Effect of Designed Nursing Program regarding Junk Food on School-Age Children's Awareness and Their Growth

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Abstract

In today's world, junk food is widely consumed, and its negative effects cannot be ignored. Due to the lack of vitamins, minerals, and trace amounts of energy and protein in junk food, there is likelihood that the child will feel full and lose interest in eating nutritious foods. **The aim was to** determine the effect of a designed nursing program regarding junk food on school-age children's awareness and their growth. **Subjects and method: Design:** This study's objective was accomplished using a quasi-experimental research design. **Setting:** The study was carried out at Sohag University Hospital's Medical Pediatric Outpatients Clinic. **Subjects**: In this study, a purposeful sample of 100 school-age children was used. **Tools for data collection:** A structured interview questionnaire which consisted of five parts; part (I) demographic characteristics of the school-age children; part (II) school-age children's knowledge regarding junk food (pre/post), part (III) school-age children 'attitude regarding junk food (pre/post), part (IV) school-age children self-reported practices regarding junk food (pre/post), and part (V) An anthropometric measurement sheet. **Results**: The study's findings showed that children in school showed highly substantial improvements-age children's knowledge, attitude, BMI, and practice regarding junk food post one month of the designed nursing program (P<0.001). there was a statistical correlation between junk food and the growth status of children was significant, so children who haven't had junk food, have grown more favorably than the other children (P<0.05). A positive significant correlation (P=0.005) was found between school-age children's knowledge scores, attitude, growth, and practices post-one month of the designed nursing program. **Conclusion:** The current study found that implementing a designed nursing program improved school-age children's knowledge, attitudes, growth, and practices toward junk food. **Recommendations:** The study suggested that school-age children should be informed about nursing programs that are aimed to teach knowledge, a healthy attitude, growth, practice, and the negative consequences of junk food. To generalize the findings, the current study must be replicated with a wider sample of school-age children in various contexts.

Keywords: Designed nursing program, Growth, Junk food, Knowledge, Attitude and practice, School-age children

Introduction:

A healthy diet is essential for children's physical and mental development. As what they eat affects their development and behavior, children need to understand this. Due to changes in our community, it is now necessary to incorporate food literacy into a child's fundamental education to maintain their health. In contemporary society, Most individuals no longer remember that eating is largely for nourishment and good health. Our culture is set up in many ways to promote unhealthy eating patterns that are bad for our health **(Harsha et al., 2019).**

Junk food is just food that is low in calories. A food that is contains high calories

but deficient in fiber, vitamins, minerals, or amino acids is known as an empty calorie food (calories). The nutrients your body needs to keep healthy are not present in these foods. As a result, although having sufficient nutritional value, many foods are seen as unhealthy as junk food. Junk food is a word used to describe foods that are perceived to have little to no nutritional value but contain components that are deemed unhealthy when consumed regularly or at all **(Gopal et al., 2019).**

Bakery goods, beverages, burgers, caffeinated drinks, chips, chocolates, noodles, pizza, soft drinks, and sugar-sweetened drinks are the junk food items that are most frequently consumed. Junk food side effects include obesity, high blood pressure, behavioral problems, cardiovascular risk, and dental decay. 13,274 children between the ages of 9 and 14 were studied, and it was found that 93% of them ate packaged food, 68% drank packaged sweetened beverages more than once per week, and 53% consumed these goods at least once per day. Around 25% of school-age children regularly eat ultra-processed foods from fast food restaurants, like pizza and hamburgers, that are rich in sugar, salt, and fat. Bakery goods, drinks, burgers, and caffeinated beverages are the junk food items that are most frequently consumed **(Hesamedin et al., 2016)**.

School-aged children are at an important point in their lives, necessitating a multidisciplinary strategy for both comprehending and resolving their problems. The most crucial dietary adjustment can make to enhance nutrition and overall health is to stop eating junk food. Many elderly people have lost sight of what genuine food is and what they should eat over the years to maintain their health. They consume garbage produced by contemporary food technology instead of entirely home-cooked meals. To improve nutrition and overall wellness, just stop consuming junk food. Eat fewer processed foods, which tend to be more synthetic than natural. Avoid processed foods that are heavy in high-fructose corn syrup, saturated fat, or other unhealthy ingredients, such as salt or high-fructose corn syrup **(Ashakiran & Deepthi, 2017)**

Since dietary habits have changed over the past few decades, healthy snacks have replaced junk food as a snack option. The primary drivers of junk food intake are television advertising, alluring packaging, and uninformed parents. In this regard, doctors, nurses, and most especially mothers should have a thorough awareness of the many stages of children's growth and development and the elements that influence them (**Darvishi et al., 2013**).

Body mass index (BMI) is calculated by dividing a person's height in meters squared by their weight in kilograms. This approach determines an unhealthy BMI and is simple, affordable, and straightforward to use. In children and adolescents, the body mass index by age and sex is calculated. Whether a child is overweight, underweight, or has excessive amounts of excess fat, their weight has an impact on their health. Based on suggestions from an expert committee, the following table displays weight status categories for BMI for age and associated percentages (**Barlow & Expert Committee 2007**).

Category of weight	Range Percentile
Underweight	< 5th percentile
Healthy Weight	from 5th to < 85th percentile
Overweight	from 85th to < 95th percentile
Obesity	≥ the 95th percentile

The **Centers for Disease Control and Prevention (CDC) (2008**) states that growth charts are determined by the percentage of weight and height and their relationship to age and sex through the websites www.infanchart.com/child/ and http:// dempuegypt. blogspot. com/ 2008/11/egyptian- for Egyptian growth chart.

