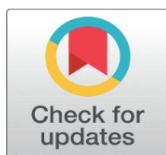


# IMPACT OF NUTRITION EDUCATION ON JUNK FOOD CHOICES AMONG TEENAGERS

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## ABSTRACT

**Background:** Adolescence is a critical stage of growth and development during which adequate nutrition supports physical health, growth, immunity and long-term disease prevention. Unhealthy dietary practices, frequent junk-food and fast-food consumption, physical inactivity and sedentary lifestyle patterns may contribute to overweight, obesity, gastric problems and other diet-related health risks. Fast food is commonly preferred by teenagers because of taste, convenience, attractive presentation and easy availability; however, many fast-food items are high in calories, fat, salt and sugar and have comparatively low nutritional value.

**Objective:** The present study aimed to assess the impact of nutrition education on junk-food and fast-food choices among adolescents. The study also examined nutrition awareness, food preferences, body mass index status and changes in healthy food choices after counselling.

**Methods:** The study was conducted among 100 adolescents selected from schools of ATS, Gadarpur, Udham Singh Nagar, Uttarakhand. A structured questionnaire was used to collect information on fast-food choices, eating habits, frequency of fast-food consumption, nutrition education awareness and preference for healthy foods. Anthropometric measurements were recorded to assess nutritional status using body mass index. Nutrition education and counselling were provided to adolescents and their mothers through interactive guidance, pamphlets, healthy recipe booklets and diet-related educational materials. Data were summarized using frequencies and percentages and presented through tables and figures.

**Results:** Before counselling, pizza was the most commonly preferred fast food (43%), followed by burgers (27%), Chinese food (14%) and sandwiches (13%). Only 3% of adolescents reported healthy food choices, and no adolescents reported fruits and vegetables as a preferred choice before counselling. BMI assessment showed that 30% of adolescents were overweight and 35% were obese, while 24% were in the normal BMI category and 11% were underweight. After counselling, preferences for fast-food items decreased, whereas healthy food choices increased. Pizza preference reduced from 43% to 25%, burger preference from 27% to 12%, Chinese food from 14% to 9% and sandwich preference from 13% to 5%. In contrast, healthy food choices increased from 3% to 27%, and fruits and vegetables increased from 0% to 22%.

**Conclusion:** The findings indicate that nutrition education and counselling can positively influence dietary awareness and food choices among adolescents. School-based nutrition education, counselling of mothers, nutrition pamphlets and healthy recipe booklets may help adolescents reduce frequent fast-food consumption and adopt healthier dietary practices.

**Keywords:** Nutrition education, Fast food, Junk food, Food choices, BMI, Adolescents, Counselling

## 1. INTRODUCTION

Adolescence is a highly sensitive and important stage of human growth and development. During this period, rapid physical growth, hormonal changes, psychological development, cognitive maturation and lifestyle formation take place. Therefore, adequate nutrition is essential for maintaining health, supporting growth, improving immunity, enhancing learning capacity and preventing future diet-related health problems [1,2]. A balanced and nutritionally adequate diet helps adolescents maintain healthy body weight and supports overall well-being. In contrast, poor dietary habits, low intake of fruits and vegetables, excessive consumption of energy-dense foods, physical inactivity and sedentary lifestyle patterns may increase the risk of overweight, obesity, gastric problems and non-communicable diseases in later life [2,3].

In recent years, eating habits among adolescents have changed considerably because of urbanization, changing family lifestyles, peer influence, food marketing, easy availability of ready-to-eat foods and preference for convenience-based eating. The traditional concept of good food, which includes home-prepared, nutritious, balanced and health-supportive meals, is increasingly being replaced by the modern culture of fast food and junk food [4]. Fast food generally refers to commercially prepared food items designed for quick preparation, rapid service, attractive presentation, easy availability and immediate consumption. These foods are commonly preferred by teenagers because of taste, convenience, low preparation time, affordability, social acceptance and attractive advertising. However, many fast-food and junk-food items contain high amounts of calories, fat, saturated fat, cholesterol, salt, sugar and refined carbohydrates, while having comparatively low nutritional value, dietary fibre, vitamins, minerals and protective food components [2,5].

