasing demand for unhealthy food products (Cairns et al., 2013). In semi-urban districts such as Kushinagar, growing commercialization and lifestyle shifts may influence adolescents toward higher junk food consumption. Despite extensive national and global research, district-level empirical studies focusing specifically on rural and semi-urban populations remain limited. Most Indian studies concentrate on metropolitan areas, leaving a gap in localized evidence for regions like Kushinagar. Therefore, region-specific research is essential to understand contextual dietary behaviors and health outcomes.

Conceptual Framework

The conceptual framework of this study is grounded in the behavioral nutrition model, which posits that dietary habits influence physical and psychological health outcomes (Story et al., 2002). In this framework, junk food consumption serves as the **independent variable**, while physical health indicators (BMI, obesity, anemia, dental issues) and psychological outcomes (concentration, mood, academic performance) function as **dependent variables**. Socio-economic status, parental influence, awareness levels, and physical activity act as mediating variables influencing the strength of association between junk food consumption and health outcomes (Popkin, 2015). Environmental exposure such as advertising and accessibility of processed food further moderates adolescent dietary behavior (Cairns et al., 2013). The framework assumes that increased frequency of junk food consumption leads to adverse health outcomes among teenagers. However, the magnitude of this relationship may vary depending on awareness, lifestyle patterns, and socio-cultural context within Kushinagar.

IV. RESEARCH METHODOLOGY

3.1 Research Design

The present study adopts a descriptive cross-sectional research design to examine the harmful impact of junk food consumption on teenagers' health in Kushinagar. A quantitative research approach is employed to systematically measure the relationship between junk food intake and various physical as well as psychological health indicators among adolescents. The cross-sectional design enables the researcher to assess dietary patterns and associated health outcomes at a specific point in time, thereby providing a snapshot of prevailing nutritional behavior and its consequences within the selected rural communities.

3.2 Study Area

The research is conducted in three villages located near the Kushinagar district headquarters, specifically in areas adjoining Kasya Block, Padrauna region, and Hata Block. These villages are semi-rural in character and represent transitional socio-economic settings where traditional dietary practices coexist with increasing exposure to market-based and packaged food products. Due to expanding connectivity, availability of fast-food outlets near schools and marketplaces, and growing influence of urban consumption patterns, these villages provide an appropriate setting for examining dietary transitions and adolescent health risks.

3.3 Population of the Study

The target population of the study comprises teenagers aged 13 to 19 years residing in the selected villages of Kushinagar district. Adolescence is considered a critical developmental stage characterized by rapid physical growth, hormonal changes, and cognitive development, making this population particularly vulnerable to dietary influences and nutritional imbalances.

3.4 Sample Size and Sampling Technique

The total sample size consists of 90 respondents, with 30 teenagers selected from each of the three villages. Equal representation ensures balanced comparison across geographical clusters and enhances statistical reliability. A simple random sampling technique is adopted to select respondents from school enrollment records and village household lists, ensuring that each eligible teenager has an equal probability of inclusion. This method reduces sampling bias and strengthens the generalizability of findings within the study area.

3.5 Inclusion and Exclusion Criteria

The study includes teenagers aged 13–19 years who have been residents of the selected villages for at least two years and whose parents or guardians provide informed consent. Teenagers diagnosed with chronic medical conditions unrelated to dietary habits and those unwilling to participate are excluded from the study to maintain data accuracy and reliability.

3.6 Variables of the Study

The independent variable in the study is the frequency of junk food consumption, measured as the number of times junk food is consumed per week. The dependent variables include Body Mass Index (BMI), self-reported fatigue, concentration level, incidence of dental problems, and digestive complaints. Control variables such as age, gender, physical activity level, and socio-economic status are incorporated to minimize confounding effects and strengthen regression analysis.

3.7 Tools for Data Collection

Data are collected using a structured questionnaire, anthropometric measurements, and an observation schedule. The questionnaire gathers information regarding frequency and type of junk food consumption, awareness levels about health risks, and psychological indicators measured through Likert-scale responses. Anthropometric measurements include height (in centimeters) and weight (in kilograms), from which BMI is calculated using the formula:

$BMI = Weight (kg) / Height (m)^2$

BMI classification follows World Health Organization adolescent guidelines. An observation schedule is used to record dental condition, visible signs of fatigue, and general health status.

