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Lifestyle at the core: Unpacking the roots of obesity and overweight

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Abstract

Background: The global rise in the overweight and obesity is a major public health issue. Obesity has been doubled since 1990s. Overweight can be defined as having BMI ≥ 25 kg/m^2 and obesity as a BMI ≥30kg/m^2. In Kerala, NFHS data showing increasing obesity rate higher than the national average. According to the WHO, in 2022 43% of the global adult population were overweight whereas 16% were obese. The study explores the prevalence and need for the awareness and intervention to step down from obesity.

Objective: To study the prevalence of overweight and obesity among adults and to assess the lifestyle factors contributing to these conditions.

Materials and methods: A cross-sectional study was conducted to assess the prevalence of overweight and obesity and data were collected from various sites and colleges of Pathanamthitta district. The sample size of the study was 729 and the duration of study was approximately about 6 months (November 2023- April 2024) . The participants were asked to fill out the questionnaire with their knowledge, then conducted an awareness class after 1-month similar questionnaire is provided to evaluate the progress of the research participants. Questionnaires were filled with face-to-face interviews with the willing research participant.

Results: The influence of lifestyle factors on obesity and overweight among adults were assessed and it showed physical activity levels slightly improved, especially among the overweight group. A family history of obesity was noted in 37.78% of obese individuals, indicating a possible genetic link. Counselling positively influenced lifestyle and activity habits.

Conclusion: The result of the study points out the lack of physical activity and improper dietary pattern has act as major factor to being overweight and obese. The sedentary lifestyle practices should be avoided It is important to have future developmental and managerial strategies to prevent from overweight and obesity.

Keywords: Obesity; Overweight; Prevalence; Adults; Body mass Index

1. Introduction

Obesity is the excessive accumulation of fat that harms health, with increasing global incidence. It is a serious Public health concern, impacting both physical and mental well-being. Abdominal obesity, identified by waist circumference, has gained attention since 1997 by the World Health Organization as a key risk marker. Lifestyle factors, including poor diet, lack of physical activity, and inadequate sleep, are major contributors to obesity and overweight. Diets high in processed foods, sugars, and unhealthy fats lead to an excess of calories, promoting fat accumulation. A sedentary lifestyle, characterized by minimal physical activity and prolonged sitting, further slows metabolism, making it difficult

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to maintain a healthy weight. Regular physical activity, such as aerobic exercises, helps burn calories, build muscle, and reduce fat. Inadequate sleep disrupts metabolic processes, increases hunger hormones, and promotes overeating. Chronic stress can lead to emotional eating and fat storage, particularly in the abdominal area. Additionally, environmental factors like limited access to healthy food options or safe spaces for exercise play a role in obesity rates. Adopting healthier eating habits, engaging in regular exercise, managing stress, and ensuring adequate sleep are essential steps to prevent and manage obesity and reduce the risk of related health conditions. This study aims to assess the influence of lifestyle factors on obesity and overweight in adults residing in Thiruvalla, using both BMI and lifestyle habits as key factors. By identifying these disparities, the study seeks to provide valuable insights that can help develop strategies to improve patients' lifestyles and raise awareness about various diseases that may result from obesity.

Objective

The objective of this study is to assess how lifestyle factors, specifically diet, sleep, and exercise, contribute to obesity and overweight in adults aged from 18-59 years of age in Thiruvalla taluk, Pathanamthitta district Kerala.

2. Methodology

This cross-sectional study aimed to assess the influence of lifestyle factors on obesity and overweight among adults in Pathanamthitta district, India. Conducted from November 2023 to April 2024, with 729 participants, the study was approved by the Institutional Review Board of Nazareth College of Pharmacy. Participants aged 18-60 were included, while pregnant, lactating women, and individuals unwilling to participate were excluded. Data were collected using a structured questionnaire from schools and colleges in the district. The study began with an awareness program focusing on obesity-related risks and lifestyle changes. Participants completed a pre-assessment questionnaire, followed by a similar one month later to assess changes in knowledge and behavior. Statistical analysis of the data determined obesity prevalence and explored the long-term health complications related to physical activity and dietary patterns. The study provides valuable insights into the impact of lifestyle choices on obesity and highlights the need for targeted health interventions.

3. Results

3.1. Distribution of gender

Table 1 Distribution of Gender in study participants

Sl.no	Gender	Frequency	Percentage
1	MALE	162	50%
2	FEMALE	162	50%
	Total	324	100%

In our study, both Male and Female individuals were equally concluded where both had 50% distribution between the both group and hence produced no significance in Prevalence of Obesity and Overweight.

