# Correlating Body Fat with Dietary Intake, Physical Activity, Alcohol, Smoking Among Adults in Chengalpattu District

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**Abstract**

**Statement of the problem:** Correlating body fat with dietary intake, physical activity, alcohol, smoking among adults in Chengalpattu district. **Objectives:** The primary objectives include determining adult body fat levels, evaluating dietary habits, physical activity patterns, alcohol intake, and smoking consumption. Through a correlation analysis, the study seeks to establish links between body fat levels and dietary intake, physical activity, alcohol use, and smoking habits. Furthermore, the research develops into the relationship between demographic variables and dietary patterns, physical activity levels, alcohol intake, and smoking practices. By exploring these interconnected facts, this study contributes to a deeper understanding of the complex interactions shaping adult body fat and its determinants. **Materials and Methods:** The study was conducted with 200 adults in quantitative approach. Cross sectional research design. Sample selection was done by purposive sampling technique method in the age group of 18-59 years. Semi structured questionnaires were used to assess the Body Mass Index (BMI), Dietary intake, Physical activity, alcohol and smoking. **Results:** The analysis revealed a moderate positive correlation between BMI and dietary intake ($r = 0.43$, $p < 0.05$), indicating that adult with higher body fat tend to have increased dietary consumption. Additionally, a weak negative correlation was observed between BMI and physical activity at work ($r = -0.39$, $p < 0.05$), suggesting that higher BMI levels might be associated with lower physical activity engagement in occupational settings. However, no significant correlation was found between BMI and physical activity at home ($r = -0.16$, $p > 0.05$). Furthermore, a weak positive correlation emerged between BMI and alcohol intake ($r = 0.16$, $p < 0.05$), indicating a potential link between higher BMI and increased alcohol consumption. Regarding smoking, a moderate positive correlation was identified between BMI and smoking behavior ($r = 0.84$, $p < 0.01$), suggesting that individuals with higher body fat are more likely to smoke. The findings revealed that BMI was statistically significant with dietary intake (P-0.05), physical activity at workplace (P0.001) alcohol (P-0.05) and smoking (P-0.005).**Conclusion:** Based on the WHO classification of body weight among 200 samples 28 (13.7%) of the participants were underweight, 25 (9.3%) were at a normal weight, 78 (99.4%) were overweight, and 69 (93.1%) were obese. Health education was provided regarding weight reduction methods among adults in Chengalpattu district after data collection. It is important to teach weight reduction methods to the adults to prevent complications of overweight and obesity.

**Key Words:** Alcohol, Body Mass Index, Dietary intake, physical activity, Smoking

## 1. Introduction

Body fat is having a significant impact on global health. Accordingto India's National Family and Health Survey, the proportion of women between the ages of 15 and 49 who had a BMI of 25 or more rose from 7.3% in 1998–1999 to 11.1% in 2005. When it accumulates in particular places like our belly or thighs, we might not enjoy body fat. However, when we have a long period of time without access to food, fat is a significant source

of stored energy and raising the risk of type II diabetes and cardiovascular disease. The term "body composition" is commonly used in the health and fitness industry. It entails determining how much body fat is present in relation to overall weight. This evaluation is helpful in establishing a person's general state of health. Having more muscle than fatresults in a better body composition. The likelihood of getting cancer, diabetes, heart disease, and other disorders rises withexcess body fat.

Physical activity is an essential component of a routine that promotes long-term health. Exercise is defined as any activity of the body demanding both physical and mental effort. Body mass index (BMI), which computes the relationship between weight and 3 Height squared, is a helpful health indicator. In contrast, body composition analyzes the ratios of muscle and fat in human bodies to describe the body.

Alcoholic beverages are frequently consumed during social eventsin many parts of the world. Each gram of ethanol that is consumed is promptly metabolized, producing 7.1 kcal. Alcohol affects a person's overall daily calorie intake because It ranks second among macronutrients in terms of energy density to fat. In social drinkers who do so frequently, drinking alcohol while eating seems to improve the energy of meals. Alcohol-derived energy, however, may replace rather than complement the energy found in other macronutrients like carbohydrate and fat in heavy drinkers. Smoking has been linked to both weight gain and loss. According toa study on weight gain after quitting smoking, heavy and long-term smokers are more likely to be overweight or obese than non-smokers.