The growing popularity of fast food among adolescents has become an important public health concern. Frequent fast-food consumption may replace healthier food choices such as fruits, vegetables, pulses, whole grains, milk products and home-cooked balanced diets. Earlier studies have reported that frequent fast-food intake is associated with poorer diet quality, higher energy intake and unhealthy weight gain during adolescence and early adulthood [5,6]. Adolescents often consume fast food not only to satisfy hunger but also for taste, enjoyment, peer-group influence and social interaction. This pattern becomes more concerning when adolescents have limited knowledge about nutrition education, healthy food choices and the harmful effects of repeated junk-food consumption.

Body mass index is commonly used as a practical anthropometric indicator for assessing nutritional status. It helps classify individuals into underweight, normal weight, overweight and obese categories. Although BMI does not directly measure body fat, it is widely used as a simple screening tool for evaluating weight-related health risk at the population level [3]. In adolescents, excessive intake of energy-dense fast foods, combined with reduced physical activity, may contribute to unhealthy BMI status. At the same time, undernutrition and overnutrition may coexist within the same population, reflecting the double burden of malnutrition observed in many developing communities [3].

Nutrition education is an important strategy for improving dietary awareness and promoting healthy food choices among adolescents. It includes planned educational activities, counselling, awareness sessions, printed educational materials, practical dietary guidance and behaviour-oriented communication that encourage the voluntary adoption of healthy eating practices [7]. Effective nutrition education helps adolescents understand the importance of balanced diets, portion control, fruits and vegetables, healthy recipes and the harmful effects of excessive fast-food consumption. School-based nutrition education is especially useful because schools provide a structured environment where adolescents can be guided toward healthier dietary behaviour [8,9].

Family involvement, particularly mothers' participation, plays an important role in shaping adolescent food choices. The dietary habits of adolescents are strongly influenced by household food availability, family meal patterns, parental awareness, food preparation methods and the type of meals served at home. Mothers often contribute directly to meal planning, food preparation and the development of healthy eating behaviour in children and teenagers. Therefore, nutrition counselling that involves both adolescents and their mothers may be more effective in improving food choices and reducing dependence on fast food and junk food.

The present study was conducted to assess the impact of nutrition education on junk-food and fast-food choices among teenagers. The study focused on fast-food preferences, nutrition education awareness, BMI status and changes in food choices after counselling. It also emphasized nutrition counselling for mothers, distribution of educational pamphlets and healthy recipe booklets to promote balanced diets, fruits, vegetables and healthier food choices. By

comparing pre-counselling and post-counselling dietary responses, this study provides practical evidence regarding the role of nutrition education in improving adolescent dietary behaviour and reducing unhealthy fast-food choices [8,10].

## **2. AIM AND OBJECTIVES**

**Aim:** The main aim of the present study was to assess the impact of nutrition education on fast-food and junk-food choices among adolescents, including both boys and girls. The study also evaluated how nutrition counselling, awareness generation and distribution of educational materials influenced adolescents' understanding of healthy food choices, balanced diets and the harmful effects of excessive fast-food consumption.

### **2.1. OBJECTIVES**

- To assess fast-food and junk-food choices among adolescents, including both boys and girls.
- To evaluate the level of nutrition education awareness among adolescents before counselling.
- To identify the effect of nutrition education and counselling on adolescents' fast-food choices after counselling.
- To examine the role of nutrition counselling in promoting healthy dietary practices among adolescents and their mothers.
- To distribute nutrition education pamphlets, healthy recipe booklets and diet-related guidance materials to adolescents and their mothers.
- To encourage mothers to include green vegetables, fruits and attractive nutritious foods in the daily diet of their children.

