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Food Consumption and Nutritional Knowledge Assessment in Teenage Adults

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ABSTRACT
A cross-sectional study of adolescent girls and young adults residing in the dorms of Bhimavaram revealed a disturbing pattern in their eating habits. A sample of 729 subjects (17 to 26 years of age) were selected from both rural and urban areas were provided with a questionnaire and their responses were assessed, taking into consideration the unique pattern of life they were leading. Girls living in Bhimavaram are mostly suffering with malnutrition due to improper diet patterns and inadequate consumption of foods. They are found to be consuming 79% carbohydrates, 37.1% proteins and 63.8%fats in their weekly meals. Mostly they are taking carbohydrates and fats rather than proteins and it may lead to nutritional deficiencies and serious health problems can occur such as hair and skin changes, cardiovascular problems, anxiety, depression, headache, back pain, anemia. Mostly now a days in India adolescents and young adults are taking improper diet and less nutrients and it may lead to malnutrition. So, if there is a lack of well- balanced nutrition this may shows the effect in the decrease in quality of life. Nutritional knowledge is important but it is not sufficient to change the diet patterns of the individuals. They are influenced by environmental factors and intra-individual factors, including motivations. As of now people had the nutritional knowledge on food, they are consuming but still they are preferring to take more carbohydrates and less proteins in their diet it is leading to health problems.
Keywords: Nutrient intake, health, hygiene, malnutrition, diet pattern, carbohydrates, proteins, fats, food knowledge.

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INTRODUCTION

Childhood malnutrition, highly widespread in South Asia continues to persist throughout adolescence but little attention has been given to malnutrition of adolescents possibly for the belief that adolescents are a low-risk group [1]. Nutrition is an aid to the foundation for health and development. Poor nutrition is very common in rural areas because due to lack of knowledge to parents about nutritional intake and their benefits.[2] Dietary knowledge and access to resources are important to ameliorate health and nutrition in a sustainable way. Now a days processed foods are consuming widely, this may lead to increase in fat and sugar in body. It also leads to obesity and risk of causing severe diseases such as hypertension, diabetes etc. [2]. Adolescence in rural India, living in poverty are suffering with nutritional deprivation, which affect their growth and development. So, there is a need to improve adolescent nutrition in India.[3] Nutritional problems at adolescence does not show more affect than any other age group, but it shows strong effects on the future growth [4]. Adolescence is the time to learn and adopt healthy habits to avoid many health and nutritional problems later in life [5]. Malnutrition is associated with significant morbidity, mortality, and financial costs in developing countries. It also affects the reproductive outcome in women of child bearing age. Interventions which targeted pregnant mothers, failed to improve the reproductive outcomes and there is an urgent need to improve the nutritional status before a woman becomes pregnant [6]. The assessment of dietary intake and physical activity is of great importance because it can determine the health of the individual and can contribute to the occurrence of disorders such as obesity etc. less or complete absence of physical exercises to the body can cause feelings of anxiety and depression [7]. Sedentary lifestyle has been suggested to slow body metabolism, which affects the body's ability to regulate blood glucose, blood pressure and the process of lipolysis. This can also provide a knowledge on which food they should consume and how they can change their lifestyle to a much better and healthy one [6]. Our

study has been conducted to know the nutrient intake and assessed the knowledge on nutrition and food hygiene practices in 929 adolescents and young adults in the age group of 17 to 26 years.

MATERIAL AND METHODS
Study Site:
A cross-sectional study was performed in Shri Vishnu Educational Society, Bhimavaram.
Study Design:
Our study mainly includes the women of reproductive age (17-26 years). Study conducted from 25 march 2023 to April 30 2023.Data collection was done with the help of a questionnaires which include dietary intake and food knowledge and hygiene practices. Our study includes total of 929 subjects. The main aim of our study is to know the effect of dietary intake and assessed the knowledge on nutrition and food hygiene practices of women.
Dietary intake data collection:
Dietary intake data pattern was determined by using a tool that was previously used Italy[8]. The tool was modified with data consisting of micro nutrients consumption, meal and water consumption, beverages consume along with breakfast, type of food taken for breakfast, frequency of consumption of fruits and vegetables and fast food.
Food knowledge and hygiene practices data collection:
Food knowledge and hygiene practice data collection was determined by using a tool that was previously used by [8]. The pattern was modified with data containing foods that are rich in carbohydrates, proteins, dietary fibers. Hygiene practices include washing hands before eating foods, checking the expiry date of packaged food.

RESULTS AND DISCUSSION
Demographics:
We have conducted our study in college students having age group 18 to 26 years, studying various courses. In this study we have assessed the individuals about their dietary habits, knowledge on the type of food they are consuming and hygiene practices.
Age:
It is found that 68% of individuals are in the age group 18 to 20 years, 27% of girls in the age group of 21-22 years, 3% of girls of 17 years of age, and 2% of 23-26 years of age.
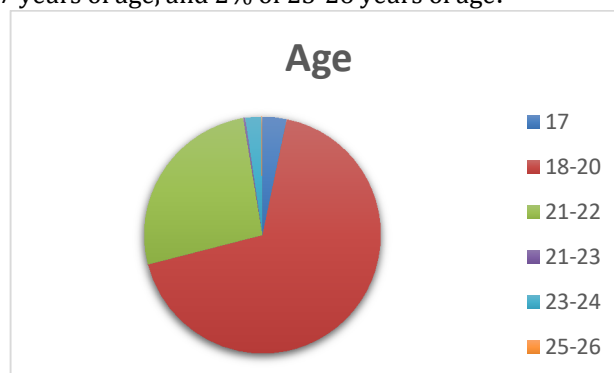

Figure 1: Age distribution.

