



Original Article

Nurses' preferred items for dysphagia screening in acute stroke patients: A qualitative studyIsabel de Jesus Oliveira^{1*}, Germano Rodrigues Couto², Liliana Andreia Neves da Mota¹¹Portuguese Red Cross Northern Health School, Oliveira de Azeméis, Portugal²Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal

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ABSTRACT

Background & Aim: Formal dysphagia screening protocols are not yet implemented in some hospitals although there is growing evidence that early dysphagia screening reduces pneumonia rates in stroke patients. Trained professionals are not often available outside weekdays working hours in stroke units, meaning that early screening is usually performed by nurses that use informal detection to screen dysphagia in acute stroke patients. The purpose of this study was to identify which items stroke nurses prioritize in their clinical practice to screen dysphagia in acute stroke patients.

Methods & Materials: A qualitative study was developed using a focus group technique in five stroke units with a total of 20 stroke nurses selected by purposive sampling in march 2019. Qualitative Data Analysis Software Miner Lite 4.0 was used to assist in content analysis.

Results: Two categories emerged: *clinical data and swallowing and non-swallowing signs*, each with a set of dimensions. In the category *clinical data*, relevance was noted for the dimension *Glasgow Coma Scale* and *sex*, identified as the most and least relevant, respectively, for dysphagia screening. In the category *swallowing and non-swallowing signs* no relevance evolved for preferred items. However, in this category, data suggest that nurses find less relevant in clinical practice *speech disorders* for dysphagia screening.

Conclusions: Results reinforce the importance of a standardized approach through the use of valid and reliable dysphagia screening protocols, arguing the need for clear guidance in acute stroke clinical pathways on procedures for dysphagia screening.

Introduction

Stroke is a neurological deficit, attributed to an acute vascular lesion located in the central nervous system, including cerebral infarction, intracerebral hemorrhage, and subarachnoid hemorrhage (1). With a high burden, stroke represents a major cause of disability and death worldwide, representing in 2016, 5.5 million deaths due to stroke (2). There is a high incidence of dysphagia after stroke ranging from 8.1 to 80%, depending on the assessment methodology (screening, clinical or instrumental assessment) and elapsed time after stroke (3). These numbers put in perspective the impact of dysphagia in patients, families, healthcare providers, and healthcare systems, knowing that in stroke

patients dysphagia increases the likelihood of respiratory infection, dehydration, and malnutrition (4). Furthermore, dysphagia is associated with worse functional outcomes, which entails the poorer quality of life, increased length of stay, and discharge to nursing homes (5). Research has focused on respiratory complications, and the impact on nutrition, hydration, and quality of life has not received the same attention (4), although an inverse bidirectional relationship between decreased quality of life and increased severity of dysphagia has been established (6). Groundbreaking research (7) suggests that patients, caregivers, and health professionals perceive the impact of dysphagia differently, prioritizing different consequences. Professionals prioritize issues related to respiratory complications, in contrast to what patients prioritize (the psychological aspects), especially the fear of suffocation and death. The awareness for the

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dysphagia impact on the quality of life and understanding that patients and health professionals prioritize different aspects is of utmost relevance for nurses since they spend the most time with patients and are, often, the first in the line of healthcare, playing an invaluable role in the initial assessment, timely clinical intervention and clinical management (8). This highlights the importance of early dysphagia screening so that the most appropriate therapeutic plan can be implemented as soon as possible, seeking to minimize the complications of dysphagia. The delaying of screening is associated with worse outcomes, namely an increased risk of stroke-associated pneumonia (9). Dysphagia screening is a fast and minimally invasive procedure for determining the risk of aspiration, defining determining who is safe to start oral feeding and who needs further clinical evaluation (10). Ideally, all patients should be evaluated with reference tests, however, there are several limitations: not all patients can undergo an invasive examination, not all hospitals have trained professionals available 24 hours a day to perform them, and not all hospitals have the necessary equipment (4,11). Therefore, there is an established consensus that dysphagia screening in acute stroke patients must be administered by nurses as early as possible so that patients are not kept nil by mouth for unnecessary time (12). The need to screen dysphagia in acute stroke patients, before any oral administration of liquids, food or medication is recommended so that patients at higher risk for adverse outcomes are promptly identified for further clinical assessment by trained professionals (13). Early screening is usually performed by nurses (14) since trained professionals are not often available outside weekdays working hours in stroke units.