The phrase "junk food" was coined in 1972 as a public service message by Michael Jacobson. They are labeled "junk food" because they are high in refined sugar, white flour, trans fat, polyunsaturated fat, salt, and numerous food additives like monosodium glutamate and tartrazine. They also lack proteins, fiber, essential vitamins and minerals, and essential minerals like iron and zinc. While high in calories, these foods are lacking in vitamins and minerals that aid in the production of enzymes. Junk food is defined as having a lot of calories but little nutritious value and being heavy in fat, sodium, and/or sugar. Contrarily, unhealthy junk food is

convenient to carry, purchase, and consume (**Lemeshow**, **2018).**

All living things require food as one of their fundamental necessities, and it takes the top spot. For continued growth and development as well as to maintain an active and healthy lifestyle, food is consumed by every individual. Carbohydrates, proteins, fats, and other crucial components make up its composition. Foods that have a high-calorie content but few nutrients are referred to as junk food. These foods are gaining popularity among people due to the time need, taste component, attractiveness, and alluring advertisements. Adolescent psychological growth, such as independence and peer acceptance, may have an impact on food selection and nutritional intake (**Rageliene and Gronhoj, 2020).**

These foods are unhealthy for kids' health. Junk food consumption has been linked to metabolic problems, excessive cholesterol, and obesity. In both the basic and secondary levels, the prevention of various health issues linked to junk food consumption has received a lot of attention in recent years. To safeguard kids' futures and maintain an exceptional health, it is crucial to avoid the health concerns connected to junk food (**Bhadoria et al., 2015).**

Children spend more time away from home and their parents' direct supervision once they start school, and they pick up numerous eating habits about "what to eat" and "how to eat" from other environments. Children's eating patterns and habits are initially impacted by family circumstances, but as they spend more time away from home and under their parents' close supervision, they may change (**Ibrahim et al., 2018).**

There is an increase in the use of junk food as a snack among kids nowadays, especially those who are in school. Nutritional snacks have been replaced by junk food and useless eating items as a result of changes in eating patterns over the past ten years. Increasing consumption of junk food is ascribed to a trend towards urbanization, widespread advertising in the media and on television, and parents' ignorance of nutrition. Excessive ingestion of these useless nutrients suppresses appetite, preventing children from

having access to delicious, very nutritious meals prepared at home (**Pour Abdollahi, et al., 2018).**

Children should equip with the necessary knowledge, abilities, attitudes, and values to improve their health, and schools are an ideal environment for this teaching. On the other hand, meals eaten while in class are a crucial part of the nutrition instruction that is provided in schools. Girls, however, are valued higher than males since they will eventually become mothers. They also learn the majority of their dietary knowledge at this age, which has long-lasting effects on their health as well as the health of their children and families (**Antony & Bhatti, 2016).**

In addition, it seems necessary to set up and Create an educational program taking into account the importance of female students as future mothers, the low cost of health education activities compared to treatment activities, the lack of studies on the connection between education and junk food consumption, and the effects of different educational methods, particularly at the primary school level (**Vakili et al., 2017** and **Rovner, et al., 2016**

Significance of the study:

Bad eating habits are associated with a preference for junk food. The majority of these quick and easy meals have high salt content, which raises the risk of high blood pressure. Junk food is primarily ready-to-eat convenience foods with little to no fruit, vegetables, or dietary fiber and high quantities of salt, sugar, or saturated fats. It is thought to have little to no health advantages (**Sharma, 2018).**

A study conducted among students found that the rising use of flavoring and preservation chemicals has the potential to have negative effects on public health. In addition, it was shown that 23% of meals consumed by students were fast food, with 50% of them claiming to consume at least three of these meals each week. Overindulging in junk food can therefore result in serious problems related to health in the future (**British nutrition foundation, 2020).**

Poor diet, which can kill millions of people through junk food consumption and lack of exercise, is the primary cause of preventable diseases. Obesity, elevated cholesterol levels, heart issues, and a host of other grave health risks

are all consequences of eating junk food. In many settings such as schools, colleges, and childcare facilities, one of the primary roles of nurses is to inform people about the negative effects of junk food **(Harsha et al., 2019)**.

Operational definitions:

Junk food is a term used to describe food that is high in calories from sugar and/or fat, and possibly sodium, but with little dietary fiber, protein, vitamins, minerals, or other important forms of nutritional value.

Aim of the study:

The study aimed to determine the effect of a designed nursing program regarding junk food on school-age children's awareness and their growth through:

- Assess school-age children's knowledge regarding junk food pre-designed nursing program.

- Assess school-age children's attitudes regarding junk food pre-designed nursing program.

- Assess school-age children's practices of junk food pre-designed nursing program.

- Assess the association between junk food consumption with BMI among the studied school-age children.

- Design a nursing program considering the actual requirements of the study group concerning junk food.

- Evaluate the effect of a designed nursing program regarding junk food on knowledge, attitude, growth, and practice among school-age children.

Research Hypotheses:

- School-age children's knowledge regarding junk food will be improved after designed nursing program implementation

- School-age children's attitudes regarding junk food will be improved after designed nursing program implementation

- School-age children's practice will be enhanced concerning junk food after the designed nursing program implementation.

- There will be an association between junk food consumption with BMI among the studied school-age children.

Subject and Methods:

Research design:

This study's objective was accomplished using a quasi-experimental research design; it identified a pre-group that is as comparable to the post-group as possible. There were differences in results between the before and after groups **(Campbell and Stanley, 2015).**

Setting:

The study was carried out at Sohag University Hospital's Medical Pediatric Outpatients Clinic

Subjects:

In this study, a purposeful sample of 100 school-age children was used with the following inclusion criteria

- Willing to engage in the study

- From both sexes (girls and boys)

- Between the ages of 6 and 12.

The exclusion criteria:

- Having persistent or mental health issues

- Chronic or nutritional disorders

Sample size:

According to the following equation, 100 school-age children would make up the necessary sample size.

$$n = \frac{t^2 x p\,(1-p)}{M^2}$$

n = necessary sample size, t = 95% confidence level, p = estimated population, and m = 5% error margin. In the previously chosen settings, a convenient sample of 100 school-age children was included.

Tool of data collection:

Tool: A structured interview questionnaire: The researchers created this tool after studying the relevant literature **(Ibrahim et al., 2018; Chalise, 2018; Rovner et al., 2018; Harsha et al., 2019)** which consisted of four parts:

Part (1): Demographic characteristics of the school-age children**:**

It asked four questions about the students' demographics, including their age, gender, educational level, and place of residence.

Part (II): school-age children's knowledge regarding junk food (pre/post):

It included questions about the following topics: the definition of junk food, examples of junk food, why people prefer junk food, the most preferred junk foods, how to use junk food, the harmful effects of junk food, how to control and prevent it, and where the information came from. It was composed of 12 open-ended questions.

Scoring system for school-age children's knowledge about junk food:

The overall knowledge score for children of school age was 24. Two points were awarded for each fully correct response, one point for each partially correct response, and zero points for any incorrect or unidentified responses. Each knowledge area's item scores were summed up, and the total answers were divided by the number of items to produce the knowledge's mean score. The outcomes were next converted into a percentage score. A student in elementary school was deemed to have a sufficient level of knowledge if their knowledge score was 60% or higher; if it was less than 60%, they were judged to have an inadequate level of knowledge.

