

Instrument content validation on nasogastric intubation skills

Validação de conteúdo de instrumento sobre a habilidade em sondagem nasogástrica

Rosana Kelly da Silva Medeiros¹, Marcos Antonio Ferreira Júnior², Gilson de Vasconcelos Torres³, Allyne Fortes Vitor⁴,
Viviane Euzébia Pereira Santos⁵, Elizabeth Barichello⁶

¹ Nurse, Master in Nursing. Nurse of the Family Health Strategy. São Gonçalo do Amarante, Rio Grande do Norte, Brazil. E-mail: rosana_kelly@hotmail.com.

² Nurse, Ph.D. in Health and Development in the Midwest Region. Associate Professor at the Federal University of Rio Grande do Norte (UFRN). Natal, Rio Grande do Norte, Brazil. E-mail: marcos_nurse@hotmail.com.

³ Nurse, Ph.D. in Fundamental Nursing. Head Professor at UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: gvt@ufrnet.br.

⁴ Nurse, Ph.D. in Nursing. Associate Professor at UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: allynefortes@yahoo.com.br.

⁵ Nurse, Ph.D. in Nursing. Associate Professor at UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: vivianeepsantos@gmail.com.

⁶ Nurse, Ph.D. in Nursing. Associate Professor of the Federal University of Triangulo Mineiro. Uberaba, Minas Gerais, Brazil. E-mail: lizabaric@gmail.com.

ABSTRACT

The objective was to validate the content of an instrument on nasogastric intubation skills based on Pasquali's model of content validation. This was a methodological study conducted with 23 nursing teachers in public higher education institutions in Rio Grande do Norte. The Content Validation Index (CVI) and Kappa Index was applied. In the overall evaluation, the instrument obtained a CVI with values above 0.75 with a total CVI of 0.95 and a total Kappa of 0.91. However, some changes were made on the instructional sequence requirements of the topics, and to vocabulary. The instrument proved to be reliable and trustworthy in facilitating nursing care quality and can be used for health services and educational institutions to assess skill levels of professionals and undergraduate students. However, the instrument requires additional stages for a more precise and specific content validation.

Descriptors: Nursing Care; Intubation, Gastrointestinal; Validation Studies.

RESUMO

Objetivou-se realizar a validação de conteúdo de um instrumento sobre a habilidade em sondagem nasogástrica com base no modelo de validação de conteúdo de Pasquali. Trata-se de estudo metodológico desenvolvido com 23 enfermeiros docentes de instituições públicas de ensino superior do Rio Grande do Norte, por meio da aplicação do Índice de Validação de Conteúdo (IVC) e do índice Kappa. Na avaliação geral, o instrumento obteve IVC com valores acima de 0,75, IVC total de 0,95 e Kappa total de 0,91. No entanto, algumas alterações foram realizadas e se concentraram nos requisitos sequência instrucional dos tópicos, clareza e vocabulário. Desse modo, o instrumento apresentou confiabilidade e fidedignidade para observar a qualidade da assistência de enfermagem e pode ser utilizado por serviços de saúde e instituições formadoras para avaliar a habilidade dos profissionais e alunos de graduação, no entanto exige outras fases para uma validação de conteúdo mais precisa e específica.

Descritores: Cuidados de Enfermagem; Intubação Gastrointestinal; Estudos de Validação.

INTRODUCTION

Nasogastric intubation is a common procedure for meeting nutritional needs when patients are unable to ingest food in sufficient quantity to replenish their needs, but are still able to absorb nutrients⁽¹⁾. This is the easiest access route to the gastrointestinal tract, with the lowest cost, and it is the closest to the physiological process because it allows for the functioning of the usual digestive enzymes. This is ideal for hospitalized and critically ill patients who still have their gastrointestinal function preserved without major risks of aspiration and gastroesophageal reflux⁽²⁾.

Nasogastric intubation is a traditional technique that requires a level of skill preceded by a full understanding for its safe execution since performing this procedure may cause some complications⁽³⁾. Some of the complications that cause damage due to trauma during insertion can be esophageal perforation and formation of pneumothorax, tracheal insertion with the displacement of the tube into the lungs causing intrapulmonary feeding which can result in pneumonia by aspiration and consequently death, nasal and oropharyngeal lesions, or esophageal stenosis⁽⁴⁻⁶⁾.