## 2. Materials and Methods

The research approach adopted for this study was quantitative research approach, aligning with the study's goal. To investigate the relationships between adult body fat levels and various lifestyle factors, a cross-sectional research design was employed. This design allowed us to capture a snapshot of data at a specific point in time.
The study focused on adults residing in selected rural areas of Chengalpattu district, Tamil Nadu. The selected rural areas include Poonjeri, Manamai, and Kokilamedu. The research population comprised adults aged between 18 and 59 years. The sample size of 200 adults was determined using a 95% confidence interval and a 5% margin of error. Sampling was carried out using purposive sampling techniques to ensure representation from the target population. Inclusion criteria encompassed adults within the specified age group who were fluent in Tamil and English and agreed to participate. Exclusion criteria involved individuals who were deaf and dumb.

Data collection was executed through a semi-structured questionnaire comprises of three distinct sections. Section I gathered essential demographic information, including age, gender, educational background, marital status, type of occupation, perceived health status, type of physical activity, type of cooking oil, frequency of vegetable consumption, and type of milk consumption. In Section II, an adults' dietary habits questionnaire was employed. This section comprised ten yes-or-no questions aimed at assessing dietary intake. Each correct response was assigned a score of 1, while incorrect responses were scored as 0. The total possible score in this section was 10, reflecting the participants' dietary habits. In Section III, physical activity was assessed through two questionnaires: A for workplace activities (consisting of 9 questions) and B for home activities (consisting of 10 questions).Furthermore, the assessment on alcohol intake and smoking consumption was incorporated into the demographic questionnaire as a screening test for participants' alcohol and smoking habits.

Data collection took place over a span of 4 weeks, from December 12, 2022, to January 1, 2023, with each participant's interaction lasting approximately 40–50 minutes. Data analysis employed both descriptive and inferential statistics to address the study's objectives. Content validity of the questionnaire was ensured through consultation with specialists from relevant fields. A pilot study involving 20 participants confirmed the applicability, feasibility, and acceptance of the study's methodology.

### 3. Results

The demographic characteristics of the study participants are presented in *Table 1.* This table offers a comprehensive overview of the distribution of participants based on various demographic variables, including age, gender, education, marital status, occupation, perceived health status, physical activity level, cooking oil consumption, vegetable consumption, and milk consumption.Key observations from the table include that the majority of participants fell within the age range of 47 to 59 years (49.0%), with a significant percentage between 26 and 46 years (44.0%). Additionally, a substantial portion of participants were male (92.0%), and the majority held undergraduate degrees (50.5%) or postgraduate degrees (21.5%). Marital status indicated that 66.5% of participants were married, while 31.5% were single. The information presented in *Table 1* is relevant to our study as it sets the groundwork for understanding the diversity of the participant population and how these demographic characteristics might intersect with our research focus on factors influencing body fat levels.

*Table 2* provides an overview of the body weight distribution among the study participants. The sample of 200 individuals was categorized into different weight categories based on standard criteria.According to the results, 28 participants (13.7%) were classified as underweight, while 25 participants (9.3%) fell within the normal weight range. The majority of the population, consisting of 99.4%, was categorized as overweight, and a significant portion, accounting for 93.1%, were classified as obese.These findings shed light on different body weight categories within our study population and contribute to our understanding of the distribution of weight status among the participants.

*Table 3* presents the distribution of body fat percentages among the study participants according to several variables, including Dietary Intake, Physical Activity at Workplace, Physical Activity at Home, Alcohol, and Smoking. The data reflects the frequency and distribution of body fat percentages in relation to these variables. Under the "Dietary Intake" variable, the majority of participants reported a "Good, need some modification" dietary pattern, with 94.5% falling into this category. For "Physical activity at workplace," the largest proportion of participants engaged in "Light" physical activity (86.5%).Similarly, under the "Physical activity at home" variable, 72% of participants were categorized as engaging in "Light" physical activity. In terms of alcohol consumption, 70% of participants were classified as "Non-alcoholic," while 30% were categorized as "Alcoholic." Regarding smoking habits, the majority of participants were "Never smokers" (72%). These findings provide valuable insights into the distribution of body fat percentages among study participants based on different lifestyle variables, which contributes to a deeper understanding of the relationship between these factors and body fat levels.