Education:
It is found that most of the individuals are pursuing B. Tech and B. Pharm (70.5%) followed by students studying Pharm. D (16.6), BDS (1.6), MCA (1.7), B. Sc (1.7), MBBS, MTech/M. Pharm.
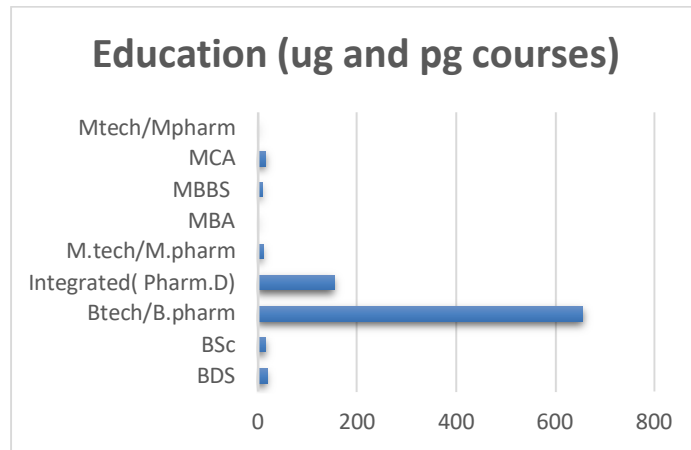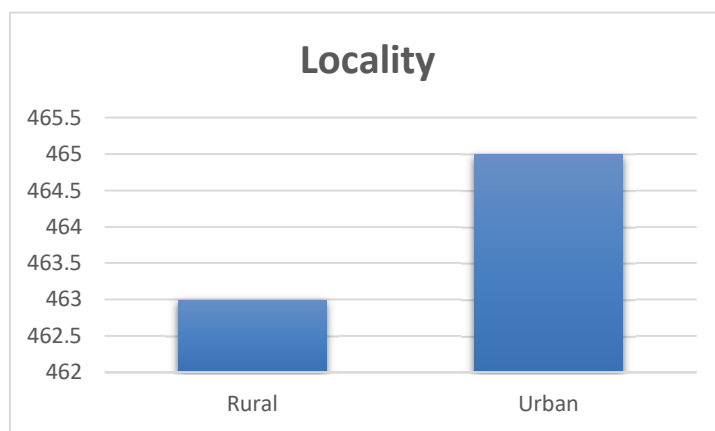
Figure 2: Education

Locality:

Figure 3: Locality

It is found that most of the girls belong to urban area (50.2%) whereas remaining are from rural area (49.8%).

Dietary intake:

Consumption of macronutrients:

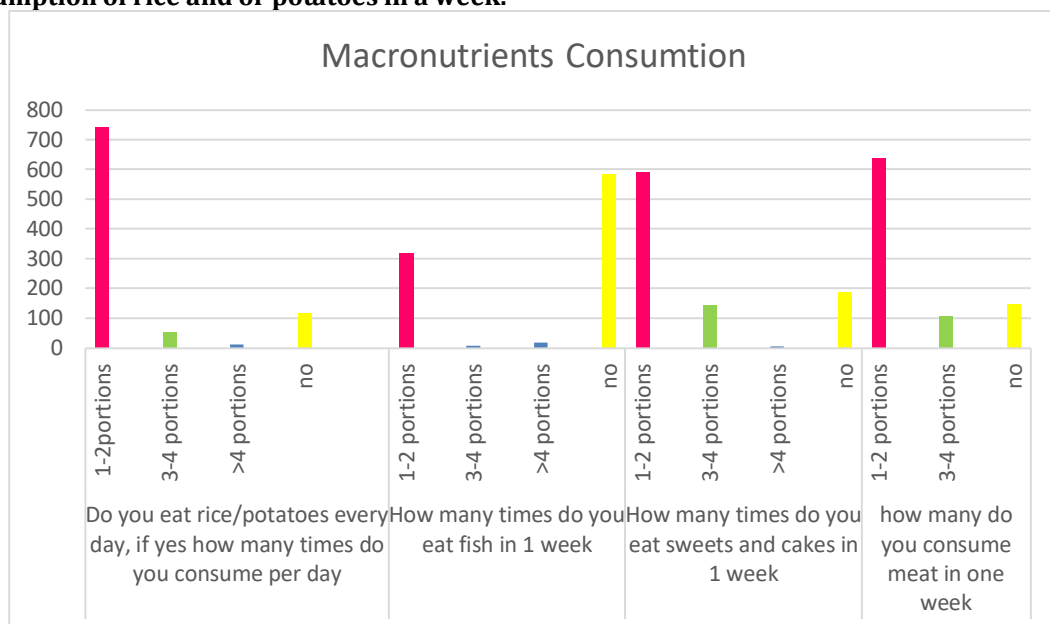**Consumption of rice and or potatoes in a week:**

Figure 4: Macronutrients consumption

We found that 79% of the individuals were consuming 1-2 portions,5.8% were consuming 3-4portions ,1.2% are consuming more than 4 times whereas 12.7%were not consuming at all and hence data found is significant (<0.001) whereas according to T Vijayapushpam et al., [9] it is found that 100% consume rice/ potatoes more than 4 portions a week which outnumbered our study [9,18, 19].

Consumption of fish in a week:
We found that 34% individuals were consuming 1-2 portions, 0.7% were consuming 3-4 portions, 1.93% were consuming more than 4 portions whereas 62.9% were not consuming at all and hence data found is significant (<0.001). According to Alam N et al., [10] 41.1% were consuming fish more than 4 times a week, 34.1% were consuming 1-2 times,15.7% were consuming 3-4 times a week, where as 9.1% were not consuming at all which outnumbered our study [10,23, 24].

Consumption of sweets and cakes in a week:
We found that 63.8% individuals were consuming 1-2 portions, 15.5% were consuming 3-4 portions, 0.53% were consuming more than 4 portions whereas20 % were not consuming at all. According to Farzaneh Montazerifar et al., [11]47.1% were consuming sweets/cakes 3-4 portions whereas, 6.5% were consuming 1-2 portions which is opposite to our survey.

