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Research Article

Assessment and Evaluation of Health and Environmental Awareness towards Fast Food Consumption among Under Graduate Students

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Abstract

The fashion to consume fast food among pre university students is growing at a faster rate. They are also being consumed because of their taste and high calories, although they lack essential nutrients. The present study was done to assess the knowledge of health and environment of fast food consumption among Under Graduate College students. Well trained university professors were recruited to get filled Semi-structured online questionnaire. The study was conducted in 10 colleges of Jammu & Kashmir region and 364 pre university students in the age group of 20-24 filled the online questionnaire after proper training by the College teachers. Data indicates that 24.6% of respondents consume chocolate and sweets, 21% eat cakes and biscuits, 20.7% consume fast foods like hot chips, burgers and pizzas, 17% consume snacks like chips, 14.1% consume sugary drinks such as spots, energy and soft drinks and least number of respondents consumes processed meat like bacon. Major number of respondent's (i.e, 83.8%) reported that they consume Maggi, 13.7% reported chicken rolls and 8.5% reported burgers as the specific fast foods consumed by them. It was concluded that almost every pre university student is consuming the fast food and has one or the other health impact caused to them by consumption of fast food and most of them are aware that the packaging material used for fast food is harmful to the environment.

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Introduction

As a worldwide health priority for reducing non-communicable illnesses, the World Health Organization has recommended for government rules to prohibit food and beverage marketing to children (including teenagers up to age 17 [1,2]. Numerous food items that are part of the so-called "Westernized diet" have been developed as a result of improvements in food processing and modifications to our agro-industrial systems. These foods that have been westernized tend to be highly processed, high in calories, and high in added sugar, saturated fat, and salt, but low in fibre [3]. Food categorization systems have been developed to differentiate between various categories of processed foods as a result of worries about how industrial processing may affect diet quality and the risk of developing chronic diseases [4].

The adoption of a western lifestyle by people in emerging nations has been linked to the prevalence of unhealthy eating habits. Examples of unhealthy dietary patterns include a tendency to consume more junk food than necessary, a lack of consistency in eating breakfast, a low frequency of eating fruits and vegetables, and a high frequency of drinking soft drinks [5]. Increases in BMI, fat mass index, weight, and waist circumference in adolescence and early adulthood were linked to higher childhood consumption of UPFs [6-8]. Consumption of highly processed foods during childhood and adolescence was found to be positively associated with adiposity, according to a 2018 systematic review [9]. On the other hand, numerous investigations have revealed no link between eating ultra-processed meals and adiposity or weight status [8,9]. According to research, null results might be explained by elements of the obesity aetiology that were not taken into account in the studies, such as physical activity, genetics, and family lifestyle [9,10]. Numerous papers have been written about how UPF consumption affects daily overall energy intake in various nations. Table 1 displays a few recent articles on the topic.

On the other hand, 50% of plastics made from fossil fuels are used for food packaging [11]. The packaging that held the food is also discarded when it is thrown away. These plastics made from fossil fuels are long-lasting in the environment and take a long time to decompose. They do this by breaking down into microplastics, which are easily ingested by, for instance, fish and can easily enter the food chain, causing bioaccumulation. Packaging has been under investigation as a result of growing environmental concerns because it consistently generates large amounts of plastic waste, necessitating substantial research into renewable alternatives [12-14]. Since, research is going on in this directions and lot of articles are needed for policy making to support the already existing literature. This research will be quite helpful for all the stakeholders, as the UT of Jammu & Kashmir is geographically different and have different food habits as compared to other states of India. The novelty of the study is that this study was restricted to the age group of 19-24 who are most vulnerable to the fast food and we organized a poster presentation in which most of the

