Evaluation of intestinal constipation in higher level students at a university in the extreme south of catarina

Avaliação de constipação intestinal em estudantes de nível superior em uma universidade do extremo sul catarinense

Evaluación del estreñimiento intestinal en estudiantes de nivel superior de una universidad del extremo sur de catarina

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RESUMO

Objetivo: Avaliar a presença de CI em estudantes das fases iniciais e finais dos cursos de Medicina, Nutrição e Engenharia Civil de uma Universidade no Extremo Sul Catarinense - Criciúma, através da ingestão alimentar e hídrica, dos tipos de fezes, se fazem uso, ou não, de alternativas de evacuação, comparando os hábitos alimentares com influência na constipação nos estudantes das três diferentes áreas. **Método:** Tal estudo foi realizado através de um questionário adaptado com questões sobre os hábitos de vida do indivíduo, juntamente com os critérios de Roma III, Roma IV e Escala de Bristol. **Resultados:** Caracterizou-se por 158 estudantes, sendo 71,5% (n=113) representam o sexo feminino e apenas 28,5% (n=45), o sexo masculino. A ingestão de líquidos demonstrou-se ser baixa, sendo 33,5% (n=53) ingerem mais que 1600ml/dia. Através da Escala de Bristol, 15,8% (n=25) revelaram evacuar o Tipo 1 e 2, caracterizando CI. Sobre os laxantes, apenas 3,2% (n=5) confirmaram a utilização. Foi verificada CI em 18,6% (n=21) das mulheres e 8,9% (n=4) dos homens. **Conclusão:** a alimentação destacou ser pobre em fibras. É notório que os estudantes sofrem com sintomas de CI. Através do auxílio de um profissional de nutrição, é necessário que equilibrem sua alimentação com fibras, consumem mais água diariamente e, consequentemente, auxiliem no bom funcionamento intestinal e na melhora da qualidade de vida.

Descritores: Estudantes; Constipação Intestinal; Ingestão Hídrica; Fibras.

ABSTRACT

Objective: To evaluate the presence of IC in students in the initial and final stages of Medicine, Nutrition and Civil Engineering courses at a University in the extreme south of Santa Catarina - Criciúma, through food and water intake, types of feces, whether they use, or no, of evacuation alternatives, comparing eating habits with influence on constipation in students from three different areas. **Method**: This study was carried out through a questionnaire answered with questions about the individual's life habits, together with the criteria of Rome III, Rome IV and Bristol Scale. **Results:** Characterized by 158 students, 71.5% (n=113) female and only 28.5% (n=45) male. Liquid intake was low, with 33.5% (n=53) ingesting more than 1600ml/day. Through the Bristol Scale, 15.8% (n=25) revealed to evacuate Type 1 and 2, characterizing CI. Regarding laxatives, only 3.2% (n=5) confirmed their use. CI was found in 18.6% (n=21) of women and 8.9% (n=4) of men. **Conclusion:** the highlighted diet is low in fiber. It is notorious that students suffer from HF symptoms. Through the help of a nutrition professional, it is necessary that they balance their diet with fiber, consume more water daily and, consequently, help in the good intestinal functioning and in the improvement of the quality of life

Descriptors: Students; Intestinal Constipation; Water Intake; Fibers.

RESUMEN

Objetivo: Evaluar la presencia de CI en estudiantes de las etapas inicial y final de las carreras de Medicina, Nutrición e Ingeniería Civil de una Universidad del extremo sur de Santa Catarina - Criciúma, a través de la ingesta de alimentos y agua, tipos de heces, si utilizan , o no, de alternativas de evacuación, comparando los hábitos alimentarios con influencia sobre el estreñimiento en estudiantes de las tres diferentes áreas. **Método:** Este estudio se realizó mediante un cuestionario adaptado con preguntas sobre el estilo de vida del individuo, junto con los criterios de Roma III, Roma IV y la Escala de Bristol. **Resultados:** Se caracterizó por 158 estudiantes, 71,5% (n=113) mujeres y sólo 28,5% (n=45) hombres. La ingesta de líquidos resultó ser baja, con un 33,5% (n=53) ingiriendo más de 1.600 ml/día. A través de la Escala de Bristol, el 15,8% (n=25) reveló evacuar Tipo 1 y 2, caracterizando CI. Respecto a los laxantes, sólo el 3,2% (n=5) confirmó su uso. La CI se verificó en el 18,6% (n=21) de las mujeres y en el 8,9% (n=4) de los hombres. **Conclusión:** la dieta era baja en fibra. Es notorio que los estudiantes padecen síntomas de CI. Con la ayuda de un profesional de la nutrición, es necesario que equilibren su dieta con fibra, consuman más agua diariamente y, en consecuencia, ayuden en el buen funcionamiento intestinal y en la mejora de la calidad de vida.

Descriptores: Estudiantes; Estreñimiento; Ingesta de Água; Fibras.

ORIGINAL

Introduction

The current process of evolution often determines and conditions the lifestyle that interferes with the functioning of the human body, causing physiological dysfunctions. Lifestyle represents one of the main factors associated with the onset of diseases, which can be called "diseases of civilization", with constipation being part of this group.[1]

Constipation is considered a population problem due to its high prevalence, affecting a high percentage of individuals, reaching 27% of the population. Thus, the high incidence is related to age, sex, low socioeconomic status, inadequate diet, low water intake, sedentary lifestyle, endocrine and metabolic alterations, neurological diseases, psychiatric disorders, and idiopathic causes.[2]

The pathophysiology of constipation is multifactorial and complex, and symptoms are characterized by a frequency of bowel movements less than three times a week, hard stools, straining when having a bowel movement, and a feeling of incomplete evacuation for at least six months. Although constipation is not life-threatening, it can cause discomfort and significantly impact quality of life.[3]

The same author also states that the prevalence of functional constipation in the Brazilian population is 36.8%, being higher in the elderly in relation to age and in females in general. In addition, sedentary people, people with low water and fiber intake, and who have a low socioeconomic status are also part of this percentage. University students represent a risk group for the development of functional constipation, because they present greater self-responsibility at this stage of life, in addition to psychosocial and environmental factors such as poor eating habits and sedentary lifestyle.

Among the factors related to constipation, the consumption of fiber is of great importance. The adherence to the continued use of fibers by individuals is not easy to achieve, due to its tasteless of products such as wheat bran, until the occurrence of abdominal discomfort, fullness and flatulence. However, it is currently known that there is a variety of foods that are sources of fiber, of good quality and with great acceptance. Despite this, there is still competition with laxatives and suppositories, which are easy to ingest and apply, inexpensive products with immediate and significant effects[4].

