

SUPPLEMENTATION FOR DIARRHEA CONTROL IN HOSPITALIZED GERIATRIC PATIENTS ON ENTERAL NUTRITION

Suplementação para controle de diarreia em idosos hospitalizados com nutrição enteral

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ABSTRACT

OBJECTIVE: To compare results of prebiotic, probiotic and synbiotic supplementation for the control of diarrhea in older patients receiving enteral nutritional therapy during hospitalization at a school hospital in Curitiba, state of Paraná. **METHODS:** The study was retrospective, by analysis of medical records corresponding to the visits performed between 2014 and 2018. **RESULTS:** A total of 75 patients were analyzed. The time of occurrence of diarrhea ranged from 1 to 16 days, with a mean of 2.69 days after the onset of therapy for reestablishment of the intestinal microbiota. As for the therapies introduced, 8 possible prescriptions of isolated and / or combined supplements were found as the first choice. Of the patients analyzed, 52% switched from supplementation during the occurrence of diarrhea; some using up to 5 different products. Of the 48% of patients who used a single product / combination from the beginning to the end of diarrhea, they generally started with a higher dose and decreased over time, with those starting at a lower dose having to increase it to stop diarrhea. In addition, there was statistical significance when comparing the time of diarrhea between patients who received a single product / combination and those who did supplemental exchanges throughout the treatment. **CONCLUSION:** Establishing a single prescription, whether of isolated or combined products and sticking to it, besides starting with a higher dose, seems more effective in controlling diarrhea in hospitalized geriatric patients, reinforcing the importance of establishing a protocol for prescription.

KEYWORDS: older adults; enteral nutrition; diarrhea; probiotics; symbiotics.

RESUMO

OBJETIVO: Comparar resultados da suplementação com prebiótico, probiótico e simbiótico para o controle da diarreia em pacientes idosos recebendo terapia nutricional enteral durante o internamento em um hospital escola de Curitiba, Paraná. **MÉTODOS:** O estudo foi retrospectivo, por análise de prontuários correspondentes aos atendimentos realizados entre 2014 e 2018. **RESULTADOS:** Obteve-se um total de 75 pacientes. O tempo de ocorrência de diarreia variou de 1 a 16 dias, sendo a média de 2,69 dias após a instituição de terapêutica para restabelecimento da microbiota intestinal. Quanto às terapias instituídas, foram encontradas oito possíveis prescrições de suplementos isolados e/ou combinados, como primeira escolha. Dos pacientes analisados, 52% trocaram de suplementação ao longo da ocorrência da diarreia; alguns chegando a utilizar até cinco diferentes produtos. Dos 48% de pacientes que utilizaram um único produto/combinado do início ao fim da diarreia, de modo geral iniciaram com uma dose maior e foram diminuindo ao longo do tempo, sendo que os que começaram com uma dose menor tiveram que aumentá-la para interromper a diarreia. Além disso, houve significância estatística quando comparado o tempo de diarreia entre pacientes que receberam um único produto/combinado e os que fizeram trocas de suplemento ao longo do tratamento. **CONCLUSÃO:** Estabelecer uma prescrição única, seja de produtos isolados ou combinados, e permanecer com ela, além de iniciar com uma dose maior, parece mais efetivo no controle da diarreia em idosos hospitalizados, reforçando a importância de se estabelecer um protocolo para prescrição.

PALAVRAS-CHAVE: idosos; nutrição enteral; diarreia; probióticos; simbióticos.

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INTRODUCTION

Enteral nutrition support via catheter is necessary for many patients during hospitalization due to changes in the functioning of the gastrointestinal tract (GIT), insufficient oral feeding, increased malnutrition, catabolism, percentage of weight loss, and presence of dysphagia.^{1,2}

A common complication in patients receiving enteral nutrition (EN) is the development of diarrhea. In the literature, the frequency ranges from 2 to 95% of hospitalized patients,^{3,4} and is not well described for aging individuals.

