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Description of risky eating habits and behaviors among adolescents at a university in Guanajuato

Descripción de los hábitos y conductas alimentarias de riesgo en adolescentes de una universidad en Guanajuato

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ABSTRACT

In recent times, there has been an increase in malnutrition rates, a situation that, among other populations, is having a worrying effect on adolescents, making it necessary to analyze the possible causes of this increasingly intense trend. Consequently, the general objective of the study is to evaluate eating habits and disorders in 16- and 17-year-old students in upper secondary education at the University of Guanajuato. A descriptive research design was used, with a random probability sample of 241 students, who were given a questionnaire on food consumption frequency, considering the healthy eating index (IAS), as well as a questionnaire on risk behaviors (CAR) to assess eating habits and disorders, respectively. The information obtained was statistically processed using response percentages. The results of the research indicate that 28.5% report a healthy and varied diet, and 37.7% comply with daily consumption recommendations. Regarding students' eating behaviors, 16% were found to be at high risk of developing eating disorders. Therefore, it can be concluded that students' diets require changes in terms of frequency and variety. Furthermore, there are practices that students engage in that make them susceptible to developing eating disorders (TCA), which requires the necessary intervention and measures within the institution for the corresponding prevention and care, for the benefit of the present and future health of students.

Palabras clave:
Alimentación, Hábitos, Conductas, Estudiantes.

RESUMEN

En los últimos tiempos ha existido un incremento en los índices de malnutrición, situación que, entre otras poblaciones, afecta de manera preocupante a los adolescentes, por lo que se hace necesario el analizar las posibles causas de esta tendencia que cada vez se manifiesta con mayor intensidad, derivado de ello, el objetivo general del estudio es evaluar hábitos y trastornos del comportamiento alimentario, en estudiantes de 16 y 17 años del nivel medio superior de la universidad de

	Guanajuato. Se realiza una investigación descriptiva, con una muestra probabilística aleatoria de 241 estudiantes, a quienes se aplica el cuestionario de frecuencia de consumo de alimentos, considerando el índice de alimentación saludable (IAS), así como el cuestionario de conductas de riesgo (CAR) para evaluar hábitos y trastornos alimentarios respectivamente, la información obtenida es tratada estadísticamente mediante porcentajes de respuesta. Los resultados de la investigación indican que el 28,5% manifiesta una alimentación saludable y variada, y el 37,7% cumple con las recomendaciones de consumo diario. En cuanto a las conductas alimentarias de los estudiantes, el 16% se encontró en riesgo alto de desarrollar trastornos de la conducta alimentaria. Por lo anterior se concluye que la alimentación de los alumnos requiere de modificaciones en cuanto a frecuencia y variedad, por otra parte, existen prácticas que los estudiantes realizan y que son susceptibles para desarrollar trastornos de la conducta alimentaria (TCA), lo cual requiere de la intervención y gestiones necesarias al interior de la institución, para la intervención de prevención y atención correspondiente, en beneficio de la salud presente y futura de los estudiantes.

Introduction

Eating habits and behaviors are repetitive practices related to the selection, preparation, and consumption of food. These habits are influenced by several factors, including economic considerations, which affect the availability and affordability of certain types of food—a situation that disproportionately impacts the most vulnerable populations, who sometimes opt to purchase and consume foods that are high in calories but low in nutritional value (1).

With reference to the psychological realm as a motivating factor for habits and behaviors, and considering that adolescence is marked by emotional episodes triggered by various causes, at this stage, adolescents are faced with situations that require them to find their own solutions, fostering a sense of individual responsibility. This can create environments of stress and anxiety that may lead to emotional imbalance, with the potential emergence of eating disorders that can become habits (2).

Lifestyles are another factor to consider in the acquisition, practice, or development of eating habits and behaviors, noting that if they are not beneficial to health, they will have immediate or future repercussions. Among these unhealthy lifestyles are drug use, lack of rest, the accumulation of emotional stress, a lack of regular physical activity, and, of course, a diet that is not nutritious and does not meet personal needs (3).

Another factor is the family environment, as it plays a role in the acquisition or development of eating behaviors; in many cases, adolescents are dependent on the decisions of their parents or guardians, which influence their current and future attitudes and may, in turn, affect the quality of their diet (4). Regarding the importance of family influence, the World Health Organization (WHO) (5) stated in 2017 that the nuclear family plays a crucial role in establishing healthy eating habits from an early age, which promote healthy and adequate growth, support proper development, and contribute to cognitive improvement, in addition to the health benefits these habits foster in the short, medium, and long term throughout a person's life.

