



Development and validation of an instrument to assess the knowledge of nurses on enteral nutrition*

Construção e validação de instrumento para avaliar o conhecimento do enfermeiro sobre terapia nutricional enteral

Construcción y validación de un instrumento para evaluar los conocimientos del enfermero sobre la terapia de nutrición enteral

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ABSTRACT

Objective: To develop and validate an instrument to assess the knowledge of nurses on enteral nutrition. **Method:** Methodological study, with literature review, content validation and pre-test. Studies published from 2008 to 2018 on enteral nutrition were included in the review. The material was evaluated by 6 judges, following psychometric criteria. The degree of agreement was calculated. The pre-test was carried out with 30 nurses, with the objective of verifying the suitability and understanding of the instrument for its use in clinical practice. **Results:** The instrument constructed had four domains with 10 items each. The domains Indication of enteral nutrition and Monitoring of enteral nutrition had better degrees of agreement -0.94 and 0.93, respectively. The categories that obtained values below 0.90 were reformulated or removed, resulting in 38 categories distributed in 4 domains. In the pre-test, the agreement was 0.90, and the instrument was considered easy to understand and adequate for practice. **Conclusion:** The instrument constructed was validated regarding content and application in nursing practice.

DESCRIPTORS

Enteral Nutrition; Nursing Care; Professional Practice; Validation Studies.

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INTRODUCTION

Nutrition has been an important area for nursing for a long time. The founder of modern nursing already provided guidance to caregivers on patient feeding and diet control⁽¹⁾. Traditionally, nutrition support in critically ill patients was considered as an adjunctive care. However, recently, this strategy has evolved to represent nutrition therapy, which is thought to help attenuate the metabolic response to stress, prevent oxidative cellular injury, and favorably modulate immune responses⁽²⁾.

Nutrition support is part of patient care, as patients may be malnourished or become malnourished while in the hospital, which is even more severe⁽³⁻⁴⁾. It seems that the process of indication and use of a feeding tube is given low priority due to the multiple simultaneous demands of the patient⁽⁵⁾. This can result in increased lengths in hospital stay, prolonged time on mechanical ventilation or infectious complications that can lead to death⁽³⁻⁴⁾.

The early initiation of nutrition therapy, mainly by enteral administration, is seen as a proactive therapeutic strategy that can mitigate the severity of a disease, reduce complications and have a favorable impact on the outcomes and clinical evolution of patients⁽⁶⁾. Thus, to achieve good results, it is important that nurses have adequate knowledge on how to provide enteral nutrition (EN) in different clinical practice settings⁽⁷⁾.

Therefore, the use of instruments to assess the degree of knowledge can contribute to the evaluation of the nursing care provided to patients on EN. The construction of reliable and valid measurement instruments is relevant for nursing practice, since these instruments can provide data to identify gaps in clinical practice, help prevent errors⁽⁸⁾ and evaluate the quality of the care provided to a given population⁽⁹⁾.

The justification for the present study is the attempt to collaborate with nursing educational practices, expanding the practical knowledge on this theme. There are still gaps in nursing education on the topic of nutrition⁽¹⁰⁾, and problems related to the prescription, administration and monitoring of enteral nutrition⁽¹¹⁾. Therefore, more studies that address the knowledge of nurses and nursing students on EN are necessary.

Thus, the objective of this study was to develop and validate an instrument to assess the knowledge of nurses on enteral nutrition. The instrument will be applied to nurses with the purpose of identifying weaknesses in EN care. It is expected that the use of specific instruments for the field of nursing, such as the one described here – a constructed and validated instrument on the theme “enteral nutrition” – will support decision-making and help provide care to patients who need this therapy. In addition, these instruments are important to provide safe and quality care to patients on EN by using care quality indicators⁽¹²⁾.

METHOD

STUDY DESIGN

The methodological research included the following steps: 1. Development of the instrument entitled Knowledge

of Nurses on Enteral Nutrition (CENFTNE); 2. Content validation; and 3. Pre-test.