The execution of the nasogastric intubation technique is a complex procedure that is increasingly being performed by trained and legally qualified professionals such as nurses⁽⁷⁾. However, there is still a wide variation of this practice⁽⁷⁾. Consequently, ongoing and appropriate training is essential for nurses in order for them to act effectively in nasogastric intubation procedures and avoid complications for the patient⁽⁴⁾.

The acquisition of this knowledge needs to be guaranteed in the training of these professionals since it is important to identify factors related to carrying out the nasogastric intubation procedure incorrectly. Such identification ensures the means for training more qualified professionals and for developing and improving nursing care. Therefore, it is necessary to use valid means of measuring instruments to make it possible to assess the quality of nursing care⁽⁸⁾. Recognizing the quality of

the instruments becomes a fundamental aspect for the legitimacy and credibility of the results of research, which reinforces the importance of validating the process⁽⁹⁾.

A content validity study can provide information about the representativeness and clarity of each item of an instrument with the collaboration of specialists who offer concrete suggestions to improve the measurement⁽¹⁰⁾. Content validity is a process of judgment that has two parts: the first is the development of the instrument and the second involves the analysis of the specialists⁽¹⁰⁾.

Pasquali's model of content validation⁽¹¹⁾ present in nursing research involves the theory of developing measurement instruments of subjective phenomena with the composition of three sets of procedures: theoretical, empirical (experimental), and analytical (statistical).

According to the conclusions of one review⁽¹²⁾, the procedures involved in the insertion and placement techniques of the nasogastric tube are incorporated into the practice by nurses without sufficient studies, especially validation studies. Thus, there is a need to critically evaluate the insertion techniques and confirmation of the tube's position since the nasogastric intubation technique is common in hospital services and thus needs to be further substantiated⁽¹²⁾.

Given the responsibilities required in performing the procedure, the associated risks, and the importance of knowledge-based execution, the aim of this study was to carry out an instrument content validation on nasogastric intubation skill level based on Pasquali's model of content validation⁽¹¹⁾.

METHOD

This is a methodological study with a quantitative approach to treatment and data analysis carried out from June to September, 2012 after obtaining approval from the Research Ethics Committee of the Onofre Lopes Teaching Hospital of the Rio Grande do Norte Federal University under CAAE No. 0002.0.294.000-10.

The study was carried out in three stages. The first stage was to build the instrument, which is a structured

observation checklist consisting of 28 items divided into three blocks (initial observations, nasogastric intubation technique, and final observations) This corresponds to the steps for observing the technical skill regarding nasogastric intubation using the most recent recommendations found in the literature. The second stage included identifying, selecting, and inviting the specialists to assess the items of the instrument; and the third stage corresponded to validating the content of the instrument by checking the level of agreement among the judges.

The Collegiate Board Resolution (RDC) No. 63 of July 6, 2000 that approves the technical regulation for the minimum requirements needed for Enteral Nutrition Therapy⁽¹³⁾, the Nursing Federal Council Resolution No. 277 of 2003⁽¹⁴⁾, and scientific articles^(2,15-16) were the main theoretical references for building the instrument.

The sample was selected by intention to include teachers of the discipline of Semiology and physical examination techniques in nursing with at least one year of experience working in the public universities of Rio Grande do Norte.

The second stage was carried out by contacting the coordinators of the undergraduate courses in nursing of the Federal University of Rio Grande do Norte (UFRN), Central campus and Santa Cruz campus, and of the State University of Rio Grande do Norte (UERN), Mossoró campus and Caicó campus. These coordinators were requested for contact information (e-mail and telephone number) of the faculty of the discipline of Semiology and physical examination techniques in nursing in order to send them an invitation letter by e-mail listing the objectives of the study and the justification of the validation process.

In this way, 30 teachers were invited, of which 24 were available to participate in the survey, one was excluded for not properly filling out the data collection instrument, which resulted in a total of 23 teachers. The Written Informed Consent and the instrument were personally delivered to these teachers and a deadline of

15 days was established for returning the material analyzed with their final opinion.

The teachers selected for content validation constituted a total of 23 judges represented according to the institution listed on Table 1.