There is evidence of long-term and sustained benefits of nurse-initiated multidisciplinary protocols for the management of acute stroke-related complications that require multidisciplinary teamwork, such as dysphagia (15) and growing evidence that early dysphagia

screening reduces pneumonia rates in stroke patients (14). Despite that, formal dysphagia screening protocols are not yet implemented in some hospitals (16). The main fact that may contribute to the lack of formal screening protocols is the reduced high-quality evidence and the lack of disease-specific guidelines comprising dysphagia (17).

Guidelines for the management of patients with acute stroke recommend swallowing assessment, but no protocol/screening tool is pointed (13). Therefore, it is important to investigate stroke nurse's dysphagia screening practices. As a part of a larger study aiming to validate a dysphagia screening tool for acute stroke patients, this study's objective was to identify which items stroke nurses prioritize in their clinical practice to screen dysphagia in acute stroke patients.

Methods

A qualitative exploratory descriptive study was conducted in five stroke units (SU) of four teaching hospitals and one central hospital of the central and northern regions of Portugal, representing 18% of all Portuguese SU's and $\approx 2\,421$ acute stroke patients admitted per year (18). A focus group was conducted in each SU, with four-stroke nurses, with a total of 20 participants in March 2019, that were selected through purposive sampling. A focus group is an effective technique for data collection that provides insight that enables researchers to achieve a deeper understanding of a shared phenomenon through participants' interaction (19). It also emphasizes the focus of the discussion on a given subject and its contribution to the understanding of the topic of interest by a number of participants that have some relevant and common characteristic to the topic under discussion (19). For participants to fit the specific profile required for this research, inclusion criteria were to have at least 10 years of working experience in a SU or with patients with swallowing disorders, or to be a certified rehabilitation nurse with more than

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five years of working experience in a SU. Head nurses were asked to identify in their units' eligible nurses to participate in the study and information about study purpose was given. Nurses who were available to participate were included. Each focus group began with instructions and explanation about confidentiality, anonymity, and informed consent procedures.

The focus groups were carried out in a meeting room in each SU and facilitated by the principal investigator, that has prior experience in conducting focus group and expertise in dysphagia in acute stroke patients. Each focus group had an approximate duration of one hour. The interview script was moderately structured and the facilitator started with broader questions and narrowed to the objective of the study (Table 1). The starting point was the existence in their units of screening protocols and how they proceeded to screen patients. Then the participants were asked to think back when they receive a patient and tell what they look for and prioritize to screen for dysphagia. During the discussion, participants were elicited to say which items they consider most important, which one they look for first. Stroke nurses were asked to identify, by relevance, which items they prioritize to screen dysphagia in acute stroke patients, and the level of agreement between participants was sought. Above all, the facilitator had the role of moderator, asking questions, listening, keeping the discussion on track, and ensuring that all participants had the opportunity to speak.

Table 1. Focus group interview guide

Interview guide
How do you screen patients for dysphagia? Do you have any protocol implemented in your unit?
Think back to when you receive patients and tell what is that you look for that may indicate to you that the patient is dysphagic?
Of all the items, you look for which one you think is more important? What do you look for first?

All focus groups were recorded and transcribed in full. All transcripts were aggregated in a single document for joint

analysis since the objective was to identify the items that nurses prioritize, regardless of the unit where they work.

The analysis and treatment of qualitative data were performed by conventional content analysis using QDA Miner 4 Lite, which started with an exploratory reading to plan the decomposition of the text. This led to an initial list of recording units, that later progressed to categorization. The reduction of qualitative data was carried out through content analysis (20) and categorization that was performed by two independent researchers that sought to infer in the participants' speech the items they use to screen for dysphagia, the relevance attributed to each of those items and the agreement between participants. The participation of the researcher who served as a facilitator to the focus group in the analysis and interpretation of the data was essential since he had privileged information about facial expressions, gestures, tone of voice and context in which the speeches were made.

The analysis of the quantitative data, namely the sociodemographic data of the participants, was carried out using IBM SPSS Software, version 25.0.

All stroke nurses agreed to participate in the study, none of them dropped out and all gave written informed consent. The facilitator had no hierarchical relationship with the participants, thus reducing the possibility of any type of coercion. Ethics committee of the five hospitals approved the study (Centro Hospitalar de S. João, 272/17; Centro Hospitalar do Porto, 2017/177; Centro Hospitalar Cova da Beira, 83/2017; Centro Hospitalar Universitário de Coimbra, 005-18; Unidade Local de Saúde da Guarda, unassigned code).

Results

Of the five SU included in this study, only one has a formal dysphagia screening protocol implemented. The other four SU did not have any dysphagia screening protocol. Nurses use a water swallowing test, with no standardized approach

participants characterizations are shown in table 2.