Part (III): School-age children's attitude regarding junk food (pre/post):

It featured six questions, including ones about whether eating junk food increases your risk of becoming obese, how enjoyable it tastes, how it frees up time for other activities, and how inexpensive and simple it is to consume junk food.

Scoring system for school-age children**'s attitude:**

It is based on a Likert scale with five options (totally agree, agree, no idea, disagree, and completely disagree), each of which was given a score between 0 and 4. The total of the item scores for each region was divided by the number of items, yielding the mean score for the component. These results were transformed into percentage scores. The attitude of school-age children was deemed favorable if their score was 60% or higher and negative if it was less than 60%.

Part (IV): School-age children's self-reported practice regarding junk food (pre/post):

It is used to evaluate the practices of school-age children towards junk food, including 4 closed-ended questions. Questions were evaluating the kids' behavior concerning watching TV while eating junk food, eating junk food frequently, and eating junk food (corn puffs, biscuits, chocolate, chips, fruit leather, soft drinks, ice drinking, ice cream, candies, Indian leather foods, chewing gum, and sour plum).

Part (V): An anthropometric measurement sheet:-It was used to assess the children's growth parameters such as weight and length for measuring body mass index.

Scoring system for school-age children practice**:**

The school-aged children's practice was graded as follows: done correctly was scored (1), and the items not done or incorrectly done were scored zero. These results were transformed into percentage scores. The practices of school-aged children were deemed good if the percentage score was 60% or above and negative if it was less than 60%.

Validity of the tools:

Five professional professors in the fields of pediatric nursing and community health medicine reviewed the content validity of the tools to make sure that the questions were precise, applicable, pertinent, and comprehensive. The expert judge stated that no modifications had been made.

Reliability of the tools:

Cronbach's alpha coefficients were used to calculate the tools' internal consistency. Tools for the study demonstrated dependability with a Cronbach's alpha of 0.89.

Administrative and ethical considerations:

After explaining its goal to the relevant authorities, permission was obtained for the study's conduct. The purpose and advantages of the study were described to school-age children by the researchers. Parents of school-aged children provided a written agreement to secure their children's involvement. Students of school

age were made aware that participation in the study was entirely optional and that they had the moral right to opt-out. Their right to resign from the study at any time and without providing a reason was also stressed, along with the fact that their responses were private and confidential.

A pilot study:

To ensure that the measures were precise and appropriate and that the survey's completion time was reasonable, the pilot study was carried out on 10% (10 school-age children) of the overall sample. The research study did not include school-aged children who took part in the pilot study.

Data collection procedure:

Field of work:

The researchers first introduced themselves to the school-aged children and their parents explained the purpose of their visits and the research objectives and gave them a thorough background on the study and the questionnaire format, which was modified by the researchers in the Arabic language to collect the necessary data. They then invited them to participate in the study by completing the questionnaire.

The internet, scientific books, articles, periodicals, and current local and international related literature were analyzed by the researchers to better grasp the issue, design the study measures, and carry them out. From the beginning of February 2023 until the end of March 2023, real fieldwork was conducted in the selected location. It takes the participants 30 to 40 minutes to complete the questionnaire.

The researchers performed the study in the following phases:

1- **Assessment Phase**: After explaining the study's goal and gathering the participants' demographic information, the researchers met with school-aged children, introduced themselves, and got their permission to enroll them in the study. Before the educational intervention, they also evaluated the knowledge, attitude, and practices of school-age children toward junk food. The fifth and sixth graders at the selected schools were subjected to anthropometric measures. The researchers measured the weights of the kids using an electronic scale that records weights in kilograms. The scale records heights in cm and children's heights were measured using a plastic measuring tape in centimeters. Index of body mass: The kilogram is divided by the square of the height in meters to determine the body mass index. The percentile BMI was calculated by writing the BMI in front of the Egyptian standard percentile curves for each sex and determining the growth state (overweight and obesity). Overweight is therefore defined as having a BMI of greater than 85 and less than 95 percentile for age and sex. According to the Egyptian Standard Growth Charts developed at the Faculty of Medicine at Cairo University and the National Research Center, obesity is defined as a BMI greater than 95 percentiles for age and sex (Egyptian Growth charts 2002). Children who were overweight or obese were randomly chosen by the researchers to participate in the trial and undergo the program.

2- **Planning phase:** Official administrative approval was obtained from the setting's authorities before this study could begin. The researchers created informational materials on voluntary involvement and provided each school-age child with a confidentiality guarantee by making it clear that all information will be utilized solely for scientific research. The recommendations' content was made available to all study participants and was based on an evaluation of the real needs of children of school age.

3- **Implementation phase:** Four educational sessions and a pamphlet about educational sessions were provided by the researchers. Each session lasts between 45 and an hour. Videos, PowerPoint presentations, and a pamphlet served as illustrations for these sessions. They received information on what junk food is, what it looks like, why people prefer it, the most popular junk foods, how to use junk food, the advantages of reducing consumption, how to cultivate a positive attitude towards reducing consumption, how to eat a healthy diet, the negative effects of junk food, how to control it, and how to prevent them. While the practice sessions involved eating fast food frequently, watching television while eating fast food, and consuming fast food.

When the school-aged subjects of the study completed the questionnaire, the intervention was created based on the findings of the pre-test. After introducing school-age students to the meaning of junk food during the first session, several sorts of knowledge regarding the repercussions of ingesting too much junk food were taught via lecture and questioning. This is known as direct education. In the second session, the prior session's material was first reviewed and some inquiries regarding its concepts were made. Next, the topics covered in the second session—such as the advantages of cutting back on consumption and how cultivating a more positive attitude towards doing so—were offended through lectures, group discussions, question-and-answer sessions, and brainstorming techniques.

The third session began with questions and group discussions, which were then followed by the presentation of the session's content, which covered prevention and barriers to reducing the consumption of junk food as well as strategies for overcoming these barriers and boosting students' self-efficacy regarding reduced consumption of junk foods. In the fourth session, discussed consuming nutritious foods including fruits, vegetables, natural juices, homemade cakes, and nuts. To ensure that students understood the material and prevented misconceptions, educational slides, posters, brochures, and a whiteboard were used in the classroom.

The following anthropometric measures were made of the school-age children: - Weight, which was determined by the researcher using a balance scale of the proper size. The scale was adjusted before the children were weighed by setting it to zero and observing if the balance was recorded precisely in the center of the mark. The scale records heights in cm and children's heights were measured using a plastic measuring tape in centimeters. Children's growth was assessed using a growth curve created by the Centers for Disease Control (CDC) based on their weight and height.