3.2. Distribution of age group

Table 2 Distribution of Age in Study Participants

Sl.no	Age group	Frequency	Percentage(%)
1	18-25	153	47.22%
2	26-33	25	7.73%
3	34-41	18	5.55%
4	42-49	28	8.64%
5	50-58	78	24.07%
6	ABOVE 58	22	6.79%
	TOTAL	324	100%

In our study, 324 participants fell under the category of overweight and obesity and in this 47.22 % belonged to the age group of 18-25, 7.73 % come under category of 26-33, 5.55% belong to category of 34-41, 8.64% come under 42-49, 24.07 % come under 50-58 age group.

3.3. Distribution of social habits

Table 3 Distribution of social habits in overweight and obese population

Sl.no	Response	Social Habits	Before Counselling	Percentage	After Counselling	Percentage
1	Over weight	Alcohol	26	10.86%	23	9.78%
		Smoking	8	3.34%	6	2.57%
		Drug substances	2	0.8%	2	0.85%
		No social habits	204	85%	204	86.8%
2	Obesity	Alcohol	17	16.83%	15	16.85%
		Smoking	3	2.97%	2	2.24%
		Drug substances	9	8.91%	0	0%
		No social habits	72	71.29%	72	80.89%

The above graph compares the participant's social habits before and after counsellin, It shows that after the counselling session , the majority of them have chosen to reduce their social habits. Alcohol use slightly declined among overweight (10.86% to 9.78%) and remained stable in obese individuals (16.83% to 16.85%). Smoking reduced in both groups, and drug use remained the same ."No social habits" increased overall—85% to 86.8% (overweight) and 71.29% to 80.89% (obesity)—reflecting healthier lifestyle trends.

3.4. Do you get at least 30 minutes of physical activity ?

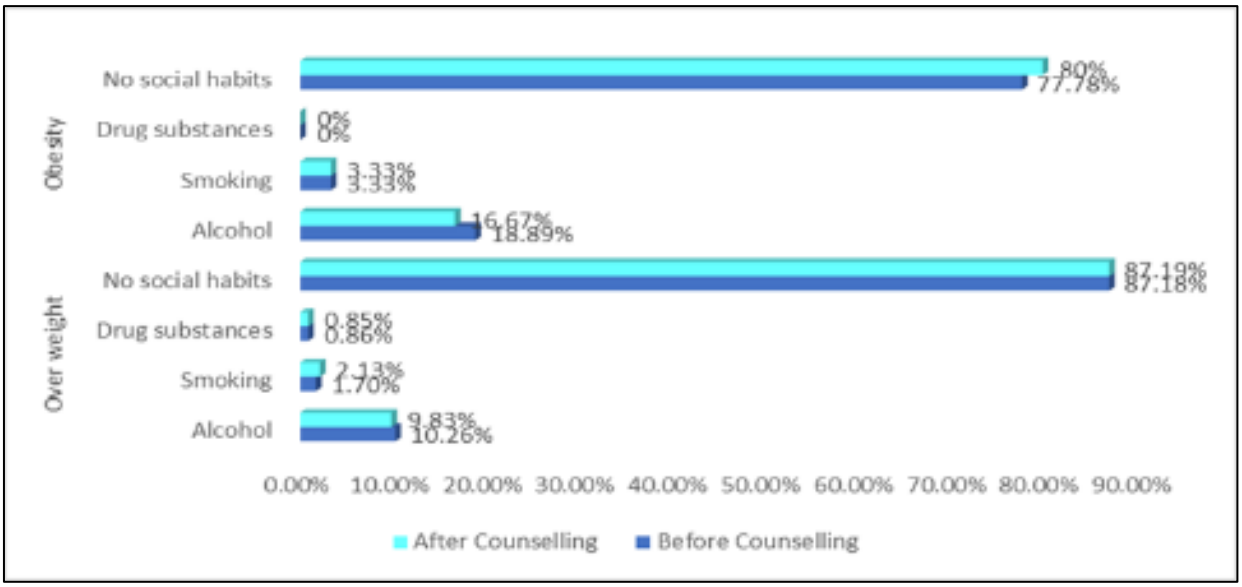

Figure 1 Graphical representation of number of individual's involved in physical activity

Table 4 Distribution of physical activity among study participant

Sl.no		Response	Before Counselling	Percentage	After Counselling	Percentage
1	Overweight	Yes	73	31.19%	75	32.46%
		No	104	44.44%	94	40.69%
		Sometimes	57	24.37%	62	26.85%
2	Obesity	Yes	23	25.55%	22	25.88%
		No	45	50%	37	43.54%
		Sometimes	22	24.45%	26	30.58%

The comparison of getting physical activity before and after counselling has been depicted in the graph above. After counselling, overweight reports rose from 31.19% to 32.46%, and "Sometimes" from 24.37% to 26.85%. Obesity denial dropped from 50% to 43.54%, while "Sometimes" rose from 24.45% to 30.58%, indicating increased awareness of physical activity for weight issues post-counselling.