The media is another factor to consider at this stage of life in terms of the development of eating habits and behaviors. Advertising promotes beauty stereotypes, and failure to meet these standards can lead to frustration in adolescents, which in turn can affect the development of eating habits and behaviors that impact their physical, psychological, and emotional health (6).

Another factor that influences eating behaviors is the adolescent's own understanding of the concept of healthy eating, which is shaped by their life experiences, knowledge of the subject, tastes, preferences, access to food, portion sizes, preparation methods, frequency, and mealtimes, as noted by Robledo et al. (7) (2023) mentions in their study that students are aware that a varied diet is beneficial to health and that fast food, soft drinks, and sugar, although they enjoy them, they recognize that they are not good for their health, reiterating that one's construct of healthy eating influences decision-making and, consequently, the manifestation of eating habits and behaviors.

Equally important is the fact that students' limited or nonexistent connection to support groups—such as their own families, educational institutions, and health care providers—is another risk factor for the development of unhealthy habits and behaviors. This lack of connection prevents students from receiving the guidance and training they

need to make their own decisions about food and nutrition, while always prioritizing self-care (8).

The repercussions of adopting unhealthy eating habits and risky eating behaviors are felt worldwide. In this regard, as stated by the WHO (9), in 2022 there were 390 million overweight children and adolescents, of whom 160 million were obese. In this regard, it is stated that "Poor nutrition causes serious harm to the health and development of children and adolescents: increased morbidity and mortality, impaired cognitive function and lower academic performance, stigma and discrimination, as well as chronic diseases, premature mortality, and a lower quality of life in adulthood" (10).

These dietary habits and behaviors represent a deeply concerning situation that requires immediate attention due to the nature and consequences of diseases, including metabolic changes such as high blood pressure, insulin resistance leading to elevated serum glucose levels, atherosclerosis, decreased levels of high-density lipoproteins (HDL), increased levels of low-density lipoproteins (LDL), and obesity (11).

These conditions are closely linked to lifestyle; therefore, it is essential to pay special attention to the development of eating habits and behaviors at an early age, so as to establish the necessary conditions for promoting, developing, and maintaining good health by reducing current and future risks of chronic degenerative diseases, thereby enabling individuals to positively influence their quality of life (12). According to Galván (13), the term "quality of life" refers to the fulfillment of physiological, economic, social, material, and emotional needs; therefore, the concept includes both objective and subjective factors aimed at individual well-being. Consequently, it is related to achieving a state of good physical and mental health, as well as the attainment of personal goals.

With regard to health care, Bustamante et al. note that (14) Adolescence is the stage of transition from childhood to young adulthood, during which childhood behaviors and attitudes are gradually abandoned or undergo gradual changes, as the individual adopts behaviors characteristic of a young person preparing for adulthood. During this period, highly noticeable changes occur in a person—ranging from their morphological structure and physiological adaptations to their decision-making abilities—which influence their personality traits and quality of life.

A defining feature of adolescence is the ability to develop, construct, and express one's identity. To achieve this, individuals go through drastic behavioral changes ranging from anxiety to the choice and execution of actions. In this process, society exerts a significant influence on decision-making, which is why self-perception and body image pose a real challenge at this stage of life (15). The concept of self-image refers to the mental representation and expression that a person constructs of their own body; it is the way they perceive themselves, how they feel, and, consequently, how they act based on that perception. Self-image can change over the course of one's life, with adolescence being the stage when individuals are most vulnerable in terms of body acceptance due to the various changes that occur during this period, which can lead to either acceptance or rejection of one's own image (16). In this process, as Zúñiga (17) notes, self-esteem is particularly important, since a high percentage of this population harbors prejudices regarding their physical appearance, which either facilitates their adaptation to a social group or, conversely, leads to psycho-emotional distress, causing this to interfere with the adolescent's daily activities and giving rise to the onset or development of eating habits and behaviors that may benefit or harm their health.

Among the consequences of adopting unhealthy eating habits and risky behaviors are weight gain due to excessive consumption of high-calorie foods and unhealthy fats, and low or no consumption of fruits, vegetables, and fiber-rich foods—a situation that can sometimes have fatal consequences (18).