Table 2. Participants characteristics (n=20)

Characteristics	N(%) / Mean \pm SD
Age (Years)	40.4 \pm 6.7
Female	11 (55%)
Working time experience, years	17.7 \pm 6.5
Working time experience in a stroke unit or with patients with swallowing disorders (Years)	14.5 \pm 7.4
Certified rehabilitation nurse	14 (70,0%)

The participants, during the initial phase of the focus group, started by mentioning that they feel that the level of preparation they received at the level of undergraduate courses and even at more advanced levels of training, does not adequately prepare them for the approach to the dysphagic patient. "I don't remember having been trained during the nursing course on dysphagia" (P16), "...the students of the advanced training courses (in rehabilitation nursing) arrive here to do an internship without having had any preparation for the assessment of dysphagic patients" (P14). The lack of screening protocols in most SU was mentioned by the participants as being an obstacle in the treatment of these patients. They also mention that they have the perception that the practices among professionals are different, ie, nurses prioritize different aspects for the screening of dysphagia, or when they value the same item, they do it differently. "... nurses know what to do in this and that patient" (P5), "... I think we all know how to act with a patient with dysphagia" (P2), however "... we know how to do it, we don't do it all the same" (P3). The participants reported feeling difficulties in the initial assessment of patients, "... I have some difficulty in evaluating (the person)" (P12), "... and evaluating is important" (P13), "... I don't know what to assess or how to assess in the initial process" (P5), "... we learn from each other, doing continuous training, studying and reading the international guidelines that are being issued" (P14). From here, the facilitator

sought to focus the discussion on the items that nurses use to screen patients and those they prioritize. Two categories emerged from this discussion, distinguished by one referring specifically to clinical signs of dysphagia (swallowing or non-swallowing) and the other category referring to clinical data obtained directly or indirectly either from the patient's clinical records or from the use of other stroke assessment tools. The categories that emerged were (table 3): clinical data and swallowing and non-swallowing signs.

Clinical data

The category clinical data evolved from a set of seven dimensions that groups the items that the participants report using and obtain from the patients' records and stroke assessment tools. Participants referred that "Glasgow Coma Scale (GCS) score is one of the first things I look for before testing a patient" (P15), reinforced by "I only test a patient who is very alert and can sit" (P8), with most participants agreeing on the relevance of GCS/consciousness level for dysphagia screening "patients have to be over 13 (GCS score) to test" (P1). It was evident, in each focus group, the relevance that nurses attribute to consciousness level, with most nurses agreeing that this is one of the most relevant items to look in the first place when they receive a stroke patient. Participants also referred to other stroke assessment tools "Barthel is not a very good indicator because of bed rest" (P14) but "functional dependency (Barthel Index Score) may indicate swallowing difficulties" (P7) and "we determine National Institutes of Health Stroke Scale (NIHSS) score every eight hours, stroke severity is an alert for dysphagia" (P9), contradicted by "that (NIHSS score) doesn't give us much information about a patients ability (to swallow)" (P11). Stroke type and lesion location were also mentioned "brainstem and hemorrhagic (strokes) are the worst, almost all (patients) are dysphagic" (P8). When patients are admitted to the SU, they already bring information, in most cases, of

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the results of imaging tests, namely computed axial tomography, which allows nurses to have access, at the time of admission, to the type and location of the stroke. Reperfusion treatment is not performed in the SU in most cases and “if they (patients) undergo reperfusion treatment they arrive here more than 72 hours after onset, at that time (lesion) location is not relevant”(P6). Sociodemographic data such as age and sex are included in this category “I’m not sure about sex, but age matters” (P11), “concerning dysphagia, men or women... it’s the same” (P19), with most of the participants reporting less importance to sex. Relevance for clinical data was noted for the items in the dimension GCS/consciousness level and sex, with participants identifying as the most relevant and the least relevant, respectively, for dysphagia screening.

Swallowing and non-swallowing signs

The category swallowing and non-swallowing signs comprise six dimensions that result from the patient’s swallowing assessment. Considering that most SU uses a water test to screen dysphagia, participants referred that “I look for cough and voice changes after water test” (P13), “either right after, or after a few minutes” (P15), “wet voice after the water test is a positive sign for dysphagia”(P12), but also question “how long is it supposed to wait after the water test to see if they cough?” (P16), from which dimensions immediate cough after swallowing, late cough after swallowing, and voice changes after swallowing evolved. The weak or absent voluntary cough was also included in this category “it concerns me when they are not able to cough correctly or not able at all” (P7) and voice changes after stroke “I ask relatives if the voice has changed (after stroke)” (P17). From discussion participants seldomly reported that “I have difficulties assessing patients” (P6) and “which signs (after water test) reassure me that it is safe to feed the patient?”(P11). Only one participant reported speech disorders as a valid item to

screen dysphagia “dysarthria, dysphonia or any speech problems are relevant, speech and swallowing problems share the same anatomical structures”(P1). In the category swallowing and non-swallowing signs no relevance evolved, yet data analysis suggests, by the reduced frequency of its evocation, that the item speech disorders might be less relevant for dysphagia screening in nurses’ practice.