3.5. Does anyone in your family have obesity

Table 5 Tabular Distribution of Familial History of Overweight and Obesity

Sl.no		Response	Frequency	Percentage
1	Over weight	Yes	84	35.89%
		No	150	64.11%
2	Obesity	Yes	34	37.78%
		No	56	62.22%

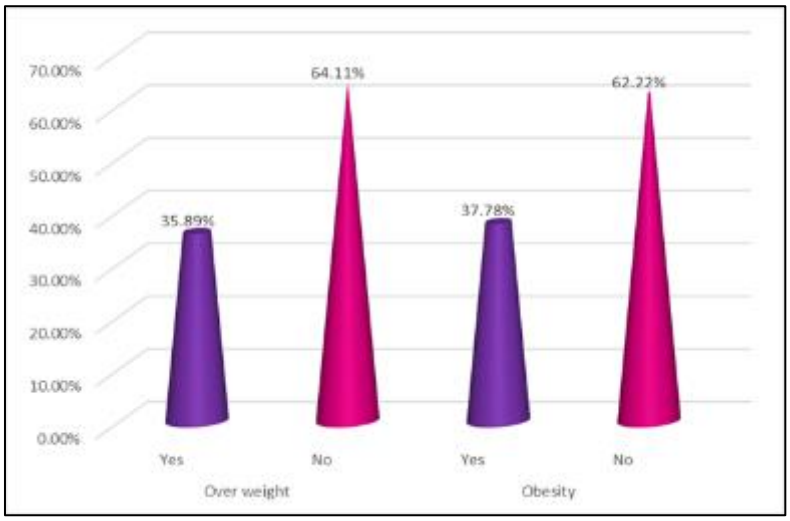

Figure 2 Distribution of individuals with a family history of obesity and overweight

In our study, it was found that in obese population 37.78% have familial history of obesity ,62.22% does not have familial history of obesity whereas in overweight population 35.89% have familial history of obesity,64.11% does not have familial history of obesity.

3.6. Distribution of individuals who take junk food and homemade food on a daily basis

Table 6 Tabular Distribution of individuals who take junk and homemade food on daily basis

Sl No			Frequency	Percentage
1.	Overweight	Junk Food	133	56.83%
		Home Food	101	43.17%
2.	Obesity	Junk Food	61	67.77%
		Home Food	20	22.23%

In our study, dietary habits were examined in relation to overweight and obesity. Among the overweight participants, a significant proportion (56.83%) reported regularly consuming junk food, while 43.17% primarily consumed home-cooked meals. The trend was even more pronounced among the obese participants, with 67.77% indicating a preference for junk food, compared to only 22.23% who consumed home food regularly. These findings suggest a strong association between frequent junk food consumption and increased prevalence of obesity and overweight.

4. Discussion

In our study, conducted among 729 participants, the results revealed that 72.23% of subjects were classified as overweight, while 19.75% were diagnosed as Obese Class I, 6.48% as Obese Class II, and 1.54% as Obese Class III, based on their BMI. These findings align with the global analysis conducted by Mariel M. Finucane, Gretchen A. Stevens, and colleagues (2011), which analyzed data from 9.1 million participants across various surveys and concluded that the global prevalence of overweight (BMI 25-29.9 kg/m^2) exceeds that of obesity (BMI ≥ 30 kg/m^2).

Regarding gender distribution, our study found that overweight was more prevalent among females, while obesity was more common in males. This pattern is consistent with the findings of a study conducted by TLS Visscher et al. (2002) in the Netherlands, which observed an increase in obesity prevalence between 1976 and 1997, with a more pronounced rise among men compared to women.

In terms of lifestyle factors, 18.89% of the obese participants reported consuming alcohol before the counselling session, a figure that slightly decreased to 16.67% after the session. This aligns with a study by Uraiporn Booranasuksakul et al. (2019), which examined the correlation between alcohol consumption and BMI in university students. The study found that 29.87% of heavy drinkers had a direct relationship between increased alcohol consumption and higher BMI, suggesting that alcohol consumption could contribute to weight gain.