Author	Study Area	Sample Size	Major Findings	Recommendations
Gupta et al [15]	India	…..	Due to the economic boom and the entry of numerous foreign players in the food industry, Indian citizens have been exposed to an abundance of ultra-processed, high-sugar, high-salt, and high-fat foods, which has led to a rise in the prevalence of diseases like diabetes and hypertension that are related to being overweight and obese. According to Gupta et al., India is dealing with a pandemic of excessive and incorrect nutrition.	Due to the rise in illnesses that can be prevented by changing one's diet, it is necessary to implement preventive strategies at the national level and test their effectiveness in lowering consumption of junk food and the resulting health problems. Citizens must be made aware of the serious dangers these foods pose, and political will must be sufficiently strong to produce legislation and national-level policies that support different nutritional needs.
Harris et al [16]			Adolescents may be even more susceptible than younger kids to the allures of junk food marketing, and this exposure has a negative influence on the dietary habits, food preferences, and long-term health of adolescents. Junk food businesses see young people as prospective, devoted clients for life, so marketing to attract young consumers to their products is a highly profitable investment. A major commercial risk is the potential regulation of food marketing to teenagers.	Additional scholarly research on how food marketing specifically impacts teenagers and the effectiveness of proposed safeguards to keep them safe is essential to support stricter regulations on junk food corporations that mislead consumers about public health risks. There is a need for more research to better understand how social media and other teen-targeted marketing techniques affect adolescents' particular vulnerability, how food advertising activates reward networks in teenagers' brains, and how junk food marketing disproportionately appeals to young people of colour and worsens health disparities in their communities.
Tempels et al. [17]			Businesses must respect people's autonomy, uphold the principle of non-maleficence in both market and nonmarket environments, consider the manipulativeness of their marketing techniques, the degree to which consumers can recognise potential manipulation, the potential negative impact (over)consumption of their product will have on public health, and make people aware of all these fundamental conditions. The food and beverage sector should reconsider promoting harmful items to adults as well as refraining from marketing unhealthy foods to youngsters.	We can only fully understand what corporate responsibility for public health can entail by evaluating actual practises in the industry, examining perceptions of corporate responsibility within food firms, and considering various food practises in various countries and cultures in the context of rising obesogenic societies.
Crimarco et al. [18]			Ultra-processed food consumption is consistently linked to an increased risk of weight gain in both adults and children, as well as an increased risk of adiposity-related co-morbidities in adults, in studies that are mostly observational. There has been a noted ecological pattern showing that obesity incidence is generally higher in nations with higher UPF consumption. However, not all nations are experiencing this trend, and variations may be explained by	Although more mechanistic studies are required, because UPFs tend to be more energy-dense than nutrient-dense, cautionary advice to limit UPF consumption is unlikely to result in any additional risk or harm and is more likely to result in a nutritional benefit.
Wade et al [19]	White and African American Emerging Adults	1058	Respondents who identified as African American would eat more fast food than respondents who identified as White. Respondents who identified as White Americans reported eating less fast food than respondents who identified as men. Numerous cultural and institutional factors encourage African Americans to eat fast food. People who rate highly on the femininity scale eat less fast food than people who rate highly on the masculinity scale. For White American emerging adults, education reduces the frequency of eating fast food, not employment.	Instead of using societally imposed ideas of masculinity and femininity, social scientists should investigate how African Americans define these concepts for themselves.
Li Yanxia et al. [20]	China	228	It has been discovered that perceived threats, such as the perceived seriousness of using a product, the perceived susceptibility of the product, and the dread of using a product with obesity-triggering ingredients, play a negative role in the behaviour of consuming junk food. This finding is further corroborated by the fitness freaks' emerging anti-junk food practises. The association between the consumption of junk food and obesity has also been found to be significantly moderated by the awareness of product knowledge concealing.	The general public should be made aware of the product's ingredients as well as any warnings regarding unfavourable effects of using or consuming junk food. It is crucial to teach children how to read the information on product packaging and how it might help them to comprehend the risks involved.
Renzo Laura Di et al [21]	Italy	3533	Consuming seasonal foods and foods high in antioxidants is highly protective against the development of chronic diseases that cannot be transmitted because they reduce inflammation and oxidative damage, which are dependent on the consumption of junk and ultra-processed food in the postprandial period.	Future, more in-depth population studies must verify and examine the data. It is strongly advised to cut back on junk food consumption to lessen the "obesogenic milieu" that contributes
Boylan et al [22]	Australia	14509	A poorer diet and a higher body mass index have been linked to watching TV while eating dinner. High scores on the junk food intake measure were linked to unhealthy parenting and family environments. Parents frequently reward their children's good behaviour with sweet snacks, despite the fact that there is evidence linking overeating and increased consumption of unhealthy foods to long-term health consequences.	As long as junk food intake among Australian youngsters is an issue, public health professionals must keep working to reduce its usage. The public health workforce must keep implementing effective initiatives to address unhealthy eating habits and the risk of being overweight or obese. As analysing consumption of individual foods may not give a whole picture of dietary health, it is necessary to look at food clustering.