Consumption of meat:
We found that 71% consumed meat 1-2 times a week, 17% never consume meat, whereas 12% consume 3-4 times a week. According to Ali Abbas Mohammad Kurshed et al., [12] 48% consume meat 1-4 times a week whereas 5% consume meat 5-7 times a week which is outnumbered by our study[12,16,17].
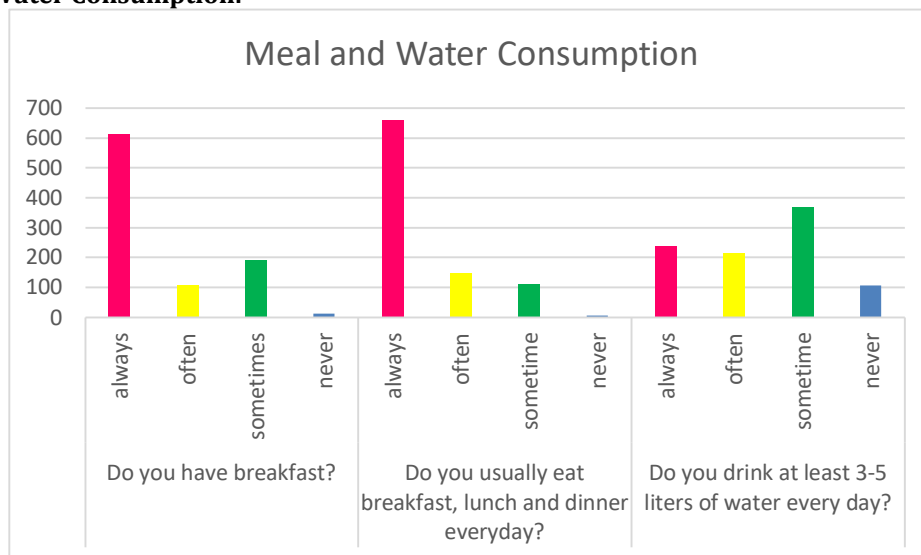
Meal and Water Consumption:

Figure 5: Meal and water consumption

Do you have breakfast?
We found that 84.2% individuals have their breakfast always,11.6%often have their breakfast,20.8% have their breakfast sometimes, whereas 1.2% never have their breakfast and hence data found is significant (<0.001). According to Saxena A et al [13]. 32.4% consume breakfast regularly, whereas 67.6% do not consume breakfast regularly which is quite opposite to our study [13,20].

Do you usually eat breakfast, lunch, and dinner every day?
We found that 25.6% individuals always drink 3-5 L of water every day,39.8% drink only sometimes,23% often drink their water, whereas 11.4% never drink 3-5L of water and hence data found is significant (<0.001).

Do you drink at least 3-5 liters of water every day?
We found that 71.2% individuals always have their breakfast lunch and dinner,12.2% sometimes, 15.9% often and 0.4% never have their breakfast lunch and dinner every day and hence data found is significant (<0.001). According to Saxena A et al., [13]63.2% consume their meals regularly whereas 36.8% do not consume which is quite like our study [13,20].
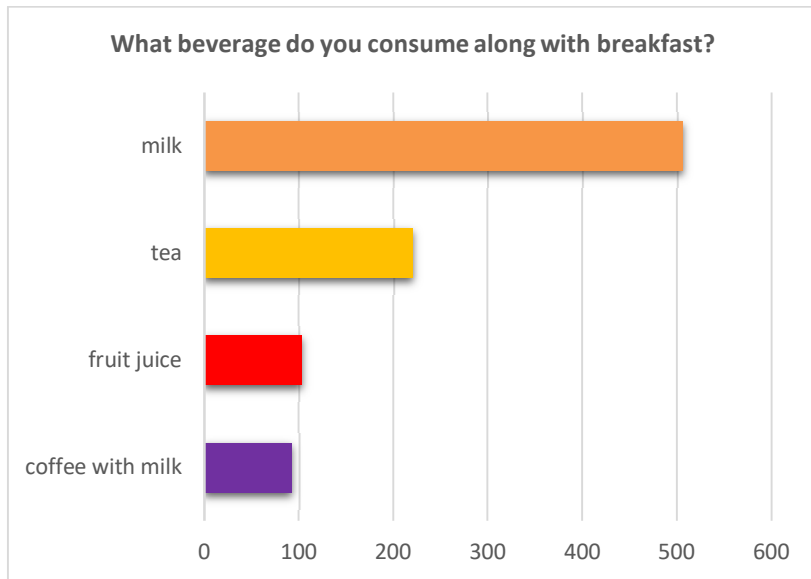
3.5.3. What beverages do you consume along with breakfast?

Figure 6: **Consumption of beverages along with breakfast**

We found that 54.4% individuals have milk along with their breakfast, 23.7% have tea,11.3% have fruit juice and 9.9% have coffee with milk. and hence data found is significant (<0.001). According to FarzanehMontazerifar et al., [11]8.6% were consuming tea, whereas 65% like to drink fruit juice which outnumbered our study.
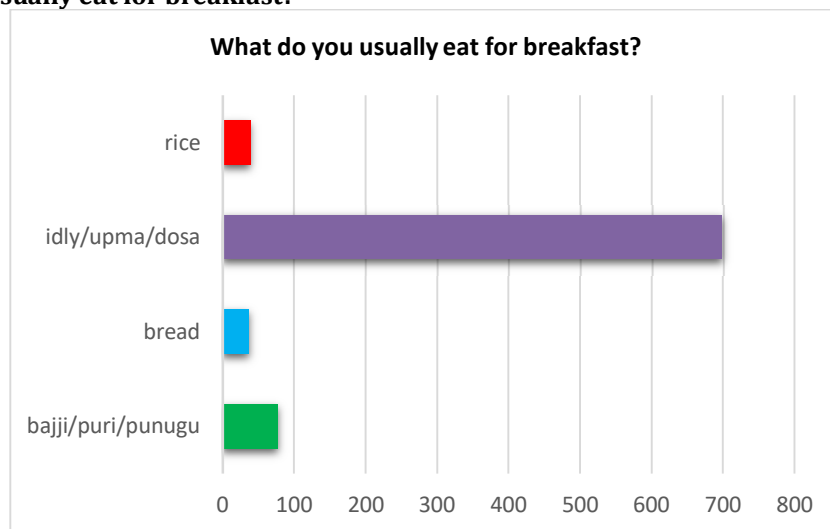
What do you usually eat for breakfast?