Similarly, significant hormonal changes occur, such as an increase in ghrelin levels, which leads to increased appetite, and a decrease in leptin levels—a hormone that regulates appetite—thereby increasing caloric intake and raising the risk of overweight and/or obesity in adolescents (19).

Due to poor eating habits, the global adolescent population has seen a 28% increase in the rates of overweight and obesity compared to 2016; in Latin America, this nutritional issue is considered a critical health situation due to the alarming rates being reported. Specifically in Mexico, it is estimated that more than 80% of this population is at latent risk of becoming obese adults, with the health consequences that this condition entails (20). In this regard, Mexico is cited as one of the countries with the highest rates of this condition, with one in three adolescents being obese or overweight; therefore, it is necessary to accurately identify the contributing factors in order to establish concrete strategies to address this health issue, both now and in the future (21).

The issue addressed in this study concerns the growing trend of malnutrition and eating disorders among adolescents nationwide, as reported by the National Health and Nutrition Survey, which indicates that 40.4% were overweight or obese. This represented a 26.8% increase compared to 1999. Currently, overweight and obesity among adolescents are the most prevalent conditions that prevent them from adopting and maintaining healthy lifestyles (22).

Given the above, the objective of this study was to evaluate risky eating habits and behaviors among 16- and 17-year-old high school students.

Method

Study Type

The study was quantitative, descriptive, and cross-sectional.

Participants

The institution where the research is being conducted is the Guanajuato High School (ENMSG), which opened in 1971 to provide a general high school education to the population of Guanajuato City. It is one of the first choices for students in the municipality who have completed their basic education and wish to continue their studies at this level.

The ENMSG currently has an enrollment of 880 students in the afternoon session. The participants were students at that educational level; 640 students were considered for a random probability sample. A 95% confidence level and a 5% margin of error were used, resulting in a sample size of 241 students.

To this end, the following inclusion criteria were applied: students aged 16 to 17, enrolled in the afternoon session, currently in their 2nd and 4th semesters, and who agreed to participate in the study.

The exclusion criteria include: students who are 15 or 18 years old; students enrolled in the 1st, 5th, or 6th semester of high school; students enrolled in the morning session; as well as those who do not agree to participate in the study or decide to withdraw from it.

Technique

Two questionnaires were administered to gather information on risky eating habits and behaviors, respectively. The instruments used for data collection were: the food frequency questionnaire, which provides insight into compliance with daily, weekly, and occasional recommendations, as well as dietary variety, based on the Healthy Eating Index (HEI). This questionnaire contains 10 variables, which are specified in the following structure:

1. Consumption of grains and grain products.
2. Consumption of vegetables.
3. Fruit consumption.
4. Consumption of milk and dairy products
5. Meat consumption
6. Consumption of legumes
7. Consumption of sausages and cold cuts.
8. Eating sweets.
9. Consumption of sugary soft drinks
10. Dietary Variety

Based on the dietary guidelines recommended by the Spanish Society of Community Nutrition (SENC), variables 1, 2, 3, and 4 represent foods consumed daily, such as grains and grain products, vegetables, fruits, milk, and dairy products; variables 5 and 6 represent foods for weekly consumption (1 to 2 times a week), including meats and legumes, while variables 7, 8, and 9 refer to foods for occasional consumption (never or almost never), such as processed meats and cold cuts, sweets, and sugary soft drinks. Point 10 determines the variety of the diet.

This questionnaire awards a maximum of 10 points when the consumption frequencies recommended by the SENC are followed, with scores awarded in descending order of 7.5, 5, 2.5, and a minimum of zero points if these recommendations are not followed. With regard to the variety of the diet, 2 points are awarded for meeting the daily frequency recommendations and 1 point for following the weekly suggestions (23).

The Risky Eating Behaviors Questionnaire (CAR) was also used; based on the responses provided, it identified potential behavioral abnormalities related to eating that could pose a risk for the development of eating disorders. It addresses issues such as fear of gaining weight, binge eating, lack of control over eating, and restrictive and purgative eating behaviors. This questionnaire has four response options, scored on a scale from 0 to 3, where 0 represents “never or almost never” and 3 represents “very often” (24).

Results

The sample consisted of 241 students, 223 of whom completed the questionnaires designed to assess their eating habits and risky eating behaviors.