Evaluation phase:

The same tools were used to compare the pre- and post-effects of the designed nursing program regarding junk food on knowledge, attitude, growth, practice and growth among school-age children post one month.

Statistical analysis:

Upon completion of data collection, the data was reviewed, prepared for computer entry, coded, scored, tabulated, and analyzed by computer using the "statistical package. Descriptive statistics (i.e., frequencies, percentages….etc.) were done using the computer program SPSS version 20. Frequency and percentage were used for numerical data also, Fisher exact test was used. The Chi-square test was used to compare differences in the distribution of frequencies among different groups. It is considered * significant when P-values were less than 0.05 or (P< 0.05).

Results:

With an average age of 7.11± 3.45, **Table** 1 revealed that the majority of pupils (37%) were between the ages of 8 and 10; 22% of them were in the third grade. 70% of school-age children reside in urban regions.

Figure 1 shows that there were more girls than males-55% as opposed to 45.0%.

Table (2): demonstrates school-aged children's knowledge about junk food improved after the designed nursing program was implemented, and there was a highly statistically significant difference between their pre-implementation and post-implementation knowledge after one month (P<0.001).

Table 3 showed that, when it came to knowing how the pre-designed nursing program related to junk food, the majority of school-age children (81%) had unsatisfactory knowledge levels, whereas only 19% did so. Nonetheless, (90%) of the school-age children exhibited satisfactory knowledge levels when the designed nursing program was put into place.

Figure (2) explains the difference between the pre-and post-implementation attitudes of school-age children for the nursing program. Before the implementation of the designed nursing program, it was observed that the majority of them (63%) had a negative attitude toward fast food; this number dropped to 23% one month later. Yet, compared to 77% one month after the implementation of the designed

nursing program, only 37% of school-age children had a positive attitude towards junk food before that time

The total practices score for school-age children before and one month after the design of the nursing program was made clear in **Figure** 3. The majority of them (88%) had poor eating practices before the implementation of the designed nursing program, however, this number fell to 14% a month later. Contrarily, just 12% of school-age children had adequate habits regarding junk food before the implementation of the designed nursing program, compared to 86% a month later.

Table 4 shows that the highest number of school-age children (76% of them) had BMIs over average and were categorized as overweight.

According to Table 5, the mean BMI percentage for the investigated school-age children was 56.67.

The consumption of junk food is strongly correlated with BMI over time (P-value <0.02) and with expenses of money on it (P-value

<0.006), according **Table** 6 representation of the relationship between this pattern and BMI.

Table (7): demonstrates that the school-aged children's knowledge score was 27.89 ± 15.23 before the implementation of the designed nursing program and reached 92.31 ± 8.44 one month later ($P < 0.001$). The results are shown in the same table, and they show that the school-age children's attitude score increased from 22.26 ± 17.31 before the adoption of the nursing program was designed to 54.06 ± 13.78 one month later ($P < 0.001$). The BMI score for school-age children was 52.26 ± 3.34 before the implementation of the nursing program that was established, and it increased to 74.03 ± 13.86 one month later, according to **Table 7** ($P < 0.001$).

Finally, it shows that the school-age children's score in the practice of the school-age children was 39.78 ± 9.57 pre-implementation of the designed nursing program which improved from one-month post-implementation of the designed nursing program to 52.00 ± 6.13 ($P < 0.001$).

Table (1): Demographic characteristics of the School-age children (n=100)

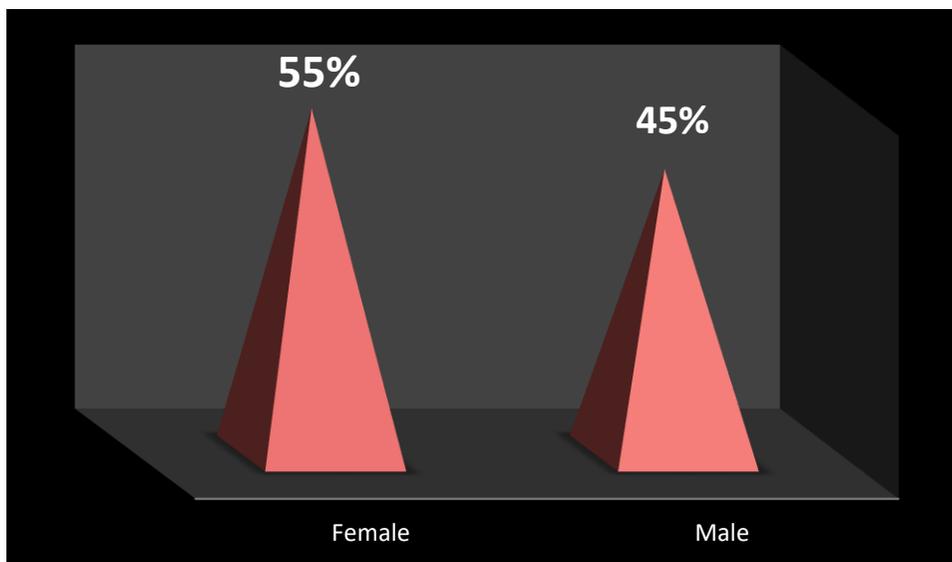| Demographic characteristics	No	%
Age:		
- 6 to < 8	35	35.0
- 8 to < 10	37	37.0
- 10 -12	28	28.0
Mean ± SD		7.11 ± 3.45
Educational grade		
-First grade	16	16.0
-Second grade	14	14.0
-Third grade	22	22.0.
-Fourth grade	19	19.0
-Fifth grade	11	11.0
-Sixth grade	18	18.0
Residence		
- Urban	70	70.0
- Rural	30	30.0

Figure (1): School-age children distribution according to their gender (n=100)

Table (2): School-age children's knowledge scores regarding junk food pre and post-designed nursing program implementation

School-age children's knowledge	No =(100)		X^2	P-value
	Pre-designed nursing program (No/%)	Post-designed nursing program (No/%)		
Meaning of junk food	22(22)	95(95)	64.55	<0.00 1*
Examples of junk food	26 (26)	93 (93)	132.56	<0.001*
Reason for preferring junk food	24 (24)	86 (86)	152.78	<0.001*
Most preferred junk foods	30 (30)	89 (89)	151.73	<0.001*
Utilization of Junk food	23(23)	90(90)	162.43	<0.001*
Effects of junk food	29(29)	91(91)	140.62	<0.001*
Control and prevention	30 (30)	92 (92)	102.59	<0.001*

Chi-square test   ***highly significance at 0.001 levels**

Table (3): Total knowledge score level among the studied school-age children regarding junk food pre and post-designed nursing program implementation (n=100).