Considering the high prevalence of constipation in the population, with young university students being a risk group for this problem, the present research brings as a problem the eating habits, water intake and intestinal functioning of university students.

Methodology

Research Design and Sample

The research is classified as basic, carried out in the field with primary data. The present study was submitted to the CEP of the Universidade do Extremo Sul Catarinense (UNESC) under opinion number: 3.768.343 and approved by the Certificate of Presentation for Ethical Appreciation (CAAE)

under number: 26663919.0.0000.0119, based on Resolution 466/12 of the National Health Council, as it is a research project involving human beings. Those who agreed signed the Informed Consent Form (ICF) and were free to withdraw from the study at any time.

The population of the present study was composed of students enrolled at the University of the Extreme South of Santa Catarina (UNESC) located in Criciúma, covering both sexes. It comprises students from the 1st and 8th phase of the medical course, 1st and 6th phase of the nutrition course, 1st and 8th phase of the civil engineering course (first and last theoretical phase of the courses). Regarding the initial number (n), an average of 243 students were expected to participate in the research, of which 90 were medical students, 74 were nutrition students, and 79 were civil engineering students, according to the information provided by the course coordination. From this initial (n) onwards, 35 civil engineering students from the 8th phase, 30 medical students from the 1st phase and 20 medical students from the 8th phase did not answer the questionnaire. Data collection was carried out from February to April 2020.

Students from the courses of medicine, nutrition and civil engineering were included in the research, who agreed to participate in the research and signed the Informed Consent Form (ICF). Individuals who did not agree to participate in the study, did not answer the questionnaire and, therefore, did not sign the informed consent form, were excluded. In addition, students who were in other courses and phases and those who were absent on the day of the research were excluded.

Obtaining Study Data

A questionnaire containing questions related to constipation: Rome III[5] and Rome IV[6] criteria was applied, along with the Bristol Scale[7] and the lifestyle habits of the participants. All questions were objective.

This questionnaire was delivered together with the informed consent form, which was signed by the participants: students of the 1st and 6th phase of nutrition, totaling 74 students, and 1st phase of civil engineering, with 39 students. This face-to-face data collection took place between February 26 and March 16, 2020.

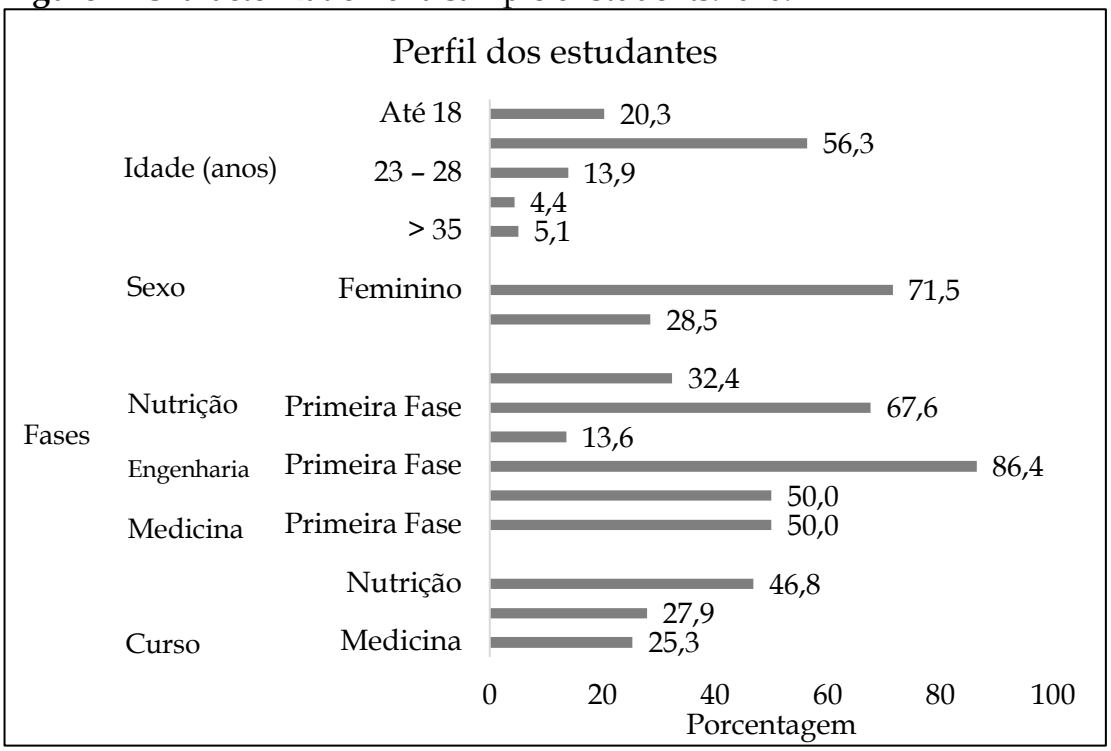
Due to the COVID-19 pandemic together with the shutdown of the University from March 17, 2020, data collection was carried out virtually from April 1 to 13, 2020. Through Google's tool, Google Forms, it was possible to develop the same questionnaire online, thus not changing the research instrument.

Contact was made via WhatsApp with the leaders of the missing classes for the research (8th phase of civil engineering and 1st and 8th phase of medicine), requesting their participation through a link. When opening the web page (by cell phone or computer), the students who were available to participate accepted the informed consent form and immediately answered the questionnaire, with an estimated time of 3 minutes. Thus, among the participants who responded online to the survey, there were a total of 5 civil engineering students 8th phase, 20 medical students 1st phase and 20 medical students 8th phase.

Results and Discussion

The present study sampled 158 students, of which 46.8% (n=74) were from the Nutrition course, 67.6% (n=50) were students from the first phase and 32.4% (n=24) from the sixth phase. In the Civil Engineering course, it comprised 27.9% (n=44) of the sample, with 86.4% (n=38) students from the first phase and 13.6% (n=6) from the eighth phase. On the other hand, the Medicine course resulted in 25.3% (n=40) of the sample, of which 50% (n=20) were in the initial phase and 50% (n=20) in the eighth phase. The majority of the sample was female, 71.5% (n=113), with only 28.5% (n=45) male. The age group between 18 and 23 years was predominant in the sample, equivalent to 56.3% (n=89) (Figure 1).