## **3. METHODOLOGY**

### **3.1. STUDY DESIGN**

The present study was conducted as a school-based educational intervention study to assess the impact of nutrition education on fast-food and junk-food choices among adolescents. The study evaluated baseline food preferences, level of nutrition education awareness, body mass index status and changes in dietary choices after nutrition counselling. Both adolescent boys and girls were included, and counselling was also extended to their mothers to promote healthy dietary practices at the family level.

### **3.2. STUDY AREA**

The study was carried out in schools of ATS, Gadarpur, Udham Singh Nagar, Uttarakhand. The selected study setting provided an appropriate school-based environment for assessing adolescent food choices, nutrition awareness and the effect of counselling-based nutrition education.

### **3.3. STUDY PARTICIPANTS AND SAMPLE SIZE**

A total of 100 adolescents were included in the study. Mothers of the selected adolescents were also involved through interview-based interaction and nutrition counselling. Their participation was considered important because mothers play a key role in food selection, meal preparation and the development of healthy dietary habits among children and adolescents.

### **3.4. SAMPLING METHOD**

The adolescents were selected randomly from the selected schools. The random selection approach was used to include both boys and girls and to obtain information regarding fast-food choices, nutrition education awareness and dietary behaviour.

### 3.5. DATA COLLECTION TOOL

A structured questionnaire was used as the primary data collection tool. The questionnaire included closed-ended questions for the convenience of respondents. It was designed to collect information on eating habits, frequency of fast-food consumption, commonly preferred fast-food items, nutrition education awareness and preference for healthy foods. In addition, interviews were conducted with mothers to understand their role in adolescent dietary practices and to provide nutrition-related guidance.

### 3.6. ANTHROPOMETRIC ASSESSMENT

Anthropometric measurements were recorded to assess the nutritional status of adolescents. Height and weight were measured, and body mass index was calculated for each participant. BMI was used as a practical indicator to classify adolescents into underweight, normal weight, overweight and obese categories. This assessment helped in understanding the nutritional status of adolescents in relation to their food choices and dietary practices.

### 3.7. NUTRITION EDUCATION AND COUNSELLING INTERVENTION

Nutrition education and counselling were provided to adolescents and their mothers. The counselling focused on the importance of balanced diets, nutritious foods, healthy food choices, fruits, green vegetables and the harmful effects of excessive fast-food and junk-food consumption. Adolescents were educated about the need to reduce unhealthy fast-food choices and increase the intake of healthier foods. Mothers were guided to include green vegetables, fruits, balanced meals and attractive nutritious foods in their children's daily diet. Pamphlets, healthy recipe booklets and diet-related guidance materials were distributed to support healthier dietary practices.

### 3.8. POST-COUNSELLING FEEDBACK

After counselling, feedback was obtained to assess changes in adolescents' food choices and awareness regarding nutrition education. The post-counselling assessment helped identify the effect of nutrition education on fast-food choices, healthy food preferences and awareness levels among adolescents.

### 3.9. DATA ANALYSIS

The collected data were organized in tabular form and analyzed using simple descriptive statistics. Frequencies and percentages were used to present adolescents' fast-food choices, BMI categories, nutrition education awareness and pre-counselling and post-counselling changes. The findings were presented through tables, bar diagrams and graphical representations for clear interpretation.

## 4. FINDINGS

The present study assessed the impact of nutrition education on fast-food choices among adolescents. The findings were analyzed using frequencies and percentages and are presented through tables and figures. The results include baseline fast-food preferences, BMI status, nutrition education awareness before counselling, changes in food choices after counselling and improvement in nutrition education awareness after counselling.