*Table 4* reflects the correlation between body fat and lifestyle factors including dietary intake, physical activity at work, physical activity at home, alcohol intake, and smoking behavior. The results demonstrated various degrees of correlation: There was a moderate positive correlation between body fat and dietary intake ($r = 0.43$, $p < 0.05$). This suggests that individuals with higher body fat tend to have increased dietary consumption.A weak negative correlation was observed between body fat and physical activity at work ($r = -0.39$, $p < 0.05$). This finding suggests that higher body fat levels might be associated with lower physical activity engagement in occupational settings.However, no significant correlation was found between body fat and physical activity at home ($r = -0.16$, $p > 0.05$), indicating that body fat may not be strongly influenced by physical activity in the home environment.Furthermore, a weak positive correlation emerged between body fat and alcohol intake ($r = 0.16$, $p < 0.05$). This implies a potential link between higher body fat and increased alcohol consumption.Regarding smoking, a moderate positive correlation was identified between body fat and smoking behavior ($r = 0.84$, $p < 0.01$). This suggests that individuals with higher body fat are more likely to smoke.These correlations provide insights into the complex interplay between body fat and various lifestyle factors, highlighting potential avenues for further investigation

*Table 5* presents the association between demographic variables and BMI classification among the study participants. The table reveals significant associations between certain demographic variables and BMI categories. Age groups showed a significant association with BMI classification ($X^2 = 13.71$, df = 6, $p < 0.05$), as did gender ($X^2 = 8.14$, df = 3, $p < 0.04$), type of occupation ($X^2 = 41.5$, df = 9, $p < 0.001$), type of milk consumed ($X^2 = 16.8$, df = 6, $p < 0.01$), and the habit of consuming tea/coffee ($X^2 = 12.7$, df = 6, $p < 0.05$). No statistically significant associations were found for education, marital status; perceived health status, type

of physical activity, type of oil used for cooking, and frequency of vegetable consumption ($p > 0.05$). These results underscore the intricate relationship between demographic variables and BMI classification in the study population.

*Table 6* highlights the association between lifestyle factors and body fat distribution among study participants. The table reveals significant associations with body fat distribution for specific lifestyle variables. Notably, a significant association was found between dietary intake patterns and body fat distribution ($X^2 = 84.5$, df = 6, $p < 0.005$), as well as between physical activity at the workplace and body fat distribution ($X^2 = 10.1$, df = 6, $p < 0.001$). Additionally, alcohol consumption ($X^2 = 17.9$, df = 3, $p < 0.005$) and smoking behavior ($X^2 = 18.4$, df = 6, $p < 0.005$) demonstrated significant associations with body fat distribution. However, no significant association was observed between physical activity at home and body fat distribution ($p > 0.99$). These findings emphasize the impact of lifestyle factors on body fat distribution patterns among the study participants.

## 4. Discussion

The demographic profile of study participants, encompassing age, gender, education, marital status, occupation, and dietary habits, provides crucial insights into the complex interactions between lifestyle factors and body fat distribution. The distribution across age ranges highlights the representation of different life stages, while the predominance of male participants underscores the gender disparity in the sample. Educational diversity and varying marital statuses signify potential influences on dietary and lifestyle choices. Occupational variations hint at the potential impact of work-related activities on body fat distribution. Dietary behaviors, exemplified by oil usage, vegetable consumption, and milk preferences, underline the role of cultural and individual choices. These demographic attributes collectively underscore the intricate web of factors shaping body fat distribution patterns. Consideration of these attributes enriches the interpretation of our findings, emphasizing the need for tailored interventions that address diverse demographic profiles to effectively address public health challenges.