As shown in Table 1, based on the IAS recommendations, 28.5% of the students reported having a "HEALTHY AND VARIED DIET" that met the suggested criteria. In terms of the frequency and variety of foods consumed, 32.6% fell into the "NEEDS CHANGES" category, and 38.9%—according to the results—were rated as having a "LESS HEALTHY" diet because they did not meet the recommended frequency and variety of foods.

Based on the IAS index recommendations, on average only 37.7% of students met the daily consumption recommendations, while 21.5% followed the weekly consumption recommendations, and 21% followed the occasional consumption recommendations.

According to the data, the most frequently consumed foods in the "healthy eating" category are fruits and legumes, while those consumed in smaller quantities include grains and grain products, meat, and sugary soft drinks. As for the foods most commonly consumed in the "unhealthy" category, these include vegetables, fruits, legumes, and sugary soft drinks. In this same category—grains and grain products, meats, sausages, and cold cuts—these are the foods that are consumed the least

Table 1. Dietary Characteristics Based on Results.

Variables **Daily intake**	**Daily intake 10 points**	**I consume it 3 or more times a week, but not every day 7.5 points**	**Consumed 1 to 2 times a week 5 points**	**I consume it less than once a week—2.5 points**	**Food consumption: never or almost never—score 0**
1. Grains and grain products	18%	38%	30%	9%	5%
2. Vegetables	39%	38%	18%	4%	1%
3. Fruits	52%	32%	12%	3%	1%
4. Milk and dairy products	42%	28%	22%	4%	4%
Weekly consumption	Consumed 1 to 2 times a week			Daily intake	Daily intake
5. Meat	11%	52%	1%	33%	3%
6. Legumes	32%	47%	9%	10%	2%
Occasional consumption	Never or almost never	I eat it less than once a week	I eat it less than once a week	I consume it 3 or more times a week, but not every day	Daily intake
7. Sausages and cold cuts	22%	22%	38%	15%	3%
8. Sweets	12%	21%	33%	28%	6%

9. Sugary soft drinks	29%	15%	23%	24%	9%
	10. Variety: **2 points if you meet each of the daily recommendations.** **1 point if you follow each of the weekly recommendations**				
Variety	2	1	0	0	0
Total score	92	68.5	45	22.5	0
Feeding category (Norte and Ortiz, 2011)	**HEALTHY 28.5%**	**CHANGES ARE NEEDED 32.6%**	**NOT VERY HEALTHY 20.7%**	**NOT VERY HEALTHY 14.5%**	**NOT VERY HEALTHY 3.7%**
Most Commonly Consumed Foods	Fruits, vegetables	Grains and grain products, vegetables, meat, sugary soft drinks	Grains and grain products, legumes, sugary soft drinks	Grains and grain products, meats, sausages, and cold cuts	Vegetables, fruits, legumes, soft drinks
Foods Consumed Least Often	Grains and grain products, meat, sugary soft drinks	Milk and dairy products, legumes, sausages, and cold cuts	Fruit, meat, sausages, and cold cuts	Fruits, vegetables, sweets	Grains and grain products, meats, sausages, and cold cuts

Regarding the Risky Eating Behaviors Questionnaire (CAR), as shown in Table 2. Among the activities identified as posing the highest risk for developing an eating disorder, 46% mentioned exercising with the intention of losing weight, followed by 38% who expressed concern about gaining weight and 27% who reported that they have sometimes overeaten; 15% report having lost control over what they eat (a feeling of being unable to stop eating), 13% report having gone on diets, and 10% report having fasted for 12 hours or more; these last two percentages were done with the goal of trying to lose weight.

With regard to activities performed less frequently and posing a lower risk for the development of eating disorders, the report indicates that 2% of students have taken laxatives to facilitate bowel movements, 3% report having used pills, in both cases, the students did not specify what types of substances they consumed; meanwhile, 5% reported having vomited after eating, and finally, 4% mentioned having taken diuretics. In all of these less frequently engaged-in activities, the goal is to try to lose weight.