Data Interpretation and Analysis

A pilot study is conducted on 10 teenagers outside the selected sample to test the clarity, reliability, and feasibility of the questionnaire. Necessary revisions are made based on feedback before final data collection. Reliability of the questionnaire is assessed using Cronbach's Alpha to measure internal consistency among scale items. Content validity is ensured through expert review by professionals in nutrition and public health to confirm that the instrument adequately captures relevant variables. Prior permission is obtained from village authorities and school administrations. Written informed consent is secured from parents or guardians before data collection. Information is gathered through face-to-face interviews to ensure clarity and accuracy of responses. BMI measurements are recorded using standardized and calibrated equipment to maintain measurement precision.

To justify the research objectives, both descriptive and inferential statistical techniques are applied. Descriptive statistics such as mean, standard deviation, percentages, and frequency distribution are used to summarize junk food consumption patterns and health indicators. An independent sample t-test is conducted to compare mean BMI between frequent and infrequent junk food consumers. One-way ANOVA is applied to examine village-wise differences in BMI. Pearson correlation coefficient (r) measures the relationship between junk food frequency and BMI, as well as between junk food consumption and concentration levels. A chi-square test evaluates the association between junk food intake categories and the presence of health problems. Multiple regression analysis predicts the impact of junk food consumption on BMI while controlling for age, gender, and physical activity level using the regression model:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e$

where Y represents BMI, X_1 denotes junk food frequency, X_2 represents physical activity, and X_3 represents age. All hypotheses are tested at a 5% level of significance (0.05). If the calculated p-value is less than 0.05, the null hypothesis is rejected; if greater than 0.05, the null hypothesis is accepted. The study adheres to ethical research standards. Informed consent is obtained from parents or guardians, confidentiality of respondents is strictly maintained, participation is voluntary, and data are used solely for academic purposes without causing harm to participants. The methodology is structured to statistically determine whether higher junk food consumption significantly affects physical and psychological health among teenagers in the selected villages of Kushinagar district. The findings are expected to provide empirical evidence for developing school-based nutrition programs, community awareness initiatives, and public health policy interventions aimed at reducing long-term non-communicable disease risks among rural adolescents.

Table 1: Village-wise Distribution of Respondents

Village	Frequency	Percentage
Village A	30	33.3%
Village B	30	33.3%
Village C	30	33.3%
Total	**90**	**100%**

Table 1 shows equal representation of respondents from three selected villages of Kushinagar district. Each village contributes 33.3% of the total sample. Equal distribution ensures balanced comparison across geographical locations and minimizes sampling bias. This structure strengthens the validity of ANOVA testing conducted later to compare BMI and junk food consumption patterns across villages. The equal representation also enhances internal consistency and ensures that observed variations are not due to disproportionate sampling. The table confirms proper execution of the sampling design outlined in the methodology. The equal distribution of respondents across three villages strengthens internal validity and reduces sampling bias. Balanced representation allows meaningful comparison across geographical clusters. Similar rural comparative designs have been recommended in community nutrition studies to ensure contextual reliability (Story et al., 2002). Research in semi-urban India indicates that dietary behavior varies across micro-regions due to availability and socio-economic exposure (Popkin, 2015). Therefore, equal village sampling enhances the robustness of ANOVA findings and allows the study to identify localized dietary transitions within Kushinagar's rural landscape.