STEP 1 – CONSTRUCTION OF THE INSTRUMENT

The theoretical procedure for the construction of the instrument included a search for items that represented the construct of EN and followed the Consensus-based Standards for the selection of Health Measurements Instruments – *COSMIN*⁽¹³⁻¹⁴⁾, as well as the psychometric criteria (behavior, simplicity, clarity, relevance and precision)⁽¹⁵⁾.

A broad literature review including studies published between 2008 and 2018 was carried out. The studies addressed the relevant elements on EN that should be part of the knowledge of nurses in care practice.

Data survey was carried out in the databases Virtual Health Library – Nursing (BDENF), *Portal de Revistas de Enfermagem*, SciELO, LILACS and MEDLINE/PubMed, using the Health Science Descriptors/Medical Subject Headings (DeCS/MeSH): “enteral nutrition” (“nutrição enteral”) and the synonyms in Portuguese and English – feeding tube, enteral feeding, gastric feeding tubes, enteral feeding tubes, gastric tubes, “nursing care” (“cuidados de enfermagem”), “intubation, gastrointestinal” (“intubação gastrointestinal”) and the controlled descriptor “enteral nutrition” associated with the Boolean operator *AND*.

After defining the items of the CENFTNE, each of them was described, along with an explanation adopted as parameter to assess the knowledge of nurses. Thus, a first version of the instrument was created.

STEP 2 – CONTENT VALIDATION

From March to May 2018, the CENFTNE was submitted to the appreciation of a group of judges, with the objective of obtaining evidence of content validity.

The population consisted of nurses who were invited to be judges in the content validation of the instrument.

The following inclusion criteria were considered: nurses with experience in enteral nutrition care; chosen based on the analysis of existing curricula in the database of the National Council for Scientific Development (CNPq); with a doctorate or master’s degree in health sciences; with work in undergraduate nursing education; and with training or scientific research in the area of enteral nutrition. Exclusion criteria were: judges who asked for money compensation or who did not return the material filled in 30 days. In addition, discontinuity criterium were not answering all the questions of the material sent to evaluate the content of the instrument.

The sample was intentional and a total of 11 nurses were invited, of which 6 accepted to participate as expert judges of the instrument. They were invited by e-mail to participate as judges in the research. The material sent to the judges was divided in two parts. The first was aimed at characterizing the participants, with questions about age, gender, professional qualification, professional experience, length of experience in teaching and in assistance and updating in enteral nutrition. The second stage referred to the CENFTNE.

The judges were asked to evaluate each item of the instrument according to its adequacy to the psychometric criteria of behavior, simplicity, clarity, relevance and precision⁽¹⁵⁾. Based on these criteria, the following scores were assigned: **-1** (total absence of agreement, that is, the item is not adequate in relation to the proposed evaluation criterion of the CENFTNE and the domain it is supposed to measure), **0** (indecision regarding the adequacy of the criterion, that is, the item is partially adequate in relation to the proposed evaluation criterion of the CENFTNE and the domain that it is supposed to measure) and **+1** (adequate criterion, that is, the item is adequate in relation to the proposed evaluation criterion of the CENFTNE and the domain that it is supposed to measure). Then, the judges were asked to evaluate the range of each domain using the same scale used for the items.

STEP 3 – PRE-TEST

After the content validation stage, the pre-test stage was initiated. In this stage, that occurred from September to October 2018, the instrument was evaluated by 30 nurses according to the adopted framework⁽¹⁵⁻¹⁶⁾. Nurses with experience in caring for adult patients on EN were included. All participants signed the Informed Consent Form (ICF). The nurses responded to a general form, providing data on gender, age, length of experience in care and training in the area of EN. Subsequently, they answered questions about their understanding of the items of the instrument. This session contained six questions on a Likert scale (1 = not relevant or not representative; 2 = requires major revision to be representative; 3 = requires minor revision to be representative; 4 = relevant or representative; 5 = very relevant or representative) with the objective of identifying: a) relevance of the items to the nurse's clinical practice, b) clarity of sentences, c) objectivity, d) layout of the instrument, e) response scale and f) time spent to fill the instrument.