Table 1: List of the judges participating in the research by their institution. Natal, Rio Grande do Norte, Brazil, 2013.

Characteristics	Institution				Total	
	UFRN		UERN		n	%
	n	%	n	%		
Gender						
Male	1	4.3	2	8.7	3	13
Female	16	69.6	4	17.4	20	87
Other activity in nursing						
Assistance	4	17.4	1	4.3	5	21.7
Management	-	-	1	4.3	1	4.3
Both	1	4.3	-	-	1	4.3
No	12	52.2	4	17.4	16	69.6
Professional qualification						
Doctorate Degree	3	13	-	-	3	13
Master's Degree	13	56.5	5	21.7	18	78.3
Specialization	1	4.3	1	4.3	2	8.7
Time of experience in teaching						
1 to 5 years	10	43.5	4	17.4	14	60.9
6 to 10 years	3	13	2	8.7	5	21.7
over 10 years	4	17.4	-	-	4	17.4
Time experience in Semiology and/or physical examination techniques in nursing						
1 to 5 years	13	56.5	5	21.7	18	78.3
6 to 10 years	2	8.7	1	4.3	3	13
over 10 years	2	8.7	-	-	2	8.7

The judges evaluated each of the 28 items and classified them as adequate, adequate with changes, or inadequate. They used numerical codes to explain the reasons for change or inadequacy according to the requirements adapted from the criteria suggested by Pasquali⁽¹¹⁾: usefulness/relevance (1), consistency (2), clarity (3), objectivity (4), simplicity (5), achievable (6), up-to-date (7), vocabulary (8), precision (9), and instructional sequence of topics (10). The overall assessment of the instrument was also done with relation to the requirements listed above.

After evaluation of the instruments, the content validation continued by applying the Content Validity Index (CVI) and Kappa Index (K) to check the level of agreement and consistency level (reliability) of the judges in relation to the permanence or lack thereof of the items of the instruments.

The Kappa values range from -1 to +1. The closer to one the better the level of agreement among the observers. Their distribution and respective interpretation levels are as follows: <0.00 = poor; 0.00 to

0.20 = weak; 0.21 to 0.40 = low; 0.41 to 0.60 = medium; 0.61 to 0.80 = good; 0.81 to 0.99 = very good; 1.00 = perfect. The acceptance criterion in this study was established as an agreement of 0.61 or higher among the judges.

The Content Validity Index (CVI) measures the proportion or percentage of judges who are in agreement on certain aspects of the instrument and its items⁽¹⁰⁾. In order to evaluate the entire instrument, the form used in this study was the average of the values from the items calculated separately, which means that all the CVIs calculated separately were added and divided by the number of the instrument's items.

In order to stipulate an acceptable agreement rate among the judges, the values recommended were established of at least 0.75 among them to serve as a decision criteria on the relevance and/or acceptance of the item⁽¹⁰⁻¹¹⁾.

Microsoft Excel 2010 was used to input the data and it was analyzed based on a reflective and descriptive statistical reading. After analyzing the data, the

instruments were reformulated in accordance with the guidelines and suggestions of the judges.

nasogastric intubation and shows that none of them were rated as inadequate and all obtained agreement within the prescribed level (CCI > 0.75 and Kappa > 0.61).

RESULTS

Table 2 represents the judgment in relation to the items that make up the skill level instrument in

Table 2: Judgment among the judges on the instrument items regarding the nasogastric intubation technique. Natal, Rio Grande do Norte, Brazil, 2013.