Figure 6: **Breakfast pattern**

We found that 75.1% of individuals have idli/dosa/upma as breakfast,8.1% have oily foods [puri/bajji/punugu] ,4% have rice and 3.8% have bread and hence data found is significant (<0.001). According to Saxena A. et al., [13]78% are consuming oily foods which is like our study [13,20].

Do you eat fruits and vegetables every day? If yes, how many times per week?

Do you eat fruits and vegetables everyday? If yes, how many times per week?
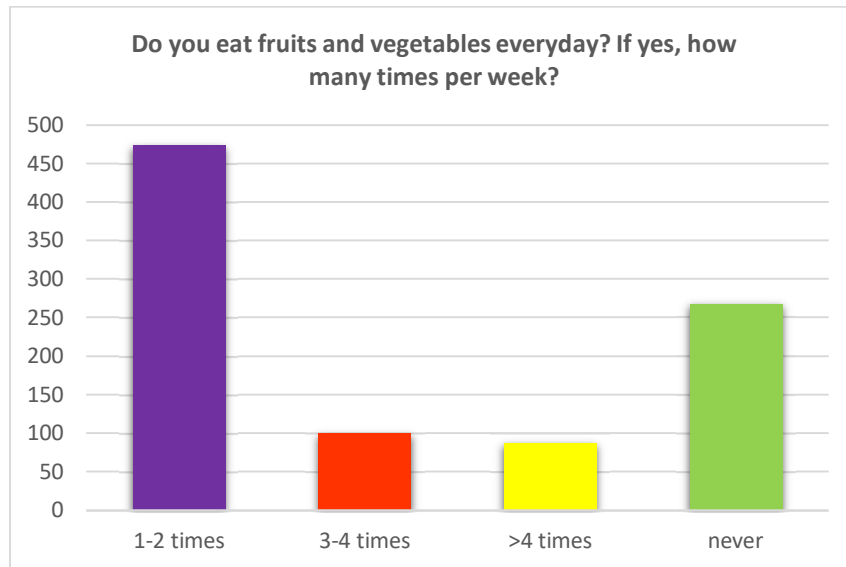
Figure 7: Fruits and vegetables consumption.

We found that 51.1% individuals have vegetables 1-2 times per week 10.7 eat 3-4 times a week, 28.8% do not have vegetables, whereas 9.4% have more than 4 times per week and hence data found is significant (<0.001). According to Alam N et al., [10] it is found that 55.9% were consuming vegetables 1-2 times a week [10,23, 24].

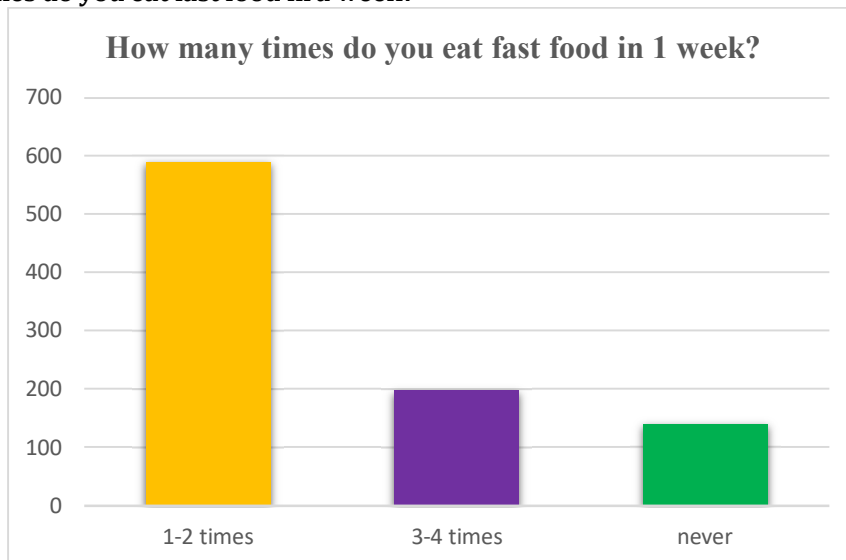**How many times do you eat fast food in a week?**

How many times do you eat fast food in 1 week?

Figure 8: Consumption of fast food.

We found that 63.1% of individuals have fast food 1-2 times every week, 21.3% have 3-4 times, and 15 % do not eat fast food at all respectively and hence data found is significant (<0.001). According to Saxena A. et al., [13] 80% were found to be consuming fast food 3-4 times a week [13,20].

Knowledge on food and food hygiene practices:
Which of the following foods contain carbohydrates?

Which of the following foods contain carbohydrates?