DATA ANALYSIS AND TREATMENT

The softwares SAS version 9.4 and SPSS version 24 were used for statistical analysis. Initially, a descriptive analysis of the profile of the judges and nurses was performed. For the content validation and pre-test steps, the degree of agreement (DA) was calculated, and the cut-off score was a DA equal to or greater than 0.90. The items that obtained a lower DA were revised according to suggestions pointed out by the judges or removed^(9,16-17). Initially, the data obtained in the pre-test form were analyzed descriptively. Then, the DA of the nurses who participated in this stage was also presented to analyze the relevance of the instrument and the clarity of the items.

ETHICAL ASPECTS

The study was submitted to and approved by the Research Ethics Committee of the Universidade Estadual de Campinas, and its execution was authorized in approval 2.375.159/2017, in accordance with Resolution 466/12⁽¹⁸⁾ of the National Health Council and following ethical principles

for clinical research involving human beings. All participants signed the Informed Consent Form (ICF).

RESULTS

The literature review revealed items relevant to the assessment of the knowledge required by nurses on the topic of enteral nutrition. Then, an instrument organized into four domains was constructed: 1) Indication of enteral nutrition for the patient, 2) Technique for the insertion of the feeding tube, 3) Monitoring of enteral feeding, and 4) Control of complications in enteral nutrition. Each domain had ten items, with a Likert-type response scale (1 – strongly disagree; 2 – partially disagree; 3 – indifferent; 4 – partially agree; 5 – strongly agree), totaling 40 categories that should be interpreted by nurses.

In the content validation stage, regarding the profile of the six judges who participated in this study, there was a predominance of nurses with a doctorate degree, teaching experience between 15 and 25 years, professional experience with EN between 11 and 20 years and diverse training in the area. Table 1 presents the degree of agreement in each item and the range value of the four domains according to the construction of the instrument proposed. In addition, the changes made to each item according to the suggestions were described.

Two items with scores below 0.67 were excluded (items 18 and 40) and one was revised (item 36), respecting the opinion of the judges. The items that obtained a degree of agreement between 0.67 and 0.83 were revised, adding minor changes in the writing and scientific nomenclature or even changes in the entire text to make it more understandable for the nurses, respecting the psychometric criteria (items 1, 3, 12, 15, 17, 19, 21, 24, 27, 35, 36 e 39). It should be noted that some items had a high degree of agreement (DA = 0.90), but the judges still provided suggestions regarding objectivity, so they were reformulated and adapted (items 4, 5, 23 and 26).

A common suggestion was to change the term enteral "catheter" ("*cateter*") by enteral "tube" ("*sonda*" or "*tubo*"), since catheter may refer to the central line associated with the circulatory system. In addition, they reported that the use of the descriptors "*sonda*" or "*tubo*" can help scientific research, as structured language and vocabulary is more adequate for scientific indexing. Thus, this recommendation was adopted in the textual organization of the CENFTNE.

As suggested by the judges, the instrument was modified in terms of the response scale, which went from a 5-point to a 3-point Likert scale, with the following options: 1. Wrong, 2. I have doubts and 3. Correct. They warned that the questions cannot raise doubts or lead to wrong answers. Some items required corrections in the wording, however the range of the four domains obtained a degree of agreement above 0.90 in the range criterion.

In the pre-test, among the 30 participating nurses, 60% were female, aged between 30 and 46 years old, 53% went to undergraduate nursing course in a private institution, 79% had specialist titles in different areas, 66.7% had worked as a nurse for 10 to 15 years and 33.3% for 15 to 25 years, and 46% reported having experience in enteral nutrition.

Regarding the current clinical practice of nurses who participated in the pre-test, 80% described performing activities that involve assisting patients on EN. As for the way they see the training they received on Nutrition Therapy, 46% considered it good, 33.3% described it as regular and 13.3% said it was bad. Regarding updating on the topic of EN, 60% said that they seek improvement, and among these, 52% seek information in scientific articles, 30% with other professionals in the field, 18% in conferences, symposiums, lectures, books or websites and 50% reported having participated in training on EN. All considered important to have knowledge of EN, 80% said they knew the protocols regarding enteral nutrition and only 10% did not know whether the institution where they worked had a multi-professional team to provide assistance and guidance in cases of patients on EN.

