

Knowledge of the medical and nursing teams about the management of oral medications in hospitalized adult dysphagic patients

Conhecimento das equipes médicas e de enfermagem sobre o manejo de medicamentos orais no paciente adulto disfágico hospitalizado

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ABSTRACT

Purpose: To describe the knowledge of healthcare teams about dysphagia, prescription, and administration of oral medications in dysphagic adult patients. **Methods:** Cross-sectional study that included physicians, nurses, and nursing technicians from Hospitalization and Intensive Therapy Units of a university hospital in southern Brazil. A total of 102 professionals participated and answered an adapted and previously tested survey for this research. Exploratory variables were: sociodemographic data; academic and professional guidance on dysphagia; knowledge about dysphagia; phases of swallowing; signs, symptoms, and comorbidities associated with dysphagia; management, prescription, and administration of medications in the dysphagic patient. **Results:** 93.5% of the physicians, 100% of the nurses, and 97.8% of the nursing technicians know what dysphagia is. Most recognize the speech therapist as being responsible for swallowing rehabilitation; however they do not identify the signs and symptoms of dysphagia; choking during swallow was the most recognized symptom. For prescription drugs, 58% of the physicians do not consider alternative routes (enteral or intravenous) for administration, and 22.5% advise the nursing staff on how to manage patients with dysphagia. Most nurses and nursing technicians, 50,0% and 68,9% respectively, crush the medicine and mix it with water; and 65,4% and 46,7%, respectively, feel unprepared to administer medications in patients with dysphagia. **Conclusion:** The knowledge of healthcare teams is still incipient when it comes to the care of the hospitalized adult dysphagic patients and the use of oral medications. Knowledge sharing, investment in permanent education, and qualification during the education of these professionals is fundamental to improve the integral care to the patient.

Keywords: Deglutition Disorders; Medication Errors; Patient Safety; Deglutition; Oral Administration of Medications.

RESUMO

Objetivo: Descrever o conhecimento das equipes assistenciais sobre a disfagia e prescrição e administração de medicamentos orais em pacientes disfágicos adultos. **Métodos:** Estudo transversal, realizado com médicos, enfermeiros e técnicos de enfermagem das unidades de internação e terapia intensiva em hospital universitário do Sul do Brasil. Participaram 102 profissionais, que responderam questionários adaptados e previamente testados para a pesquisa. As variáveis exploratórias foram: dados sociodemográficos; orientação acadêmica e profissional sobre disfagia; conhecimento sobre disfagia; fases da deglutição; sinais, sintomas e comorbidades associados à disfagia; manejo, prescrição e administração de medicações no paciente disfágico. **Resultados:** Dos entrevistados, 93,5% dos médicos, 100% dos enfermeiros e 97,8% dos técnicos de enfermagem sabiam o que é disfagia. A maioria reconheceu o fonoaudiólogo como responsável pela reabilitação da deglutição, mas não identificou os sinais e sintomas da disfagia, sendo o engasgo na deglutição o mais reconhecido. Ao prescrever medicamentos, 58,1% dos médicos responderam que não cogitam vias alternativas (enteral ou endovenosa) para administração medicamentosa e 22,5%, que orientam a equipe de enfermagem sobre como administrar em pacientes disfágicos. A maioria dos enfermeiros e técnicos - 50,0% e 68,9% respectivamente -, informou que tritura o medicamento, misturando com água, e 65,4% e 46,7%, respectivamente, mencionaram que se sentem pouco preparados para administrar medicamentos em pacientes disfágicos. **Conclusão:** O conhecimento das equipes assistenciais ainda é incipiente, quando relacionado ao cuidado do paciente adulto disfágico hospitalizado e ao uso de medicações por via oral. O compartilhamento de saberes, o investimento em educação permanente e a qualificação durante a formação destes profissionais é fundamental para melhorar o atendimento integral ao paciente.

Palavras-chave: Transtornos de Deglutição; Erros de Medicação; Segurança do Paciente; Deglutição; Administração Oral de Medicamentos.

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INTRODUCTION

Dysphagia is a disorder in the process of swallowing, which affects the path of food from the mouth to the stomach due to changes in the structures involved in this function; causes may be neurological, mechanical or psychogenic, the latter being less common^(1,2). In addition, the healthy aging process itself leads to difficulties in swallowing⁽³⁾.