This condition has a multifactorial cause, such as previous malnutrition, changes in the intestinal microbiota, use of medications, parasitic infections, surgical procedures in the GIT, and even the administration of the enteral diet.^{5,6}

It consists of the collective genome — all genetic information encoded by bacteria residing in the human body, which is changeable throughout life and influenced by environmental, behavioral, dietary and health aspects.⁷⁻⁹ Another important factor is the intestinal microbiome of individuals, which is fundamental in the development of digestive, immune, and nervous systems.⁹

Age interferes in the composition of the microbiota, due to physiological changes that occur in the GIT over the years, added to several environmental elements. In older adults, it is characterized by a reduction in the number of bifidobacteria, *Clostridium cluster XIV*, and *Faecalibacterium prausnitzii*, the latter two known as major producers of butyrate. Also, there is a reduction in the levels of *Blautia coccooides*–*Eubacterium rectal* and a greater number of *Enterobacteriaceae* and *Clostridium*, including *C. perfringens*. In addition, *Bacteroidetes* are more numerous, while *Firmicutes* are in minor amount in the older population, compared to younger adults.^{8,10}

There are several strategies for controlling diarrhea in patients receiving EN, including the use of prebiotics, probiotics, or synbiotics.^{3,4,11-14}

Prebiotics consist of human non-digestible complex carbohydrates that can be used as a substrate, stimulating the growth and / or activity of beneficial bacteria in the gut, improving host health. Common prebiotic fibers include inulin, oligofructose and fructooligosaccharides (FOS), which can be used alone or added to enteral diet formulas.^{3,12,13}

Probiotics are microorganisms in sufficient amount to survive transit through the GIT and arrive intact in the gut where they can influence the microbiota by implantation or colonization of a host's compartment. The most common products contain strains of lactobacilli, bifidobacteria, saccharomyces, or mixtures of these strains.^{4,11,12}

Synbiotics are described as the combination of prebiotics and probiotics.¹⁴

The benefits of using these products include: help in regulating body weight, promoting better glucose tolerance, reducing the prevalence and duration of diarrhea, and alleviating inflammation and other symptoms associated with intestinal disorders.^{4,11,12} Mechanisms of action are related to modulation of intestinal barrier function, suppression of enteropathogenic colonization, immune stimulation, and modulation of metabolism in the colon.¹⁴

Thus, the present study proposed an analysis of the administration of prebiotic, probiotic, and synbiotic supplements, prescribed alone or in combination, in the resolution of diarrhea in older patients in EN, comparing the products used to improve the clinical condition, allowing to direct the therapy by establishing a specific protocol regarding the choice of the product and the most appropriate dose.

METHODS

This was a retrospective, analytical, longitudinal study, using a quantitative approach, conducted at a school hospital in the city of Curitiba, Paraná.

The sample consisted of patients treated at the Clinical Nutrition service of the hospital, from January 2014 to September 2018. The study was performed using a physical database and electronic medical records.

Participants included patients of both sexes, aged 60 years or older, who received EN therapy, had diarrhea at some point during hospital stay, and used prebiotic, probiotic, or synbiotic supplementation to assist in solving it, in an isolated, combined manner, or with glutamine.

We used the definition of diarrhea by the World Health Organization (WHO): occurrence of three or more fluid or loose stools per day, or more frequently than normal for the individual.¹⁵

Data from patients who died during hospitalization, who had intestinal resection, who took a specific antibiotic to control diarrhea due to suspicion or confirmation of being caused by the presence of *Clostridium difficile*, and those who had drug or drug-induced diarrhea (of constipation) were excluded, as well all data that were in inconclusive, incomplete, or illegible forms in the physical database.

