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The knowledge of intensive care professionals about diarrhea

Conhecimento de profissionais de unidade de terapia intensiva sobre diarreia

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ABSTRACT

Objective: To assess the opinions and practices of intensive care professionals with regard to diarrhea in critically ill patients.

Methods: A multicenter cross-sectional study was conducted among health care professionals working at three adult intensive care units. Participants responded individually to a self-administered questionnaire about their length of work experience in intensive care; the definition, characterization, and causes of diarrhea; types of records in the patient's medical record; and training received.

Results: A total of 78 professionals participated in this study, of whom 59.0% were nurse technicians, 25.7% were nurses, and 15.3% were physicians; 77.0% of them had worked in intensive care for over 1 year. Only 37.2% had received training on this topic. Half of the interviewees defined diarrhea as

“liquid and/or pasty stools” regardless of frequency, while the other 50.0% defined diarrhea based on the increased number of daily bowel movements. The majority of them mentioned diet as the main cause of diarrhea, followed by “use of medications” ($p < 0.001$). Distinct nutritional practices were observed among the analyzed professionals regarding episodes of diarrhea, such as discontinuing, maintaining, or reducing the volume of enteral nutrition; physicians reported that they do not routinely communicate the problem to other professionals (for example, to a nutritionist) and do not routinely record and quantify diarrhea events in patients' medical records.

Conclusion: Different opinions and practices were observed in intensive care professionals with regard to diarrhea.

Keywords: Diarrhea; Nutritional therapy; Questionnaires; Intensive care units

Conflicts of interest: None.

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INTRODUCTION

Gastrointestinal motility disorders are common in critically ill patients,⁽¹⁾ occurring mainly because of physiological responses to the severe disease itself, enteral nutrition intolerance, use of medications (particularly antibiotics and prokinetics), infection, and immunosuppression.^(2,3)

Diarrhea is the most frequent complication among the changes observed in intensive care unit (ICU) patients receiving enteral nutrition.⁽⁴⁾ Among other factors, diarrhea can be caused by alterations in the colonic response, microbial contamination of enteral nutrition formulas, low-fiber diet, hypoalbuminemia, disturbances of the intestinal flora, increased use of antibiotics and concurrent drug therapy, and *Clostridium difficile* infection.⁽⁵⁻⁸⁾ Furthermore, etiology,

disease severity, and comorbidities may contribute to the onset of diarrhea in critically ill patients.⁽⁹⁾

The complications of diarrhea can be severe and include infection and skin problems (such as pressure ulcers), loss of electrolytes, dehydration, malnutrition, and hypoalbuminemia, which prolong hospitalization and thus contribute to higher rates of morbidity and mortality in addition to increased hospital costs.^(7,10)

The reported incidence of diarrhea in ICU patients varies widely in the literature, ranging from 2 to 95% depending on the criteria used to define and quantify bowel movements.^(7,8,11-13) The World Health Organization⁽¹⁴⁾ defines diarrhea as the passage of three or more episodes of liquid or loose stools per day. Usually, this definition is easier to apply in practice and compatible with the daily routine of the health care professional team in the ICU.^(15,16) Nevertheless, neither a consensus on the definition of diarrhea among the services nor care standards for patients with this condition are available.^(17,18) The literature itself does not present a single definition of diarrhea, which also makes its identification for the actual quantification of this problem in critically ill patients more difficult. For example, different criteria are used by researchers to define diarrhea, such as the stool density, description of the frequency, consistency and quantity of bowel movements, or the daily elimination of feces weighing >250g or volume >300mL.⁽¹⁵⁾ This lack of consensus can have serious effects for the patient, especially related to nutritional deficits, inappropriate metabolic response, and delay in the clinical rehabilitation process.⁽¹¹⁾

The analysis of the knowledge of health care professionals on this topic is important to develop strategies for the multidisciplinary management of hospitalized patients. Therefore, this study aimed to assess the opinions and practices of professionals in the ICU with regard to diarrhea in critically ill patients.