Table 2: Gender Distribution of Respondents

Gender	Frequency	Percentage
Male	48	53.3%
Female	42	46.7%
Total	**90**	**100%**

Table 2 indicates that 53.3% of respondents are male and 46.7% are female. The near-balanced gender composition allows gender-based comparisons in health outcomes and junk food consumption frequency. Slight male dominance reflects local school enrollment patterns. Gender distribution is important because dietary behaviors often vary between boys and girls. This balance enhances the reliability of regression analysis when gender is included as a control variable. The representation ensures that findings reflect broader adolescent trends rather than gender-specific bias. The near-balanced gender distribution allows gender-sensitive interpretation of dietary patterns. Studies suggest adolescent boys often consume more fast food due to higher autonomy and peer influence, whereas girls may experience body image pressures influencing eating behavior (Rathi et al., 2017). Research by Sawyer et al. (2012) emphasizes adolescence as a gender-differentiated developmental stage affecting nutrition and metabolism. The relatively equal representation ensures that regression analysis controlling for gender is statistically reliable and that findings reflect broader adolescent trends rather than gender-specific anomalies.

Table 3: Frequency of Junk Food Consumption per Week

Frequency Category	Frequency	Percentage
0–1 times	12	13.3%
2–3 times	28	31.1%

4–5 times	30	33.3%
6+ times	20	22.2%

The table shows that 55.5% of teenagers consume junk food four or more times per week. Only 13.3% consume it rarely. This high prevalence confirms junk food as a regular dietary component among adolescents in Kushinagar villages. The findings support the study's assumption that junk food intake is frequent and potentially harmful. The data provides strong justification for further inferential statistical testing to examine its impact on BMI and psychological health indicators. The high prevalence (55.5% consuming junk food ≥4 times weekly) aligns with global patterns of ultra-processed food consumption among adolescents (Monteiro et al., 2019). Indian studies report similar consumption rates in semi-urban areas due to increasing market penetration (Popkin et al., 2020). Frequent intake during adolescence increases caloric density while reducing micronutrient intake (Black et al., 2013). The data confirms that junk food is integrated into routine dietary habits in rural Kushinagar, supporting the study's premise that dietary transition is not limited to metropolitan regions.

Table 4: Mean BMI of Respondents

Statistic	Value
Mean BMI	23.8
Standard Deviation	3.4
Minimum	17.5
Maximum	30.2

The average BMI of 23.8 falls within the upper-normal to overweight category for adolescents. The standard deviation of 3.4 indicates moderate variability in body weight status. The maximum BMI of 30.2 indicates presence of obesity within the sample. This distribution suggests growing overweight trends in rural Kushinagar. The findings justify correlation and regression testing to evaluate the association between junk food frequency and BMI. The data signals emerging nutritional transition in semi-rural areas. The mean BMI (23.8) approaching overweight status reflects the nutritional transition observed in developing regions (Popkin, 2015). WHO (2022) reports increasing adolescent overweight prevalence globally, even in rural populations. Rising BMI in Kushinagar villages suggests dual burden of malnutrition — coexistence of overweight and micronutrient deficiency (Popkin et al., 2020). The moderate standard deviation indicates clustering around higher BMI categories, reinforcing concerns about early cardiovascular risk development in rural youth populations.

Table 5: BMI Category Distribution

Category	Frequency	Percentage
Underweight	10	11.1%
Normal	42	46.7%
Overweight	26	28.9%
Obese	12	13.3%

Nearly 42.2% of respondents fall under overweight or obese categories. This is significant for a rural district sample. Only 11.1% are underweight, indicating shift from traditional undernutrition to dual burden of malnutrition. The results align with national nutritional transition patterns. The table strengthens the argument that junk food consumption may be contributing to rising BMI levels. Further inferential testing examines statistical significance of this relationship. With 42.2% overweight or obese, findings parallel NFHS-5 data showing increasing adolescent overweight rates in India (IIPS & ICF, 2021). Similar rural findings have been reported in North India, where lifestyle shifts and processed food availability influence BMI trends (Rathi et al., 2017). The decline in underweight prevalence indicates a shift from traditional undernutrition toward caloric excess. This supports literature describing India's "nutrition transition," where energy-dense diets replace traditional foods (Popkin, 2015).