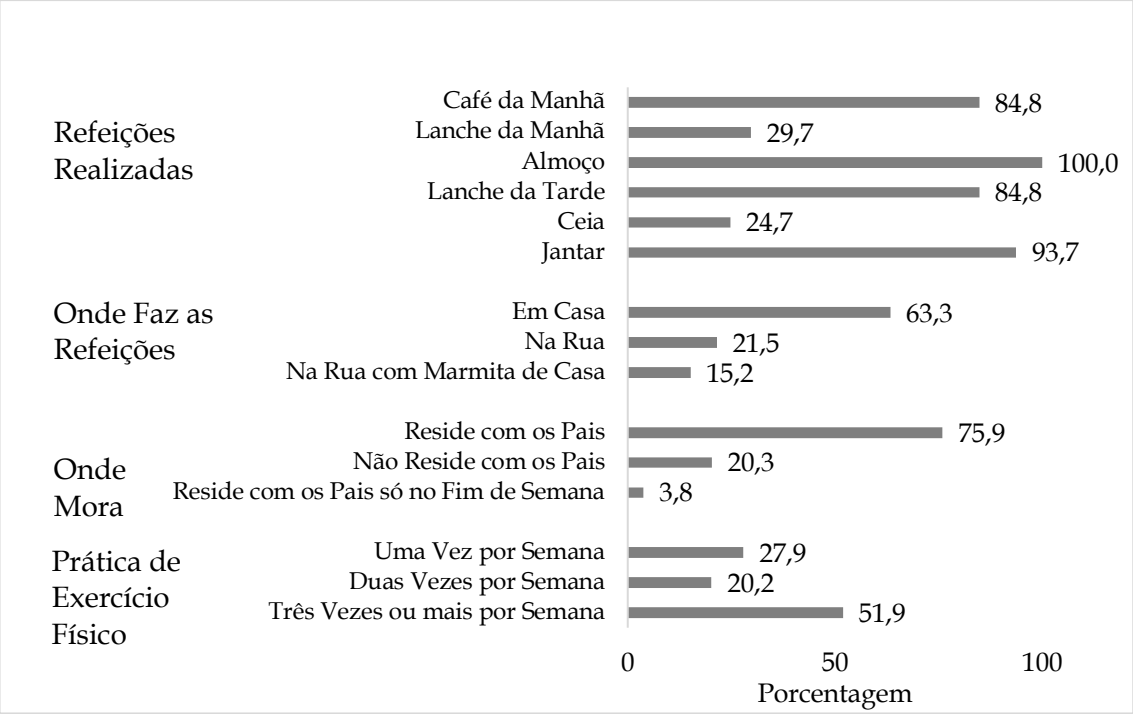
Figure 1- Characterization of a sample of students.2020.



Martinoff and Aquino[8] conducted a study with university students in their first years of undergraduate courses in Physical Education, Nursing, Pharmacy, Physical Therapy and Nutrition, to evaluate Constipation and its relationship with the students' eating habits and lifestyle. The sample consisted of 181 students, 67.9% (123) female and 32.1% (58) male. The mean age was 20 years and the female gender also prevailed in this study. These data are similar to those of the present study.

Regarding the practice of physical activity, 65.8% (n=104) of the sample performed physical exercise, and 51.9% (n=54) practiced three or more times a week. Most of the students, 75.9% (n=120), reported living with their parents and eating meals at home (63.6%, n=100). Regarding meals, it was observed that, on average, students eat 4 meals a day (4.2020 ± 1.16), with 100% (n=158) of the sample reporting that they eat lunch and only 24.7% (n=39) do not have the habit of having dinner at the end of the night (Figure 2).

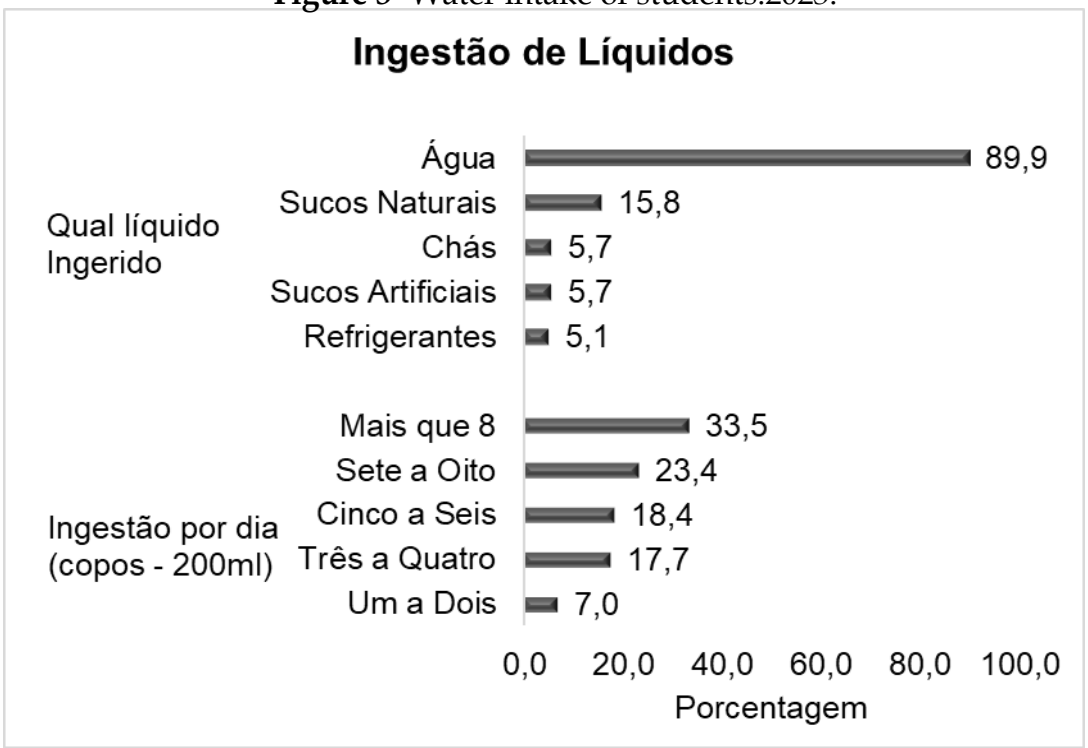
Figure 2 - Characterization of a sample of students.