Stages	Judgment					
	Adequate		Adequate w/ changes		CVI	Kappa
	n	%	n	%		
Initial observations						
Checks data on user's medical records	22	95.7	1	4.4	0.96	0.91
Washes hands	23	100.0	-	-	1.00	1.00
Selects the material and instruments needed	19	82.6	4	17.4	0.83	0.70
Identifies him/herself to the patient and explains the procedure to be performed	22	95.7	1	4.4	0.96	0.91
Nasogastric intubation technique						
Puts on gloves	18	78.3	5	21.7	0.78	0.64
Places the patient in a Fowler's position	22	95.7	1	4.4	0.96	0.91
Examines the tube	21	91.3	2	8.7	0.91	0.83
Protects the patient's chest	23	100.0	-	-	1.00	1.00
Examines the nostrils and selects the most penetrable one	22	95.7	1	4.4	0.96	0.91
Determines the length of the tube to be introduced by the NEX measurement	21	91.3	2	8.7	0.91	0.83
Marks the measurement of the distance given	21	91.3	2	8.7	0.91	0.83
Positions the patient	19	82.6	4	17.4	0.83	0.70
Lubricates the tube with anesthetic	21	91.3	2	8.7	0.91	0.83
Lubricates the patient's nostril with anesthetic	20	87.0	3	13.0	0.87	0.76
Introduces the tube gently into the nostril	23	100.0	-	-	1.00	1.00
In case of resistance, stops, and pulls back	22	95.7	1	4.3	0.96	0.91
If resistance persists, removes the tube	23	100.0	-	-	1.00	1.00
Observes signs of coughing, respiratory distress, cyanosis or agitation, removing and reintroducing	22	95.7	1	4.3	0.96	0.91
Introduces the tube slowly until where it was measured	23	100.0	-	-	1.00	1.00
Confirms the location of the tube with placement tests	20	87.0	3	13.0	0.87	0.76
Closes the tube connection	23	100.0	-	-	1.00	1.00
In case of drainage, connects the tube to the collector	23	100.0	-	-	1.00	1.00
Removes gloves	23	100.0	-	-	1.00	1.00
Fastens the tube	23	100.0	-	-	1.00	1.00
Final observations						
Leaves the patient in a comfortable position	23	100.0	-	-	1.00	1.00
Organizes the environment	23	100.0	-	-	1.00	1.00
Washes hands	23	100.0	-	-	1.00	1.00
Records the procedure in the medical records	23	100.0	-	-	1.00	1.00

Legend: NEX - Nose-Earlobe-Xiphoid

Among the 28 items of the instrument, 13 had a perfect agreement index (Kappa = 1.00); 10 showed a very good level of agreement (Kappa between 0.81 and 0.99); and 5 had a good level of agreement (Kappa between 0.61 and 0.80) with a total Kappa among the items of the instrument being 0.87. Regarding the CVI, all items reached levels above 0.75 and the total CVI reached for the instrument was 0.95.

Fifteen items were considered adequate with changes, three of which belonged to the initial observations block and 12 to the nasogastric intubation technique. Chart 1 shows the suggestions made by the judges so that the items deemed adequate with changes could be reformulated and improved.

In the final opinion of the judges about the instrument based on 10 assessment requirements, all requirements adapted from the criteria suggested by

Pasquali obtained a good Kappa index and a CVI above 0.75, as shown in Table 3. Of these, usefulness/relevance, simplicity, and achievable received the maximum agreement score. In contrast, the item instructional sequence of the topics presented a lower index than the other requirements. Thus, this requirement and others that did not present a maximum score of agreement along with the 15 items considered adequate with changes were analyzed for adaptation in order to prepare the final version of the instrument.

In the overall assessment, the instrument to test the skill on the nasogastric intubation technique obtained a CVI with values higher than 0.75 and reached a total CVI of 0.95, while the total Kappa was 0.91, which demonstrates the high reliability and trustworthiness of the instrument to observe the quality of nursing care.

Table 3: Final opinion of the judges regarding the instrument for the nasogastric intubation technique. Natal, Rio Grande do Norte, Brazil, 2013.

Requirements	Final opinion				CVI	Kappa
	Adequate		Adequate w/ changes			
	n	%	n	%		
Usefulness/relevance	23	100.0	-	-	1.00	1.00
Consistency	22	95.7	1	4.3	0.96	0.91
Clarity	22	95.7	1	4.3	0.96	0.91
Objectivity	22	95.7	1	4.3	0.96	0.91
Simplicity	23	100.0	-	-	1.00	1.00
Achievable	23	100.0	-	-	1.00	1.00
Up-to-date	22	95.7	1	4.3	0.96	0.91
Vocabulary	22	95.7	1	4.3	0.96	0.91
Precision	22	95.7	1	4.3	0.96	0.91
Instructional sequence of the topics	18	78.3	5	21.7	0.78	0.64

Chart 1: Suggestions from judges about the items considered adequate with changes. Natal, Rio Grande do Norte, Brazil, 2013.