Table 6: Correlation Between Junk Food Frequency and BMI

Variable	r-value	p-value
Junk Food Frequency & BMI	0.62	0.000

Pearson correlation coefficient ($r = 0.62$) indicates strong positive correlation between junk food intake and BMI. Since $p < 0.05$, the relationship is statistically significant. This confirms that higher junk food frequency is associated with increased BMI among teenagers. The strength of correlation supports rejection of the null hypothesis. The finding is consistent with global studies linking ultra-processed food consumption with obesity. It demonstrates that dietary habits significantly influence adolescent body weight in Kushinagar villages. The strong positive correlation ($r = 0.62$) aligns with findings by Bowman et al. (2004), who reported increased BMI among frequent fast-food consumers. Malik et al. (2010) demonstrated that sugar-sweetened beverage intake significantly predicts weight gain and metabolic risk. Monteiro et al. (2019) linked ultra-processed food consumption with obesity prevalence. The statistically significant correlation confirms that junk food intake contributes substantially to adolescent BMI variation in Kushinagar.

Table 7: Independent Sample t-Test (High vs Low Consumers BMI)

Group	Mean BMI	t-value	p-value
Low Consumers	21.2		
High Consumers	25.6	4.87	0.000

The t-test reveals a significant difference in mean BMI between high and low junk food consumers ($t = 4.87$, $p < 0.05$). High consumers show substantially higher BMI. This statistically confirms that frequent junk food intake contributes to increased body weight. The test strengthens causal inference within cross-sectional limitations. The result supports H_1a hypothesis regarding BMI impact. The significant difference in BMI between high and low consumers supports global evidence linking dietary frequency with weight gain (Malik et al., 2010). Similar statistically significant differences have been observed in Indian adolescent populations (Rathi et al., 2017). The magnitude of difference strengthens causal inference within cross-sectional limits. These findings confirm that frequent junk food intake has measurable physiological consequences, consistent with WHO (2022) obesity reports.

Table 8: ANOVA for Village-wise BMI Comparison

Source	F-value	p-value
Between Villages	3.45	0.036

ANOVA results show significant BMI differences across villages ($p < 0.05$). This suggests environmental or socio-economic variation influencing dietary patterns. Village C showed slightly higher average BMI. The findings indicate that geographical context plays a role in adolescent health outcomes. The equal sampling enhances reliability of this comparison. Village-wise BMI differences reflect environmental and socio-economic variability. Story et al. (2002) highlight environmental access as a major determinant of adolescent dietary behavior. Studies show that proximity to markets and food vendors increases unhealthy consumption patterns (Cairns et al., 2013). The significant ANOVA result suggests that local environmental factors in certain Kushinagar villages may amplify junk food exposure and obesity risk.

Table 9: Chi-Square Test (Junk Food vs Health Problems)

χ^2 value	df	p-value
9.82	1	0.002

Chi-square results indicate significant association between high junk food intake and reported health problems. Since $p < 0.05$, the null hypothesis is rejected. Adolescents consuming junk food frequently reported higher fatigue, digestive complaints, and dental issues. This supports the multidimensional health impact beyond BMI alone. The significant association between junk food intake and health complaints aligns with He et al. (2008), who linked high sodium intake with early hypertension risk. Moynihan and Kelly (2014) demonstrated the relationship between sugar intake and dental caries. Black et al. (2013) emphasized micronutrient deficiency despite high caloric intake. The chi-square findings confirm multidimensional health consequences beyond BMI alone.

Table 10: Correlation Between Junk Food and Concentration Level

Variable	r-value	p-value
Junk Food & Concentration	-0.48	0.001

Negative correlation ($r = -0.48$) indicates that higher junk food consumption reduces concentration levels. The statistically significant p-value confirms meaningful psychological impact. This finding highlights cognitive consequences of poor dietary habits. It supports hypothesis H_1b regarding academic performance and mental focus. The negative correlation supports findings by Jacka et al. (2010), who linked poor diet quality with depressive symptoms and reduced cognitive performance. Nyaradi et al. (2014) found that unhealthy diets impair neurocognitive development. High sugar intake has been shown to affect attention and energy stability (Benton, 2010). Thus, dietary habits significantly influence psychological and academic outcomes among adolescents.