**Table 1**

**Table 1 Food Preferences Mostly Consumed by Adolescents before Nutrition Counselling (n = 100)**

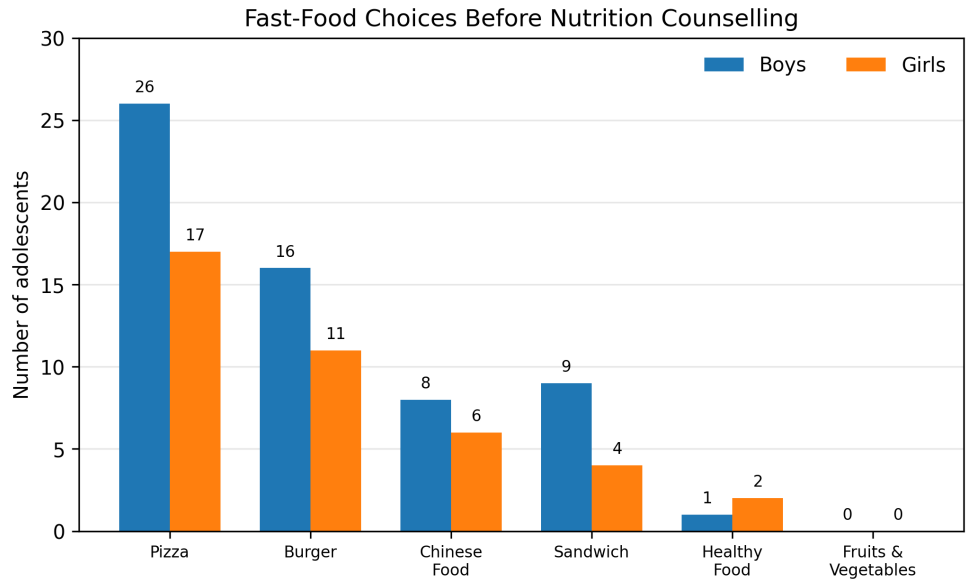
Food preference category	Boys, n	Girls, n	Total adolescents, n	Total (%)
Pizza	26	17	43	43
Burger	16	11	27	27
Chinese food	8	6	14	14
Sandwich	9	4	13	13
Healthy foods	1	2	3	3

Fruits and vegetables	0	0	0	0
<b>Total</b>	<b>60</b>	<b>40</b>	<b>100</b>	<b>100</b>

**Note** Values are presented as frequencies and percentages of the total sample

Before counselling, 43% of adolescents preferred pizza, making it the most common fast-food choice. Burger preference was reported by 27% of adolescents, followed by Chinese food (14%) and sandwiches (13%). Only 3% of adolescents preferred healthy foods, whereas no adolescents selected fruits and vegetables as a preferred choice before counselling (Table 1; Figure 1).

**Figure 1**



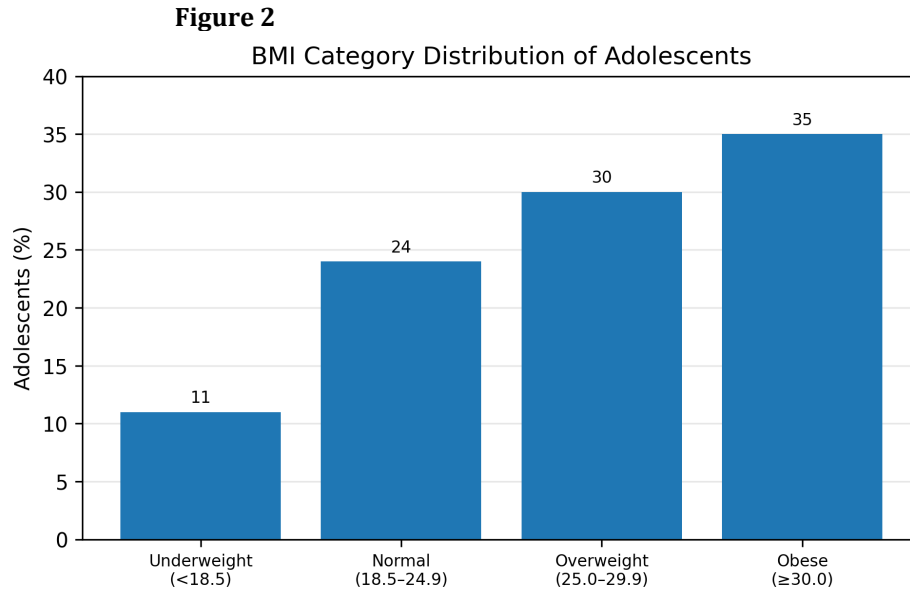
**Figure 1 Fast-Food Choices Mostly Consumed by Adolescents before Nutrition Counselling**

