ELABORATION OF THE ASSESSMENT SCALE OF PATIENT KNOWLEDGE ABOUT CARDIAC SURGERY

Elaboração da escala de avaliação do conhecimento de pacientes acerca da cirurgia cardíaca

Elaboración de la escala de evaluación del conocimiento del paciente sobre cirugía cardíaca

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ABSTRACT: Objective: To develop and perform the face and content validation of the Assessment Scale of Patient Knowledge about Cardiac surgery (*Escala de Avaliação do Conhecimento de Pacientes acerca da Cirurgia Cardíaca* - EACCC). **Method:** This is a methodological, quantitative study, in which 30 nurses considered experts according to the criteria proposed by Fehring participated. **Results:** The respondents were mostly women (24; 80.0%), with an average training time of 5.5±10.43 years and experience time approximately to the training (5.0±10.78). There was no suggestion to change the way to evaluate the responses in each item and score them, with changes being made to the wording or content of items, as suggested. **Conclusion:** The final version remained with the same number of items as the first version. In general, in the assessment of judges, the scale proved to be useful for achieving its objective, being ready for clinical validation.

Keywords: Validation study. Psychometrics. Thoracic surgery. Knowledge. Cardiovascular nursing.

RESUMO: Objetivo: Elaborar e realizar a validação de face e conteúdo da Escala de Avaliação do Conhecimento de Pacientes acerca da Cirurgia Cardíaca (EACCC). **Método:** Trata-se de um estudo metodológico, quantitativo, em que participaram 30 enfermeiros considerados expertos pelos critérios propostos por Fehring. **Resultados:** Os respondentes eram em sua maioria mulheres (24; 80,0%), com tempo médio de formação de 5,5±10,43 anos e tempo de experiência aproximado ao de formação (5,0±10,78). Não houve sugestão para alteração na forma de avaliar as respostas em cada item e pontuá-las, sendo realizadas alterações para a redação ou o conteúdo de itens, conforme sugestões. **Conclusão:** A versão final permaneceu com a mesma quantidade de itens da versão primeira. De forma geral, na avaliação dos juízes, a escala apresentou-se útil para o alcance do seu objetivo, estando pronta para a validação clínica.

Palavras-chave: Estudo de validação. Psicometria. Cirurgia torácica. Conhecimento. Enfermagem cardiovascular.

RESUMEN: Objetivo: Elaborar y realizar la validación de rostro y contenido de la Escala de Evaluación del Conocimiento de los Pacientes sobre Cirugía Cardíaca (EECCC). **Método:** Se trata de un estudio metodológico, cuantitativo, en el que participaron 30 enfermeras consideradas expertas según los criterios propuestos por Fehring. **Resultados:** Los encuestados fueron mayoritariamente mujeres (24; 80,0%), con un tiempo medio de formación de 5,5±10,43 años y un tiempo de experiencia similar al de la formación (5,0±10,78). No se sugirió cambiar la forma de evaluar las respuestas en cada ítem y calificarlas, con cambios en la redacción o el contenido de los ítems, como se sugirió. **Conclusión:** La versión final se mantuvo con el mismo número de ítems que la primera versión. En general, en la evaluación de los jueces, la Escala resultó útil para alcanzar su objetivo, estando lista para la validación clínica.

Palabras clave: Estudio de validación. Psicometría. Cirugía torácica. Conocimiento. Enfermería cardiovascular.

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INTRODUCTION

The preoperative period is dedicated to the process of preparing the patient, in addition to being the moment related to the educational process of providing information about surgical procedures and the care to be performed.[1] Such guidelines range from the preparation for the surgical act to the care provided during the preoperative period, including the changes in life that may arise.[1]

The prospect of undergoing surgery is commonly perceived by individuals as an event related to disability and/or alteration of body image, which can be a cause of stress and anguish, sensations related to questions about the anesthetic-surgical procedure and the uncertainty of the diagnostic result.[2] Preoperative stress and anxiety are thus directly related to patients' lack of knowledge and, indirectly, to the failure to take advantage of preoperative moments which the multidisciplinary team could offer them.[3] Anxiety symptoms are related to a higher level of postoperative pain and negatively impact the results of surgery. This is also valid in the long term, in the postoperative period, which could be minimized with education strategies and interventions focused on the socioemotional issues involved.[3-7]

The waiting for cardiac surgery usually generates psychological and physiological repercussions because the heart is an organ that has great symbology for people, being idealized as the center of emotions, life, and body.[1] In addition, it can also trigger decreased capacity for tissue recovery and slow immune response, contributing to a greater predisposition to infections.[5,6]