700
600
500
400
300
200
100
0

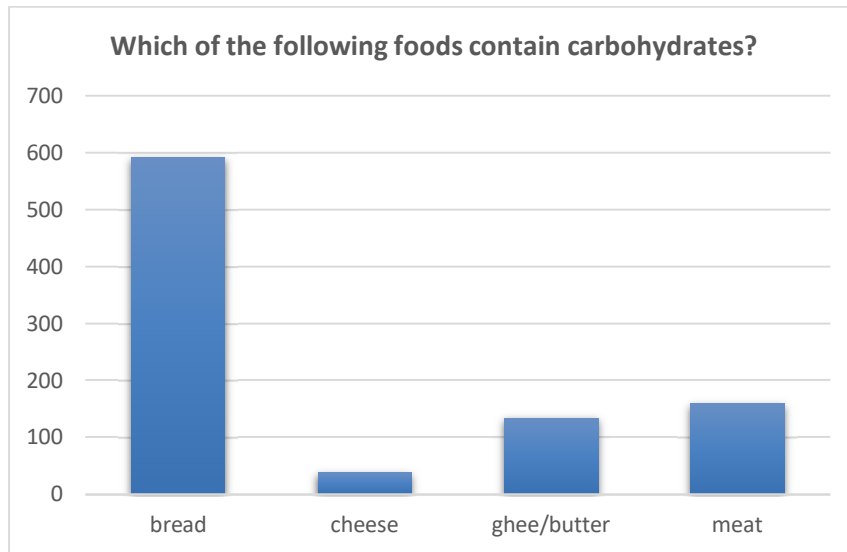bread   cheese   ghee/butter   meat

Figure 9: Foods containing carbohydrates

We found that 63.7% individuals think that the food which contains carbohydrates is bread, 17.2% think its meat, 14.4% think its ghee/butter and 4% think it is cheese respectively and hence data found is significant (<0.001). According to L W Pon et al., [14]71.5% knew which food contains carbohydrates which is like our study.

Which different foods do not contain dietary fiber?

Which of the following foods do not contain dietary fibre?

wholegrain bread

white bread

meat

beans

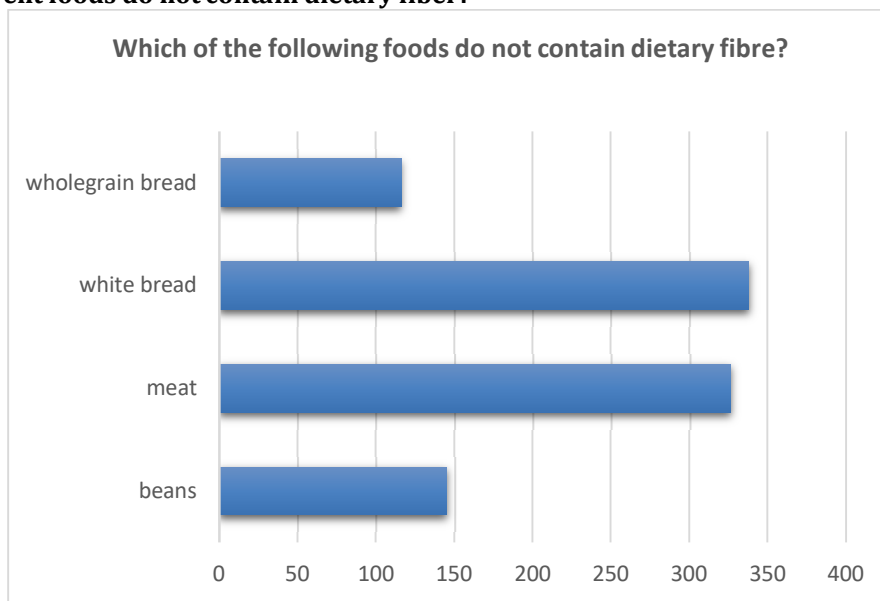0   50   100   150   200   250   300   350   400

Figure 10: Dietary fiber containing foods

We found that 36.4% individuals think that the foods which do not contain dietary fibers is white bread, 35.3% think its meat,15.6% think its beans, but only 12.65% think its wholegrain bread and hence data found is significant (<0.001). According to L W Pon et al., [14] 81.2% knew which food does not contain dietary fiber which outnumbered our study.

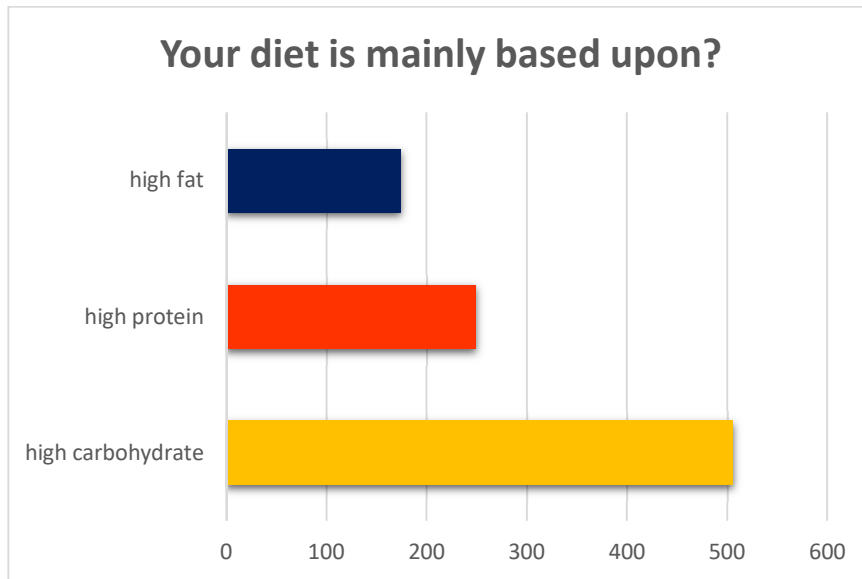**3.6.3. Your diet is mainly based upon?**

Figure11: Diet.

We found that 54.4 % of individual's diet is based on high carbohydrate foods, 26.8% is based on proteins, 18.7% is based on fats and hence data found is significant (<0.001).

Which different foods are rich in protein?