A study carried out at the Federal University of Pampa (UNIPAMPA) with 212 health students showed that most of the students reported living with their parents (35.8%), eating their meals at home (76.9%), eating four or more meals a day (54.7%), similar to the findings of this study.[2]

Figure 3 shows the water intake of the students who participated in the research. Regarding fluid intake, 33.5% (n=53) of the sample ingested more than eight glasses (200ml) per day, totaling more than 1600ml/day. Of these, 89.9% (n=142) ingest water and a minority, 15.8% (n=25) ingest natural juices.

Figure 3- Water intake of students.2023.



Fernandes and Blasi[9] conducted a study in which 534 female medical records were analyzed regarding the patients' water consumption. Between 19 and 29 years old: 27.4% (n=56) ingested less than 500ml/day; 46.3% (n=95) ingested between 500 and 2000ml/day and 26.3% (n=54) ingested more than 2000ml/day. Of the 30-39 years, 24.2% (n=30) consumed less than 500 ml/day, 49.2% (n=61) between 500 and 2000 ml/day and 26.6% more than 2000 ml/day. Thus, it is observed that the women had a low water consumption, as most ingest between 500-2000ml/day, and the ideal would be an intake greater than 2000ml/day. Similar to the present study, the amount of fluid ingested was also low, with 66.5% (n=105) of the female and male students reporting consuming less than 1600ml/day.

Regarding the eating habits of the students, the intake of fiber was evaluated through the consumption of fruits, vegetables and whole foods, in addition to evaluating the intake of fried foods, associated with an inadequate diet. Thus, it showed that 40.5% (n=64) of the sample ingested fruit once a day and only 3.2% (n=5) ingested it more than three times a day. In terms of vegetables, 28.5% (n=45) of the students eat vegetables twice a day and 16.5% (n=26) do not. In whole grains, 24.1% (n= 38) of the students reported that they consume foods that are sources of fiber twice a day, and with a balanced number, 22.8% (n=36) do not consume whole grains (Figure 4). In addition, 33.5% (n=53) of the sample stated that they ate fried foods more than once a day and only 2.5% (n=4) did not eat them (Figure 5).

Figure 4- Students' food intake. 2023.

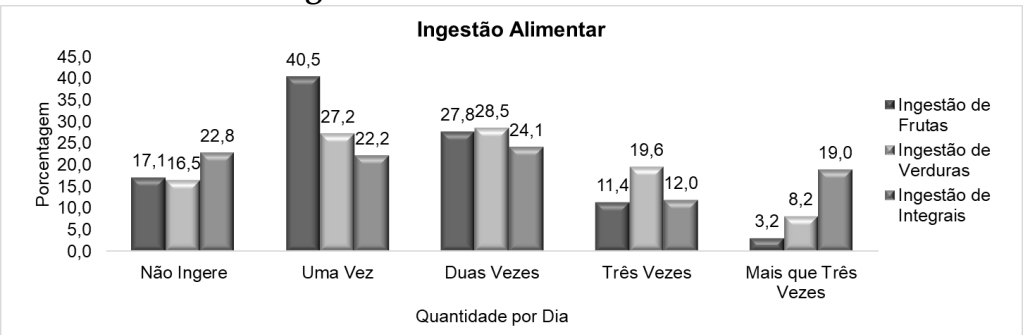
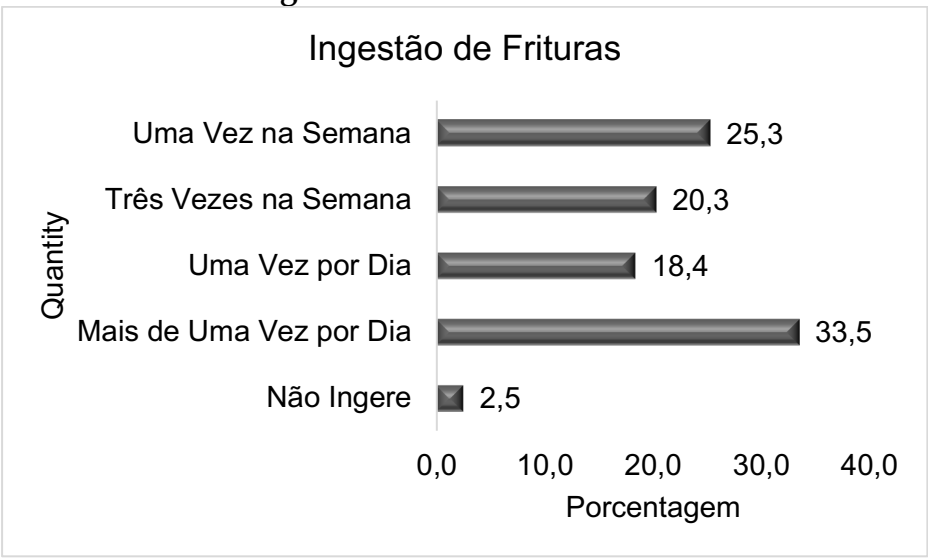


Figure 5- Students' food intake. 2023.

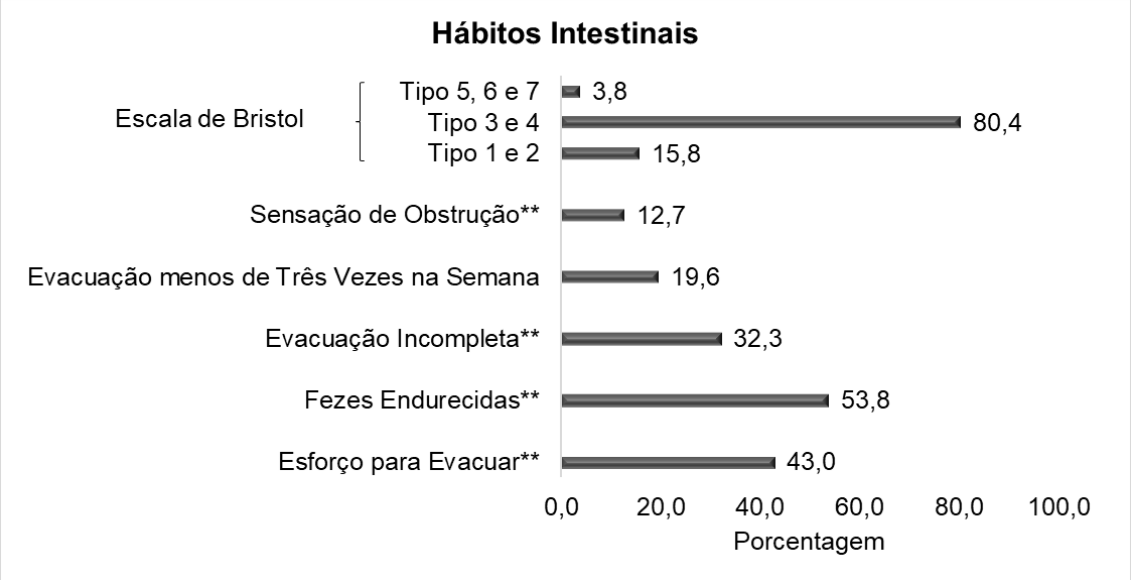


These results demonstrate how inadequate fiber intake is, with the low consumption of fruits three times a day, the high number of individuals who do not consume vegetables and whole grains during the day. In addition, it is worth mentioning the high number of students who consume fried foods more than once a day, indicating a diet low in dietary fiber.