Block	Items	Requirements evaluated	Suggestions from judges
1. Initial Observations	1.1. Checks data on user's medical records	Clarity	Give better detail of the stage on the instrument.
	1.3. Selects the material and instruments needed	Consistency; Vocabulary.	Replace the verb "selects" for "gathers".
		Up-to-date.	Delete the word "instruments".
		Precision.	List the materials needed.
	-	Observe in the literature the use of gloves and sterile gauzes.	
	1.4. Identifies him/herself to the patient and explains the procedure to be performed	Instructional sequence of the topics	Place as item 1.2.
2. Nasogastric Intubation Technique	2.1. Puts on gloves	Clarity	Specify the type of gloves (sterile or non-sterile). Place after item 2.3.
		Up-to-date.	Place after item 2.5.
		Instructional sequence of the topics.	-
	2.2. Places the patient in a Fowler's position	Instructional sequence of the topics	Place as item 2.1.
	2.3. Examines the tube	Objectivity; Vocabulary; Instructional sequence of the topics.	Included in item 1.3.
			Give better detail of the stage on the instrument.
	2.5. Examines the nostrils and selects the most penetrable one	Precision	Specify diameter of tube in the item.
	2.6. Determines the length of the tube to be introduced by the NEX measurement	Clarity; Vocabulary.	Observe in the literature the use of the acronym NEX.
	2.7. Marks the measurement of the distance given	Clarity	Change the wording of the item to: Marks the tube in the length previously determined.
	2.8. Positions the patient	Clarity; Instructional sequence of the topics	Make it clear that it is the positioning of the patient's head.
			Included in item 2.2.
			Put before item 2.7.
			Included in item 2.11.
	2.9. Lubricates the tube with anesthetic	Instructional sequence of the topics	Place after item 2.10.
	2.10. Lubricates the patient's nostril with anesthetic	Simplicity; Instructional sequence of the topics	Give better detail of the stage on the instrument.
Put before item 2.9.			
2.12. In case of resistance, stops, and pulls back	Clarity	Make it clear that after pulling the tube back, it is reintroduced.	
2.14. Observes signs of coughing, respiratory distress, cyanosis or agitation, removing and reintroducing	Clarity	Rephrase the wording of item.	
2.16. Confirms the location of the tube with placement tests	Consistency; Clarity.	Give details about the placement tests.	

DISCUSSION

Based on the assessment of the judges for validating the instrument, the block of initial observations included suggestions for improving items 1.1, 1.3, and 1.4. Regarding item 1.1 "Checks data on user's medical records", this item refers to checking the user's identification data, diagnosis, and data related to enteral nutrition if the indication of the tube is to enable enteral feeding, as recommended by the RDC⁽¹³⁾.

Item 1.3 "Selects the material and instruments needed" was changed to "Gathers the materials necessary" as suggested by the judges. However, the recommendations regarding the material specification were not included because this is a concise checklist-type instrument for observation of nursing practice during nasogastric tube insertion technique.

Considering the suggestions of the judges, it should be mentioned that some studies⁽¹⁷⁻¹⁸⁾ indicate the use of procedure gloves and clean gauzes and they list the materials described in the instrument to comply with the item such as prescribed tube, kidney basin or pan, clean gauze, procedure gloves, microporous tape, topical water-soluble anesthetic gel, 20 ml syringe, stethoscope, towel or paper towels, and an open collector and intermediate latex or silicone device depending on the purpose of the procedure.

It is important to mention that the use of water-soluble gel prevents aspiration pneumonia by oil if the tube accidentally enters the trachea; however, its use reduces the gag reflex due to the anesthetic effect of lidocaine on the pharynx, which causes a reduction in the tube placement success rate with increased tracheal insertion⁽¹⁹⁾.

The use of the stethoscope for checking bowel sounds before the procedure and the instillation of air to confirm the tube's placement in the stomach, is disputed by some studies considering that the absence of bowel sounds and flatus still allow enteral nutrition because the sounds are due to air movement in the intestine and are often absent or weak even when the intestine works

normally. Furthermore, the auscultatory method is inaccurate in differentiating between a tracheal or gastric insertion of the tube^(16, 20). Because of this, the stethoscope was eliminated from the instruments needed for the nasogastric intubation technique.