Table 11: Regression Analysis Predicting BMI

Predictor	Beta	p-value
Junk Food Frequency	0.55	0.000
Physical Activity	-0.29	0.012
Age	0.14	0.08

Regression analysis shows junk food frequency as strongest predictor of BMI ($\beta = 0.55$). Physical activity negatively predicts BMI, confirming protective role. Age shows weak non-significant effect. The model confirms that even after controlling for other variables, junk food significantly influences adolescent BMI. Regression results identifying junk food frequency as strongest BMI predictor align with global epidemiological models (Monteiro et al., 2019). Physical activity's protective role reflects findings from WHO (2022) physical health guidelines. The model confirms that dietary behavior independently predicts BMI even after controlling for age and activity, reinforcing the primary hypothesis.

Table 12: Awareness Level About Junk Food Risks

Awareness Level	Frequency	Percentage
Low	38	42.2%
Moderate	34	37.8%
High	18	20.0%

42.2% of respondents have low awareness about health risks of junk food. Only 20% demonstrate high awareness. This suggests urgent need for nutrition education programs in villages. Poor awareness likely contributes to frequent consumption patterns. Educational interventions may help mitigate adverse health outcomes. Low awareness (42.2%) corresponds with rural nutrition literacy gaps identified in Indian public health surveys (IIPS & ICF, 2021). Story et al. (2002) emphasize that knowledge influences dietary behavior but requires environmental support. Limited awareness in Kushinagar villages suggests need for school-based interventions.

Table 13: Physical Activity Level Distribution

Activity Level	Frequency	Percentage
Low	32	35.6%
Moderate	40	44.4%
High	18	20.0%

35.6% report low physical activity. Combined with high junk food intake, this increases obesity risk. The data suggests lifestyle factors compound dietary impact. Promoting sports and physical education in village schools could offset adverse effects. Low activity prevalence supports findings that sedentary behavior compounds dietary risk (WHO, 2022). Combined low activity and high junk food intake accelerate obesity development (Popkin et al., 2020).

Table 14: Dental Problem Prevalence

Dental Issue	Frequency	Percentage
Yes	44	48.9%
No	46	51.1%

Nearly half of respondents report dental issues. This aligns with high sugary food consumption. The finding reinforces the need for dietary control and oral hygiene awareness campaigns. High prevalence aligns with Moynihan and Kelly (2014), who confirmed sugar-dental caries relationship. Sugary beverage exposure significantly increases adolescent dental risk.

Discussion and Justification of Research Objectives and Hypotheses

The present study aimed to examine the harmful impact of junk food consumption on teenagers' health in Kushinagar district. The research objectives focused on understanding consumption patterns, assessing physical and psychological health outcomes, measuring awareness levels, and statistically evaluating the relationship between dietary habits and adolescent health. The findings collectively indicate that junk food consumption is highly prevalent among teenagers in the selected villages, with more than half consuming junk food four or more times per week. This directly fulfills the first research objective, which sought to assess the frequency and pattern of junk food intake. The high prevalence supports earlier national and global findings indicating increasing dietary transition even in rural settings (Popkin, 2015; Monteiro et al., 2019). Thus, the study confirms that the problem is not confined to urban populations but is expanding into semi-rural regions such as Kushinagar.

The second objective aimed to identify the impact of junk food consumption on physical health indicators, particularly BMI. Statistical analysis revealed a strong positive correlation ($r = 0.62$) between junk food intake and BMI. The independent sample t-test further showed significant differences in BMI between high and low consumers. Regression analysis confirmed junk food frequency as the strongest predictor of BMI even after controlling for physical activity and age. These findings strongly justify rejection of the Null Hypothesis (H_0), which assumed no significant relationship between junk food consumption and adolescent health. Instead, the Alternative Hypothesis (H_1) is supported, demonstrating a statistically significant association between junk food intake and increased BMI levels. The BMI distribution results, where over 42% of respondents were overweight or obese, reflect the nutritional transition described in contemporary public health literature. This shift from traditional undernutrition to overnutrition aligns with the dual burden of malnutrition model (Popkin et al., 2020). The findings validate the third research objective, which sought to examine adverse health outcomes associated with junk food intake.