The analysis of body weight distribution among the 200 study participants underscores prevailing patterns within the sample. Notably, 78 participants (39.0%) were categorized as overweight and 69 participants (34.5%) as obese, emphasizing the concerning prevalence of higher weight categories. In contrast, 25 participants (12.5%) were at a normal weight and 28 participants (14.0%) fell under the underweight category. These findings align with global trends, where obesity has become a significant public health challenge (World Health Organization, 2022). The prominent prevalence of overweight and obesity highlights the urgency to address these issues, given their associations with various chronic conditions (Ng et al., 2021). Effective interventions targeting dietary habits, physical activity, and broader environmental factors are crucial to mitigate the health risks posed by these weight statuses (Lobstein et al., 2020).

The examination of body fat percentage distribution across various lifestyle variables provides valuable insights into the complex relationship between habits and body composition. Notably, a significant proportion of participants reported a "Good, need some modification" dietary pattern (94.5%), while engaging in "Light" physical activity was prevalent both at the Workplace (86.5%) and at Home (72%). Furthermore, a majority identified as "Non-alcoholic" in terms of alcohol consumption (70%), and "Never smokers" constituted a substantial portion (72%). These findings shed light on prevailing trends in dietary intake, physical activity, and substance use, contributing to a more comprehensive understanding of their potential impact on body fat levels. Such insights are crucial for designing targeted interventions that promote healthier lifestyles and mitigate potential health risks associated with unfavorable body fat percentages.

The analysis of correlations between body fat and various lifestyle factors yields insightful implications for our understanding of body composition. A notable moderate positive correlation between body fat and dietary intake ($r = 0.43$, $p < 0.05$) highlights a tendency for individuals with higher body fat to exhibit increased dietary consumption, possibly contributing to weight gain. Conversely, a weak negative correlation between body fat and physical activity at work ($r = -0.39$, $p < 0.05$) suggests that individuals with elevated body fat levels may engage less in physical activities within occupational contexts, potentially impacting energy expenditure. The absence of a significant correlation between body fat and physical activity at home ($r = -0.16$, $p > 0.05$) suggests that home-based activity might not play a major role in body fat variation. Moreover, a

weak positive correlation between body fat and alcohol intake ($r = 0.16$, $p < 0.05$) indicates a potential connection between higher body fat and greater alcohol consumption, underscoring the relevance of alcohol's caloric contribution. Notably, a moderate positive correlation between body fat and smoking behavior ($r = 0.84$, $p < 0.01$) suggests that individuals with higher body fat are more inclined to smoke, possibly due to various intertwined physiological and behavioral factors. These correlations collectively illuminate the intricate interactions between body fat and lifestyle behaviors, revealing potential targets for interventions aimed at managing body composition and promoting healthier habits.

The exploration of the correlation between demographic variables and BMI classification among study participants is elucidated through a significant association revealed by the presented table. This association is particularly evident in certain demographic factors and their link to distinct BMI categories. Age groups and gender exhibit significant correlations with BMI classification, where age groups ($X^2 = 13.71$, df = 6, $p < 0.05$) and gender ($X^2 = 8.14$, df = 3, $p < 0.04$) highlight pronounced influences on body weight status. Equally noteworthy are the substantial associations observed with type of occupation ($X^2 = 41.5$, df = 9, $p < 0.001$), type of milk consumed ($X^2 = 16.8$, df = 6, $p < 0.01$), and the habit of consuming tea/coffee ($X^2 = 12.7$, df = 6, $p < 0.05$). Conversely, education, marital status, perceived health status, type of physical activity, type of cooking oil, and frequency of vegetable consumption did not exhibit statistically significant associations ($p > 0.05$). These findings collectively underscore the intricate interplay between demographic variables and BMI classification within the study population, shedding light on the multifaceted nature of factors influencing body weight patterns.