In relation to the CENFTNE responses, it was observed that nurses had difficulties regarding the “clarity of the items of the instrument” (DA = 0.80). Participants reported that some items had words that raised doubts in the interpretation of the text, which were modified as recommended. They also reported difficulty in responding to items in Domain 02, which addressed the technique for the insertion of the feeding tube. In these items, adjustments in technical-scientific writing were made. Another suggestion was changing the layout of the instrument to make it more pleasant and easier to understand.

After assessing the relevance of each domain, a degree of agreement greater than 0.90 was obtained, as some nurses pointed out that the CENFTNE was extensive, which could make it a little strenuous. Thus, it was necessary to adapt the layout of the instrument. The analysis of the percentage of responses in the form composed of six questions did not show any significant comprehension problems. The total degree of agreement regarding the relevance of the instrument was 0.90 (Table 1).

Table 1 – Degree of agreement of nurses on the relevance of each domain of the instrument Knowledge of Nurses on Enteral Nutrition – Montes Claros, MG, Brazil, 2019.

	DA
Domain 1. Indication of enteral nutrition	0.97
Domain 2. Technique for the insertion of the feeding tube	0.90
Domain 3. Monitoring of enteral feeding	0.90
Domain 4. Control of complications	0.97
Overall instrument	0.90

*DA: degree of agreement

DISCUSSION

The instrument developed had four domains about the knowledge of nurses on enteral nutrition. Then, the process of validation of the instrument by the judges showed a degree of agreement above 0.90, which means that the items are clear and representative for the evaluation of the context^(9,16-17).

To validate the content of a measurement instrument, judges must be selected very carefully. It is recommended that the expert should have great knowledge and skills, based on studies and clinical experience⁽¹⁶⁾. In this study, the judges selected to validate the content of the instrument met this recommendation, as they had theoretical knowledge, skills, clinical experience and training in the area of enteral nutrition.

All domains of the CENFTNE had a degree of agreement above 0.90 and Domain 1 – Indication of Enteral Nutrition had the highest value (0.94). This demonstrates the validity of the layout and the content of the instrument, which, to be valid, must encompass the attributes of each domain and the categories of evaluation adopted in this study^(9,16-17).

Some items related to the four domains presented a degree of agreement of 0.83 and were maintained, following the recommendation of the literature to not use values lower than 0.78 when working with a sample of six or more judges⁽¹⁷⁾ and the suggestion of a minimum agreement of 0.80 to verify the validity of new instruments⁽¹⁷⁾.

In relation to the development of Domain 01 – Indication of enteral nutrition, the identification of patients that need enteral nutrition is based on nutritional risk or impossibility of receiving their nutritional, caloric or specific needs spontaneously via oral route⁽¹⁹⁾. This domain was reformulated due to difficulties in the judges' interpretations, which were related to the lack of clarity in the wording. According to the methodological framework used to guide the study, the clarity criterion requires that the items of an instrument are comprehensible to all categories of the target population, in order to ensure the understanding of the sentences⁽¹⁵⁾.

It is important to note that knowing the nutritional profile of patients before initiating therapy allows for appropriate diet planning, with the objective of fixing pre-existing nutritional deficiencies and meeting current nutritional demands⁽²⁰⁻²¹⁾. It is also necessary to investigate the variables that are associated with higher frequency of malnutrition and death, since these variables can help identifying groups that are more vulnerable to unfavorable outcomes⁽²²⁾.

Domain 02, which addressed the technique for the insertion of the feeding tube, had the highest number of corrections and suggestions by the judges. It is important to emphasize that it is the nurse's responsibility to access the gastrointestinal tract via nasogastric or orogastric tube (tube with guidewire introducer, transpyloric or not)⁽²³⁾. As it is an invasive procedure, adequate placement and subsequent evaluation must be conducted to avoid serious complications, such as inadvertent insertion^(2,24) or aspiration pneumonia.