We found that 3% think the foods rich in proteins are noodle, 14.8% think its corn, 15.75 think its apple, whereas 65.9% think its legumes and hence data found is significant (<0.001). According to L W Pon et al., [14] 54.1% knew which food is rich in proteins which is less than our study.
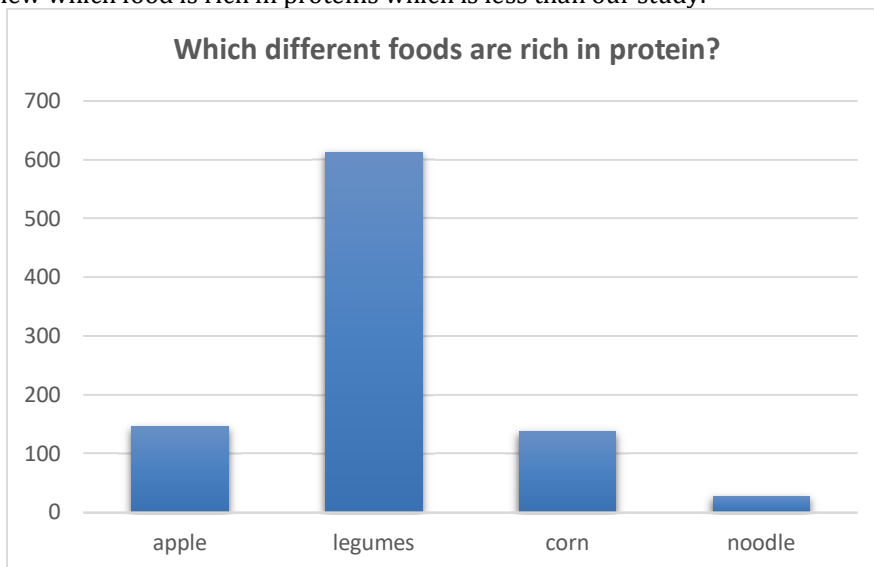

Figure 12: Protein rich foods.

What different foods are richer in calories?

We found that 4.3% individuals think bread contains the most calories, 21.5 % thinks that fruits contain the most calories, 32.5% think its potato whereas 41.1% think its cake and hence data found is significant (<0.001). According to L W Pon et al., [14] 38.6% knew which food is high in calories which is similar to our study.
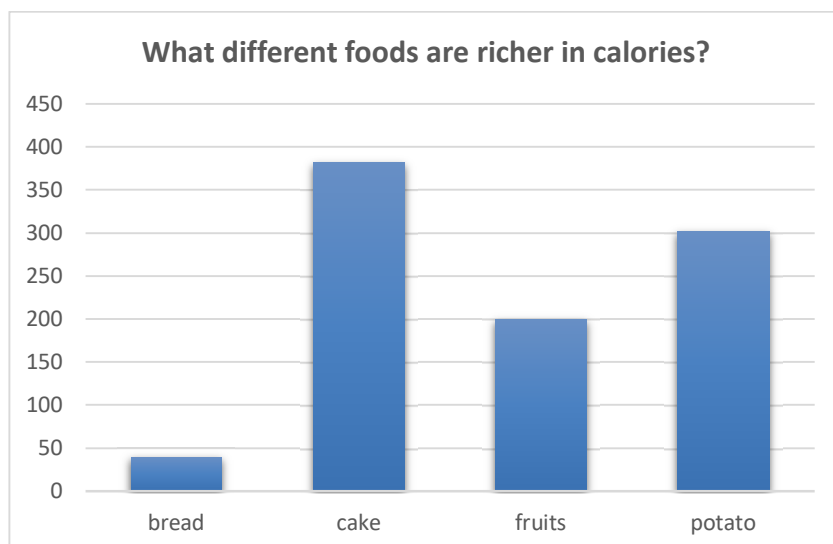
What different foods are richer in calories?

Figure 13: Calorie rich foods.
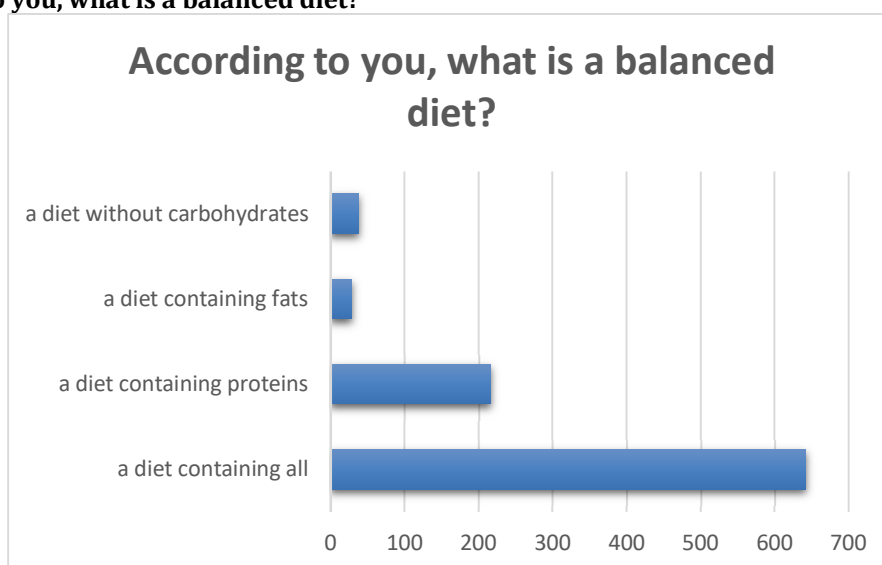
According to you, what is a balanced diet?

Figure 14: Balanced diet.

We found that 3% individuals think a diet containing fats, 4% think a diet without carbohydrates, 23.3% think a diet containing proteins, 69.1 5 think it is a diet containing all (carbohydrates, proteins, fats) and hence data found is significant (<0.001). According to L W Ponetet al., [14]66.7% knew what a balance diet is which is quite like our study.

Which different substances contain more energy?

We found that 14.4% individuals think the substance which contains the most energy is fats, 35.5% think it is carbohydrate, 48.8 % think its protein and hence data found is significant (<0.001).
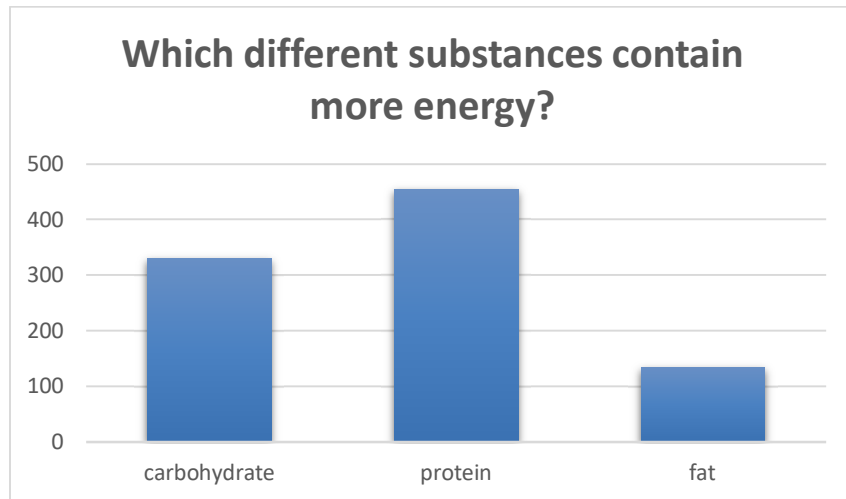
Figure 15: Energy rich foods.