The examination of associations between lifestyle variables and body fat distribution within the study cohort highlights significant insights into the intricate interplay between habits and body composition. The presented table underscores substantial links between specific lifestyle factors and body fat distribution, enriching our understanding of their influence. Notably, dietary intake patterns ($X^2 = 84.5$, df = 6, $p < 0.005$) and physical activity at the workplace ($X^2 = 10.1$, df = 6, $p < 0.001$) exhibit pronounced connections with body fat distribution, aligning with previous research indicating the crucial role of these factors in shaping adiposity. Furthermore, significant associations are evident in alcohol consumption ($X^2 = 17.9$, df = 3, $p < 0.005$) and smoking behavior ($X^2 = 18.4$, df = 6, $p < 0.005$), linking them to body fat distribution in ways that warrant further investigation and potential intervention. Intriguingly, no significant association is found between physical activity at home and body fat distribution ($p > 0.99$), highlighting the need for more nuanced exploration of home-based activities and their impact on body fat. These findings collectively underscore the multifaceted nature of lifestyle influences on body fat distribution, reinforcing the imperative for tailored strategies that harness these insights to mitigate unfavorable body composition and associated health risks.

## 5. Conclusion

In this study, we explored how body fat relates to dietary intake, physical activity, alcohol and smoking. Findings show that many adults were overweight and obese, highlighting the importance of addressing these weight concerns. We found that people with higher body fat tended to have less dietary habits and engage in lighter physical activity at work. Interestingly, alcohol consumption and smoking were linked to higher body fat. Overall, these findings emphasize the need for personalized approaches to promote healthier habits and manage body fat for better health outcomes. BMI remains a fundamental metric for initiating discussions about health risks, guiding public health efforts. Its role extends beyond individual assessment, contributing to a broader understanding of weight related health trends and advocating for healthier lifestyle with communities.

## 6. Ethical Approval

Institutional Human ethics committee clearance was obtained from Chettinad Academic of Research and Education, IHEC -1/1213/22 dated 06/09/22. Permission was obtained from dean for data collection, Chettinad Hospital and Research Institute. Written consent was obtained from the study participants.

### 7. Funding sources

### 8. Conflict of interest

There are no conflicts of interest to declare.

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**List of tables**

*Table-1: Adults socio demographic variables: frequency and percentage distribution*

| S.no | Demographic Variables | Frequency | Percentage |
|---|---|---|---|
| 1 | **Age in years** | | |
| | 18-25 | 14 | 7.0 |
| | 26-46 | 88 | 44.0 |
| | 47-59 | 98 | 49.0 |
| 2 | **Gender** | | |
| | Male | 184 | 92.0 |
| | Female | 16 | 8.0 |
| 3 | **Education** | | |
| | Illiterate | 15 | 7.5 |
| | Primary Education | 36 | 18.0 |
| | Higher Secondary Education | 43 | 21.5 |
| | Undergraduate | 101 | 50.5 |
| | Postgraduate | 5 | 2.5 |
| 4 | **Marital Status** | | |
| | Married | 133 | 66.5 |
| | Unmarried | 62 | 31.0 |
| | Widow | 5 | 2.5 |
| | Divorce | 0 | 0 |
| 5 | **Type of Occupation** | | |
| | Skilled | 54 | 27.0 |
| | Unskilled | 27 | 13.5 |
| | Semi-skilled | 43 | 21.5 |
| | Shop keeper/Clerk | 76 | 38.0 |
| 6 | **Perceived Health Status** | | |
| | Good | 92 | 46.0 |

| | | | |
|---|---|---|---|
| | Average | 90 | 45.0 |
| | Bad | 18 | 9.0 |
| 7 | **Type of Physical Activity** | | |
| | Good | 36 | 18.0 |
| | Moderate | 99 | 49.5 |
| | Vigorous | 65 | 32.5 |
| 8 | **Type of Oil used for cooking** | | |
| | Olive Oil | 13 | 6.5 |
| | Coconut Oil | 30 | 15.0 |
| | Saturated Oil | 33 | 16.5 |
| | Sunflower Oil | 110 | 55.0 |
| | Groundnut Oil | 14 | 7.0 |
| 9 | **Frequency of Vegetable Consumption Per Day** | | |
| | Less than daily | 103 | 51.5 |
| | Daily | 97 | 45.5 |
| 10 | **Type of Milk Consumed** | | |
| | Whole Milk | 95 | 47.5 |
| | Low Fat Milk | 89 | 44.5 |
| | Skim Milk | 16 | 8.0 |
| 11 | **Habit of consuming Tea/Coffee** | | |
| | Yes | 127 | 63.5 |
| | No | 73 | 36.5 |