Population aging, increased life expectancy, urban violence, and the increase of chronic diseases have been motivating the expansion of studies on dysphagia. In addition to speech therapists, many professionals are involved in the dysphagia rehabilitation team, including physicians, nurses, nursing technicians, nutritionists, physiotherapists, occupational therapists, dentists, and social workers^(4,5).

In the hospital setting, the prevalence of dysphagia can vary between 20% and 60%,^(6,7) depending on the distribution of causes of hospitalization, associated comorbidities, and characteristics of the population served. In hospitalized patients, the rapid identification of dysphagics is related to the reduction of the risk of pneumonia, shorter hospital stay, and better cost-effectiveness, resulting from the reduction of days of hospitalization⁽⁸⁾.

The World Health Organization (WHO) recently announced a global patient safety challenge, called “Medication without harm”. Among the domains to be addressed, the training and monitoring of health-care professionals regarding the use of medications stand out⁽⁹⁾. It is known that errors in drug administration in dysphagic patients are common and can lead to important risks to patient safety. A study conducted in the United Kingdom⁽¹⁰⁾ found that during hospital stay, dysphagic patients are three times more likely to suffer errors in drug administration than their non-dysphagic peers. These errors are associated with inadequate selection of drug formulation, wrong drug preparation, administration of drug over an hour late, and different tablets dispersed together.⁽¹⁰⁾

Despite the importance and necessity of cautious clinical practice with the patient in hospital stay, there are often shortcomings in prescription and administration, which compromise the drug treatment^(11,12), besides contributing to the increase in hospital costs and time of hospitalization of the patient⁽¹³⁾. Considering that medical and nursing teams are present in the basic support of hospitalization and intensive care units, and are responsible for the prescription and handling of medications, it is important that these professionals are aware of the needs of each patient.

Thus, this study aimed to identify and describe the basic knowledge of dysphagia among physicians, nurses, and nursing technicians, as well as the medical conduct for prescription of medications, and the routine of the nursing team in the practice of administering medications in dysphagic patients.

METHODS

This is a cross-sectional study conducted at a tertiary university hospital in the Metropolitan Region of Porto Alegre, Rio Grande do Sul, Brazil. The study included physicians, nurses, and nursing technicians who were working in the adult hospitalization and intensive care units during the period of October to December 2015.

All those who accepted to participate in the survey were included in the study. The sample consisted of 102 professionals, of whom 31 were physicians, 26 were nurses, and 45 were nursing technicians. The questionnaire adapted from the study of Albin et al.⁽¹⁴⁾, previously tested in a pilot study, was used for data collection. The participants completed a self-administered pen-paper questionnaire, scheduled according to the availability of each professional. Thus, the speech therapist responsible for collecting the data met each participant to deliver the questionnaire, and awaited its completion.

The adapted questionnaire (Appendix 1) consisted of 22 multiple choice questions, with demographic data such as sex (female, male), age (years), profession (nursing technician, nurse, and physician), in addition to other issues, such as knowledge about dysphagia (yes, no), having received academic guidance on dysphagia (yes, no), professional considered to be competent to rehabilitate dysphagia (speech therapist, nutritionist, nurse, doctor, physiotherapist). Also, specific questions were asked about the phases of swallowing (oral preparatory, oral, pharyngeal, and esophageal), dysphagic signs and symptoms (coughing, choking and/or throat clearing, increased feeding time, difficulty chewing and initiating a swallow, alteration in vocal quality, escape of saliva or food), as well as the possible associated comorbidities (dehydration, malnutrition, aspiration).

Specific questions for physicians were: knowledge about prescription and medication administration in dysphagic patients (advise the nursing team on how to proceed during administration, observe the type of diet and consistency safe for the patient, watch for possible drug interactions). Specific questions for the nursing team were: routine administration of oral medications in dysphagic patients, including preparation of the medication (possibility of cutting, crushing, smashing and/or dissolving the medication in water), patient position in bed for administration (sitting, semi-upright, or supine), and drug interaction (medicine versus feeding, water, or other medications). It was also questioned the frequency of patients' gagging during the medication routine (almost always, always, almost never, never, do not know), and the feeling of these professionals in administering the medication for dysphagic patients (well prepared, poorly prepared, have doubts).