**Table 2**

BMI category	BMI range (kg/m <sup>2</sup> )	Adolescents, n	Total (%)	Mean BMI (kg/m <sup>2</sup> )
Underweight	<18.5	11	11	17.4
Normal weight	18.5–24.9	24	24	23.2
Overweight	25.0–29.9	30	30	27.6
Obese Grade I–III	≥30.0	35	35	32.4
<b>Total</b>	—	<b>100</b>	<b>100</b>	—

**Note.** BMI = Body Mass Index. Values are Presented as Number of Adolescents, Percentage of Total Adolescents and Mean BMI within Each BMI Category

The BMI assessment showed that 11% of adolescents were underweight, 24% were in the normal BMI category, 30% were overweight and 35% were obese. The mean BMI values were 17.4 for the underweight category, 23.2 for the normal category, 27.6 for the overweight category and 32.4 for the obese category. These findings suggest that a considerable proportion of adolescents were overweight or obese (Table 2; Figure 2).



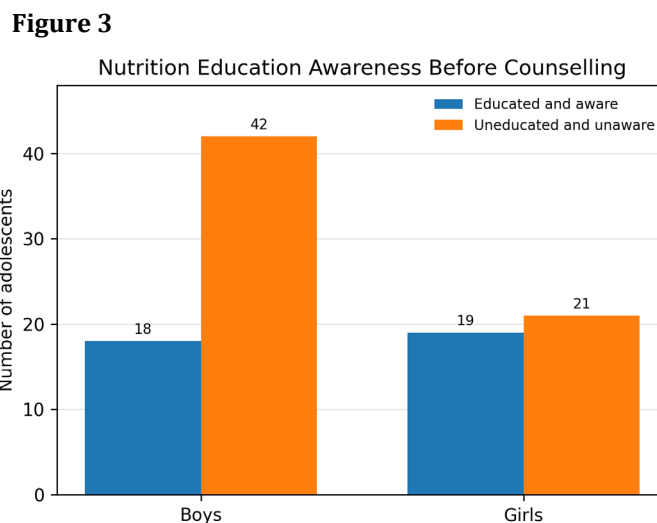
**Figure 2 Percentage Distribution of Adolescents According to BMI Category**

**Table 3**

Table 3 Level of Nutrition Education Awareness Among Adolescents Before Counselling (n = 100)					
Adolescent group	Total students, n	Educated and aware, n	Educated and aware (%)	Uneducated and unaware, n	Uneducated and unaware (%)
Boys	60	18	30	42	70
Girls	40	19	47.5	21	52.5
Total	100	37	37	63	63

**Note** Percentages are calculated within each Adolescent Group

Before counselling, only 37% of adolescents were educated and aware regarding nutrition education, whereas 63% were uneducated and unaware. Among boys, 30% were aware and 70% were unaware. Among girls, 47.5% were aware and 52.5% were unaware. These results indicate the need for structured nutrition education among adolescents (Table 3; Figure 3).