The instructional sequence of topic 1.4 "Identifies him/herself to the patient and explains the procedure to be performed" has been changed, as recommended, and now is item 1.2. Communication with the patient is essential for care since it is important that nursing professionals emphasize the positive aspects that occur in receiving the treatment with a focus on using the tube as a viable alternative. Communication also highlights the human aspect of care and fosters a closer relationship between staff and patient⁽²¹⁾. The explanation of the procedure to reduce discomfort and promote cooperation is important. Patients can be informed about the nasal discomfort, nausea, and tearing that they may feel and about the way in which they can cooperate with the procedure by breathing through their mouth and swallowing, which facilitates the tube's advancement. Therefore, therapeutic communication needs to be present in everyday interactions in health institutions in order to ensure comprehensive care⁽²¹⁾.

According to the recommendation of the judges, a change was made to the instructional sequence of the topics when considering obtaining a lower CVI (0.78) and Kappa index (0.64) on item 2.1 "Puts on gloves". The item was changed to "Puts on clean gloves" in order to ensure protection from exposure to the patient's fluids and reliance on the use of non-sterile clean gloves⁽¹⁸⁾. Thus, item 2.1 "Puts on gloves" became part of item 2.5. Item 2.2 "Places the patient in a Fowler's position" was transferred to item 2.1 according to the suggestion of the judges.

Greater details were recommended for item 2.3 "Examines the tube", as well as the suppression of the item since it is already considered in item 1.3 "Selects the material and instruments needed". Item 2.3 was excluded from the instrument because the examination

of the tube's structure must take place during the selection of materials when checking for defects such as uneven and rough edges or partially enclosed lumen and when the validity is checked⁽¹⁷⁾.

As for item 2.5, "Examines the nostrils and selects the most penetrable one", it was suggested that aspects of the tube's diameter be included. However, this suggestion was not accepted since the tube's diameter should be checked when the material is selected for carrying out the procedure in accordance with the doctor's prescription⁽¹⁷⁾.

For item 2.6 "Determines the length of the tube to be introduced by the NEX measurement", it has been suggested that aspects of this acronym be examined in the literature. According to the most current literature⁽²⁾, the NEX measurement comes from the measurement of the adequate mark for inserting the tube and also means that you start from the length of the *Nose* to the *Earlobe* to the *Xiphoid* (NEX). So item 2.6 was changed to "Determines the length of the tube to be introduced by the NEX measurement" (using the English acronym instead of the Portuguese one, NOX).

It was suggested that the wording of item 2.7 "Marks the measurement of the distance given" be changed. The item's wording was changed to "Marks the tube in the length previously determined".

As for item 2.8 "Positions the patient", it was suggested clarifying that this has to do with positioning the patient's head. Although some judges affirmed that item 2.8 was included in item 2.2 "Places the patient in a Fowler's position", this suggestion was not accepted since the "patient's positioning" corresponds to flexing the patient's neck so that the jaw approaches the thorax, if there are no contraindications. This enables the narrowing of the trachea and opens the esophagus thereby facilitating the correct insertion of the nasogastric tube⁽²²⁾. This does not correspond to Fowler's position, known as high Fowler, which raises the head of the bed to 45°, also only done if there are no contraindications.

Some judges also stated that item 2.8 was already included in item 2.11 "Introduces the tube gently into the nostril". This suggestion was accepted since before inserting the tube into the nostril, the head should be tilted back for the introduction until the posterior nasopharynx is visible. This procedure consists of directing the tube downward and backward towards the ear and only when the tube reaches the pharynx should the patient tilt the head forward because this occludes the airway and thus the tube is less likely to enter the trachea⁽²²⁾. So item 2.8 was deleted and item 2.11 was changed to "Introduces the tube gently into the nostril positioning the patient's head."

Item 2.9 "Lubricates the tube with anesthetic" and 2.10 "Lubricates the patient's nostril with anesthetic" were changed in accordance with the suggestion from the judges. Specifically in relation to item 2.10 "Lubricates the patient's nostril with anesthetic," the text was replaced with "Uses topical analgesic with patient" since the inhalation of lidocaine through nebulization, spray, and intermittent breathing with positive pressure by nebulization through the mouth has demonstrated significant reduction in pain associated with placing the nasogastric tube. However, these techniques require special devices that are not always available besides requiring time-consuming preparations⁽¹⁹⁾.