In order to implement health education, the multidisciplinary team must seek to understand the learning needs of patients and have the scientific evidence needed to organize care and guide the educational process.[8] Health education can be understood, in this context, as a social practice that promotes reflection and critical awareness, with an emphasis on a dialogical and organizing process of working with people, and not just a merely instructional act.[8]

For making the practice of health education more effective and efficient in the preoperative period of cardiac surgery, thinking of strategies with language accessible to the target audience is important, with educational and interactive actions between professionals and their patients. Preoperative guidance and visits are of utmost importance.[7,8] When patient have such knowledge, preventing complications in the postoperative period is feasible, in addition to allowing them to feel less anxious and accept better the guidelines they receive, meeting their psychological needs and contributing to a rapid improvement after surgery.[9]

Developing strategies for assessing the learning needs of patients about the procedure they will undergo is also necessary. To better plan how to intervene, professionals must have resources that provide them with security and allow them to optimize their time with more focused actions and directly evaluate the effect of these on the patient's education.

A validated instrument that would make it possible to assess patients' knowledge about the perioperative of cardiac surgery would serve a dual purpose: as a guide to check, objectively, the dimension of patients' learning needs, guiding a reflection on which aspects need a better approach; and, at the same time, to consider patients' progress after an educational intervention. For the measurement of effectiveness of educational interventions, this instrument could be applied, for example, before and after surgery, or only after it, whenever it would be possible to establish a goal of the minimum score to be achieved.

Therefore, research emphasizes the relevance of improving instruments for evaluating nursing care, especially health education strategies.

OBJECTIVE

To develop and perform the face and content validation of the Assessment Scale of Patient Knowledge about Cardiac surgery (*Escala de Avaliação do Conhecimento de Pacientes acerca da Cirurgia Cardíaca* - EACCC).

METHOD

This is a methodological, quantitative study. Methodological research investigates, organizes, and analyzes data to build, validate, and evaluate research instruments and techniques focused on the development of specific data collection tools for improving their reliability and validity.[9]

Data collection took place between May and October 2018. The invited nurses, according to the criteria described below, worked in three university hospitals in the Northeast of Brazil (Recife, Pernambuco's State Capital), who perform heart surgeries.

Research was conducted in two stages. In the first stage, the authors prepared the first version of the EACCC. For

the scale proposition, contents taught, the most frequent doubts and the authors' experience with the theme were used. In turn, the content used to guide patients, performed in the hospital, was developed by a broad literature review, in addition to the experience of professionals and hospital protocols.

For surveying patients' doubts and learning needs, a previous investigation was carried out with 50 patients admitted to the specialized hospital, who were awaiting surgery. Care was taken not to interview patients who had already undergone any educational intervention to seek out the most primary doubts, that is, those doubts that had not been addressed by any other professional.[10]

At the end of this first stage, the initial version of the scale was elaborated with 18 items to be filled out by nurses during interviews with patients. After the interviews, the scale must be completed for each item evaluated, considering that:

- patients *do not* have knowledge about the question when there is no answer on their part or when they are completely wrong;
- patients *partially have* knowledge about the question when they do not use the terms correctly or do not know details, but know the main thing about the care to which the item refers;
- patients *have* knowledge about the question when they respond with their own words correctly regarding the main aspects related to the care to which the item refers.

The scale score is counted as follows: 0 point for each item that patients do not have knowledge about the question; 1 point for each item that patients partially have knowledge about the question; and 2 points for each item patients have knowledge about the question. The total score of the first version ranged from 0 to 36 points, the highest score corresponding to a better knowledge of severe cardiac patients about cardiac surgery to which they could be submitted.

The second step for face or appearance, and content validation was carried out with the evaluation of the agreement by judge-nurses. After the evaluations returned, there was agreement between the evaluators' considerations about each item proposed on the scale and the scale itself.

Nurses were invited in person or by email to participate, filling out a collection instrument to assess the first version of the scale. One month was given from contact to conclusion; when it did not occur, a second contact was made to give fifteen more days as deadline.