Total knowledge	Pre-designed nursing program		Post-designed nursing program		X^2	P-value
	No	%	No	%		
Satisfactory	19	19.0	90	90.0	9.034	<0.001*
Unsatisfactory	81	81.0	10	10.0		

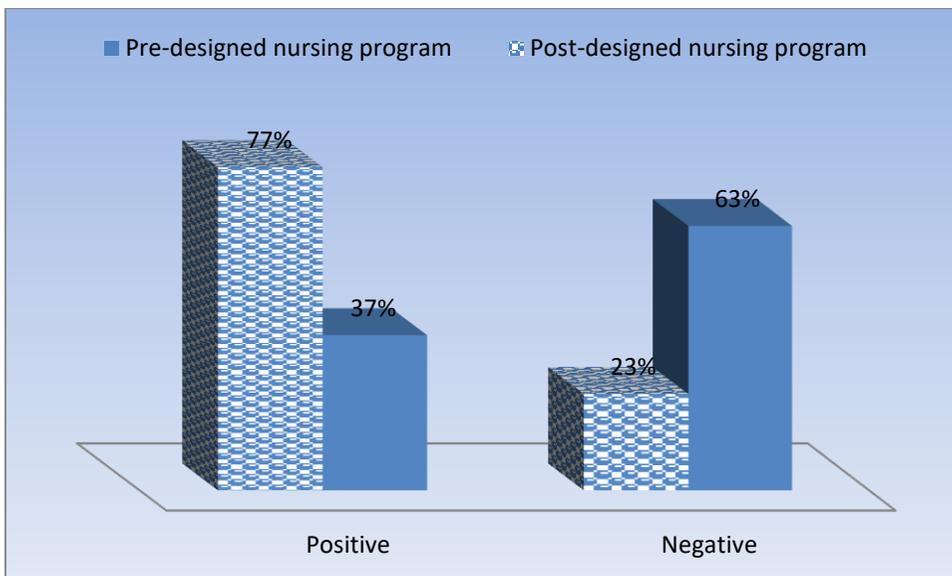Chi-square test   ***highly significance at 0.001 levels**

Figure (2): Total attitude score level of the studied school-age children regarding junk food pre and post-one-month designed nursing program implementation (n=100).
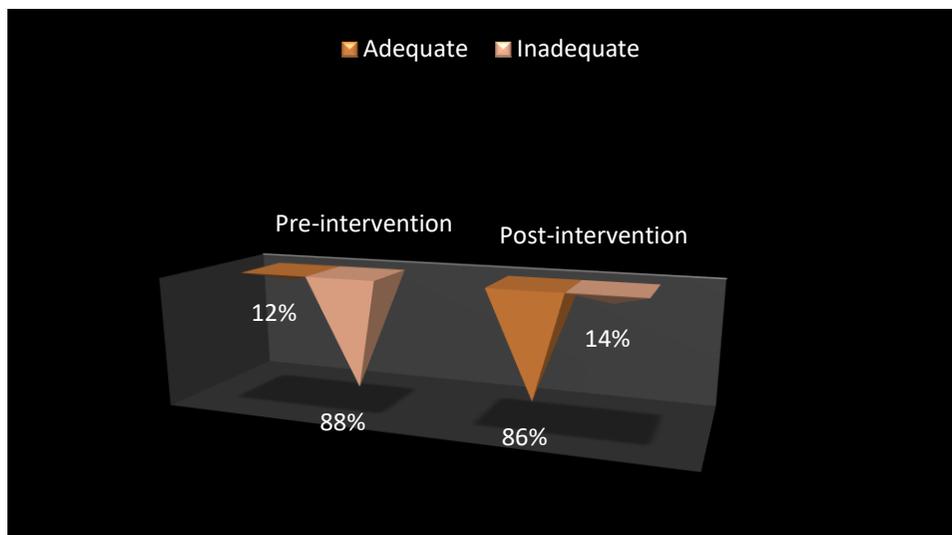

Figure (3): Total practices score level of the studied school-age children regarding junk food pre and post-one-month designed nursing program implementation (n=100).

Table (4): School-age children distribution concerning Body Mass Index

BMI	Frequency	Percentage
<9.5 (underweight)	4	4.0
9.5 to 15.5 (normal)	20	20.0
>16 (overweight)	76	76.0

Table (5): Mean Scores of the studied school-age children regarding Body Mass Index

Variable	Mean ± SD	Mean Percentage	Range
BMI	13.678±2.345	56.67	37.08-14.83

Table (6): The relationship between children of school age who consume junk food and their BMI

Variable				χ^2	p- Value
	<9.5	9.5 to 15.0	>16		
Do you consume junk food as an alternative to regular meals?					
Yes	54 (54.0)	46 (46.0)	0 (0.0)	4.467	0.93*
No	48 (48.0)	42 (42.0)	10 (10.0)		
What is the Most usual time you consume junk food?					
Before school as breakfast	37 (37.0)	50 (50.0)	2 (13.0)	0.587	0.02*
At school during lunch	47 (47.0)	52 (52.0)	1 (1.0)		
After School	56 (56.0)	41 (41.0)	3 (3.0)		
Whenever available	52 (52.0)	42 (42.0)	6 (6.0)		
How many times on average do you consume junk food?					
Everyday	51 (51.0)	49 (46.0)	3 (3.0)	1.424	0.954*
Once a week	47 (47.0)	47 (47.0)	6 (6.0)		
Twice a week	49 (49.0)	48 (48.0)	3 (3.0)		
Several times	53 (53.0)	45 (45.0)	2 (2.0)		
What is the most common junk food you consume?					
Fast food (momo, chow min, etc)	49 (49.0)	46 (46.0)	5 (5.0)	0.306	0.572 **
Aerated drinks (coke, Fanta)	60 (60.0)	40 (40.0)	0 (0.0)		
Street food (pakora, pani puri)	52 (52.0)	45 (45.0)	3 (3.0)		
Candies, biscuits, chips, noodles	50 (50.0)	49 (49.0)	1 (1.0)		

*Significant level at < 0.05; * likelihood ratio; ** Linear by linear*

Table (7): Correlation coefficient between total school-age children's knowledge, attitude, BMI, and practice scores pre and post-one-month of designed nursing program implementation.