Ankul Singh et al [23]	India		Obesity damages organs and, like other malnutrition-related conditions, is known to reduce leucocyte count and cell-mediated immune responses. But not only has substantial psychological effects that can harm a child's intelligence and personality, it also causes physiological repressions. Children and teenagers are more prone to gaining weight, losing immunity, and becoming infectious during the third wave of COVID-19 when junk food, physical inactivity, and ongoing psychological stressors are combined.	Children and young adults must be made urgently aware of these negative effects of junk food and the fact that they should not be used as a substitute for a healthy diet. There has never been a better time than the present to create a nurturing environment that promotes the inclusion of children and young people in society and good health.
Azemati et al. [24]	Iran	14,400	According to Azemati B et al., people who ate junk food were more likely to be overweight or carry extra weight.	One way to encourage teenagers to choose healthy foods and reduce overweight and obesity is by improving their nutritional understanding.
			In terms of metabolic factors, "overweight" and "high blood pressure" stood out the most.	Limiting the intake of sugar-sweetened beverages, salty and fatty snacks, and other foods with added sugar can help children and young adults' cardiovascular health.
			High systolic and diastolic blood pressure was more prevalent in junk food eaters. With regard to cardio-metabolic risk factors, Iranian children and adolescents who consumed junk food experienced negative effects. Urban residence and a higher BMI were associated with metabolic syndrome (P=0.004), as well as being more prevalent.	
Lalanza et al [25]			The consequences of a CAF diet on behaviour include increased snacking, decreased hedonic value of other rewards like sucrose and ethanol, impairment of spatial and contextual memory, and a propensity for anxiolytic and antidepressant effects, mostly in animals who have already experienced stress.	To account for methodological discrepancies, more study is required, which should result in findings that are more consistent.
				Basic animal studies are required to understanding not only the physiological and behavioural impacts of junk food, but also the causes and risk factors for overeating these sorts of food items.
Wahl et al. [26]	Helsinki Finland	38	Consumption of vegetables was the major factor in eating happiness, which was calculated over an eight-day period. On average, eating sugary foods made people feel equally happy as eating "healthy" foods like fruits or vegetables. Dinner produced similar eating pleasure to snacking.	More thorough and sensitive measurements of the behaviour are required to have a deeper knowledge of how eating behaviours are controlled. Mobile technology advancements offer considerable hope for practical dietary evaluation based on image-assisted techniques.
			We might learn more about the experience of eating happy if we broaden the definition of "nutrition" to include the amount, timing, location, duration, and company of eating.	
Lee et al. [27]	U.S	1524	When compared to fruit intake, fast food consumption was associated with higher levels of depression in young women.	While we investigate how much fast food, soda, fruit, and vegetables are consumed, other foods may have an impact on young women's depression. Young women should be the focus of nutrition programmes designed to persuade them to consume fewer unhealthy foods, such as fast food, and more nutritious ones, such as fruit. These programmes could offer coupons for local farmer's markets or other financial aid to help young women afford healthier foods, or they could offer free cooking classes in the neighbourhood to teach easy recipes to combat the convenience of fast food.
			People with lower incomes and those without jobs are more likely to eat fast food, which increases their chance of developing depression.	
			The impact of fruit consumption on depression was larger in unemployed women than in employed women, who have easier access to fruits.	
Khongrangjem et al [28]	Karnataka India	160	A balanced diet with adequate nutrition is essential for human growth and development. The majority of students, particularly kids and young adults, eat fast food around mealtime and become accustomed to its flavour. Despite being pleasant, fast food has excessive calories and poor nutritional value. Nutritional counselling on the value of a balanced diet and the negative impacts of fast meals may aid in reducing the addiction to fast food.	To ensure that students are aware of the negative effects of fast food and the benefits of a balanced diet, a study must be conducted in conjunction with an awareness campaign about them.

Table 1: Recent Research on the health impacts of fast food.

students participated and spoke on the harmful effects of consuming fast food that had appreciably decreased the consumption of fast food in the campus and same has been recommended to other colleges. Further, the UT of Jammu and Kashmir is geographically unique and people have different food taste and during the last few years people have shifted towards junk fund appreciable as compared to the parts of the world, Hence intervention by this study played a key role in evasion of Junk food in the colleges. Hence, the current study was conducted to assess and evaluate the knowledge of health and environment of undergraduate students regarding fast food consumption, which may be helpful to design a nutritional policy and Governemnt regulations to improve the nutritional status of college students. (Table 1)

Materials and Methods

Study design, setting and sample size

This study was conducted from June to November, 2022 among undergraduate students. The study was conducted in10 undergraduate colleges in Jammu & Kashmir. The prior permission was taken from the college authorities. The study was carried out after proper deliberations with the concerned college teacher and 364 participants willingly participated in the study. The students were explained the importance of study and every question was explained to them by the recruited teacher in their classroom and students were asked to fill the online questionnaire as per their convenience. Most of the students filled the questionnaire within next 24 hours of their training.