It was also observed in a study that the instillation of 5 ml of 2% lidocaine gel into the patient's nostril five minutes before the procedure results in a significant reduction in pain during the insertion of the nasogastric tube⁽¹⁹⁾.

In item 2.12 "In case of resistance, stops, and pulls back", the judges stated the need to make clear the fact that after the tube is pulled back, it is reintroduced. The reintroduction can occur in the same nostril, or if the resistance persists, the tube is removed and then inserted into the other nostril if there are favorable conditions for doing so⁽²³⁾. In this context, the wording of item 2.12 was changed to "In case of resistance, stops, pulls back, and reintroduces the tube". The same reasoning for changing

the wording was applied to item 2.14 "Observes signs of coughing, respiratory distress, cyanosis or agitation, removing and reintroducing". The text was rewritten to describe the fact of interruption of the procedure due to signs of distress⁽²³⁾: "Observes signs of coughing, respiratory distress, cyanosis or agitation, removes and reintroduces the tube".

The last item considered adequate with changes was 2.16 "Confirms the location of the tube with placement tests," which presented a suggestion for the details of the placement tests. Even though the auscultation technique is widely used by professionals for the certifying of placement by instilling 10 ml or more of air into the tube in order to observe sounds in the epigastric region, there is no evidence supporting the auscultation method for the confirmation of the correct placement of the tube⁽¹⁶⁾. In this context, the hydrogen test (pH) and verification by X-ray are tests considered to be more reliable by scientific evidence⁽¹⁵⁻¹⁶⁾. The verification of the exterior length of the tube, the volume aspirated, and the description of what was aspirated present a moderate degree of reliability for evaluating the tube's location in the gastrojejunal region according to an evaluation of the evidence⁽¹⁵⁾.

Regarding the evaluation of the gastric or endotracheal location, it is considered in the hydrogen test that pH values lower than 5 of the material aspirated have a 90% chance of indicating the correct positioning of the tube in the gastric environment or a 77% chance if an acid inhibitor is used⁽²⁴⁾. The minimum value for the endotracheal pH, however, is 6⁽²⁴⁾. Thus, for pH levels higher than 5 it is appropriate to use a chest X-ray, which is the gold standard for ensuring the correct placement of the tube⁽²⁴⁾.

Regarding the aspect of gastric or endotracheal content, a study by Gilbertson⁽²⁴⁾ showed that there is no staining difference between the two materials aspirated since the colors most observed were found in both types of material aspirated.

The items that corresponded to the final stages of the technique garnered an index of perfect agreement along with the items belonging to the block of final observations.

In this context it is essential to register the procedure performed by nurses⁽¹⁴⁾. Although studies⁽²⁵⁾ suggest inadequacies in this practice, a clear and accurate record of the information related to the insertion, administration, and training of the user is indispensable when carrying out this nursing technique⁽¹⁴⁾.

CONCLUSION

The instrument to test the skill of the nasogastric intubation technique proved through to be reliable and trustworthy for observing the quality of nursing care, however, some items required changes.

The nasogastric intubation technique is a procedure performed in the routine of hospital services that lately has also been extended to other environments with the onset of new home care programs. Nasogastric intubation is a fundamental practice in nursing care that requires skill and knowledge. Therefore, this study represents an important step in beginning the process of validating the instrument to test nasogastric intubation skills.

The instruments validated as to their content are adequate tools for observing the quality of the nursing care and can be applied by health services to improve the technical capacity of the nursing staff as well as in training institutions to observe the skills of the undergraduate students in labs or practice fields.

The limitations of this study correspond to the technique of selecting judges as the inclusion of judges from different regions of the country was not possible. There is also the need to carry out other phases of this research because this study only set out to fulfill some stages of the validation process. The instruments need to be re-submitted to the judges for retesting and for their clinical application in the attempt to find more accurate and specific indicators.

There is a clear need for more validation studies about the nasogastric intubation procedure because of their scarcity in nursing, especially on the insertion

techniques and confirmation of placement of the nasogastric tube. The improvement of this knowledge will lead to more qualified care.

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