METHODS

A multicenter cross-sectional study was conducted among physicians, nurses and nurse technicians working in three adult ICU of hospitals located in the city of Cascavel in western Paraná State-Brazil. One of the hospitals was a public teaching hospital with 15 ICU beds; the second was a voluntary hospital for cancer care with 8 beds; and the third was a private teaching hospital with 20 beds, with a total of 127 professionals (82 nurse technicians, 25 nurses and 20 physicians). Physicians, nurses, and nurse technicians who were working in the ICU in August 2012 and who agreed to participate in the study were included. Professionals on vacation or on sick leave

during that month and cases where the questionnaires were incomplete and/or not returned within the deadline were excluded from the study. The study was approved by the Human Research Ethics Committee of the *Faculdade Assis Gurgacz* (FAG), opinion 231/2013 REC/FAG, with the signing of an Informed Consent Form being required to include any professional in the study.

The participants answered a questionnaire (self-administered) that was delivered during the work shift and were allotted 30 minutes to complete it. The questionnaires were answered individually and without interference from the researchers, who collected them immediately after their completion. Data were collected during the morning, afternoon, and night shifts. The participation in the study was voluntary. The survey questionnaires did not contain personally identifiable information from the participants.

The variables of the questionnaire were related to the work identification (position held and length of work experience in ICU); definition, characterization, and causes of diarrhea in the ICU; documentation of diarrhea in the clinical record; and practices and training on diarrhea.

Among the 14 multiple choice questions on the questionnaire, 10 were multiple-answer questions, and 4 were single-answer questions. The latter category included the question about the definition/characterization of diarrhea, and all the criteria used in the literature were considered, which resulted in twenty alternatives that included different degrees of quantity (small, medium, large), frequency (one to three times, four to six times, and more than six times/day), and consistency (liquid or pasty) of stools. Regarding nutritional practices, the first action taken by the respondents was considered the response. For that purpose, the following practices were considered: discontinue, maintain, or reduce the volume of enteral nutrition; communicate the problem to other professionals; record the incident in the patient medical record; or change the composition of the enteral nutrition formula used. For the documentation of the episode, the alternatives were related to the recording of the frequency, number, and appearance of diarrhea in the patient medical record; communicating the problem verbally to another professional; or not including it in the patient medical record. The causes of diarrhea associated with enteral nutrition were included in the multiple-answer questions. All the conditions described in the literature were considered as possible causes. To quantify the responses, equal alternatives were summed up, and the highest frequencies were considered for the study.

There was no sample size calculation because the goal was the participation of all professionals. Statistical analysis was performed using the Stata 9.1 software. After a general description of the population, differences were analyzed using a chi-square test, with significance level of 5% ($p=0.05$).

RESULTS

A total of 78 professionals participated in the study (61.4% of the total professionals), of whom 59.0% were nurse technicians ($N=46$), 25.7% nurses ($N=20$), and 15.3% physicians ($N=12$). Eight professionals on vacation, 5 professionals on sick leave, and 36 who either did not return or did not properly answer the survey questionnaire were excluded from the study. Table 1 shows the demographic profile of the participants.

Among the professionals, 37.2% ($N=29$) had received some training on this subject (characterization of diarrhea), and of this group, 27.0% ($N=21$) reported that they received this training during college, 8.9% ($N=7$) in the work institution, and only 1.3% ($N=1$) in courses or meetings.

When the professionals were asked about the definition of diarrhea (single-answer question), 39 (50.0%) responded that diarrhea is “liquid or pasty stools” regardless of frequency, while the other 39 (50.0%) responded that diarrhea was characterized by an increased number of daily bowel movements, with large variability observed for the frequency (Figure 1).