According to the World Health Organization[10], the appropriate recommendation is 400g/day, equivalent to five daily servings of fruits and vegetables. A study conducted by Olivon et al.[3] evaluated 90 university students from private higher education institutions located in the city of São Paulo, Brazil, using a self-administered questionnaire with questions regarding age, gender, physical activity, smoking, weight and height, undergraduate education, family history of constipation, ethnicity, number of daily meals, intake of fiber-rich foods, and water intake. It was observed that most students ate 4 meals or more a day and did not eat fiber-rich foods daily (52%).

Regarding bowel habits, according to the criteria adapted from Rome III and IV, more than half of the sample, 53.8% (n=85) had hardened stools in at least 25% of the bowel movements. Using the Bristol Scale, 15.8% (n=25) of the sample reported having a bowel movement in Type 1 and 2 of the Scale, which corresponds to fragmented or sausage-shaped, hard and segmented stools, resulting in constipation (Figure 6).

Figure 6- Characterization of participants according to the criteria of Rome III, adapted IV and Bristol Scale.2023



**In at least 25% of defecations.

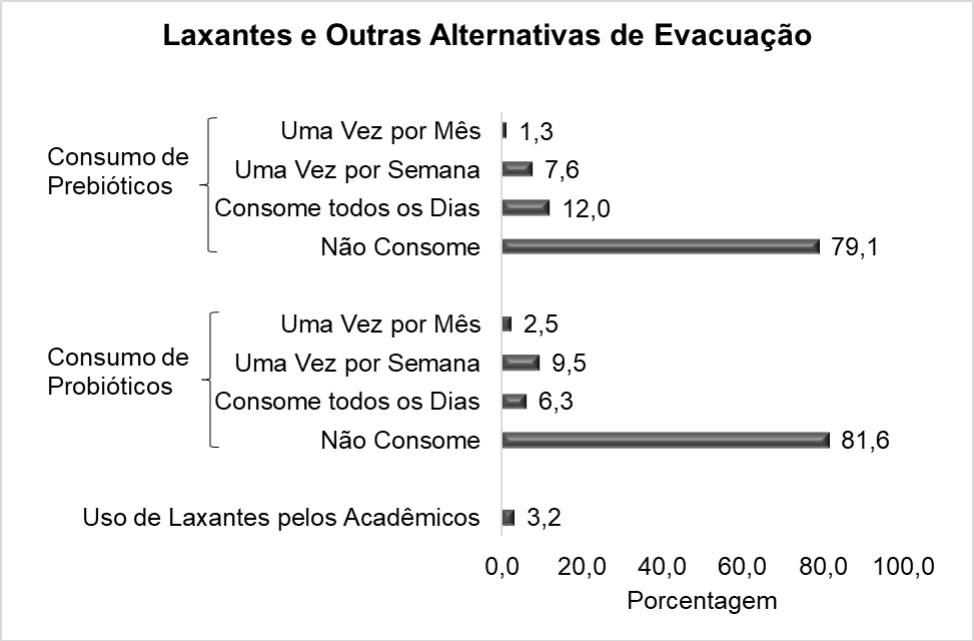
Rao, Rattanakovit and Patcharatrakul11 in a study observed familial susceptibility, with a higher prevalence of constipation in women, mothers, daughters and sisters. Chronic constipation is associated with other functional gastrointestinal disorders, such as chest pain, GERD, and functional dyspepsia. It is also related to the increased prevalence of psychological distress, such as anxiety, depression, obsessive-compulsive traits and somatization. In addition, health-related quality of life is markedly impaired in patients with dyssynergic defecation and slow transit constipation.

Confirming the finding in the literature and similar to the current research, which observed, many students suffer from anxiety and stress during the school year full of commitments, responsibilities and study. Such factors directly affect intestinal transit, interfering with the individual's constipation.

Ziani, Castro and Lara[2] point out that the responsibilities of academic life usually lead to a series of changes in the lives of these young women, especially changes in their eating habits, thus interfering with their quality of life and constituting a risk factor for IC.

The students were asked about the use of laxatives to aid in bowel movements and about the use of other methods, such as the consumption of probiotics and prebiotics (Figure 7). Regarding the use of laxatives, only 3.2% (n=5) of the sample confirmed their use. Few reported consuming probiotics and prebiotics, with 81.6% (n=129) and 79.1% (n=125) not consuming probiotics and prebiotics, respectively.

Figure 7 - Use of laxatives and other evacuation alternatives by students of Medicine, Nutrition and Civil Engineering. 2023.



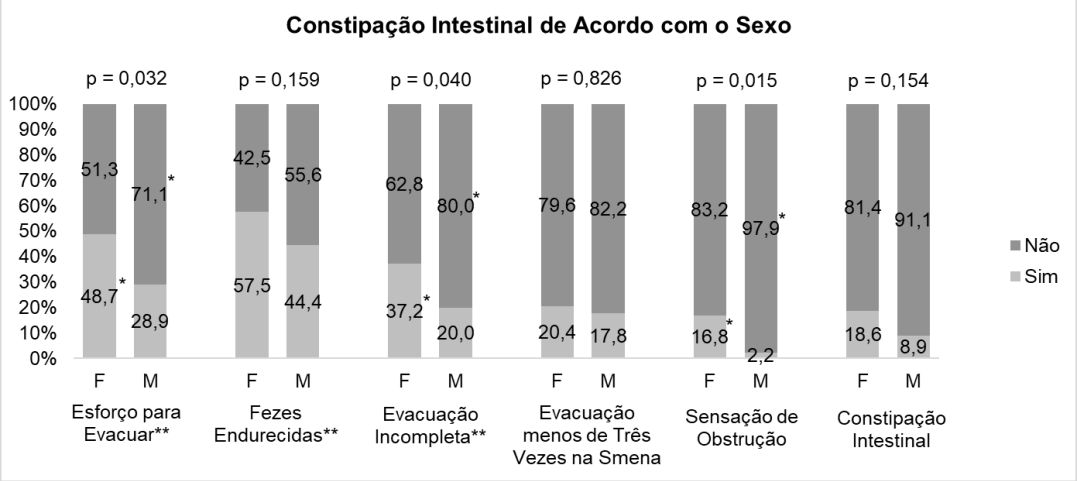
The consumption of laxative drugs should not be encouraged, as they irritate the intestinal mucosa and cause dependence, in addition to interfering with the absorption of fat-soluble vitamins, carotene and water. However, they are often prescribed to treat constipation in elderly, young, and child patients. The indiscriminate use of laxatives can lead to structural changes in the terminal ileum and colon.[12]