Inclusion and Exclusion criteria

Undergraduate college students from Jammu and Kashmir who were properly trained for the purpose were only included in the present study. The students who were absent during the training period were not included in the study.

Data Collection Methods

The data was obtained on the online questionnaire with the purpose that it will save good number of papers. The online questionnaire included questions on socio-demographics of the participants, knowledge of health and practice of fast food consumption, environmental impact among participants. The questionnaires were designed based on knowledge of health and practice of the undergraduate college students regarding fast food consumption and their knowledge towards environment related to the issues arising due to packaging material of fast food. The questionnaires were initially validated by expert opinion and it was pilot tested. Questionnaires were administered in both English languages only however, the same was translated by the recruited teacher in native language (Kashmiri). The students were bound to fill all the questions to assess their knowledge. The participants took approximately 20 min to complete the questionnaire.

Analysis

The Statistical Package for Social Sciences 20(SPSS 20) for Windows was used to analyze the data. Through descriptive statistics, socio-demographic, knowledge of the participants on health and environment were described and expressed as frequencies and percentages.

Ethical Consideration

Written informed consent was obtained from all the participants after the purpose of the study was explained to them using a participant information sheet and participation in the study was voluntary. The consent was also obtained from the college authorities. All the participants were informed that the data will be used only for research purposes and every information will be kept confidential.

Results and Discussion

A study to assess and evaluate the knowledge of health and environment by consumption of fast among under-graduate students was conducted in UT of Jammu & Kashmir, India (Table 2). Total 364 participants were involved in the study (Figure 1).

Socio demographic Characteristics	Average
Gender	M = 103 F= 260
Average Age	21 Years
Religion	Islam
Place of Residence	Rural
Average Height	5'4" Feet
Average weight	57.02 Kg
Average Monthly Income of family	20000/=

Table 2: Socio demographics details of the participants.

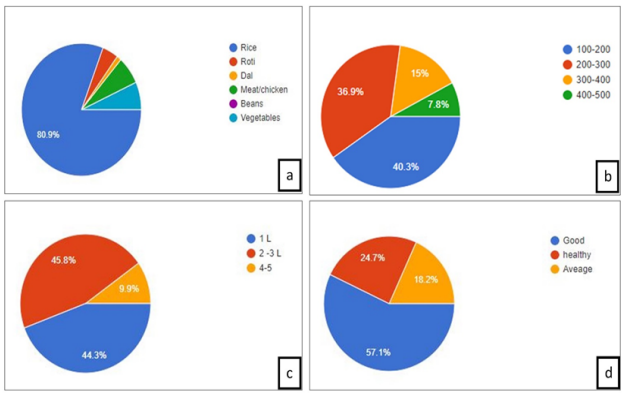

Figure 1: a) Staple Food b) Quantity of staple food c) Amount of water d) Overall health.

Table 1 describes about the socio-demographic profile of the undergraduate students. Figure 1a describes about the staple food of the pre university students. Majority of the respondents i.e., 80.9% consumed rice as their staple food, followed by vegetables, meat/chicken, roti and Dal. It is pertinent to mention here that majority of the respondents consumed rice and least number of respondents consumed Dal as their staple food. Figure 1b indicates the practice of quantity of staple food consumption among the respondents. In the study 40.3% of the respondents reported that they consume 100-200 grams of staple food on daily basis. Among the participants from rest of the sample 36.9% consumed 200-300 grams, 15% consumed 300-400 grams and 7.8% consume 400-500 grams of staple food on daily basis. Figure 1c describes the amount of water consumption among the respondents. With respect to quantity of water consumption, majority of respondents' i.e, 44.3% reported that they drank 1 litre of water, 45.8% drank 2-3 litres and 9.9% drank 4-5 litres of water regularly. The less intake of water after consumption of fast food may expose them to acidity/stomach related disease. Figure 1d describes that majority of 57.1% of participants keep overall good health status, 24.7% had healthy and 18.2% of respondents enjoy overall average health status with respect to general health status (Figure 2). The results are also tabulated in Table 2.