Data were collected and tabulated within the school hospital, which corresponded to: age (in complete years); sex (male and female); systemic involvement (reason for hospitalization: neurological, trauma, cancer, renal, GIT diseases, lung disease, sepsis and others); presence of sepsis (yes or no); type of breathing (spontaneous or non-spontaneous); nutritional assessment (weight, height, and body mass index — BMI, classified according to BMI for the aged);¹⁶

enteral nutritional therapy (enteral nasogastric, nasoenteric, orogastric, gastrostomy or jejunostomy tube — and whether it was exclusively enteral nutrition or mixed with oral or parenteral feeding); estimated daily requirements of kilocalories (Kcal) and grams of protein, calculating how much the dietary prescription was adequate to these estimated needs on the first day of diarrhea (in percentage); length of hospital stay (total days and after onset of diarrhea); duration of diarrhea (total days and after institution of supplementation for control); supplementary nutritional therapy used to control diarrhea (each product prescribed, isolated / combined, dose offered, total days used and how many days of diarrhea using this therapy); and use of antibiotics (number of days that used antibiotics during hospitalization).

The analysis of the supplementation therapies was conducted in different stages:

- the number of different supplements/combinations that each individual received during the course of diarrhea was identified;
- supplements found were coded according to their composition: 1) FIBERS: fiber supplement composed of partially hydrolyzed guar gum and inulin; 2) SYN BIO: synbiotic supplement containing partially hydrolyzed guar gum, inulin and *Lactobacillus reuteri*; 3) PRO BIO: probiotic supplement consisting of *Lactobacillus acidophilus*, *Lactobacillus rhamnosus*, *Lactobacillus paracasei*, and *Bifidobacterium lactis*; 4) GLUTA: L-glutamine supplement; 5) SYN BIO+PRO BIO: synbiotic prescribed together with probiotic (products 2 and 3 simultaneously); 6) SYN BIO+GLUTA: synbiotic prescribed together with L-glutamine (products 2 and 4 simultaneously); 7) PRO BIO+GLUTA: probiotic prescribed together with L-glutamine (products 3 and 4 simultaneously); 8) FIBERS+ SYN BIO: soluble fibers (product 1) prescribed simultaneously with synbiotic compound by *Lactobacillus paracasei*, *Lactobacillus rhamnosus*, *Lactobacillus acidophilus*, *Bifidobacterium lactis* and FOS;
- if the patient started and finished therapy with the same supplement / combination, it was considered as single therapy (ST) in the control of diarrhea (because it used a single product / combination). Patients who started with a supplement / combination and then changed or added other supplement (s), were referred to as mixed therapy (MT) (because they used more than 1 product / combination);
- the duration of diarrhea was analyzed between patients using ST and MT, relating to the following variables: presence of sepsis, nutritional status and use of

antibiotics, using 2 parametric statistical tests: *t* test for independent variables, when only 2 variables were analyzed, and ANOVA when 3 or more variables were being analyzed, adopting a significance level of 95% ($p < 0.05$). The software used was IMB SPSS;

- a study of the dose evolution of ST supplements was conducted as follows: we described the first supplement and dose the patient received, and next what occurred with the prescribed dose (whether it increased, decreased or did not change, because diarrhea ceased) and the mean number of days of diarrhea using each dose.

The project was approved by The Research Ethics Committee of the institution and registered under approval certificate number 2 632 493, according to Resolution 466/2012, Resolution 510/2016, and the Declaration of Helsinki (2000).

RESULTS

At the end of the data collection, 383 medical records of geriatric patients who had diarrhea at some time during hospital stay were obtained. Of these, 308 were excluded, 183 of whom died, 55 because they had more than 3 fluid evacuations in 24 hours after using drug and supplemental therapy for constipation (i.e., they had intentionally induced diarrhea), 7 because they had intestinal resection, 10 because they used a specific antibiotic to control diarrhea on suspicion or confirmation of being caused by *Clostridium difficile*, and 53 because the medical records contained incomplete and / or inconclusive data.

Thus, a total of 75 patients met the inclusion criteria and were analyzed, aged 60 to 93 years, with a mean age of 71.8 ± 7.9 years. Table 1 presents the profile of the participants.