The descriptive analysis of the data, with absolute and relative frequency, was performed with the SPSS 22 software. This study was approved by the Research Ethics Committee of

the Universidade Luterana do Brasil (ULBRA), under number 1.294.042. Participants were informed about the purpose of the study and, after agreeing, signed the Free and Informed Consent Form.

RESULTS

Of the 102 participants in the study, 75.5% were female. The age range of the majority of physicians and nurses was between 20 and 31 years (67.7% and 57.7%, respectively) and nursing technicians, from 32 to 43 years old (51.1%). Of the professionals questioned about dysphagia, 93.5% of the physicians, 100% of the nurses, and 97.8% of the nursing technicians answered correctly. Most of the participants - 80.6% of the medical team, 96.2% and 84.4% of the nurses and nursing technicians, respectively - recognized the speech therapist

as the professional that has the competence to rehabilitate swallowing (Table 1).

With regard to the signs and symptoms of dysphagia, the medical team was best informed; choking during meals was reported by 93.5% of the physicians. Nurses did not identify important signs to detect dysphagia, such as difficulty chewing (53.8%), increased feeding time (69.2%), alteration in vocal quality (80.8%), and coughing (46.2%). Regarding nursing technicians, the need for more information about the symptoms of dysphagia was observed, since most of them could not identify the signs presented by dysphagic patients; coughing and alteration in voice quality during oral intake were not identified as signs of dysphagia by 82.2% of nurses and 93.3% of nursing technicians (Table 2).

Regarding the academic guidance on prescription and medication administration in dysphagic patients, 64.5% of

Table 1. Sociodemographic characteristics and general knowledge of physicians, nurses, and nursing technicians about dysphagia (N = 102)

Characteristics	Physicians		Nurses		Nursing technicians	
	N	%	N	%	N	%
Sex						
Female	13	42.0	22	84.6	42	93.3
Male	18	58.0	4	15.4	3	6.7
Age						
20 to 31 years	21	67.7	15	57.7	17	37.8
32 to 43 years	9	29.1	11	42.3	23	51.1
+44 years	1	3.2	-	-	5	11.1
Knows what dysphagia is						
Yes	29	93.5	26	100.0	44	97.8
No	2	6.4	-	-	1	2.2
Phases of swallowing						
Correct identification	22	71.0	12	46.2	19	42.2
Incorrect identification	9	29.0	14	53.8	26	57.8
Complications of dysphagia						
Correct identification	27	87.1	22	84.6	31	68.9
Incorrect identification	4	12.9	4	15.4	14	31.1
Had academic guidance on dysphagia						
Yes	11	35.5	10	38.5	35	77.8
No	20	64.5	16	61.5	10	22.2
Had professional guidance on dysphagia						
Yes	8	25.8	8	30.8	25	55.6
No	23	74.2	18	69.2	20	44.4
Professional who rehabilitates dysphagia						
Speech therapist	25	80.6	25	96.2	38	84.4
Nutritionist	1	3.2	1	3.8	10	22.2
Nurse	5	16.1	0	0	1	2.2
Physician	1	3.2	0	0	1	2.2
Physiotherapist	0	0	1	3.8	0	0
Total	31	100	26	100	45	100

Data presented in absolute and relative frequency.

the physicians, 61.5% of the nurses, and 22.2% of the nursing technicians did not have this clarification. In professional practice, only 8 professionals of the medical team received guidance; in the nursing team, 8 nurses and 25 technicians received guidance.

Regarding the medical practice for prescription and administration of oral medications (tablets, capsules, and emulsions), 80.7% of physicians stated that they checked the type of diet prescribed for the dysphagic patient before prescribing the drug treatment. However, only 13 professionals reported considering the use of other routes of administration, such as intravenous or enteral tube, when the patient has a restriction of some diet consistency. Regarding the nursing team orientation routine at the time of medication administration, only 7 physicians reported this habit (Table 3).

The nursing team was asked about the frequency with which patients presented coughing, choking, and difficulty in taking oral medications, and 73.2% reported that almost always, 16.9% answered that always, 7.0% reported that never, and 2.8% reported not knowing. In addition, 60.5% of the professionals - among them, 12 nurses - mentioned positioning the patient semi-upright (between 45° and 60°) at the moment of administration of the medication, and only 38.0% - including

12 nurses - mentioned positioning the patient correctly seated (90° angle).