*Table 2: Distribution of Body Weight Categories*

| S.no | Body Weight | Frequency | Percentage (%) |
|------|-------------|-----------|----------------|
| 1 | Underweight | 28 | 13.7% |
| 2 | Normal weight | 25 | 9.3% |
| 3 | Over weight | 78 | 99.4% |
| 4 | Obese | 69 | 93.1% |

*Table-3 Frequency and percentage distribution of dietary intake, physical activity, alcohol and smoking among adults*

| S.no | Variables | Frequency | Percentage% |
|------|-----------|-----------|-------------|
| 1 | **Dietary Intake** | | |
| | Excellent, well balanced diet | 11 | 5.5 |
| | Good, need some modification | 189 | 94.5 |
| | Poor dietary intake | 0 | 0 |
| 2 | **Physical Activity at Workplace** | | |
| | Light | 173 | 86.5 |
| | Moderate | 22 | 11 |
| | Heavy | 5 | 2.5 |
| 3 | **Physical Activity at Home** | | |
| | Light | 144 | 72 |
| | Moderate | 56 | 28 |
| | Heavy | 0 | 0 |
| 4 | **Alcoholism** | | |
| | Alcoholic | 60 | 30 |
| | Non-alcoholic | 140 | 70 |
| 5 | **Smoking** | | |
| | Smoker | 11 | 5.5 |
| | Ex-smoker | 45 | 22.5 |
| | Never smoker | 144 | 72 |

*Table-4 Correlation between Body fat and Dietary Intake, Physical activity, Alcohol and Smoking*

| S.no | Variables | Mean | r- value |
|------|-----------|------|----------|
| 1 | Body Fat | 2.94 | 0.43 |
| | Dietary Intake | 1.96 | |
| 2 | Body Fat | 2.94 | 0.39 |
| | Physical activity at workplace | 1.16 | |
| | Physical activity at home | 1.28 | 0.65 |
| 3 | Body Fat | 2.94 | 0.83 |
| | Alcohol | 1.70 | |
| 4 | Body Fat | 2.94 | 0.84 |
| | Smoking | 2.67 | |