In Domain 03 – Monitoring of enteral feeding, it is emphasized that the nurse needs to check the placement of the enteral feeding tube using appropriate techniques, such as the verification of gastroparesis. In addition, nurses should be aware of the contraindications to enteral nutrition and recognize signs of complications⁽²⁴⁾.

Domain 04 – Control of complications emphasizes the need to identify failures in care or disagreements between

the nursing staff to avoid mechanical, metabolic and/or digestive complications, since several factors can make it difficult to provide the necessary calories in enteral nutrition to severely ill patients⁽²⁰⁾. These factors are usually related to the lack of adequate information and qualified knowledge necessary for a safe assistance in enteral nutrition⁽¹¹⁾. Some examples are unplanned removal of the enteral tube by the patients themselves, obstruction of the internal lumen by medication and/or food, ineffective tube fixation with partial or total loss of the tube, accidental expulsion of the tube and medical procedures with clinical devices (tubes, drains)⁽⁷⁾.

The content of the CENFTNE was validated and went through a pre-test, which “aims to investigate by interviews with subjects composing the target population, the level of understanding and acceptance of terms, the relevance of items, the existence of any difficulty and the possible need of adaptation”⁽²⁵⁾.

The importance of the pre-test with nurses is highlighted, since it allowed to verify the understanding about the items regarding enteral nutrition, indicating or not significant changes in form or content. Nurses with clinical

experience in EN were able to make suggestions, reveal their difficulties and understandings and put forward the aspects that they considered important⁽²⁶⁾.

The limitations of the present study are the biases related to the use of questionnaires, such as memory and cognition.

CONCLUSION

The instrument was constructed with four domains and based on a broad literature review. The content was validated by judges, who presented better degree of agreement in Domain 1 (Indication of Enteral Nutrition) and 3 (Monitoring of enteral nutrition), although all were equal or above 0.90. In addition, the instrument was considered appropriate (DA = 0.90) and easy to understand for the assessment of knowledge on enteral nutrition.

It is believed that the CENFTNE instrument can be used in continuing health education to assist in the assessment and expansion of the knowledge of nurses on enteral nutrition, since the weaknesses of these health professionals will be unveiled. However, further research is necessary to confirm the validity and reliability of this instrument and recommend its application in clinical settings.

RESUMO

Objetivo: Construir e validar instrumento para avaliar o conhecimento do enfermeiro sobre terapia nutricional enteral. **Método:** Estudo metodológico, com revisão de literatura, validação de conteúdo e pré-teste. Para a revisão, foram incluídos trabalhos publicados de 2008 a 2018 a respeito da terapia de nutrição enteral. O material foi apreciado por 6 juízes, seguindo os critérios da psicometria. Calculou-se percentual de concordância. O pré-teste foi realizado com 30 enfermeiros, a fim de verificar a adequação e o entendimento para uso na prática clínica. **Resultados:** Instrumento construído continha quatro domínios, com 10 itens cada. Os domínios Indicação da terapia enteral e Monitoramento da administração da dieta enteral apresentaram melhores percentuais de concordância - 0,94 e 0,93, respectivamente. As categorias que obtiveram valores abaixo de 0,90 foram reformuladas ou retiradas, resultando em 38 categorias distribuídas em 4 domínios. No pré-teste, a concordância foi de 0,90, sendo o instrumento considerado de fácil entendimento e adequado para a prática. **Conclusão:** O instrumento construído foi validado quanto ao conteúdo e à aplicação na prática pelos enfermeiros.

DESCRITORES

Nutrição Enteral; Cuidados de Enfermagem; Prática Profissional; Estudos de Validação.