In a single-center, randomized, double-blind study of 34 women with Irritable Bowel Syndrome with Constipation (IBS-C), it was found that the use of Bifidobacterium lactis in a 125g serving of yogurt eaten daily for 4 weeks had a superior effect to placebo in reducing bloating and colonic transit as measured by radiopaque marker testing.[13]

In the present study, females prevailed, corresponding to n=113, and males n=45. IC was observed in 18.6% (n=21) of women and 8.9% (n=4) of men. Among the variables to detect the IC of the students, some obtained statistically

significant values. The effort to evacuate in at least 25% of the bowel movements was reported by 48.7% (n=55) of the women, while 71.1% (n=32) of the men stated that they did not have this difficulty (p<0.05). In addition, 37.2% (n=42) of the women reported a feeling of incomplete evacuation in at least 25% of the bowel movements, and 80% (n=36) of the men reported that they did not have this sensation (p<0.05). Also, in the variable about the sensation of anorectal obstruction in at least 25% of the cases, 16.8% (n=19) of the women answered "yes", while 97.9% (n=44) of the men said "no" (p<0.05) (Figure 8).

Figure 8- Variables to detect Constipation according to the sex of the students.2023.



†Values obtained using Fisher's exact test; * Statistically significant values after residue analysis;
Source: Author (2020).
*In at least 25% of bowel movements.

A study conducted with students between 18 and 24 years of age, with most of the sample composed of women (72.53%), showed that the prevalence of IC was 14% in females. Thus, it was observed that IC manifests itself more in women14, which was also found in this current study.

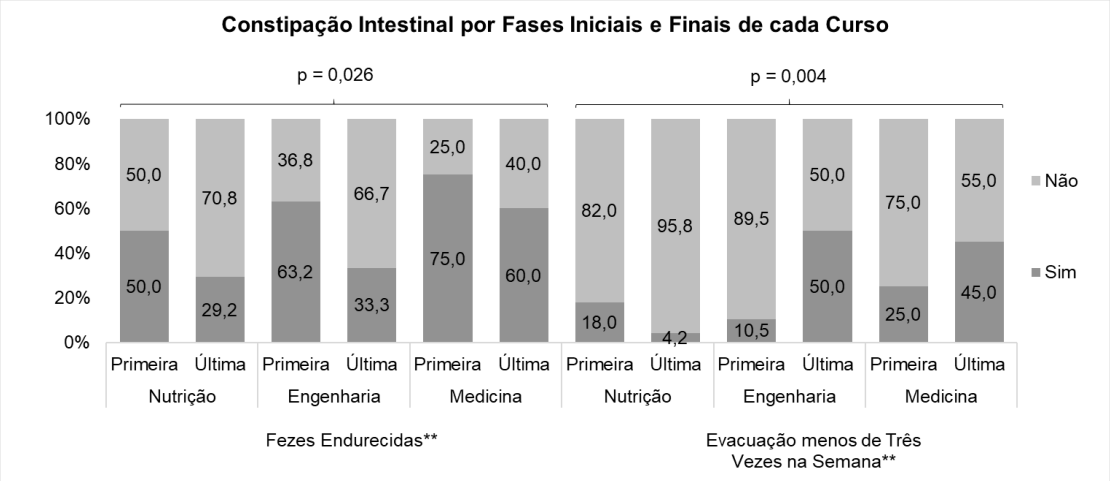
Trisóglio et al.[15] found in their study that, at some point in their lives, 72% of women and 31% of men had symptoms of IC. Most men reported occurrence in childhood, not extending to adulthood (13%), while among females the period of highest prevalence was the current one, with no previous involvement in childhood (38%). The overall prevalence rate of IC defined by meeting the Rome III diagnostic criteria was 35%; Considering the distribution by sex, the rate was 55% among women and 18% among men. The higher prevalence of IC among women was statistically significant (p< 0.0001).

In a survey of 119 students, 54.7% (n=65) had three or more symptoms of the Rome III criteria, and were therefore classified as having functional constipation. Among them, only 1 (one) student answered was male, thus prevailing constipated women.[16]

Of the Nutrition students who did not present hardened stools, 70.8% (n=17) were in the last theoretical phase of the course (6th phase), while the Medical students who presented hardened stools in at least 25% of the bowel movements, 75% (n=15) were in the first phase of the course (p<0.05). In addition, of the medical students who reported having a bowel movement less than three times a week, 45% (n=9) were in the last theoretical phase of the course (8th phase). Regarding the Civil Engineering course, none of the results showed statistical significance (Figure 9).

It seems that, analyzing the results of the present study, most of the students of the last theoretical phase of the Nutrition course do not have hardened stools because they study the subject and at the end of graduation, take better care of their intestinal health. In relation to the Medicine course, most of the graduates of the course reported presenting this symptom. This can be explained by the stressful phase of starting graduation and all the responsibilities that begin.