Our survey also revealed that 25.55% of obese participants engaged in at least 30 minutes of physical activity before counselling, with a slight increase to 25.88% after the session. These findings mirror the results from a study by Martin Lindstrom et al. (2003), which analyzed leisure-time physical activity and obesity trends over time. Their study found an increase in obesity prevalence among both males (from 4.6% to 11.4%) and females (from 6.1% to 9.8%) between 1986 and 1994, highlighting the growing importance of physical activity in managing obesity. In terms of perceptions about the causes of obesity, our study found that the majority of overweight participants (44.44% before counselling, 40.69% after) identified *physical inactivity* as the main contributing factor. On the other hand, a majority of obese participants believed *diet* was the primary cause, with 61.22% expressing this belief before counselling and 66.66% after. This aligns with the findings of Teshale Darebo et al. (2019), who found that 21.6% of 531 study participants attributed low physical activity to overweight and obesity, alongside dietary patterns that involved frequent intake of sweets, meat, and eggs.

Regarding smoking habits, 3.34% of obese participants were smokers before the counselling session, which decreased to 2.57% afterward. This reduction in smoking is supported by the study conducted by Shadrach Rache et al. (2017), which found that heavy smoking was associated with a 60% increase in the likelihood of obesity.

Additionally, 56% of participants in our survey reported having a family history of obesity, and these individuals were significantly more likely to be at risk of becoming obese. This finding is in line with the study by PKE Magnusson & F. Rasmussen et al. (2002), which found that 36% of first-degree relatives of obese individuals are more prone to obesity, emphasizing the genetic component of the condition.

In our study, a higher intake of junk food was strongly associated with both overweight and obesity. Among the overweight group, 56.83% consumed junk food, compared to 43.17% who preferred home-cooked meals. This trend was even more prominent in the obese group, where 67.77% consumed junk food and only 22.23% relied on home food. In contrast, healthier dietary choices such as reduced red meat and increased vegetable intake showed improvement post-counselling. Red meat consumption among overweight participants dropped from 110 to 59, and from 46 to 13 among obese participants. These results support the findings of a meta-analysis by M.H. Rouhani et al. (2014), which concluded that higher red and processed meat consumption is linked to increased obesity risk. White meat consumption also declined after counselling—from 155 to 105 in overweight individuals and from 66 to 43 in obese participants. A 2023 study by Jinan Almajed et al. noted that high white meat intake in obese individuals was positively associated with Bacteroides, while lower intake in non-obese individuals correlated with Actinobacteria.

Vegetable consumption increased slightly post-counselling. Among the overweight group, it rose from 206 to 213, and in the obese group, from 72 to 79. These findings align with the study by Jihun You et al. (2016), which found that fruit and vegetable intake partially mediated the relationship between low socioeconomic status and obesity in adolescent girls.

5. Conclusion

The study examined the distribution of gender, age group, social habits, physical activity, and familial history in participants with overweight and obesity.

- **Gender Distribution**: The study showed an equal distribution between male and female participants, each accounting for 50% of the total sample. This balance suggests no significant gender difference in the prevalence of obesity and overweight in this study.
- A**ge Group Distribution**: The majority of participants (47.22%) fell within the 18-25 age group, indicating that younger individuals may be more prone to overweight and obesity. The study also revealed that the prevalence of overweight and obesity decreased with age, with the 50-58 age group accounting for 24.07% of participants, and those above 58 accounting for only 6.79%.
- **Social Habits**: A notable reduction in negative social habits such as alcohol consumption, smoking, and drug use was observed after counselling. This suggests that the counselling had a positive impact in encouraging healthier lifestyle choices among participants.
- **Physical Activity**: The comparison of physical activity levels before and after counselling revealed a slight improvement in both overweight and obese populations. Among the overweight group, 31.19% engaged in physical activity before counselling, increasing to 32.46% after. For the obese group, 24.45% engaged in physical activity before counselling, with a slight increase to 30.58% post-counselling. This highlights a small but positive shift towards more physical activity following counselling.
- **Familial History**: The study found that a significant portion of the obese population (37.78%) had a familial history of obesity, compared to 35.89% in the overweight group. This suggests that familial history may play a role in the development of obesity, though it does not fully account for the prevalence, as a substantial proportion of participants did not report a familial history of obesity.

Overall, the findings suggest that both gender and familial history do not show a significant difference in the prevalence of overweight and obesity in this population. However, younger individuals, particularly in the 18-25 age group, appear to be more affected. Additionally, counselling interventions seem to have a positive effect on reducing harmful social habits and increasing physical activity levels.

6. Conclusion

The study found equal representation of males and females, with both groups showing similar rates of obesity and overweight. The highest prevalence was in the 18-25 age group (47.22%), with a decrease in older age groups. After counselling, participants showed a reduction in unhealthy social habits like alcohol and smoking. Physical activity levels also slightly increased, particularly in the overweight group. A familial history of obesity was observed in 37.78% of the obese population, suggesting a genetic link, though many did not have a family history. Overall, counselling appeared to positively impact lifestyle habits and physical activity.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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