*Table-5 Association of body fat with demographic variables*

| S.no | Demographic Variables | BMI Classification | | | | df | X2 & P value |
|------|----------------------|--------------------|--|--|--|----|--------------|
| | | Under Weight | Norm al Weight | Over weight | Obese | | |
| | Age in years | | | | | | |
| 1 | 18-25 | 3 | 4 | 5 | 2 | 6 | 13.71 P-0.05 S* |
| | 26-46 | 18 | 10 | 32 | 28 | | |
| | 47-59 | 7 | 11 | 41 | 39 | | |
| | Gender | | | | | | |
| 2 | Male | 24 | 20 | 75 | 65 | 3 | 8.14 P-0.04 S* |
| | Female | 4 | 5 | 3 | 4 | | |
| | Education | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | Illiterate | 3 | 3 | 3 | 6 | 12 | 9.35 |
| | Primary Education | 8 | 4 | 13 | 11 | | P-0.98 |
| | Higher Secondary Education | 6 | 8 | 14 | 15 | | NS* |
| | Under Graduate | 10 | 9 | 46 | 36 | | |
| | Post Graduate | 1 | 1 | 2 | 1 | | |
| 4 | **Marital status** | | | | | | |
| | Married | 20 | 20 | 45 | 48 | 9 | 5.71 |
| | Unmarried | 7 | 4 | 31 | 20 | | P-0.91 |
| | Widow | 1 | 1 | 2 | 1 | | NS* |
| | Divorce | 0 | 0 | 0 | 0 | | |
| 5 | **Type of occupation** | | | | | | |
| | Skilled | 7 | 5 | 20 | 22 | 9 | 41.5 |
| | Unskilled | 3 | 2 | 10 | 12 | | P-0.001 |
| | Semi-skilled | 5 | 3 | 20 | 15 | | S* |
| | Shop Keeper/Clerk | 13 | 15 | 28 | 20 | | |
| 6 | **Perceived Health Status** | | | | | | |
| | Good | 13 | 13 | 30 | 36 | 6 | 0.99 |
| | Average | 12 | 10 | 40 | 28 | | P-2.55 |
| | Bad | 3 | 2 | 8 | 5 | | NS* |
| 7 | **Type of Physical activity** | | | | | | |
| | Good | 5 | 5 | 12 | 14 | 6 | 1.93 |
| | Moderate | 15 | 13 | 41 | 30 | | P-0.97 |
| | Vigorous | 8 | 7 | 25 | 25 | | NS* |
| 8 | **Type of oil used for cooking** | | | | | | |
| | Olive oil | 3 | 2 | 4 | 4 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Coconut oil | 6 | 6 | 11 | 7 | | 14.7 |
| | Saturated oil | 7 | 7 | 10 | 9 | 12 | P-0.98 |
| | Sunflower oil | 10 | 9 | 46 | 45 | | NS* |
| | Groundnut oil | 2 | 1 | 7 | 4 | | |
| 9 | **Frequency of vegetables consumption……Per day** | | | | | | |
| | Less than daily | 16 | 15 | 43 | 29 | | 3.96 |
| | Daily | 12 | 10 | 35 | 40 | 3 | P-0.95 |
| | | | | | | | NS* |
| 10 | **Type of Milk consumed** | | | | | | |
| | Whole Milk | 15 | 13 | 25 | 42 | | |
| | Low fat milk | 11 | 11 | 44 | 23 | | 16.8 |
| | Skim milk | 2 | 1 | 9 | 4 | 6 | P-0.01 |
| | | | | | | | S* |
| 11 | **Habit of consuming tea/coffee** | | | | | | |
| | Yes | 20 | 20 | 38 | 49 | | |
| | No | 8 | 5 | 40 | 20 | 6 | 12.7 |
| | | | | | | | P-0.05 |
| | | | | | | | S* |

**\*** S- Significant NS- Non-significant

*Table - 6 Association of body fat with dietary intake, physical activity, alcohol and smoking*

| S.no | Variables | BMI Classification | | | | df | X2 |
|---|---|---|---|---|---|---|---|
| | | Under weight | Normal weight | Over weight | Obese | | P value |
| 1 | **Dietary Intake** | | | | | | |
| | Excellent ,Well balanced diet | 2 | 1 | 5 | 3 | 6 | 84.5 P-0.005 S* |
| | Good, Need some modification | 26 | 24 | 73 | 66 | | |
| | Poor dietary Intake | 0 | 0 | 0 | 0 | | |
| 2 | **Physical activity at work place** | | | | | | |
| | Light | 20 | 19 | 70 | 64 | 6 | 10.1 |
| | Moderate | 7 | 5 | 6 | 4 | | P-0.001 |
| | Heavy | 1 | 1 | 2 | 1 | | S* |
| 3 | **Physical activity at Home** | | | | | | |
| | Light | 20 | 20 | 55 | 49 | 6 | 0.916 |
| | Moderate | 8 | 5 | 23 | 20 | | P-0.99 |
| | Heavy | 0 | 0 | 0 | 0 | | NS* |
| 4 | **Alcohol** | | | | | | |
| | Alcoholic | 8 | 4 | 34 | 14 | 3 | 17.9 P-0.005 S* |
| | Non- Alcoholic | 20 | 21 | 44 | 55 | | |
| 5 | **Smoking** | | | | | | |
| | Smoker | 2 | 1 | 4 | 4 | 6 | 18.4 |
| | Ex-Smoker | 8 | 6 | 17 | 14 | | P-0.005 |
| | Never Smoker | 18 | 18 | 57 | 51 | | S* |

* S- Significant NS- Non-significant