The study also addressed psychological health outcomes, including concentration and fatigue. The negative correlation between junk food consumption and concentration level ($r = -0.48$) indicates that higher junk food intake is associated with reduced cognitive focus. This finding aligns with neurocognitive research suggesting that high sugar and saturated fat intake negatively affect adolescent brain functioning (Nyaradi et al., 2014; Jacka et al., 2010). Thus, the research objective concerning psychological impact is also statistically justified. Chi-square results demonstrated significant association between junk food intake and reported health problems such as dental issues and digestive complaints. Nearly half of the respondents reported dental problems, supporting existing evidence linking sugar consumption with dental caries (Moynihan & Kelly, 2014). These findings confirm that junk food impacts multiple dimensions of health beyond weight gain alone.

Village-wise ANOVA results revealed significant BMI differences across the three villages, suggesting environmental and socio-economic influence on dietary habits. This supports the socio-ecological model of adolescent eating behavior, which emphasizes the role of environmental exposure and availability (Story et al., 2002). Therefore, the objective examining contextual variation across villages is fulfilled. Another critical objective was to assess awareness levels regarding junk food risks. The findings showed that 42.2% of respondents had low awareness. This lack of knowledge may partially explain high consumption frequency. Literature suggests that nutrition education significantly influences dietary choices when combined with supportive environments (WHO, 2022). The findings indicate an urgent need for school-based awareness programs in Kushinagar villages. Interrelating all results, the data presents a coherent pattern: High junk food consumption → Increased BMI → Greater health complaints → Reduced concentration → Compounded by low awareness and moderate physical inactivity. This interconnected chain strongly validates the conceptual framework of the study. Junk food frequency emerged as the central independent variable influencing multiple dependent outcomes, including physical and psychological health indicators.

The rejection of the Null Hypothesis is statistically justified across multiple tests (correlation, t-test, ANOVA, chi-square, regression), each yielding significant results at the 0.05 level. The consistency across diverse statistical methods strengthens internal validity and reduces the likelihood of random association. From a regional perspective, the findings demonstrate that rural districts like Kushinagar are experiencing early-stage lifestyle disease risk patterns typically associated with urban populations. The presence of overweight and obesity alongside moderate physical inactivity suggests emerging non-communicable disease risk factors among adolescents. The research objectives have been comprehensively achieved:

1. Junk food consumption patterns were clearly identified.
2. Significant associations with BMI and physical health were established.
3. Psychological impact was statistically validated.
4. Awareness levels were assessed and found inadequate.
5. Village-level variation was confirmed.

The study provides strong empirical evidence supporting the Alternative Hypothesis that junk food consumption significantly affects teenagers' health in Kushinagar. The integrated findings reinforce the need for preventive interventions at school, family, and community levels.

V. Conclusion of the Study

The present study examined the harmful impact of junk food consumption on teenagers' health in Kushinagar through a structured empirical investigation involving 90 adolescents from three selected villages. The study was guided by clearly defined research objectives and hypotheses and utilized descriptive and inferential statistical tools to establish relationships between junk food consumption and health outcomes. The findings indicate that junk food consumption is highly prevalent among teenagers in the selected villages, with more than half consuming junk food four or more times per week. This reflects a significant dietary shift in rural and semi-urban settings, aligning with the broader nutrition transition observed in India. The frequent consumption of energy-dense and nutrient-poor foods has contributed to a rising prevalence of overweight and obesity among adolescents in the study area.

Statistical analysis revealed a strong positive correlation between junk food consumption and Body Mass Index (BMI). Independent sample t-test and regression analysis confirmed that teenagers who frequently consume junk food exhibit significantly higher BMI levels compared to low consumers. These findings led to the rejection of the Null Hypothesis and acceptance of the Alternative Hypothesis, establishing a statistically significant relationship between junk food intake and adverse physical health outcomes. Beyond physical health, the study also identified psychological and cognitive implications. A significant negative correlation was found between junk food consumption and concentration levels, indicating that higher intake is associated with reduced academic focus and mental alertness. Additionally, chi-square analysis demonstrated a significant association between junk food consumption and health complaints such as fatigue, digestive issues, and dental problems.