Regarding the most common causes of diarrhea among ICU patients, the two most common responses were “diet”

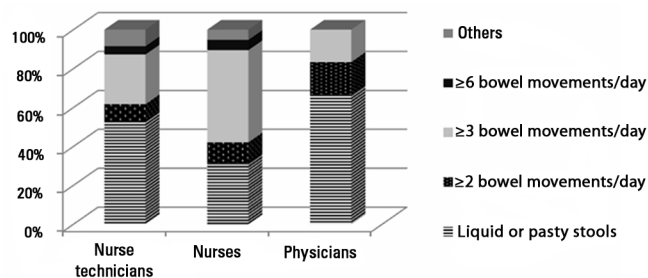


Figure 1 - Definition of diarrhea according to the interviewees (single-answer questions).

and “use of medications”, with a statistically significant difference among the professionals ($p<0.001$) (Table 2). The percentage of professionals who indicated diet as the main cause of diarrhea ranged from 75% (physicians) to 89.1% (nurse technicians). Among the factors associated with diet (volume, infusion rate, temperature, composition, and contamination of enteral nutrition formula), differences were observed for all items among the interviewed health care professionals (<0.001) (Table 2).

The nutritional practice (discontinuing, maintaining, or reducing the volume of enteral nutrition) in situations of diarrhea varied among the respondents; however, no significant difference was observed. In episodes of diarrhea, a greater number of nurse technicians, who defined the disease according to their own conception, reported discontinuing the administration of enteral nutrition or reducing its volume and communicating the problem to the nurse or another professional. Regarding the response of physicians, there was a low rate of communication of the presence of diarrhea to other professionals (e.g., nutritionists), as shown in table 2.

Table 1 - Interviewees' demographic characteristics ($N=78$)

	Total ($N=78$)	Physicians ($N=12$)	Nurse technicians ($N=46$)	Nurses ($N=20$)
Male	22 (28.2)	9 (75)	11 (24)	2 (10)
Age group (years)				
18-25	18 (23.1)	1 (8.3)	10 (21.7)	7 (35)
26-40	49 (62.8)	9 (75)	28 (60.9)	12 (60)
≥41	11 (14.1)	2 (16.7)	8 (17.4)	1 (5)
Hospitals				
1	27 (34.6)	5 (41.7)	18 (39.1)	4 (20)
2	23 (29.5)	3 (25)	10 (21.7)	10 (50)
3	28 (35.9)	4 (33.3)	18 (39.2)	6 (30)
Length of work experience at ICU (years)				
≤1	17 (21.8)	3 (25)	9 (19.6)	6 (30)
1-5	30 (38.6)	3 (25)	20 (43.5)	7 (35)
>5	30 (38.6)	6 (50)	17 (36.9)	7 (35)

ICU - intensive care unit. Results expressed in number (%).

Table 2 - Results from questionnaires

	Physicians (N=12)	Nurse technicians (N=46)	Nurses (N=20)	p value
Main cause of diarrhea*				
Diet	9 (75.0)	41 (89.1)	17 (85.0)	<0.001
Medications	5 (41.7)	12 (26.1)	10 (50.0)	<0.001
Gastrointestinal infection	3 (25.0)	10 (21.7)	3 (15.0)	0.202
Patient-related factors	2 (16.7)	10 (21.7)	2 (10.0)	0.627
Causes of diarrhea associated with diet*				
Administration rate	9 (75.0)	35 (76.1)	19 (95.0)	<0.001
Volume	10 (83.3)	29 (63.0)	14 (70.0)	<0.001
Composition	10 (83.3)	23 (50.0)	13 (65.0)	<0.001
Contamination	8 (66.7)	21 (45.6)	17 (85.0)	<0.001
Temperature	5 (41.7)	19 (41.3)	10 (50.0)	<0.001
Other	0	1 (2.2)	0	NA
Action by the professional*				
Discontinue the diet	2 (16.7)	7 (15.2)	5 (25.0)	0.311
Maintain diet	4 (33.3)	15 (32.6)	3 (15.0)	0.014
Reduce diet	5 (41.7)	6 (13.0)	2 (10.0)	0.532
Communicate to other professionals	3 (25.0)	29 (63.0)	14 (70.0)	<0.001
Type of record of episodes of diarrhea				
No record	2 (16.7)	0	0	NA
Verbal communication	2 (16.7)	2 (4.3)	2 (10.0)	NA
Record without quantification	5 (41.6)	1(2.2)	0	NA
Record with quantification	3 (25.0)	43 (93.5)	18 (90.0)	<0.001