Variable	Study time	Mean±SD	Test result
Knowledge	Pre-intervention	27.89±15.23	<0.001*
	one month post the intervention	92.31±8.44	
ANOVA test		<0.001*	0.323
Attitude	Pre-intervention	22.26±17.31	<0.001*
	one month post the intervention	54.06±13.78	
ANOVA test		< 0.001*	0.07
BMI	Pre-intervention	74.26±1.34	<0.001*
	one month post the intervention	59.03±3.86	
ANOVA test		<0.001*	0.343
Practice	Pre-intervention	39.78±9.57	<0.001*
	one month post the intervention	52.00±6.13	
Test result		<0.001*	0.316

Discussion:

There seems to be more processed food and fast food in our diets each day. Unfortunately, this high-calorie, low-nutrient eating pattern leads to weight gain, high blood pressure, and elevated cholesterol levels, all of which are contributing factors in the obesity and diabetes epidemics. Several packaged and processed meals are marketed to children because they are tasty and convenient to consume. Contrarily, the nutritional content of these foods is poor and they are high in sugar and fat. The value of eating a variety of good foods and avoiding junk food must be ingrained in your children from an early age. These healthy eating habits will have an impact on their adult years, as well as their physical, emotional, and cerebral growth and development. In certain circumstances, kids won't eat enough, and it can be difficult to make sure they get a range of nutrient-dense foods and balanced meals and snacks every day. Children of school age require between 1,740 and 1,970 calories per day; these calories cannot come from junk food or other empty calories. An unhealthy diet as a youngster might result in diseases **(Haris, 2018).**

During the past few decades, overweight and obesity rates have skyrocketed, becoming an epidemic that affects nearly every country on earth. In India, school-aged children's overweight rates increased from 9.7% to 13.9% over ten years due to high junk food consumption. Physical inactivity and bad eating patterns are two things that could harm young people's weight status and, in turn, how they will feel as adults in the future. Children's obesity and high body mass indices have been discovered to be closely related to a high diet of fried meals and artificially sweetened beverages. Furthermore, diets that include a lot of junk food have very little in the way of nutrients (**Saeidi et al., 2015**).

Eating sweets is significantly associated with both overall and abdominal obesity. Numerous research has also shown that Western dietary practices (refined grains, red meat, sweets, desserts, pizza, French fries, and soft drinks) were directly connected with obesity while central obesity is generally inversely associated with healthy dietary practices**.** So, the goal of the study was to assess the effect of a designed nursing program regarding junk food on school-age children's awareness and their growth **Mishra et al., (2021)**.

The findings of the current study showed that there was an improvement in school-aged children's knowledge of junk food before and after the adoption of the designed nursing program (P <0.001). According to the researchers, the introduction of a designed nursing program had a positive impact on school-aged children's knowledge of the consumption of junk food. These results are consistent with the study entitled "Impact of promotional training programs to limit the intake of fast food" on fifth-grade primary school girls was the focus of a study by **Fatehi et al. (2015**). That study found that students lacked nutritional knowledge about fast food and its risks, but that after receiving instruction, the intervention group's attitudes improved.

The findings of the current study are similar to **Lee, et al., (2018**) findings, who examined nutrition knowledge, dietary attitudes, and eating behaviors in primary school students in South Korea with and without nutrition education and discovered that education significantly improved knowledge, attitudes, and nutritional behavior. The results also showed that, as a result of a knowledge gap, educational initiatives and more focus on elementary children are needed.

A related study, "Effect of educational intervention on awareness regarding health hazards of junk food consumption among engineering students," was conducted by **Mishra et al., (2021**). It was discovered that the execution of the educational intervention on awareness of the health consequences of junk food consumption resulted in an improvement in knowledge scores.

The studies **Yadav et al., (2019**) "Knowledge Regarding Health Hazards of Junk Food and Its Prevention Among Adolescents," and **Ramachandra et al., (2015**) "Knowledge regarding health hazards of junk foods among adolescents," both reported similar findings that suggested an improvement in knowledge score following the educational intervention.

The majority of school-age children had satisfactory knowledge levels after the adoption of the designed nursing program, according to the study's findings. These results are consistent with those from related studies by **Choobineh et al., (2019**), who investigated the " nutritional awareness of Ahwaz high school females and the education effect," and **Mazloomi et al., (2019**), who looked into the "Effect of role modeling through theatre show in oral health education," found that the student's knowledge regarding the consumption of junk foods was low. has significantly increased following the intervention.

The results of this study showed that most school-aged children had a positive attitude towards junk food one month after the introduction of the designed nursing program. These results are in line with those from related studies by **Pour Abdollahi, et al. (2014) and Hosseini, et al. (2016**) looked into "educational intervention on knowledge, attitude, and practice about iron deficiency anemia in female adolescent students," they found that the student's knowledge, attitudes, and practices about iron deficiency anemia had improved. Similar conclusions were reached by **Heidari et al. (2013**) in their study on the "Efficacy of education on knowledge, attitude, and practice of type II diabetic patients concerning correct nutrition," which discovered that nine months after the intervention, the researchers noticed a significant improvement in the participant's knowledge and attitude towards the intake of fruits.

About the total practice score before and one month after the introduction of the designed nursing program in school-aged children. one month after the introduction of the designed nursing program, The majority of them had sufficient junk food behaviors, it was found. The results of a related study by **Vakili et al., (2017**), which assessed "Assessing the effect of education on knowledge, attitude, and practice of guidance school students about milk and dairy products," support these conclusions by showing that education significantly improved students' performance concerning junk food consumption. This result is in line with a study by **Blom Hoffman et al. (2014**) entitled "Promoting Healthy Food Consumption among Young Children:

Evaluation of a Multi-Component Nutrition Education Program," which demonstrated the positive effects of education on students' eating knowledge and performance.

In this study, the majority of children had BMIs below average and were regarded as underweight. This result contrasts with a Saudi Arabian study's conclusion that less than one-third of obese children who consume junk food are teenagers (**Hala & Amany, 2015**). It implies that junk food is one important element linked to malnutrition, whether it refers to under or over-nutrition.

According to the results of the current study, the majority of school-age children eat junk food as a mid-day snack or lunch in class during recess, and pupils have easy access to these food products from the nearby general stores. a nationwide prohibition on the consumption of junk food, including chips, quick noodles, and soft beverages, by schoolchildren during lunch. Despite the government's threat to withhold funding from schools that disobey the directive, the ban is not been successfully implemented since there are no effective guidelines and an adequate monitoring system (**Naya Patrika, 2013**). It is suggested that local government should properly direct and oversee this system to manage and regulate the marketing and production of junk food.