**Figure 3 Nutrition Education Awareness Among Boys and Girls Before Counselling**

**Table 4**

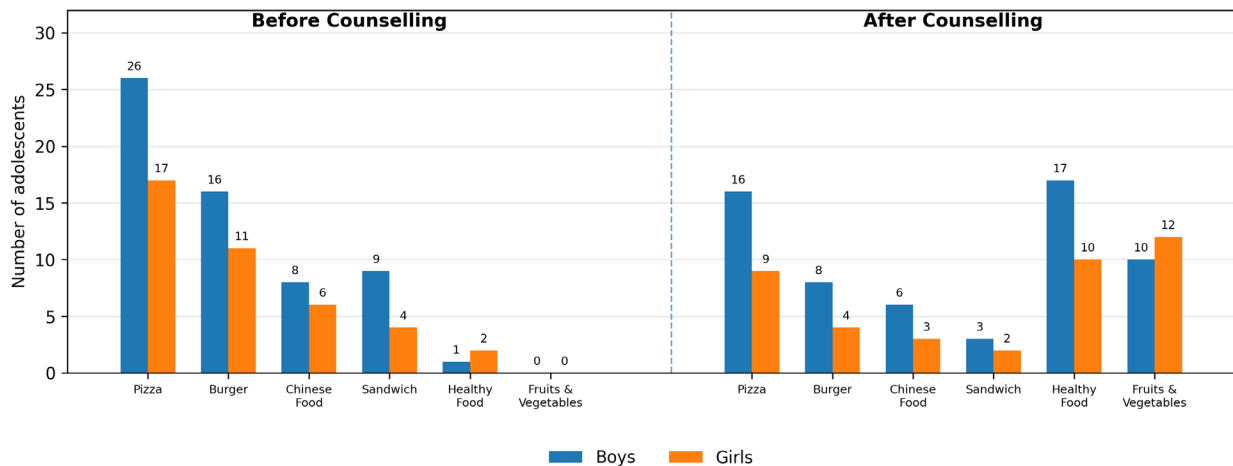
Table 4 Food Preference Pattern of Adolescents Before and After Nutrition Counselling (n = 100)				
Food preference category	Before counselling, n	Before counselling (%)	After counselling, n	After counselling (%)
Pizza	43	43	25	25
Burger	27	27	12	12
Chinese food	14	14	9	9
Sandwich	13	13	5	5
Healthy foods	3	3	27	27
Fruits and vegetables	0	0	22	22
Total	100	100	100	100

**Note.** Values Are Presented as Number of Adolescents and Percentage of the Total Sample. the Table Shows a Reduction in Fast-Food Preferences and an Increase in Healthier Food Choices after Nutrition Counselling

After nutrition counselling, fast-food preferences decreased and healthier food choices increased. Pizza preference decreased from 43% to 25%, burger preference from 27% to 12%, Chinese food from 14% to 9% and sandwich preference from 13% to 5%. In contrast, healthy food choices increased from 3% to 27%, and fruits and vegetables increased from 0% to 22%. These findings indicate a positive dietary shift after nutrition education and counselling (Table 4; Figure 4).

**Figure 4**

Food Preference Pattern Before and After Nutrition Counselling



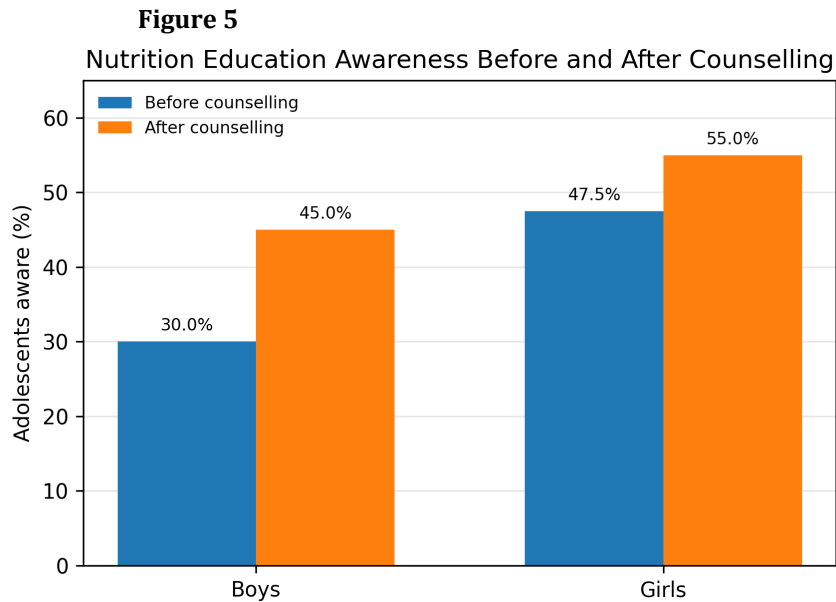
**Figure 4** Food Preference Pattern Among Adolescents Before and After Nutrition Counselling