Regarding the nutritional status of the patients, weight ranged from 49.4 to 130 kg, with a mean of 69.4 ± 13.9 kg; the observed height was between 1.41–1.80 m, with a mean of 1.60 ± 0.0 m. Regarding BMI, 12% of the patients were malnourished, had a mean of 20.6 ± 1.0 kg / m², 44% were eutrophic, had a mean BMI of 24.8 ± 1.5 kg / m², and 44% were overweight, with a mean BMI of 30.5 ± 3.5 kg / m².

Regarding the estimated nutritional need, it ranged from 1 235 to 2 500, with a mean of $1 787.3 \pm 239.6$ Kcal per day; the required amount of protein in grams (g) per day was between 64 and 141 g, with a mean of 89.8 ± 15.3 g. Regarding the dietary prescription adjustment to the needs, 80% were adequate for providing Kcal at the time of diarrhea development and 65.3% were adequate for protein ($\geq 70\%$ of the needs).

The total mean time of hospitalization of the sample was 37.6 ± 31 days, with 25.1 ± 28.7 days of duration after the onset of diarrhea. The duration of diarrhea was 4.4 ± 3.7 days; and after initiation of supplementation to control diarrhea, was 2.6 ± 3.3 days.

Supplementation therapies for controlling diarrhea

Regarding nutritional therapies for diarrhea control, 48% ($n = 36$) of the patients ingested only 1 type of supplement (ST). However, many patients had changes in prescription during the course of diarrhea: 40% changed supplementation / combination at least once, using 2 different products, and 11.9% of patients used 3 to 5 different supplements or combinations (5.3; 2.6 and 4% used 3, 4, or 5 products, respectively).

Table 2 shows the first supplement used, relative to whether it was changed (MT) or not (ST), regardless of the dose. The prescription that did not change products was considered as effective (the number of patients that appear in the column of ST in each of the products). This is due to the fact that, if the diarrhea was reduced or stopped with the

first supplement / combination, it was not necessary to change the prescription, suggesting that this product / combination was effective for the control of diarrhea in these patients.

The most frequently prescribed product was PROBIO (3), which also showed the most satisfactory result for controlling diarrhea, since it was able to cease diarrhea in 55.8% of the patients who received it as the first prescription.

The supplements that showed less satisfactory results were (4) GLUTA, since none of the 3 patients remained with this supplement until the end of the diarrhea; and (7) PROBIO + GLUTA, since 7 of the 9 patients changed their prescriptions and did not remain with this combination until the diarrhea ceased.

Duration of diarrhea related to the supplements used

The number of days of diarrhea, when the patient used any of the supplements that were ST, had no relation to the presence of sepsis, the time of antibiotic use, or the patient's BMI ($p \geq 0.05$).

There was no difference in the number of days of diarrhea comparing the different supplements that were ST (ANOVA; $p = 0.651$).

For MT patients, there was an association between the presence of sepsis and the time of antibiotic use with a longer time of diarrhea ($p < 0.05$).

Patients who used only 1 type of supplement / combination, regardless of dose, had a significantly shorter time of diarrhea compared to those who switched from supplementation during

Table 1 Clinical profile of geriatric patients who had diarrhea during hospitalization when they used enteral nutrition in Curitiba ($n = 75$).

| Variable | Description | n (%) |
|--|---------------------------------|-----------|
| Sex | Female | 43 (57.3) |
| Systemic impairment | Neurological | 26 (34.6) |
| | Other | 21 (28.0) |
| | Trauma | 14 (18.6) |
| | Oncologic | 4 (5.3) |
| | Renal | 3 (4.0) |
| | Gastrointestinal tract diseases | 3 (4.0) |
| | Pulmonary disease | 2 (2.6) |
| | Sepsis | 2 (2.6) |
| Sepsis | Yes | 38 (50.6) |
| Antibiotic therapy | Yes | 74 (98.6) |
| | > 7 days | 59 (79.7) |
| Nasogastric enteral nutrition access route | Nasogastric | 35 (46.6) |
| | Nasoenteric | 33 (44.0) |
| | Orogastric | 3 (4.0) |
| | Gastrostomy | 3 (4.0) |
| | Jejunostomy | 1 (1.3) |
| Type of nutritional therapy | Exclusively enteral route | 72 (96.0) |