The current study found a strong relationship between BMI and the amount of time spent consuming junk food. After-school junk food consumption among school-age children is linked to BMIs that are below average and is associated with being underweight. A study that found a substantial correlation between high BMI and fast food eating in the evening and at night supports this conclusion (**Trushna et al., 2014**). This implies that parents and teachers should advise teenagers not to eat junk food while they are at school or on the way home, and that healthy food options should be made available to them at home to prevent them from doing so.

The findings of the current study revealed that there was a relationship between this consumption of junk food and BMI. From the researchers' point of view, it reflected the

negative effects of junk food in increasing obesity among school-age children.

The research also showed a strong correlation between BMI and the amount of money spent on junk food. It has been discovered that school-age children with lower BMIs and considered underweight have lower average monthly spending on junk food. This means that those who eat cheap, readily available foods like chips, fast noodles, and street food are deemed to be eating foods with little to no nutritional value. It is advised that parents refrain from paying for their children's lunches and that general grocery stores and street food vendors not be allowed on school grounds. So that their children are not compelled to buy junk food and are not tempted to do so, parents should place restrictions on their pocket money and make tiffin at home.

The results of the current study showed that school-age children's knowledge, attitude, and practice scores had improved one month after the implementation of the designed nursing program. They also showed a significant difference between the mean knowledge scores of the pre- and post-tests, demonstrating the effectiveness of the designed nursing program implementation. This correlation can be explained by the fact that school-age children were more inclined to use their information when they received it in a useful amount. Similar findings were made by **Yadav & Kaur (2019)** and **Mishra & Ghosh (2020)**, who suggested that interventions are needed to help students apply their knowledge to maintain a healthy lifestyle and develop good eating habits.

According to the current research, there was a relationship between people's demographic traits and their knowledge of junk food consumption. The findings of **Amoldeep's (2017)** research project, "Efficacy of designed teaching program on the understanding of negative consequences of junk food among adolescents," were similar to those of the current study in that they found a significant relationship between pre-test knowledge scores about junk food and age and educational status. On the other hand, **Yadav and Kaur's (2019)** study on "Knowledge About Health Risks of Junk Food and Its Prevention Among Teenagers" found no correlation between knowledge score and certain demographic factors.

The present study's findings have validated its purpose and central hypothesis, and the school-age children who were evaluated now have better knowledge, attitudes, BMIs, and practices surrounding junk food. From the perspective of the researchers, this is demonstrated by the effectiveness of the designed nursing program implementation and its positive impacts. The findings of a study by **Shabanian et al. (2018)** in Tehran, In line with this one, studies named "Impact of Health Education on the Knowledge, Attitude, and Practice of Fast Food Eating among Primary Students" have been conducted. They found that decreasing fast food intake among primary school kids can be accomplished by increasing students' awareness of educational health in terms of knowledge, attitude, and practice. Similarly to this, **Vakili et al. (2018)** discovered that implementing instructional guidelines led to a substantial difference in the mean scores of school-age children's nutritional knowledge, attitude, and behavior regarding milk and dairy products, demonstrating the value of instructional guidelines implementation for students.

Conclusion:

Based on the findings of the current study, its goal, and its hypotheses, it was concluded that most school-age children had poor habits, a negative attitude, and inadequate information regarding junk food before the implementation of the designed nursing program but improved afterward. The current study also concluded that implementing a designed nursing program had a positive impact on raising school-age children's knowledge, attitudes, and eating behaviors about junk food. The consumption of junk food is strongly correlated with BMI over time (P-value <0.02) and with expenses of money on it (P-value <0.006), and there was a relationship between this consumption of junk food and BMI.

Recommendations:

Based on the findings of the present study, the following recommendations were suggested:

- Pediatric nurses should advise mothers bout precautions that must be taken by them regarding the diet habits of their children, the bad effects of consuming junk foods, and the adoption of a healthy lifestyle

among their children.

- Health workers are crucial in delivering an ongoing health education program to students of school age that teaches them about information, positive attitudes, and the negative impacts of junk food.

- To generalize the findings, the current study must be replicated with a wider sample of school-aged children in various contexts.

- Further research into the detrimental impact of fast food on children's health**.**

References:

Amoldeep, K.P. (2017): Effectiveness of planned teaching program on knowledge regarding harmful effects of junk food among adolescents. *Int J Health Sci Res*; 7(5):176–82.

Antony, M., & Bhatti, R.K. (2015): Junk Food Consumption and Knowledge about its Ill Effects among Teenagers: A Descriptive Study. *International Journal of Science and Research*; Vol. 6(4): p.1133-1136.

Ashakiran, A., & Deepthi, R. (2017): Fast Food and their Impact on Health. *Journal of Krishna Institute of Medical Sciences University*. Vol. 1, No. 2, July-Dec.

Barlow, S. E., & Expert Committee. (2007). Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*, *120*(Supplement_4), S164-S192

Bhadoria, A.S., Sahoo, K., Sahoo, B., Choudhury, A.K., Sufi, N.Y., & Kumar, R. (2015): Childhood obesity: Causes and consequences. *J Family Med Primary Care*; 4(2):187. doi:10.4103/2249-4863.154628.

Blom-Hoffman, J., Kelleher, C., Power, T.J., & Leff, S.S. (2014): Promoting healthy food consumption among young children: Evaluation of a multi-component nutrition education program. *J Sch Psychol*; 42:45-60.

British nutrition foundation. (2020): foods in high in fat salt and sugar. Available at http://www. nuitrition.org.uk.

Centers for Disease Control and Prevention (CDC) (2008): "Obesity Prevalence Among Low-Income, School-Aged Children-United States, 1998-2008." MMWR. Morbidity and mortality weekly report 58, no. 28 (2009): 769-773.

Chalise, B. (2018): Junk food prevention education package intervention and its effect on behavioral intention among students of kageswori manohara municipality, Kathmandu district, Nepal. *MOJ Public Health*; 7(3):123–7. doi:10.15406/mojph.07.00217.

Choobineh, M.A., Hesari, S.N., Hossain, D., & Haghighizadeh, M.H. (2019): Study of nutritional knowledge of Ahwaz high school girls and the education effect. *Birjand Univ Med Sci J*; 16:23-30.