According to you, what is "Daily Energy Expenditure"?
We found that 7.8% individuals think it means energy consumed during sleep, 11.6% think it means energy consumed for maintaining body temperature at 370 C, 16.5% think it means energy consumed for physical activity, whereas 63.9% think it means energy consumed during the whole day and hence data found is significant (<0.001).
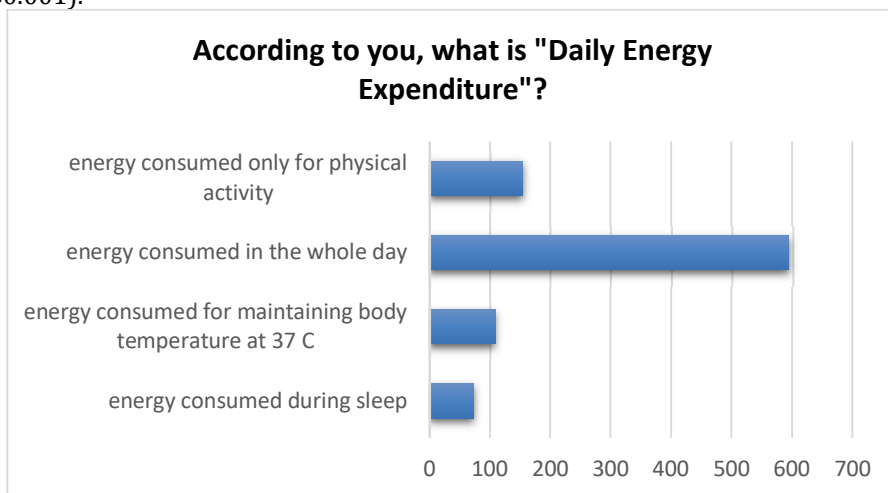
Figure 16: Daily Energy Expenditure.
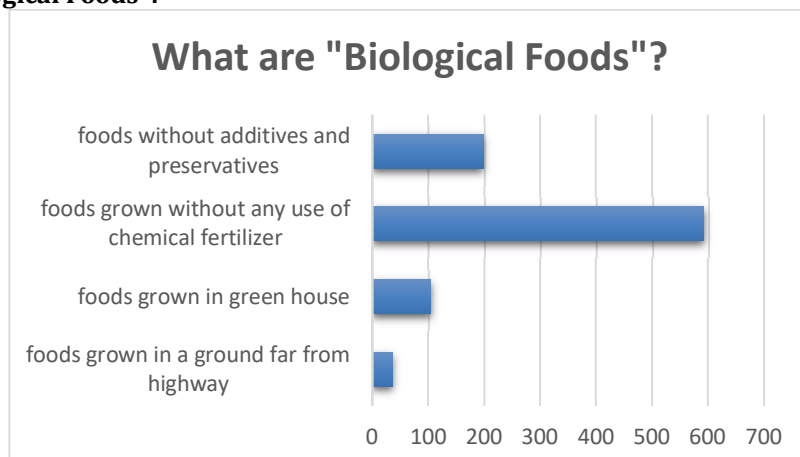
What are "Biological Foods"?

Figure 17: Biological foods

We found that 3.7% individuals think it means foods grown in a faraway country, 11.1% think it means foods gown in a green house, 21.3% think it means foods without additives and preservatives, whereas 63.7% think it means foods grown without any use of chemical fertilizers and hence data found is significant (<0.001).

What are "Transgenic Foods"?

We found that 7.4% individuals think it means foods without germs, 9.5% think it means foods without toxic substances, 14.4% think it means foods imported from foreign countries, whereas 688% think it ,means food in which different fragments of DNA have been included and hence data found is significant (<0.001).
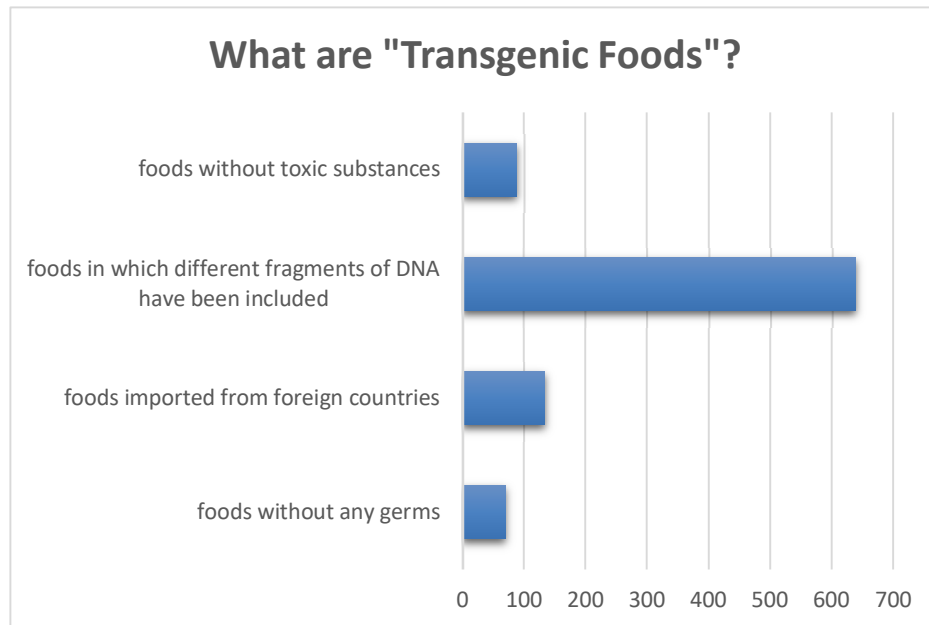