Table 2 Observed and relative frequency of diarrhea resolution efficacy with the first supplement or prescribed combination, irrespective of dose.

| Product | Mixed therapy n (%) | Single therapy n (%) | total n of prescriptions of each product / combination |
|---------------------|---------------------|----------------------|--|
| (1) FIBERS | 1 (100) | 0 (0) | 1 |
| (2) SYNBIO | 3 (50) | 3 (50) | 6 |
| (3) PROBIO | 19 (44.1) | 24 (55.8) | 43 |
| (4) GLUTA | 3 (100) | 0 (0) | 3 |
| (5) SYNBIO + PROBIO | 4 (40) | 6 (60) | 10 |
| (6) SYNBIO + GLUTA | 1 (50) | 1 (50) | 2 |
| (7) PROBIO + GLUTA | 7 (77.7) | 2 (2.2) | 9 |
| (8) FIBERS + SYNBIO | 1 (100) | 0 (0) | 1 |
| Total | 39 (52) | 36 (48) | 75 |

treatment ($p = 0.000$). The mean time of diarrhea between STs was 0.8 ± 1.2 days, whereas for MT it was 4.4 ± 3.8 days.

Dose analysis of single therapy supplements

In general, there was a higher frequency of supplementation at higher doses at the beginning of therapy, and lower doses throughout therapy (Table 3).

In addition, the supplement (3) PROBIO in the dose of 3 g showed the best result.

DISCUSSION

This retrospective study of 75 geriatric patients hospitalized on enteral nutrition identified the following facts regarding nutritional therapy to control diarrhea:

- the time of diarrhea among patients who received a single product / combination during treatment was lower compared to those who had changes in prescription;
- there was no difference in the number of days of diarrhea comparing the different supplements, which suggests that there was no difference in the choice of the product;
- initiating therapy with a higher dose of the chosen product seems to lead to a shorter time of diarrhea;
- PROBIO supplement (3) at 3 g had the best result, however the other products had a small sample, which makes it difficult to make concrete statements about this result.

The clinical aspects of the patients analyzed in the present study and related to the occurrence of diarrhea are described

below. First, the mean age of 71.8 ± 7.9 years, because according to the literature, in aging adults there is a natural reduction of bifidobacteria that promote the maintenance of intestinal health, thus, the use of these supplements helps in the balance of the microbiota.^{8,10}

The prolonged use of antibiotics causes rupture of the intestinal barrier and allows the entry of pathogenic bacteria, of which *Clostridium difficile* is the most common.³ In the present study, 79.7% of the patients used antibiotics for more than a week, and the mean days of use was 22.4 ± 21.94 . In addition, a long length of hospital stay (mean was 37.6 ± 31 days) is a factor that contributes to the development of sepsis (observed in 50.6% of the patients), which increases the use of antibiotics and is associated with a higher frequency and duration of diarrhea.^{17,18}

Pereira et al.¹⁹ showed the results of a randomized double-blind study with 135 patients from different hospitals who had a reduction of diarrhea associated to antibiotic and *C. difficile*, using 100 g / day of probiotics *L. casei*, *S. thermophiles* and *L. bulgaricus* at the start of antibiotic treatment and 1 week after its completion. Of the experimental group, 12% of the patients had diarrhea, compared to 34% in the placebo group. No patients in the probiotic group evolved with diarrhea caused by *C. difficile* positive; however, in the placebo group, 9 people (17%) developed it.