* Multiple-answer questions. Results expressed in number (%). Chi-square test.

Respondents were asked about how the diarrhea episodes were recorded, with options for a single daily record in the patient diary (checklist); a record in the shift report, mentioning the consistency, frequency, or volume of diarrhea; or verbal communication without any entry in the patient's medical record. In this question, some of the physicians reported not routinely recording and quantifying events of diarrhea in the patient's medical record (Table 2).

DISCUSSION

The majority of the professionals who participated in this study were from the nursing department, and a great disparity was observed regarding nutritional practices during an episode of diarrhea.

It is known that a proper nutritional procedure can influence most of the items mentioned above, and therefore, knowledge regarding appropriate strategies of care is critical in the management of these patients. The same is true for complications, especially gastrointestinal ones (diarrhea and constipation), which can cause,

result from, or occur associated with disorders linked to malnutrition.

Therefore, questionnaires designed to assess the level of knowledge of the health care professionals specialized in nutrition therapy are important tools to map practices and identify performance in internal continuing education programs.

In this study, the opinions and practices of the professionals who work directly with ICU patients showed great variability in the approach and management of diarrhea, including the definition of the condition. Variations were observed among professionals working at the same hospital and among professionals of the same category, which makes the standardization of practices more difficult.

The definition of diarrhea was heterogeneous among the respondents, with 39 (50%) of them using the criterion of consistency (liquid or pasty stools), and almost half (44%) using the criterion of the frequency of bowel movements. This discrepancy was even more evident when the groups of professionals were compared. This difference is clearly

observed in the literature, which shows great variability in the definition of diarrhea.^(12,16,19) In a questionnaire administered to professionals working at hospitals, ICU nurses considered the frequency of bowel movements to define diarrhea, while nurses in a neurological unit considered the liquid consistency of stools to be the more important factor for the diagnosis of diarrhea.⁽¹²⁾

Regarding the opinions of the causes of diarrhea assessed in this study, more than half of the respondents in each group indicated enteral nutrition as a primary factor. This finding can be partially explained by the fact that the interviews were conducted by the nutritionists of the institutions, which could influence these responses. The concept of diarrhea itself could influence these responses in the group of respondents who consider stool volume to be a criterion in the definition of diarrhea because infectious diarrhea tends to be more severe and voluminous.⁽¹⁵⁾ Another factor that could influence the results is that the diagnosis of infectious diarrhea, particularly caused by *Clostridium difficile*, is unusual and difficult,⁽²⁰⁾ which could contribute to its underdiagnosis. Among 141 patients with diarrhea in Spanish ICU, only 5% of cases were associated with *Clostridium difficile*.⁽²¹⁾

Regarding the etiology of diarrhea associated with enteral nutrition, there was no consensus within the group or among the groups, and all variables were significantly different. Intensivist nurses who were interviewed about practices and opinions in regard to enteral nutrition reported that the most common causes of diarrhea were associated with the use of antibiotics or the composition of enteral nutrition.⁽²²⁾ The infusion method of enteral nutrition is also indicated as a risk factor for developing diarrhea. In a comparative study, a significant difference was observed in the incidence of diarrhea in a group of patients who used enteral nutrition in a closed enteral feeding system with tighter control of the drip rate.⁽²³⁾