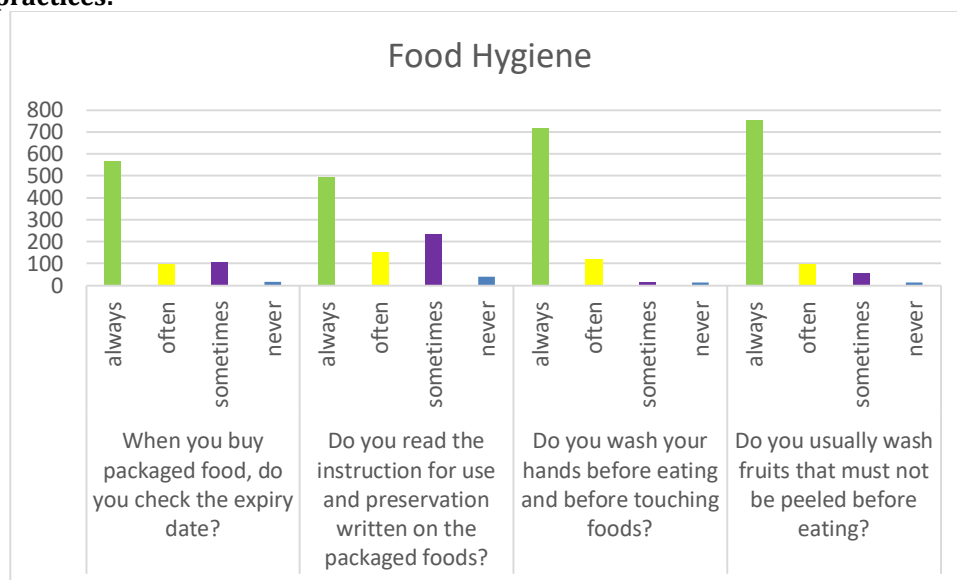**Figure 18: Transgenic foods.**

Hygiene practices:

Figure 19: Food hygiene.

When you buy packaged food, do you check the expiry date?

We found that 2% never check, 11.8% check sometimes, 10.7% check often, whereas 75.3% always check the expiry date. According to A.A. Fasoro et al., [15] 69.9% always check the expiry date, 10.7% often check, 6.1% check sometimes, 10.7% never check which is quite similar to our study [15,21, 22].

Do you read the instruction for use and preservation written on the packaged foods?

We found that 4.6% never read, 16.6% read often, 25.6% read sometimes, 53.1% always read the instruction for use and preservatives.

Do you wash your hands before eating and before touching foods?
We found that 1.85 never wash, 7.7% wash sometimes. 12.9% often wash their hands whereas 77.5 always wash their hands before eating and before touching the food. According to A.A. Fasoroet al., [15] 80.6% always wash, 12.7% often wash, 3.6% wash sometimes, 3.1% never wash which is quite similar to our study[15,21, 22].

Do you usually wash fruits that must not be peeled before eating?
We found that 1.8% never wash, 6% wash sometimes, 10.7% often was, whereas 81.3% always wash fruits that must not be peeled before eating. According to A.A. Fasoro et al., [15] 93.1% always wash, 6.1% often wash, 0.5% wash sometimes which is slightly higher than our study [15,21, 22].

If you realize you have left the milk out of the refrigerator at night, what do you do?
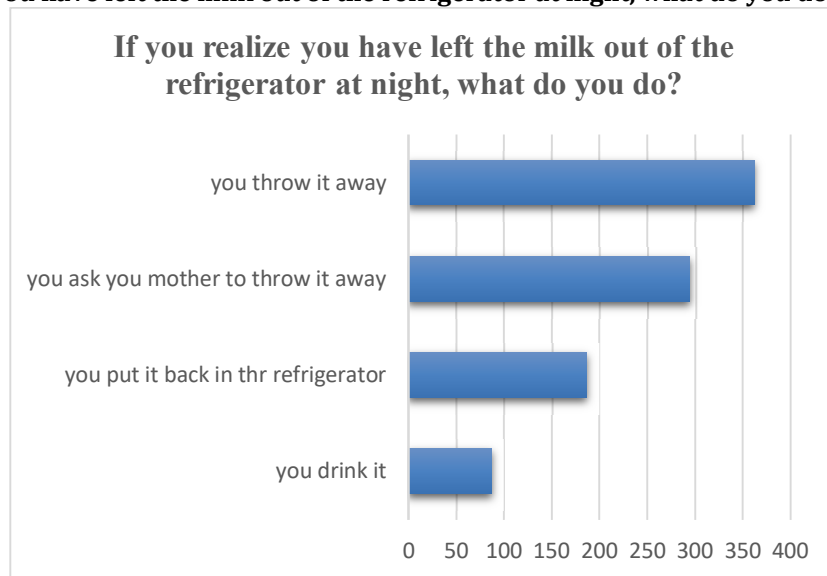

Figure 20: Stable milk storage

We found that 9.4% drink it, 20% will put it back in the refrigerator, 31.6% will ask their mother to throw it away, whereas 38.9% will throw it out by themselves.

CONCLUSION
Our study concludes that majority of the women consume carbohydrate rich food and less consumption of protein rich food which includes meat and dairy products. Due to this, malnutrition and obesity is observed which can lead to many harmful conditions such as cardiovascular risks, headache, hair and skin changes, anxiety, depression, and it may also affect the reproductive health of the individuals. In our study we found that most of the subjects were aware of the type of nutrients they are consuming and perform good hygiene practices. By maintaining proper nutritious diet and good hygiene practices they can improve their quality of life and well-being.

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