RESUMEN

Objetivo: Construir y validar un instrumento para evaluar el conocimiento del enfermero sobre la terapia de nutrición enteral. **Método:** Se trata de un estudio metodológico, de revisión literaria, validación del contenido y prueba previa. Para la revisión se incluyeron trabajos publicados desde 2008 hasta 2018 relativos a la terapia de nutrición enteral. Seis jueces analizaron el material siguiendo los criterios de la psicometría. Se calculó el índice de concordancia. La prueba previa se realizó con 30 enfermeros para comprobar la idoneidad y la comprensión para su uso en la práctica clínica. **Resultados:** El instrumento construido contenía cuatro dominios de 10 elementos cada uno. Los dominios “Indicación de terapia enteral” y “Monitoreo del manejo de la dieta enteral” presentaron un porcentaje de concordancia - 0,94 y 0,93, respectivamente. Las categorías que obtuvieron valores por debajo de 0,90 se reformularon o se retiraron, lo que trajo como resultado 38 categorías distribuidas en 4 dominios. En la prueba previa, la concordancia fue de 0,90, por lo que se consideró al instrumento de fácil comprensión e idóneo para la práctica. **Conclusión:** El instrumento ha sido validado por los enfermeros según su contenido y su aplicación en la práctica.

DESCRIPTORES

Nutrición Enteral; Atención de Enfermería; Práctica Profesional; Estudios de Validación.

REFERENCES

1. Medeiros ABA, Enders BC, Lira ABDC. The Florence Nightingale's environmental theory: a critical analysis. *Esc Anna Nery*. 2015;19(3):518-24. doi: <http://doi.org/10.5935/1414-8145.20150069>
2. McClave SA, Taylor BE, Martindale RG, Warren MM, Johnson DR, Braunschweig C, et al. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). *J Parenter Enteral Nutr*. 2016;40(2):159-211. doi: [10.1177/0148607115621863](https://doi.org/10.1177/0148607115621863)
3. Yip KF, Rai V, Wong KK. Evaluation of delivery of enteral nutrition in mechanically ventilated Malaysian ICU patients. *BMC Anesthesiol*. 2014;14:127. doi: <https://doi.org/10.1186/1471-2253-14-127>
4. Lee ZY, Barakatun-Nisak MY, Noor Airini I, Heyland DK. Enhanced protein-energy provision via the enteral route in critically ill patients (PEP uP Protocol): a review of evidence. *Nutr Clin Pract*. 2016;31(1):68-79. doi: [10.1177/0884533615601638](https://doi.org/10.1177/0884533615601638)