Village-wise ANOVA results suggested environmental and socio-economic influences on dietary behavior, indicating that local context plays an important role in shaping adolescent eating patterns. Moreover, a substantial proportion of respondents exhibited low awareness regarding the health risks of junk food, highlighting the urgent need for educational interventions. The study concludes that junk food consumption is not merely a dietary preference issue but a significant public health concern in Kushinagar. The interrelationship between high consumption frequency, elevated BMI, increased health complaints, reduced concentration, and low awareness levels indicates a multidimensional impact on adolescent health. Therefore, the study strongly recommends:

- Implementation of school-based nutrition education programs
- Regulation of junk food sales near schools
- Community awareness campaigns for parents
- Promotion of physical activity among adolescents
- Policy-level intervention at district health administration

The study provides empirical evidence that junk food consumption significantly affects the physical and psychological health of teenagers in Kushinagar district. Immediate preventive strategies are necessary to curb long-term non-communicable disease risks in this vulnerable population.

References

[1]. Benton, D. (2010). The influence of dietary status on cognitive performance. *Molecular Nutrition & Food Research, 54*(4), 457–470.

[2]. Black, R. E., Victora, C. G., Walker, S. P., et al. (2013). Maternal and child undernutrition and overweight in low-income countries. *The Lancet, 382*(9890), 427–451.

[3]. Bowman, S. A., Gortmaker, S. L., Ebbeling, C. B., Pereira, M. A., & Ludwig, D. S. (2004). Effects of fast-food consumption on energy intake and diet quality among children and adolescents. *Pediatrics, 113*(1), 112–118.

[4]. Cairns, G., Angus, K., Hastings, G., & Caraher, M. (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. *Appetite, 62*, 209–215.

[5]. He, F. J., Marrero, N. M., & MacGregor, G. A. (2008). Salt and blood pressure in children and adolescents. *Journal of Human Hypertension, 22*(1), 4–11.

[6]. International Institute for Population Sciences (IIPS), & ICF. (2021). *National Family Health Survey (NFHS-5), 2019–21: India*. Mumbai: IIPS.

[7]. Jacka, F. N., Kremer, P. J., Berk, M., et al. (2010). A prospective study of diet quality and mental health in adolescents. *PLoS ONE, 5*(9), e24805.

[8]. Malik, V. S., Popkin, B. M., Bray, G. A., Després, J. P., & Hu, F. B. (2010). Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes. *Diabetes Care, 33*(11), 2477–2483.

[9]. Monteiro, C. A., Cannon, G., Levy, R. B., et al. (2019). Ultra-processed foods: What they are and how to identify them. *Public Health Nutrition, 22*(5), 936–941.

[10]. Moynihan, P., & Kelly, S. (2014). Effect on caries of restricting sugars intake. *Journal of Dental Research, 93*(1), 8–18.

[11]. Nyaradi, A., Li, J., Hickling, S., Foster, J., & Oddy, W. H. (2014). The role of nutrition in children's neurocognitive development. *Frontiers in Human Neuroscience, 8*, 1–14.

[12]. Popkin, B. M. (2015). Nutrition transition and global health dynamics. *The Lancet Diabetes & Endocrinology, 3*(9), 674–675.

[13]. Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition. *The Lancet, 395*(10217), 65–74.

[14]. Rathi, N., Riddell, L., & Worsley, A. (2017). Food consumption patterns of adolescents aged 14–16 years in urban India. *Public Health Nutrition, 20*(8), 1423–1431.

[15]. Sawyer, S. M., Afifi, R. A., Bearinger, L. H., et al. (2012). Adolescence: A foundation for future health. *The Lancet, 379*(9826), 1630–1640.

[16]. Story, M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association, 102*(3), S40–S51.

[17]. World Health Organization. (2022). *Obesity and overweight fact sheet*. Geneva: WHO.