Rondanelli et al.¹⁰ showed that the median length of hospital stay was 8 days in the group receiving probiotics, compared to 10 days in the placebo group ($p = 0.09$). The treatment was performed in 89 men with mean age of 72 years. The preparation used was a fermented milk containing at least 50×10^9 colony forming units of *L. acidophilus* CL1285 and

Table 3 Analysis of evolution rate in geriatric patients using a single supplement or combination.

| Product and prescribed dose | Total of patients n | Behavior of prescribed dose | | | Mean time of diarrhea (days) |
|--------------------------------|------------------------|-----------------------------|----------------|---|---------------------------------|
| | | Increased n | Decreased n | No change (cessation of diarrhea) n | |
| (2) SYNBIO (10 g) | 3 | 1 | 0 | 2 | 0.33 |
| (3) PROBIO (1 g) | 1 | 1 | 0 | 0 | 2 |
| (3) PROBIO (2 g) | 5 | 2 | 1 | 2 | 1.2 |
| (3) PROBIO (3 g) | 18 | 0 | 5 | 13 | 0.6 |
| (5) SYNBIO + PROBIO (15 + 3 g) | 5 | 0 | 3 | 2 | 1.4 |
| (5) SYNBIO + PROBIO (10 + 2 g) | 1 | 0 | 0 | 1 | 2 |
| (6) SYNBIO + GLUTA (10 + 20 g) | 1 | 0 | 0 | 1 | 0 |
| (7) PROBIO + GLUTA (1 + 10 g) | 2 | 0 | 0 | 2 | 0.5 |
| Total | 36 | 4 | 9 | 23 | - |

L. casei. The schedule of administration was 49 g once daily for 2 days, followed by 98 g once daily to cover the entire duration of antibiotic treatment. Antibiotic-associated diarrhea occurred in 7 of 44 patients (15.9%) in the lactobacilli group and in 16 of 45 patients (35.6%) in the placebo group, with an odds ratio of 0.34; confidence interval of 95% (CI95%) 0.12–0.94, and $p = 0.05$.

Thus, it was observed that several studies have been conducted in geriatric patients, showing a reduction in the diarrhea associated with antibiotics and in the severity of the symptoms with the ingestion of probiotics,¹⁰ leading to a reduction in hospital stay, hospital costs, and time spent by the nursing team to provide care.¹⁹ However, it is necessary to establish protocols for use, since our findings have shown that patients who have exchanged supplements during the treatment had a longer time of diarrhea, associated with the presence of sepsis and the time of antibiotic use ($p < 0.05$).

As for nutritional status, we know that nutritional changes are related to the reduction of immunity, wound healing, increased hospital stay, costs, death risk and a decrease in the patient's quality of life.²⁰ In this study, malnutrition was observed in 12% of the patients, and overweight in 44%. No relationship was found between these conditions and the time of diarrhea with the use of ST and MT, possibly by the sample size in each product group.

With regard to the enteral diet related to the estimated nutritional needs of the patients, it was observed that 80% of them were receiving $\geq 70\%$ of daily Kcal needs and 65% were receiving $\geq 70\%$ of daily protein requirements at the time of onset of diarrhea. Authors argue that EN increases the risk of developing diarrhea when more than 60% of the energy target is delivered via enteral route in combination with antimicrobial drugs.⁵ However, studies have shown that the implementation of a standard protocol for enteral feeding has reduced the incidence of diarrhea.²¹

To date, there are no well-established guidelines for the use of prebiotics, probiotics, and synbiotics in the recovery of intestinal homeostasis for treatment of different clinical conditions, since many species of bacteria are used to treat various diseases.²² Because of the heterogeneity of studies, it is still unclear which strains, (whether isolated or combined), dose, and time of treatment should be used.²³

In this study, 52% of patients had altered therapy during the course of diarrhea, using minimally 2 different supplements, and 11.99% used 3 to 5 products or combinations, which became a limiting factor to analyze the efficacy of each of these products regarding the time to resolve the diarrhea.