The most common response of the nursing team about their practice in regard to diarrhea in patients with enteral nutrition was to notify other professionals ($p < 0.001$); in contrast, among the physicians, almost half decided to reduce or maintain the diet. Even more worrying was the fact that when the decision was to communicate the problem to other professionals, only in 38.8% of the cases was this professional the nutritionist. It is important to emphasize that the performance of a multidisciplinary team improves the efficiency of

nutrition therapy in hospitalized patients, in addition to reducing complications, hospital costs,⁽²⁴⁾ and unnecessary procedures such as discontinuing the enteral feeding.^(11,25)

A study with Brazilian nurses⁽¹²⁾ and physicians working in intensive care⁽²⁶⁾ (54% were certified intensivists) demonstrated a great discrepancy in both the definition of diarrheal stools in ICU patients and the practices in a illustrative case of diarrhea in the ICU. In this study,⁽²⁶⁾ the majority of the interviewees reported difficulty in organizing an enteral nutrition program for critically ill patients.

The number of misdiagnoses was reduced after the implementation of a training program for nursing professionals about the definition of diarrhea.⁽²⁷⁾ Therefore, this study can help to identify the actual approach and practices of health care professionals within a hospital in regard to the gastrointestinal management of patients, aiming to establish clinical protocols based on evidence and experience.⁽²⁸⁾

This study had certain limitations. The researcher delivered the questionnaires to the participant and collected them after approximately 30 minutes, without any confidentiality criterion. Despite the absence of validation (pre-test), the time and the nature of the questions were apparently not limitations to completing the questionnaire. However, the researchers were the nutritionists of the hospitals that participated in the study, which could have influenced the answers, given that the participants might be embarrassed to describe what they know and/or what they do. The number of analyzed professionals and the number of institutions (three institutions) limit the generalizability of these data.

CONCLUSIONS

The analysis of the responses of a questionnaire administered to health care professionals working in adult intensive care units showed that opinions on and knowledge about diarrhea in hospitalized patients were discrepant, varying among the studied groups. Likewise, the practices of the health professionals were also divergent.

Specific protocols to identify episodes of diarrhea should be elaborated to standardize the practice, aiming to ensure that patients safely receive the designated nutritional support, thus contributing to their speedy recovery.

RESUMO

Objetivo: Avaliar opiniões e condutas de profissionais atuantes em unidades de terapia intensiva relacionadas à diarreia do paciente grave.

Métodos: Estudo transversal, multicêntrico realizado com profissionais de saúde de três unidades de terapia intensiva de adultos. Os participantes responderam individualmente a um questionário autoaplicável sobre tempo de atuação profissional em terapia intensiva; definição, caracterização e causas da diarreia; formas de registro no prontuário; e treinamentos recebidos.

Resultados: Participaram 78 profissionais, sendo 59,0% técnicos em enfermagem, 25,7% enfermeiros e 15,3% médicos; 77,0% trabalham em terapia intensiva há mais de 1 ano. Apenas 37,2% tinham realizado previamente algum treinamento relacionado. Metade dos entrevistados caracterizou diarreia como

“evacuações líquidas e/ou pastosas” independentemente da frequência, enquanto os outros 50,0% caracterizaram pelo aumento do número de episódios diários de evacuações. A maioria referiu a dieta como principal fator causal da diarreia, seguida de “uso de medicamentos” ($p < 0,001$). Foram detectadas condutas nutricionais distintas entre os profissionais pesquisados frente a um episódio de diarreia, no tocante a suspender, manter ou reduzir a dieta; os médicos referiram não ter o hábito de comunicar a outro profissional (por exemplo, o nutricionista), assim como não referiram o hábito de registrar e quantificar os eventos de diarreia no prontuário.

Conclusão: Detectou-se pluralidade de opiniões e atitudes dos profissionais de terapia intensiva relacionadas à diarreia.

Descritores: Diarreia; Terapia nutricional; Questionários; Unidades de terapia intensiva

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