Table 2: Responses to the CAR Screening Questionnaire

	Never or almost never	**Sometimes**	**Frequently: twice a week**	**Very often: more than twice a week**
I've been worried about gaining weight	26%	36%	15%	23%
Sometimes I've eaten too much; I've stuffed myself.	24%	49%	14%	13%
I've lost control over what I eat (I feel like I can't stop eating).	54%	31%	8%	7%

I've been throwing up after meals to try to lose weight	87%	8%	3%	2%
I've fasted (going without food for 12 hours or more) to try to lose weight.	66%	24%	5%	5%
I've been on diets to try to lose weight	60%	27%	10%	3%
I've been exercising to try to lose weight.	26%	28%	22%	24%
I've used pills to try to lose weight. Specify which one(s)	94%	3%	2%	1%
I've been taking diuretics (medication to help eliminate water) to try to lose weight. Specify which one(s)	93%	3%	2%	2%
I've been taking laxatives (a substance that helps with bowel movements) to try to lose weight. Specify which one(s)	91%	7%	1%	1%

Figure 1 shows the percentage of risk for developing eating disorders, indicating that a score of 11 or higher indicates a risk of developing these behaviors, a score of 7 to 10 is considered moderate risk, and a score of less than 7 indicates no risk of developing them (Unikel et al. (2011).

With regard to the situations described by the students three months prior to completing the Risky Eating Behaviors Questionnaire (CAR), it was determined that 62% did not show a risk of developing eating disorders, 22% were at moderate risk, and 16% were at high risk of developing eating disorders.

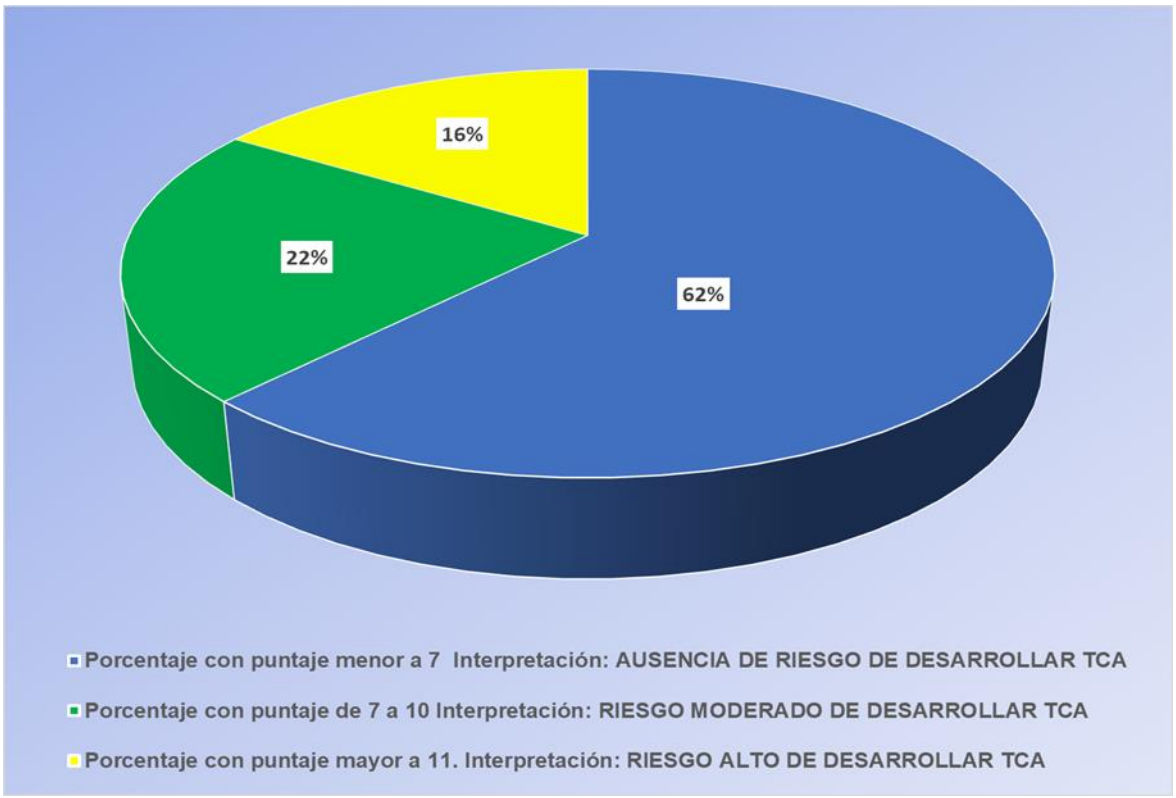

Figure 1. Percentages of risk of developing an eating disorder.

Discussion and Conclusions

The research findings show that the diets of 71% of the students in the study require changes to promote healthy eating, in terms of recommended daily intake, weekly, and occasional intake. The data indicates a limited variety in dietary intake; consequently, their dietary status does not meet the requirements for promoting or maintaining optimal health, as defined by the IAS.