Issa and Moucari,²³ in their review, showed results from studies in which trials with multiple combined strains were

more effective in preventing *Clostridium difficile*-associated diarrhea than those with a single strain. Furthermore, several studies have demonstrated that there are no statistically significant differences in the reduction of diarrhea with the use of different probiotic strains, such as *Lactobacilli*, *S. boulardii*, *Saccharomyces*, and *Enterococcus faecium*, that is, different types of probiotics showed benefit regardless of species. The similarity of results would be explained by the fact that probiotics reestablish the non-pathological intestinal microbiota and not by the specific effect of some species.

Our study did not observe significant differences in time of resolution of diarrhea between patients treated with probiotics or synbiotics, separately or combined with each other or with glutamine when patients underwent ST. However, maintaining single or mixed supplementation during treatment, without changes, seems to have better results. There are no studies that have performed this comparison between products for the same clinical condition.

Regarding the composition of the supplement to be used in these cases, according to a study by Cai et al.,²⁴ *Lactobacillus rhamnosus* GG may be superior to other probiotic treatments for diarrhea associated with antibiotic therapy, both in efficacy and in tolerance. In terms of secondary outcomes, *Lactobacillus casei* seems to be the most effective choice when associated with severe cases related to *Clostridium difficile*; and the combination of strains showed no advantage over the use of a single species, either in efficacy or in tolerability.

In this study, the most frequently prescribed product was the probiotic containing a mixture of different strains — product (3) PROBIO —, which also showed the most satisfactory result for the control of diarrhea, since it was able to cease it in 55.8% of the patients who received it as ST. This supplement contains *Lactobacillus rhamnosus* GG in its composition. However, due to the limitations in the analysis of the other products, it cannot be said that the superiority in efficacy was due to its composition of multiple strains, or because it contains *Lactobacillus rhamnosus*.

Regarding the prescribed dose, our results indicate that when started in a larger amount, it is more assertive to stop diarrhea, since half of the patients who used the product (3) PROBIO in doses lower than 3 g had to increase it to the control of diarrhea. The literature does not define the best dose to be offered. Although there are extensive studies on probiotics, the effectiveness of the same product in different amounts is not compared.

Analyzing data on glutamine-only treatment was limited, as only 3 patients used it. However, the literature points out that its usefulness includes maintenance of nucleotide metabolism and intestinal barrier function, modulation of

inflammation, and regulation of responses to stress and apoptosis.²⁵

The present study is important in the attempt to elucidate the question of the best treatment to be added to nutritional therapy for the control of diarrhea. The literature is extensive in affirming the harms of diarrhea to the health and quality of life of patients; and that the use of prebiotic, probiotic, and synbiotic products may help in its resolution, minimizing complications and length of hospital stay. However, it fails to define guidelines that indicate the choice of supplement, dose, and treatment time.

The limitations of this study were several and include: design of a retrospective study, exclusion of 308 patients (small sample) and other factors that could influence diarrhea and that were not evaluated.

CONCLUSION

It is concluded that choosing a single prescription, whether of isolated or combined products, and sticking to it seems more effective in controlling diarrhea than changing supplementations during treatment. It is also more effective to start with a higher dose and decrease it according to the reduction of the frequency and / or volume of the patient's evacuation.

Further controlled studies are needed to elucidate the choice of strains and the time of treatment, considering the different clinical conditions of hospitalized geriatric patients, so that a protocol can be clearly established for the control of diarrhea in this population.

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CONTRIBUTION OF AUTHORS

Janaina Bach Naslowski Pocidoni: Elaboration of the research project, submission of the project to the Research Ethics Committee, data collection, analysis of results, writing of the final article.

Magda Rosa Ramos da Cruz: development of the methodology, advising the resident for data collection and analysis, article revision.

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Jaqueline Naomi Fujimura: provided the physical database of the patients served by the clinical nutrition service. Revision of the research project. Revision of the final article.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

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