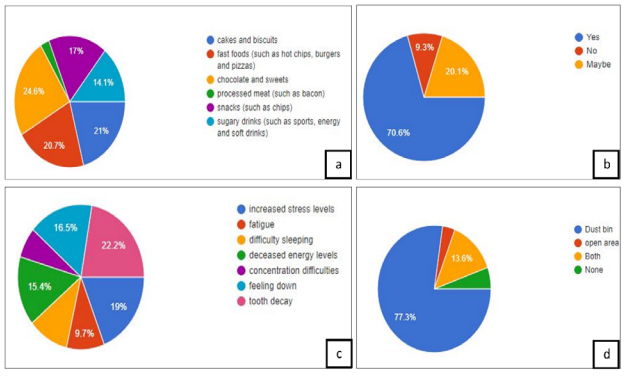

Figure 2: a) Junk food consumption b) Emotional health and Junk food c) Junk food and diseases d) Disposal of wrappers.

Figure 2a describes about the variety of junk foods consumed by the respondents. Data indicates that 24.6% of respondents consume chocolate and sweets, 21% eat cakes and biscuits, 20.7% consume fast foods like hot chips, burgers and pizzas, 17% consume snacks like chips, 14.1% consume sugary drinks such as spots, energy and

soft drinks and least number of respondents consumes processed meat like bacon. The above data revealed that on an average 1/4th of the students are addicted to one or the other variety of fast food which is not a healthy sign at this age.

Table 2 summarizes the perception towards environmental impact caused by junk foods. Figure 2b presents the impact of junk foods on emotional health. Among the respondents majority i.e., 70.6% reported that junk food consumption had impacted their emotional health. In the present study 20.1% of respondents believe that junk food may have impacted their emotional wellbeing and 9.3% participants reported that junk food had no impact on their emotional health. It has been observed that initially students are behaving differently while they are being asked to stop the consumption of Junk food. However, after intervention there was a significant improvement among the students in this regard. Figure 2c describes the instant relation of junk foods and diseases. Data shows that 22.2% respondents had tooth decay, 19% develop increased stress levels, 16.5% are feeling down, 15.4% had decreased energy levels followed by respondents with difficulty in sleeping and least number of respondents developed concentration difficulties. The consumption of Junk Food at this age may increase their vulnerability to increased stress, fatigue, difficulty sleeping, less energy levels, tooth decay as has been revealed by number of studies [15-19]. Figure 2d indicates that 77.3% of respondents dispose wrappings of fast foods in dustbins after consumption. Among other participants, 13.6 % respondents reported that they dispose the wrappers either in dust bins or in open areas and least number of participants reported that they do not dispose wrappers either in dustbins or in open areas. Since good number of participants dispose of the wrappers in the dustbin which indicates that they have awareness towards the harmful impact of wrappers on the environment and after intervention by the recruited teachers a significant improvement has been observed among the students and it is seen now almost every students put wrappers in the dust bin in the intervention colleges (Figure 3).

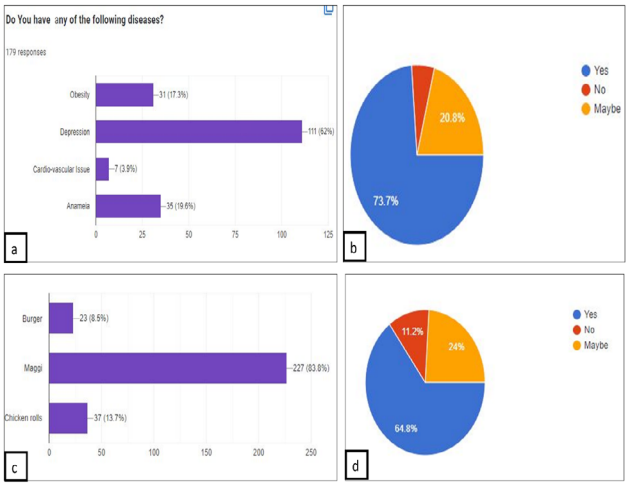

Figure 3: a) Status of diseases b) Wrappers and threat to the environment c) Specific Fast foods d) Prefer to pay extra for products wrapped in biodegradable material.