Regarding medication administration, the most used method was crushing the tablet (or opening the capsule) and mixing it with water - 50.0% of the nurses and 68.9% of the nursing technicians cited this practice. Still, 23.1% of nurses and 20.0% of nursing technicians reported that they put the tablet in the water and wait for it to dissolve, and then medicate the patient. Crushing the medication and mixing it in thickened water, for patients with restriction of solid and liquid consistency, was another reported practice (Table 4).

Regarding the confidence of each professional when administering oral medications in patients with difficulty swallowing, 65.4% of the nurses reported feeling unprepared, and 46.7% of the nursing technicians also reported feeling insecure (Table 5).

DISCUSSION

Most of the professionals interviewed said they knew what dysphagia was and acknowledged the speech therapist's role in rehabilitation. However, during the routines of the hospitalization units in which the survey was carried out, it was noticed that there are still doubts in the identification of

Table 2. Identification by physicians, nurses, and nursing technicians of symptoms presented by dysphagic patients (N = 102)

Variables		Physicians		Nurses		Nursing technicians	
		n	%	n	%	n	%
Choking	Yes	29	93.5	17	65.4	23	51.1
Difficulty starting a swallow	Yes	27	87.1	20	76.9	25	55.6
Coughing	Yes	24	77.4	14	53.8	8	17.8
Increased feeding time	Yes	22	71.0	8	30.8	11	24.4
Loss of saliva or food from the mouth	Yes	18	58.1	8	30.8	9	20.0
Difficulty chewing	Yes	12	38.7	12	46.2	23	51.1
Alteration in vocal quality	Yes	10	32.3	5	19.2	3	6.7

Table 3. Medical practice for the prescription and administration of oral medications in patients with dysphagia (N = 31)

Variables	Yes		No		Sometimes	
	n	%	n	%	n	%
Check the type of diet before prescribing the medication	25	80.7	1	3.2	5	16.1
Consider alternative routes for administration (intravenous and/or enteral tube)	13	41.9	18	58.1	–	–
Guide nursing team on patients with modified diet	7	22.5	6	19.3	18	58.2

Table 4. Method used by nurses and nursing technicians to administer oral medication in dysphagic patients (N = 81)

Variables	Nurses		Nursing technicians	
	n	%	n	%
Crush it and mix it with water	13	50.0	31	68.9
Wait for it to dissolve in water	6	23.1	9	20.0
Crush it and mix it with thickened water	7	26.9	3	6.7
Do not know how to do it	2	7.7	2	4.4

Table 5. Feeling of nurses and nursing technicians when administering medication in dysphagic patients

Feeling when administering medication to dysphagic patients	Nurses		Nursing technicians	
	n	%	n	%
Well prepared	5	19.2	22	48.9
Unprepared	17	65.4	21	46.7
Have doubts (if prepared / do not know)	4	15.4	1	2.2

the dysphagic patient, the necessary referrals for these cases, and at what time to do them, aspects identified in physicians, nurses, and nursing technicians.

The speech therapist is the professional with competence to rehabilitate swallowing, being responsible for the management of dysphagia in the hospitalization, intensive care, and outpatient units⁽¹⁵⁾. In this context, the identification of dysphagia is not restricted to dysphagic signs alone. Motor, sensory, cognitive, behavioral, physical, and environmental alterations also interfere in swallowing, leading to aspiration pneumonia, malnutrition, and dehydration. The identification of the associated factors allows the mapping of the population at risk, allowing the management of swallowing problems, in order to determine speech therapy and interdisciplinary interventions, aiming at the well-being of patients and reducing health costs^(14,16).

In this study, most of the professionals in both medical and nursing team presented difficulties in identifying the signs and symptoms of dysphagia, which agrees with the literature⁽¹⁴⁾. Still, another study pointed out that 70.4% (n = 1051) of patients with difficulties in swallowing are not identified by the physician⁽¹⁷⁾. Considering that the physician is the professional who usually accepts patients with clinical complaints and base diseases, and that dysphagia is usually an associated comorbidity and has a relevant risk to lead to complications that may aggravate the clinical situation, it is fundamental this professional is able to identify such symptoms.