The results presented here are similar to those reported in the study by Aguilera et al. (25) which analyzed the lifestyles of students in the Sabana Centro province of Cundinamarca, Colombia, with regard to eating habits and behaviors, concluding that these were not adequate, as the students consistently consumed fast food and drank large amounts of carbonated beverages.

The findings of this study are consistent with the results of the study by Ruiz and Aguilera (26), which evaluated dietary habits at the Institución Universitaria Colegios de Colombia. The study found that these habits are not ideal, as there is a lack of dietary variety, carbohydrate intake is high, and protein consumption is low, noting that 75% of the participants have an unhealthy diet.

Furthermore, the results are consistent with the research by Maza et al. (27) In which a literature review was conducted; this review noted that findings published in specific health sciences journals indicated that 87.72% of college students engage in unhealthy habits, as evidenced by a diet lacking in variety and of low nutritional quality.

With regard to eating behaviors, while it is true that the findings of this study indicate that only 38% pose a risk of developing an eating disorder, given the nature and significance of these behaviors, it is necessary to implement the necessary measures to eradicate them, with the goal of ensuring that the student population is free of eating habits that are harmful to health.

The findings presented here are consistent with the study conducted by Saucedo et al. (28) which identified the presence of risky eating behaviors among high school students and concluded that 15.5% were at high risk, while 17.3% were at moderate risk.

In contrast to the work by Bautista et al. (29) which analyzed 200 Mexican high school students and reported that only 5.5% exhibited risky eating behaviors and 94.5% were not at risk for risky eating behaviors; these findings are consistent with the research by Villalobos et al. (30) whose objective was to report and update information regarding the prevalence of risky eating behaviors among Mexican adolescents, for which the results of the national health survey conducted in 2022 were considered; these results indicate that 6.5% report risky eating behaviors, while 93.5% do not exhibit risky eating behaviors. The information in these studies differs from that presented in the study itself, as the latter reports higher percentages of students at risk.

A close similarity is evident when comparing the results of this study with the study conducted by Sáez et al. (31) which analyzed risky eating behaviors among young adults in Chile in the municipalities of Chillán, and found that 37.16% are at risk for eating disorders, while 62.84% are not at risk.

Disclosing personal information sometimes makes it difficult to obtain such data, as it constitutes an invasion of the privacy of the research subjects. This situation is exacerbated when the information pertains to ways of thinking, actions, and behaviors that, in the subjects' view, may or may not be accepted by society; consequently, they prefer to conceal the truth or exclude themselves from the research, which poses an obstacle to the study's completion. In this study, 18 students chose of their own accord not to complete the questionnaires, a decision that was respected.

As a conclusion to this study, it is evident that the diets of the students in the study are unhealthy and need to be changed, specifically in terms of the frequency and variety of their food intake. With regard to eating disorders, certain behaviors have been identified among students, such as exercising because they feel they do not have the "ideal" body type, overeating, and fasting to lose weight—all of which are risk factors for the development of eating disorders.

The habits and behaviors described here indicate the need for professional intervention to address the situation outlined, with the aim of promoting or improving overall health, with a particular focus on eating habits and behaviors. It is important to recognize that unhealthy eating habits, combined with a poor diet, can lead to health problems among students, such as abnormal cholesterol and triglyceride levels and high blood pressure, as well as being overweight, obesity, malnutrition, cardiovascular disease, and psychological disorders.

As mentioned earlier, adolescence is a stage with very distinctive characteristics in terms of developmental, energy, physical, social, and psychological needs—a time when habits and behaviors in general become established and will shape behavior in adulthood. For this reason, it is essential that students receive the necessary support to foster eating habits and behaviors that promote these processes.

In light of the above, it is recommended that education and health authorities work together to develop and implement a nutritional assessment and intervention program, taking into account the specific characteristics and needs of students, thereby fostering healthy environments with regard to eating habits and behaviors. It is also recommended that relevant prevention and care measures be implemented, such as management, counseling, and training regarding food procurement, storage, preparation, and consumption, involving students, parents, and health institutions, thereby creating collaborative networks that promote, improve, and/or strengthen eating habits and behaviors to enhance current and future health.

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Conflict of Interest

I hereby declare, under penalty of perjury, that I have no conflict of interest in any activities that could introduce bias into the design, conduct, and/or results of this research.

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