**Table 5**

Table 5 Nutrition Education Awareness Among Adolescents before and After Counselling (n = 100)					
Adolescent group	Total students, n	Before nutrition education, n	Before nutrition education (%)	After nutrition counselling, n	After nutrition counselling (%)
Boys	60	18	30	27	45
Girls	40	19	47.5	22	55
Total	100	37	37	49	49

**Note.** Percentages are Calculated within Each Adolescent Group. The Value for Girls After Counselling Is 55.0% Because 22 Of 40 Girls Were Aware After Counselling

Before counselling, 37% of adolescents were aware of nutrition education. After counselling, awareness increased to 49%. Among boys, awareness increased from 30% to 45%, while among girls it increased from 47.5% to 55.0%. These findings suggest that nutrition counselling improved awareness among adolescents and supported better understanding of healthy food choices (Table 5; Figure 5).



**Figure 5** Nutrition Education Awareness before and After Counselling Among Boys and Girls

## 5. DISCUSSION

The present study assessed the impact of nutrition education on junk-food and fast-food choices among adolescents. The findings showed that, before counselling, most adolescents preferred commonly available fast-food items such as pizza, burgers, Chinese food and sandwiches, whereas the preference for healthy foods, fruits and vegetables was very low. This pattern reflects the increasing popularity of fast-food culture among teenagers and indicates that taste, convenience, availability, peer influence and attractive presentation may strongly influence adolescent food choices. Similar findings have been reported in previous studies showing that fast-food consumption among children and adolescents is associated with higher energy intake, poorer diet quality and reduced intake of nutritionally beneficial foods [11–13].

The high consumption of fast food before counselling is an important concern because many fast-food items are energy-dense and may contain high levels of fat, salt, sugar and refined carbohydrates. Such dietary patterns may gradually displace healthier food options, including fruits, vegetables, whole grains, pulses and home-prepared balanced meals. In the present study, pizza and burgers were the most preferred fast-food items before counselling, while fruits and vegetables were not reported as preferred choices. This finding suggests that adolescents may have limited practical awareness regarding the nutritional importance of protective foods and balanced diets. Earlier research has also emphasized that frequent fast-food use among adolescents is associated with less healthy food choices and higher fat and energy intake [12,13].

The BMI findings further indicate that a considerable proportion of adolescents were overweight or obese. Although BMI alone cannot establish causality, it provides a useful screening indicator of nutritional status and weight-related health risk. The observed BMI pattern may be associated with frequent consumption of energy-dense fast foods, low intake of healthy foods, limited nutrition awareness and possible sedentary lifestyle practices. Previous evidence also supports the association between fast-food intake, increased energy consumption, poorer nutrient density and unhealthy weight status among children and adolescents [11,13]. Therefore, nutrition education at the adolescent stage is important for preventing poor dietary habits from becoming long-term lifestyle patterns.

Before counselling, nutrition education awareness was limited among adolescents, particularly among boys. This finding highlights a gap in food-related knowledge and suggests the need for structured school-based nutrition education. Adolescents may consume fast food for taste, enjoyment, peer acceptance and convenience without fully understanding its long-term health consequences. Nutrition education can help adolescents understand the difference between hunger satisfaction and nutritional adequacy. It can also improve awareness regarding balanced diets, portion control, healthy recipes, fruits and vegetables and the harmful effects of excessive junk-food intake. School-based nutrition education has been recognized as an effective approach for improving dietary knowledge and promoting healthier food-related behaviour among children and adolescents [17,18].