In addition, nurses and nursing technicians also play an important role in the care of these patients, as they are more present in bedside routines, identifying signs, symptoms, and performing routine care. A study carried out with 94 professionals of a nursing team found that 67.02% of respondents reported having received guidance on dysphagia during professional practice and 59.57% received training⁽¹⁴⁾, a result that differs from the figures found in the present study. Thus, it is important to carry out qualification courses and systematic training for the professionals of the care teams, including the medical team, so that they consider patients' swallowing difficulties, and know how to prescribe and correctly guide the best way and route to administer medications, in each case.

The literature confirms that the management of dysphagia depends on the swallowing characteristics in each individual, and that the purpose of modifying the consistency of the foods is to promote safe swallowing⁽¹⁸⁾. Modification of the medication

to be mixed with food or administered by feeding tube so that it can be used safely, should be carefully considered⁽¹⁹⁾. In this study, 80.7% of the physicians reported checking the type of diet prescribed for the patient before prescribing drug treatment. However, there is a possibility that reality in the Brazilian context may not be as satisfactory. It is believed that the guidelines given by speech therapists in the cases of dysphagic patients, during medical rounds and nursing shift changes in the hospital where the study was performed, contributed to this result. Thus, it is pointed out the need for more investments in permanent education, aiming to qualify the integral care to the patient.

Studies^(13,17) have pointed out that between 65% and 70% of medications are manufactured in solid oral forms. Tablets and capsules are generally less complex and cheaper in the pharmaceutical market, in addition to providing more precise dosage in administration. However, patients who have difficulty swallowing have a challenge ahead at the time of taking the medication.⁽²⁰⁾

In the speech therapy clinical practice, dysphagic patients have their solid food and liquid diets adjusted in order to avoid laryngotracheal aspiration. Thus, thinking about medication modification is the most logical option when the patient has difficulty swallowing. Even though this is the practice found in this study, other studies^(17,21,22) have shown that modifying tablets (breaking, smashing, crushing or dissolving) and capsules (opening), in addition to resulting in unlicensed use, can be toxic to the patient and decrease the action potential, since some drugs are designed to be absorbed in specific places in the digestive tract.

Thus, it is suggested that the participation of the clinical pharmacist in the care teams would contribute to the quality of patient care and safety regarding drug therapy, assisting in the identification and prevention of prescription and medication administration errors, besides guiding the teams on the possible modifications of solid medicines⁽²³⁾.

Most of the nursing team reported being unprepared when faced with a dysphagic patient at the time of drug administration. It can be evidenced that there is lack of knowledge and guidance on the best way to administer the drugs in these patients. More attention at the time of prescription, and medical and pharmaceutical guidance on medication administration can improve team preparation and avoid errors.

With regards to the position of the patient in bed, it is known that an upright 90-degree sitting position at mealtime helps

prevent laryngotracheal aspiration⁽²⁴⁾. Thus, the position in which the patient is at the time of medication intake should also be taken into consideration. In this study, it was observed that less than half of the participants of the nursing team positions the patient correctly seated, with the semi-upright position being the most used. Researchers⁽²⁴⁾ pointed out the need to prepare the team and the institution, for assistive technology for example, to deal with swallowing difficulties, so that the patient maintains adequate positioning for oral intake. In hospital practice, there is cutting-edge assistive technology, like automatic beds and reclining chairs, but the technical staff either does not have enough instruction on the correct posture or does not perform it.

The present study provided important information on the management of dysphagic patients and the knowledge of care teams in the routines of medication prescription and administration; however, it had some limitations. The results of this survey were probably due to having been performed in a university hospital, with active and consolidated speech therapy service. However, there was no comparison with a regular hospital without speech therapy service, in order to confirm the findings. It is worth noting that studies on the oral administration of drugs in dysphagic patients are widely discussed in other countries, and that research on this topic should be encouraged in the Brazilian population and in other inpatient services.

CONCLUSION

In spite of the fact that most of the professionals have mentioned knowing what dysphagia is, the knowledge of the care teams is still incipient when related to the care of the dysphagic patient and the use of oral medications. These results reinforce the importance of the interdisciplinary team, the permanent education, the sharing of knowledge, and the joint conduct, for the best care to the dysphagic patient.