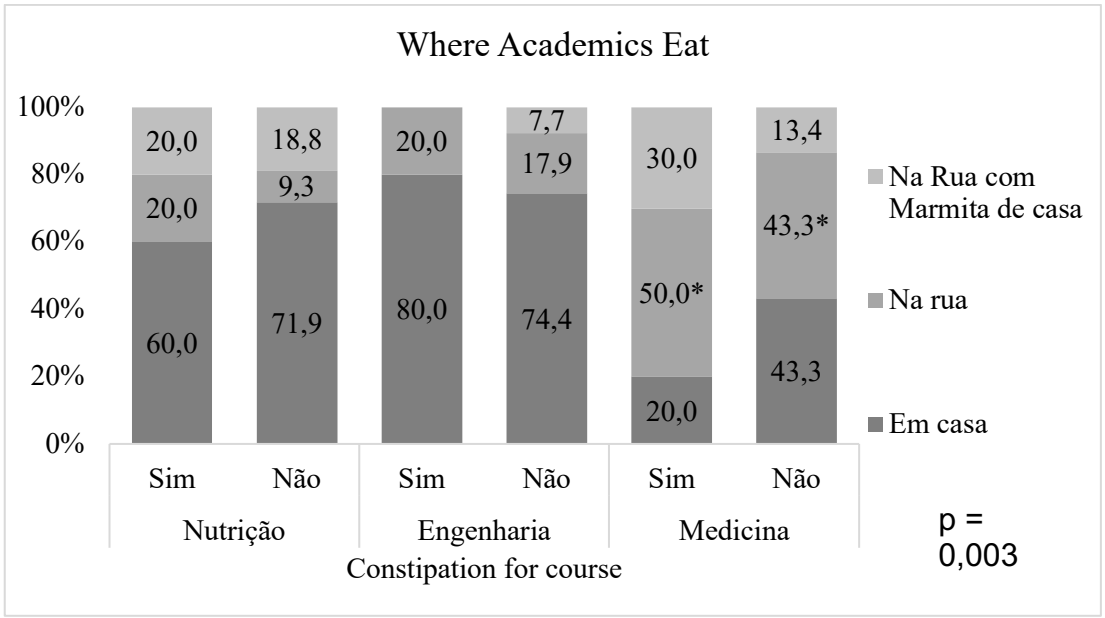
Figure 9 - Variables to detect Constipation in the first and last theoretical phases of the Kurds of Nutrition, Engineering and Medicine at the University of the Extreme South of Santa Catarina. 2023.



†Values obtained by means of the Likelihood Ratio test; * Statistically significant values after residue analysis; Source: Author (2020).
*In at least 25% of defecations.

The findings showed that 50% (n=5) of the 10 medical students who are constipated eat out of the house (on the street) ($p<0.05$) (Figure 10).

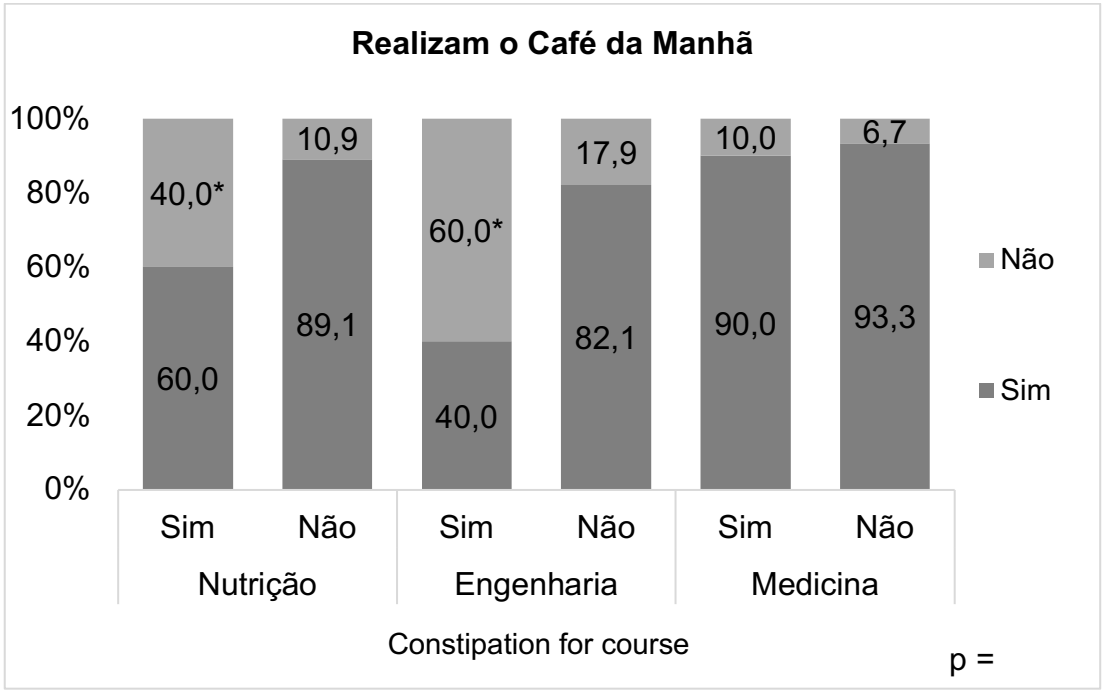
Figure 10- Eating habits related to Constipation in Nutrition, Engineering and Medicine courses. 2023**.**



†Values obtained by means of the Likelihood Ratio test; * Statistically significant values after residue analysis.

When asked about the meals they ate, 40% (n=4) of the 10 Nutrition students and 60% (n=3) of the 5 Civil Engineering students, who are constipated, reported not eating breakfast (p<0.05) (Figure 11).

Figure 11- Eating habits related to Constipation in Nutrition, Engineering and Medicine courses. 2023.



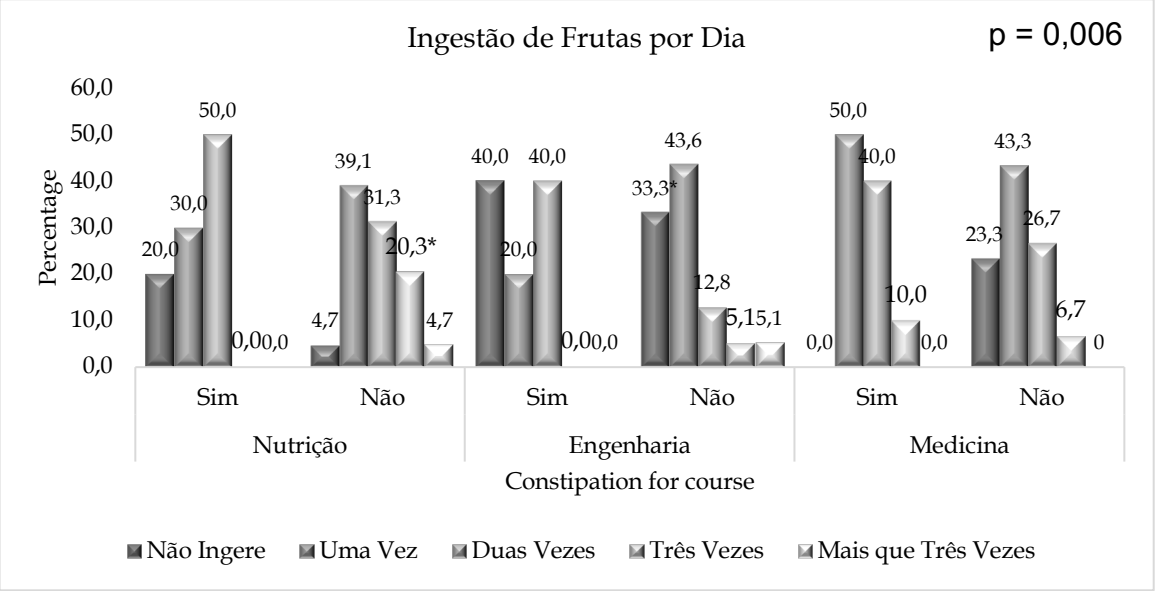
†Values obtained by means of the Likelihood Ratio test; * Statistically significant values after residue analysis; Source: Author (2020).