Figure 3a indicates that majority of the respondents i.e., 62% had depression, 19.6% had Anemia, 17.3% had obesity and 3.9% reported cardio-vascular disease with respect to status of diseases. This indicates that the under-gardaute students in the colleges of UT of Jammu and Kashmir are in state of depression which may be enhanced by consumption of fast food directly or indirectly. Figure 3b presents the data about the wrappers and threat to the environment. In the present study majority i.e. 73.7% of respondents reported that wrappers impose threat to the environment. Among other respondents 20.8% reported that wrappers may cause threat to the environment and least number of respondents reported that wrappers do not impose threat to the environment. Figure 3c indicates about the consumption of the specific fast foods by the Under Graduate students. Major number of respondent's i.e, 83.8% reported that they consume Maggi, 13.7% reported chicken rolls and 8.5% reported burgers as the specific fast foods consumed by them. The consumption of Maggi may expose them to headache, nausea, increased thirst and a twitching sensation in the mouth. In some cases one may feel numbness, skin rashes and excessive sweating too due to presence of glutamate, gelatin, yeast extracts or protein concentrates. Figure 3d describes the data regarding the number of respondents who prefer to pay extra charges for products wrapped in biodegradable material. With respect to the products wrapped in biodegradable material 64.8% of respondents reported that they would preferably pay extra charges if the product is wrapped in biodegradable wrappings, followed by 24% participants who reported that they may pay extra charges and 11.2% respondents reported that they will not prefer to pay extra charges. The student community is become more and more environmental conscious as they agreed to pay extra charges if the same is wrapped in biodegradable material (Tables 3 & 4).

Fast food and factors	Value/Percentage	P value
Staple food	Rice	
Average consumption	250-350	
Major fruits consumed (Quantity)	Apples (100-150 gm)	
Average No of eggs consumed per day	1 = 15.6% 2 = 19.9% 4 = 19.3% >5 = 35.6%	p< 0.0001
Water consumption per day	1 ltr = 44.4% 2 -3 ltr = 45.7% 4-5 ltr = 9.9%	p< 0.1147
Present Health Status	Average = 18.2% Good = 57.2% Healthy =24.6%	p< 0.1227
Do you have any of the disease	Obesity= 17.8% Depression=61.7% Cardio-vascular =3.9% Anemia = 19.4	p< 0.0333
Fast food consumption	Cakes & Biscuits = 21.2% Hot Chips, Burger, Pizza = 20.6% Chocolate & Sweets = 24.5 Processed meat = 2.6% Snacks = 17% Sugar drinks = 14.1	p< 0.0001
Do you take any of them	Burger = 8.6% Maggi = 83.8% Chicken Rolls = 13.6 %	p< 0.4410
Average expenses	Rs 49/=	

health conditions/ symptoms after eating these foods	Increased Stress Levels = 19.3% Fatigue = 10.4% Difficulty Sleeping = 9.6% Deceased Energy Levels = 15.4% Concentration Difficulties =6.8% Feeling Down =16.4% Tooth Decay = 22.1%	p< 0.0001

Table 3: Food consumption and Perception of respondents towards Health Awareness due to junk food.

Environmental Parameter	Percentage	
Where you put wrappers	Dust bin = 77.4 % open area = 3.5% Both = 13.5% None = 5.5%	p< 0.0912
Do you think wrappers are hazardous to Environment	Yes = 73.8% No = 5.5 % May Be =20.7 %	p< 0.4040
Do you agree that recycled biodegradable materials are good for environment	Strongly disagree =8.8% Disagree =5.9% Neutral =- 8.8% Agree = 41.2% Strongly agree = 35.3	p< 0.0005
Will you buy products with biodegradable packing	Yes = 64.9% No = 23.9% May Be =11.1%	p< 0.2192
Will you extra for product wrapped in biodegradable material	Yes = 41.7% No = 26.4% May Be =31.9%	p< 0.0023

Table 4: Perception of respondents towards Environmental Awareness of junk food.

Conclusion

Balanced diet is very essential for good health especially at the adolescent age. It was observed that almost every participant is habitual to fast food in the study area. There must be ban to the fast food in college premises and student must be made aware about the harmful impact of packaging material on the environment. The dieticians must be involved to curb the use of fast food after proper counseling. Workshops, seminars may prove beneficial.

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Author's Contribution

Heena Qadir and Khursheed Ahmad Wani devised the project, the main conceptual ideas and proof outline, worked out almost all of the technical details, and performed the numerical calculations for the suggested experiment. Tehmina Yousuf collected Data from Jammu colleges helped in writing the manuscript and All author revised the Manuscript before submission.

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Conflict of interest

The authors declare no funding and no conflicts of interest.

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