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Appendix 1.

QUESTIONNAIRE

1. Sex: Female Male Age: _____
2. Profession: Nursing technician Nurse
 Physician
3. What is dysphagia?
 Difficulty in transporting food from the mouth to the stomach
 Symptom of a disease of the digestive tract
 Pain in the digestive tract
 I do not know
4. What are the phases of swallowing?
 Oral, oral preparatory, pharyngeal , esophageal
 Oral, oral preparatory, esophageal, pharyngeal
 Oral preparatory, oral, pharyngeal, esophageal
 Oral preparatory, oral, esophageal, pharyngeal
 I do not know
5. What are the complications of dysphagia?
 Malnutrition, dehydration, increased sensitivity of the larynx
 Dehydration, malnutrition, aspiration
 Malnutrition, aspiration, increased sensitivity of the larynx
 I do not know
6. Which of the following symptom(s) is(are) found in the dysphagic patient?
(Please indicate your response by selecting one or more alternatives)
 Loss of saliva or food from the mouth
 Difficulty chewing
 Alteration in vocal behavior
 Difficulty starting a swallow
 Nasal reflux
 Coughing
 Choking
 Increased feeding time
7. In your academic background, have you received any guidance regarding medication administration/prescription in dysphagic patients?
 Yes, in undergraduate course
 Yes, in the technical course
 Yes, in the graduate course
 No
 Others Which? _____

8. In your professional life, have you received any guidance or training regarding the administration/prescription of medications in dysphagic patients?
 Yes No
9. Which professional is responsible for rehabilitating patients with feeding difficulties?
 Physician
 Physiotherapist
 Nurse
 Speech therapist
 Nutritionist
 I do not know

ATTENTION: QUESTIONS 10 TO 14 MUST BE RESPONDED ONLY BY PHYSICIANS

10. Do you usually check the type of diet prescribed for the patient before prescribing the medications?
 Yes
 No
 Sometimes
 I do not know
11. In case of dysphagic patients, which alternatives do you consider to administer the medications?
 Enteral tube
 Intravenous
 I do not know
 Others Which? _____
12. Do you guide the nursing team regarding medications given to dysphagic patients with an adapted diet?
 Yes
 No
 Sometimes
 I do not know
13. Do you guide the nursing team regarding medications given to dysphagic patients with alternative feeding routes?
 Yes
 No
 Sometimes
 I do not know

14. In the medication administration/prescription routine, you consider (please indicate the response by selecting one or more alternatives):

- Tube interaction
- Drug-drug interaction
- Diet interaction
- Water interaction

ATTENTION: QUESTIONS 15 TO 23 MUST BE ANSWERED ONLY BY NURSES AND TECHNICIANS

15. Regarding medication administration in patients with alternative feeding route (EN/NG/Gastrostomy/Jejunostomy):

- Can be crushed/smashed and mixed with water.
- Can be dissolved in water.
- Cannot be crushed/smashed and mixed with water.
- I do not know

16. How do you administer medication in a dysphagic patient with difficulty ingesting liquids and solids?

- I cut the medication and offer water
- I crush/smash the medication and mix it with water
- I dissolve it with liquid
- I do not know
- Other Which? _____

17. When administering medication in dysphagic patients, how do you feel?

- Well prepared
- Unprepared
- In doubt
- Other Which? _____

18. In which position do you put the dysphagic patient to administer the medicine?

- Lying lower than 30° if bedridden
- Elevated 45° if bedridden
- Elevated 60° if bedridden
- Sitting
- I do not know

19. In which position do you put the patient after administering the medicine?

- I leave the patient in the position they are
- I put them back to initial position
- I wait a few minutes and lie them back down
- I immediately lie them back down

20. How often do dysphagic patients present some difficulty in ingesting medications (do not swallow, cough, choke, others)?

- Almost always
- Always
- Never
- Almost never
- I do not know

21. Do you administer more than one medication via enteral tube?

- Yes
- Sometimes
- No

22. When administering medication via enteral tube, you consider (please indicate the response by marking one or more alternatives):

- Tube interaction
- Drug-drug interaction
- Diet interaction
- Water interaction