In a study conducted by Barufaldi et al.18, carried out in three schools in each municipality of Rio de Janeiro (RJ), Feira de Santana (BA), Botucatu (SP), Campinas (SP) and Cuiabá (MT), one privately managed and two public, in different areas of the cities, it was shown that 1/5, 18.9% (n=178) of the adolescents never had breakfast.

Trancoso, Cavalli and Proença19 report that the decline in breakfast consumption is directly related to changes in the modern lifestyle of the population, such as the number of individuals who live alone, the lack of time to eat meals and differences in the consumption of dishes by the members of the family.

According to Figure 12, regarding the variables related to food intake, among the 64 non-constipated Nutrition students, 20.3% (n=13) reported eating fruit three times a day, and among the 39 non-constipated Civil Engineering students, 33.3% (n=13) did not consume fruit daily (p<0.05).

Figure 12- Eating habits related to Constipation in Nutrition, Engineering and Medicine courses. 2023.



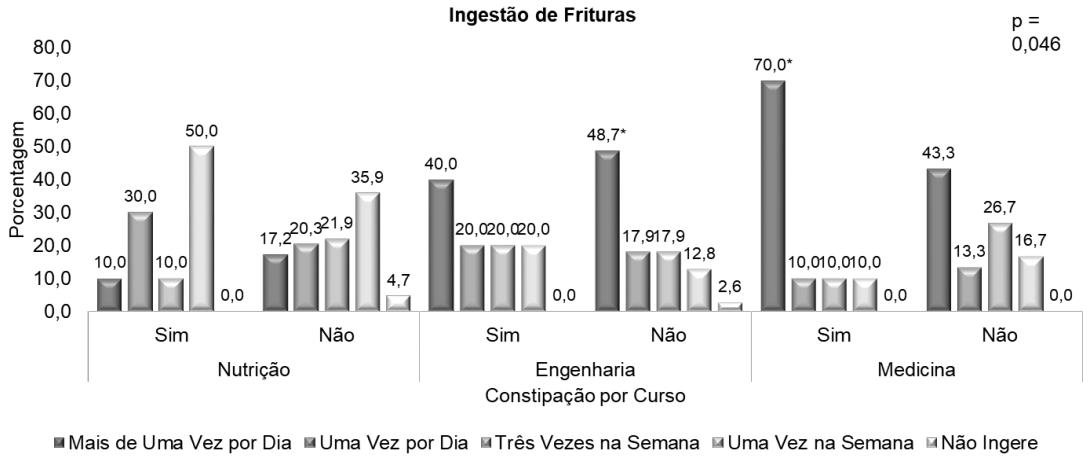
†Values obtained by means of the Likelihood Ratio test; Source: Author (2020).

According to a study conducted by Sant'Ana, Pomini and Souza20, the intake of foods from the group of regulators, composed of fruits, vegetables and greens, varies. Among the students interviewed, 40.68% had an average consumption of 2 fruits per day.

Despite the results found, it is known that the consumption of fruits and vegetables, as well as whole foods and adequate water intake, are necessary for the proper functioning of the body, as it activates intestinal peristalsis. However, constipation does not depend exclusively on diet, but on many associated factors, such as physiological, psychic, and physical exercise.

Finally, Figure 13 shows a considerable consumption of fried foods by medical students, and of the 10 constipated students, 70% (n=7) reported the consumption of fried foods more than once a day. For the nutrition course, of the 64 non-constipated students, 35.9% (n=23) reported consuming fried food only once a week ($p<0.05$).

Figure 13- Eating habits related to Constipation in Nutrition, Engineering and Medicine courses.2023.



†Values obtained by means of the Likelihood Ratio test; * Statistically significant values after residue analysis; Source: Author (2020).

A study conducted by Zhang et al.[21] in mice demonstrated that dietary administration of frying oil impaired intestinal barrier function, improved translocation of lipopolysaccharide (LPS) and bacteria from the gut to the circulatory system, and increased tissue inflammation. The results showed that dietary administration of frying oil influenced the development of inflammatory bowel disease.

According to Ko et al.[22], studies in recent years have suggested that the gut microbiome in the small intestine has a role in regulating metabolism and response to dietary lipids. As a comprehensive understanding of all aspects of the function of the gastrointestinal tract, it is a clear fact that intestinal lipid absorption is linked to many other functions in the gut and the rest of the body.

Considering the current research, constipation in students who consumed fried foods more than once a day, compared to those who consumed them only once a week, was quite significant.

Conclusion

It is concluded that in the research population the female gender prevailed, and in the analyses women prevailed in relation to IC. Most academics ingest a low amount of fluids, since the consumption of these is essential for proper intestinal function. Regarding eating habits, the consumption of fiber through fruits, vegetables and whole foods was little reported. In addition, the intake of fried foods more than once a day was significant, and it is worth highlighting how inadequate nutrition is present in the students' lives.

Most of the individuals in the study presented anxiety and stress during the school year, along with some criteria from Rome III and Rome IV. Overall, it was concluded that 25 students presented IC according to the Bristol Scale, in addition, most of the sample did not use laxatives, probiotics and probiotics to improve their bowel movements. In general, this research can help health professionals, especially nutritionists, to help patients with constipation, through strategies for a good diet, preventing future acute or chronic complications, and promoting health.

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