After counselling, the study observed a positive shift in food choices. Preferences for pizza, burgers, Chinese food and sandwiches decreased, whereas healthy food choices and intake of fruits and vegetables increased. This change suggests that nutrition education and counselling may influence adolescent dietary behaviour by improving awareness and motivating healthier food selection. The improvement observed after counselling supports the importance of educational strategies, practical dietary guidance, pamphlet distribution and healthy recipe booklets in promoting better food choices. Previous systematic reviews have also reported that multicomponent school-based interventions and teaching strategies can improve self-reported dietary behaviour and healthy eating outcomes among school-aged children and adolescents [17,18].

The involvement of mothers in the present study is another important strength. Mothers often play a major role in food selection, meal preparation, household food availability and development of children's eating habits. Counselling mothers about green vegetables, fruits, nutritious recipes and balanced diets may help reinforce the nutrition messages given to adolescents. Family meal patterns and parental food practices have been shown to influence adolescent dietary intake, including fruit and vegetable consumption and overall diet quality [14,15,20]. Therefore, mother-focused counselling may increase the practical impact of nutrition education by improving the home food environment and encouraging healthier alternatives to fast food.

The findings also suggest that adolescent dietary behaviour is influenced by both individual awareness and environmental support. Nutrition education alone may improve knowledge, but sustained behaviour change requires supportive school and family environments. Previous public health literature emphasizes that healthy eating is shaped by multiple settings, including home, school, community and food availability environments [16]. Therefore, school-based education, family involvement, healthy recipe guidance and repeated counselling may be useful for reducing fast-food dependence and encouraging nutritious food choices.

Overall, the study indicates that nutrition education and counselling can contribute to improved awareness and healthier food choices among adolescents. The shift from frequent fast-food preference toward healthy foods, fruits and vegetables after counselling reflects the potential value of structured nutrition education. However, long-term follow-up, repeated awareness sessions and broader school-level nutrition programmes may be required to sustain these improvements. Future studies may also include more detailed dietary assessment, physical activity evaluation and stronger statistical analysis to better understand the relationship between nutrition education, dietary behaviour and BMI outcomes. Evidence from obesity-prevention research supports the importance of diet-related interventions, especially when combined with supportive lifestyle and environmental strategies [19].

## 6. CONCLUSION

Nutrition education is a combination of educational strategies, supported by environmental and behavioural guidance, designed to facilitate the voluntary adoption of healthy food choices and other food- and nutrition-related behaviours that are beneficial for health and well-being. The present study showed that, before counselling, adolescents and their mothers had limited knowledge regarding nutrition, healthy diets, balanced food choices and the harmful effects of excessive fast-food consumption. After nutrition education and counselling, awareness regarding nutrition and healthy diets increased among adolescents and their mothers, and a positive shift was observed toward healthier food choices instead of fast-food preferences.

The study further indicated that nutrition education, dietary counselling, pamphlet distribution and healthy recipe booklets were useful in promoting awareness about balanced diets and nutritious food choices. Healthy recipe booklets provided to mothers helped guide them in preparing healthier diets for their children. Intensive and interactive nutrition education focusing on healthy food selection instead of fast food may therefore play an important role in improving

dietary behaviour among adolescents. Counselling mothers is also important because they contribute directly to meal planning, food preparation and the inclusion of green vegetables, fruits and nutritious foods in their children's daily diet.

Fast food is convenient, tasty, easily available and often preferred by adolescents for enjoyment, peer influence and hunger satisfaction. However, many fast-food items are prepared with low-nourishing ingredients and may contain high amounts of fat, salt, sugar and calories. Because of limited nutrition-related knowledge, many adolescents remain unaware of the possible health consequences of frequent fast-food consumption. Adolescents should therefore be encouraged to reduce fast-food consumption and adopt healthier food choices such as fruits, vegetables, balanced meals and nutritious home-prepared foods.

Overall, the study concludes that nutrition education and counselling are important approaches for improving awareness, promoting healthy dietary practices, reducing dependence on junk food and supporting better health among adolescent boys and girls.

## CONFLICT OF INTERESTS

None.

## ACKNOWLEDGMENTS

None.

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