5. Anziliero F, Corrêa APA, Silva BA, Soler BED, Batassini E, Beghetto MG. Nasoenteral tube: factors associated with delay between indication and use in emergency services. *Rev Bras Enferm.* 2017;70(2):326-34. doi: <http://doi.org/10.1590/0034-7167-2016-0222>
6. McClave SA, Martindale RG, Rice TW, Heyland DK. Feeding the critically ill patient. *Crit Care Med.* 2014;42(12):2600-10. doi: [10.1097/CCM.0000000000000654](https://doi.org/10.1097/CCM.0000000000000654)
7. Colaço AD, Nascimento ERP. Nursing intervention bundle for enteral nutrition in intensive care: a collective construction. *Rev Esc Enferm USP.* 2014;48(5):844-50. doi: <http://doi.org/10.1590/S0080-6234201400005000010>
8. Costa RKS, Torres GV, Salvetti MG, Azevedo IC, Costa MAT. Instrument for evaluating care given by undergraduate nursing students to people with wounds. *Rev Esc Enferm USP.* 2015;49(2):317-25. doi: <http://doi.org/10.1590/S0080-623420150000200018>
9. Alexandre NMC, Coluci MZO. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. *Ciênc Saúde Coletiva.* 2011;16(7): 3061-8. doi: <http://doi.org/10.1590/S1413-81232011000800006>
10. Guimarães AB, Tapety FI, Martins MCC, Lago EC, Ramos CV. Formação do enfermeiro na atenção nutricional de usuários na Estratégia Saúde da Família. *Rev Enferm UFPI.* 2015;4(3):59-64. doi: <https://doi.org/10.26694/reufpi.v4i3.4213>
11. Medeiros RKS, Ferreira Junior MA, Pinto DPSR, Santos VEP, Vitor AF. Asistencia de enfermería a pacientes sometidos al uso de sonda gastrointestinal: revisión integrativa de las principales fallas. *Rev Cuba Enferm [Internet].* 2014 [citado 2019 jun. 28];30(4). Disponible en: <http://www.revenfermeria.sld.cu/index.php/enf/article/view/288/107>
12. Cervo AS, Magnago TSBS, Carollo JB, Chagas BP, Oliveira AS, Urbanetto JS. Adverse events related to the use of enteral nutritional therapy. *Rev Gaúcha Enferm.* 2014;35(2):53-9. doi: <http://doi.org/10.1590/1983-1447.2014.02.42396>
13. Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, et al. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. *Qual Life Res.* 2010;19(4):539-49. doi: [10.1007/s11136-010-9606-8](https://doi.org/10.1007/s11136-010-9606-8)
14. Cosmin: COnsensus-based Standards for the selection of health measurement instruments [Internet]. Amsterdam: COSMIN; 2019 [cited 2019 June 28]. Available from: <https://www.cosmin.nl/>
15. Pasquali L. Princípios de elaboração de escalas psicológicas. *Rev Psiquiatr Clin.* 1998;25(5):206-13.
16. Coluci MZO, Alexandre NMC, Milani D. Construção de instrumentos de medida na área da saúde. *Ciênc Saúde Coletiva.* 2015;20(3):925-36. doi: <http://10.1590/1413-81232015203.04332013>
17. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Res Nurs Health.* 2006;29(5):489-97. doi: [10.1002/nur.20147](https://doi.org/10.1002/nur.20147)
18. Brasil. Ministério da Saúde; Conselho Nacional de Saúde. Resolução n. 466, de 12 de dezembro de 2012. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos [Internet]. Brasília; 2012 [citado 2019 mar. 12]. Disponível em: <http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf>
19. Philippsen EB. Uso de terapia nutricional enteral via sonda em pacientes hospitalizados. *Rev Especialize On line IPOGO [Internet].* 2015 [citado 2019 jun. 28];1(10):1-16. Disponível em: <http://www.ipoggo.com.br/uploads/arquivos/fddd7130f9a99f43f5e52ac54b59db41.pdf>
20. Cahill NE, Jiang X, Heyland DK. Revised questionnaire to assess barriers to adequate nutrition in the critically ill. *J Parenter Enteral Nutr.* 2016;40(4):511-8. doi: [10.1177/0148607115571015](https://doi.org/10.1177/0148607115571015)
21. Elke G, Van Zanten AR, Lemieux M, McCall M, Jeejeebhoy KN, Kott M, et al. Enteral versus parenteral nutrition in critically ill patients: an updated systematic review and meta-analysis of randomized controlled trials. *Crit Care.* 2016;20(1):117. doi: [10.1186/s13054-016-1298-1](https://doi.org/10.1186/s13054-016-1298-1)
22. Cahill NE, Murch L, Wang M, Day AG, Cook D, Heyland DK. The validation of a questionnaire to assess barriers to enteral feeding in critically ill patients: a multicenter international survey. *BMC Health Serv Res.* 2014;14:197. doi: [10.1186/1472-6963-14-197](https://doi.org/10.1186/1472-6963-14-197)
23. Carrasco V, Silva DVA, Silva PO. Reflection on the need for permanent education in nutritional therapy. *Rev Enferm UFPE On line.* 2018;12(12):3500-5. doi: <https://doi.org/10.5205/1981-8963-v12i12a237459p3500-3505-2018>
24. Medeiros RKS, Ferreira Junior MA, Torres GV, Vitor AF, Santos VEP, Barichello E. Validação do conteúdo de instrumento sobre a habilidade em sondagem nasogástrica. *Rev Eletr Enf.* 2015;17(2):278-89. doi: <http://doi.org/10.5216/ree.v17i2.28820>
25. Fuzissaki MA, Santos CB, Almeida AM, Gozzo TO, Clapis MJ. Validação semântica de instrumento para identificação da prática de enfermeiros no manejo das radiodermatites. *Rev Eletr Enf.* 2016;18:e1142. doi: <https://doi.org/10.5216/ree.v18.35164>
26. Cucolo DF, Perroca MG. Instrument to assess the nursing care product: development and content validation. *Rev Latino Am Enfermagem.* 2015;23(4):642-50. doi: <http://doi.org/10.1590/0104-1169.0448.2599>