Darvishi, L., Ghiasvand, R., Ashrafi, M., Ashrafzadeh, E., Askari, G., & Shiranian, A. (2013): Relationship between junk foods intake and weight in 6-7 years old children, Shahin Shahr and Meymeh, Iran. *J Educ Health Promot*; 2 (3):2-5.

Fatehi Panah, S., Salavati, A., & Shafeai, R. (2015): Effect of promotional training program to reduce the consumption of fast food Case study: Showing promotional Ads, brochures, and Counseling to students in Sama primary school. *J Health Syst Res*; 11(2):435-43. [Persian]

Gopal, J., Sriram, S., Seenivasan, R., & Kannabiran, K. (2019): Student's perspective on junk foods: Survey. *Sudanese Journal of Public Health*; Vol. 7(1): p. 21-25.

Hala, H.A., & Amany, M.B. (2015): Fast Food consumption associated with obesity /overweight /risk among University female students in Saudi Arabia. *Pakistan Journal of Nutrition*; 14 (8):511- 16.

Haris, N. (2018): Demand Media: How to Reduce the Intake of Junk Food in Children. Available from: http://www.healthyeating.sfgate. com/reduce-intake-junk-food-children-57 68. html.

Harsha, H.N., Jha, A.K., Taneja, K.K., Kabra, K., & Sadiq, H.M. (2019): A study on consumer awareness, safety perceptions, and practices about food preservatives and flavoring agents used in packed/ canned foods from South India. *National Journal of Community Medicine*; Vol. 4 (3): p.402-406.

Hesamedin, A.M., Mahnaz, S., Ali, M., Davoud, S., Saharnaz, A., Nejat, D. (2016): Factors Influencing Fast-Food Consumption Among Adolescents in Tehran: A Qualitative Study. *Med J*; 18 (3).

Heydari, G.H., Moslemi, S., Montazeri, F., & Heydari, M. (2013): Efficacy of education on knowledge, attitude, and practice of type II diabetic patients about correct nutrition. Tabib-e-Shargh, *J Zahedan Univ Med Sci Health Serv;* 4:207-13.

Hosseini, M., Shojaeizadeh, D., Chaleshgar, M., & Pishva, H. (2016): A study of educational intervention on knowledge, attitude, practice about iron deficiency anemia in female adolescent students. *Gorgan Univ Med Sci J*; 8:37-43.

Ibrahim, U., Ismail, U.F., & Mohammed, M. (2018): Nutritional Knowledge, Attitudes and Junk Food Consumption Habits among Students of Abubakar Tatari Polytechnic (ATAP) Bauchi. *International Journal of Scientific and Engineering Research*; Vol. 5(12): p.26-28.

Lee, O., Chang, S.O., & Park, M.J. (2018): Comparison of nutrition knowledge, dietary attitude, and dietary habit in elementary school children with and without nutrition education. *J Korean Soc Food Sci Nutr*; 37(11):1427-34. [Korean]

Lemeshow, A.R. (2018): Food and beverage consumption and food addiction among women in the Nurses' Health Studies. Appetite; Vol. 121 (1): p. 186-197.

Mazloomi –Mahmoodabad, S., Moein-Taghavi, A., Barkhordari, A., Alidoosti, F. (2019): Effect of role modeling through theater show in oral health education. *J Islamic Dent Assoc Iran*; 21:138-42.

Mishra, R., & Ghosh, S.S. (2020): Effect of Computer-Based Teaching Module On Knowledge Level Regarding Healthy Lifestyle Practices Among Adolescent School Going Girls At Kolkata-A Pre-Experimental Study. *Int J Creative Res Thoughts*; 8(2):273–7.

Mishra, R., Binumol, K., Drishya, V., Kirtika, S., Meenu, B., & Sinimol, J. (2021): Effect of educational intervention on awareness regarding health hazards of junk food consumption among engineering students, *International Journal of Medical Pediatrics and Oncology*;7(2):73–78

Naya patrika. (2013): Junk food rumors in school (translated from Nepali), Editorial news Kathmandu.

Pour-Abdollahi, P., Zarati, M., Razavieh, S.V., Dastgiri, S., Ghaem Maghami, S.J., & Fathi Azar, E. (2014): The effect of nutrition education on the knowledge and practice of elementary school children regarding junk food intake. *Zanjan Univ Med Sci J*; 13:13-20.

Rageliene, T., & Gronhoj, A. (2020): The influence of peers′ and siblings′ on children's and adolescents′ healthy eating behavior, A systematic literature review. Appetite; 148:104592. doi:10.1016/j.appet.104592.

Ramchandra, M.U., Salunkhe, A.H., & Mohite, V.R. (2015): Knowledge regarding health hazards of junk foods among adolescents. *Int J Sci Res*; 4(4):43–5.

Rovner, A.J., Nansel, T.R., Wang, J., & Iannotti, R.J. (2018): Food sold in school vending machines is associated with overall student dietary intake. *Journal of Adolescent Health*; Vol. 48 (1): p.13–19.

Saeidi, Z., Vakili, R., Ghazizadeh Hashemi, A.h., & Saeidi, M. (2015): The Effect of Diet on Learning of Junior High School Students in Mashhad, North-east of Iran. *Int J Pediatr*; 3 (2.2): 517-26.

Shabanian, K.h., Ghofranipour, F., Shahbazi, H., & Tavousi M. (2018): Effect of Health Education on the Knowledge, Attitude, and Practice of Fast Food Consumption among Primary Students in Tehran, Health Education, and Health Promotion Spring, Volume 6, Issue 2.

Sharma, V. (2018): Adolescent knowledge regarding harmful effects of junk food. *IOSR Journal of Nursing and Health Sciences*; Vol. 1(6): p.1-4.

Trushna, S., Geetanjali, P., Sandhya, P.N., Bhavita Patel, A., Yash, R., R., & Shah, M. (2014): Assessment of Obesity, Overweight and Its Association with the Fast Food Consumption in Medical Students. *Journal of Clinical and Diagnostic Research*; 8(5): 5-7.

Vakili, M., Baghiani-Moghadam, M.H., Pirzadeh, A., & Dehghani, M. (2017): Assessing the effect of education on knowledge, attitude, and practice of guidance school students about milk and dairy products. *Knowl Health J*; 2:41-7.

Yadav, B., & Kaur, M. (2019): Knowledge Regarding Health Hazards of Junk Food and Its Prevention among Adolescents, J Nurs Res, Educ Manag; 1:57–64.