Table 3. Categories and dimensions

Categories	Dimensions
Clinical data	GCS/consciousness level
	Lesion location
	Stroke type
	NIHSS
	Barthel Index
	Age
Swallowing and non-swallowing signs	Sex
	Immediate cough after swallowing
	Late cough after swallowing
	Voice changes after stroke
	Voice changes after swallowing
	Weak or absent voluntary cough
Speech disorders	

Discussion

From the two categories that emerged, clinical data and swallowing and non-swallowing signs, relevance evolved for the most and least relevant dimensions in clinical data, but not for the other category. GCS score is considered as more relevant, which is in line with evidence that correlates the level of consciousness with the swallowing ability (21). Dysphagia also arises with a decreased level of consciousness (4), which explains the fact that it is of utmost importance that patients must be alert to be screened (22,23). Stroke nurses did not find sex relevant and the correlation of sex with dysphagia severity is scarce. Although data analysis suggests that the item speech disorders is less relevant, no relevance emerged in the category swallowing and non-swallowing signs. This suggests that different signs are used by nurses in clinical practice to screen

dysphagia, making uncertain if the ones with the highest sensitivity are taken into consideration. About 80% of dysphagia patients have cumulative communication difficulties (21). Dysarthria and dysphonia, especially if associated with swallowing items, can achieve high sensitivity and specificity in identifying dysphagia (24). The difficulty in identifying these items as relevant may be related to the need for specific training on swallowing disorders (17).

Evidence suggests that informal detection, despite the high specificity, has a low sensitivity meaning that patients with dysphagia will be missed (25). The results show that most SU does not have screening protocols implemented and that nurses use different items to screen patients for dysphagia. This can lead to asymmetries in patients' assessment, with consequences in the definition of their therapeutic plan, delaying swallowing assessment, and dysphagia identification, increasing the risk of complications such as aspiration pneumonia, dehydration, and malnutrition (9). Dysphagia experts are underrepresented in most hospitals (17) making impractical to assess all acute stroke patients before any oral intake by these professionals. Nurses spend the most time with patients and often are the first to assess stroke patient's ability to swallow. Therefore, clear guidance for dysphagia protocol screening in acute stroke patients is needed.

Clinical guidelines advocate dysphagia screening in all acute stroke patients, but no recommendations on which protocol/screening tool to use is made (13), resulting in that some SU has not adopted any formal dysphagia screening protocol. Evidence shows that specific clusters of swallowing and non-swallowing features may achieve high sensitivity to identify dysphagia (24) and dysphagia screening tools for patients with stroke have been developed (8). It is essential to implement protocols for dysphagia screening, using valid and reliable screening tools, for timely assessment, and to prevent unreliable screening results. Despite insufficient

evidence on the effectiveness of dysphagia screening on reducing rates of pneumonia, death, or dependency after stroke (26), it does not mean that it should not be performed (27). Failing dysphagia screening is associated with worse outcomes (16). Failure to standardize nursing practices poses a risk to patient safety. The implementation of nurse-initiated dysphagia screening protocols is effective in identifying dysphagia, reducing respiratory infections (28), and increasing the number of patients screened within the first 24 hours (29). Nursing screening for dysphagia does not invalidate assessment by other professionals but is a critical first step in ensuring patient safety (11).

This study has limitations, mainly the sample size that prevents the transferability of results to other settings.

Conclusion

These findings reinforce the importance of a standardized approach through the use of valid and reliable dysphagia screening tools. It also argues the need for clear guidance in acute stroke clinical pathways on procedures for dysphagia screening. Guidelines should point out which screening tools are available, their psychometric properties (especially sensitivity and negative predictive value) so that nurses can decide which tool best suits their clinical settings. Disease-specific guidelines should clearly include dysphagia screening protocols.

More trials are needed to determine the effect of dysphagia screening protocols on reducing complication rates. This evidence will support the development of guidelines comprising dysphagia and motivate their adoption.

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Conflict of Interest

Authors state no financial or non-financial conflict of interest. This research was not funded.

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