Judges were selected according to their Lattes curriculum, following the criterion proposed by Fehring (1994) for the selection of experts, explained in Chart 1, adapted for the Nursing area within Cardiology.[11,12]

From a total of 14 possible points for the curricula evaluation, experts who considered at least 4 points were considered experts qualified to participate as judges. The sample of nurses was estimated between 25 and 50, according to the Fehring method for validation by experts.[12]

The data were tabulated in the Microsoft Excel program and analyzed using SPSS version 20.0, of public domain. For data analysis, the resources of descriptive statistics (absolute and relative frequencies, means and standard deviations) and the content validity index (CVI) were used, which measures the agreement of judges regarding the representativeness of the items, in relation to the content under study.

The CVI was calculated by dividing the number of judges who assessed the item as being clear and objective, with a relevant presence, and which makes it possible to reach the scale's objective by the total of judges (evaluation per item), resulting in the proportion of judges who judged the valid item. The level of agreement considered as acceptable for the scale was 80%.[9] A fourth item was proposed as

Chart 1. Adaptation of the expert scoring system to Fehring's content validation model (1994).

Master in Nursing	4
Master in Nursing with dissertation on Cardiac Nursing	1
Research with publication in the field of Cardiac Nursing	2
Article published in the field of Cardiac Nursing	2
Doctorate in Nursing or related areas	2
Clinical practice of at least one year in the field of Cardiac Nursing	1
Specialization certificate in the areas of Cardiac Nursing, Surgical Clinic, or Adult Health	2
Highest score	14

a Likert type, in which judges had to assign a value from 1 to 5 for the item's relevance for scale. The calculation of the CVI of this item considered as positive those responses that scored with 4 and 5, that is, with the greatest relevance. To calculate the instrument's general CVI, the sum of all CVIs calculated separately was performed, dividing it by the number of items.[9,12,13]

The CVI result varies from 0 to 1, demonstrating the agreement between judges from 0 to 100%. An index of ≥0.80 was defined and acceptable (80% agreement between the judges), considered both for the evaluation of each item and for the general evaluation of the instrument.[9,12,13]

Both the first and the final versions were evaluated by two professionals qualified in reviewing the Portuguese language. Research was prepared based on the precepts of Resolution No. 466/2012, and evaluated and approved by the institution's Research Ethics Committee (Opinion No. 2.434.581, CAAE 56496116.5.0000.5192).

RESULTS

A total of 45 nurses was invited to participate, who had a score higher than 4 after previous analysis of their Lattes curricula to be considered experts. Of these, 30 responded to the survey after the deadline, with an average score of 7.0±1.26 points, ranging from 4 to 12 points.

Most respondents were women (24 / 80.0%), with an average training time of 5.5±10.43 years and experience time like that of training (5.0±10.78). The time of experience varied between 4 and 28 years, and all worked in care provision.

As for academic training, 18 (60.0%) held a master's degree in Nursing, and 27 (90.0%) had a specialization in Cardiology, Surgical Clinic, or related areas in adult health. Only 2 (6.67%) held a doctor's degree; 66.67% (20) had published articles in journals in the field of Cardiac Nursing; 56.67% participated or used to participate in research in the area; and 76.67% (23) had care experience in this area. The remaining 23.3% (7) had experience in surgical clinic, including the pre and postoperative periods.

The evaluation of the items by the IVC revealed that they were mostly valid for the evaluated criteria. Those that were not valid, that is, did not reach CVI≥0.85, are described below in Table 1:

- as for clarity and objectivity (CVI = 0.87): items 3 (describe this type of surgery), 7 (necessary trichotomy), 9 (position for the patient who has cardiac surgery to sleep in the hospital);
- as for the relevant presence to evaluate information/care (CVI = 0.94): items 3 (describe this type of surgery), 4 (what is fasting);
- as for the value of enabling the achievement of the scale objective (CVI = 0.94): items 3 (describe this type of surgery), 4 (what is fasting);
- As for the relevance to the general objective (CVI = 0.88): items 3 (describe this type of surgery), 4 (what is fasting).

Then, nurses answered questions for the general assessment of the scale, considering it easy to read and understand for nurse practitioners (26 / 86.7%), which makes it possible to assess the knowledge of patients in the preoperative period about cardiac surgery to which they are eligible (26 / 86.7%). Of the respondents, 40.0% (12) stated that more questions should be added, and 60.0% (18)

Table 1. Content validity of each item on the Assessment Scale of Patient Knowledge about Cardiac surgery (*Escala de Avaliação do Conhecimento de Pacientes acerca da Cirurgia Cardíaca* - EACCC) - 1st version.

Item	Clarity and objectivity	Relevant presence	Enables reaching the scale objective	Relevance to the overall objective
1	0.87	0.97	1.00	0.87
2	0.93	1.00	1.00	0.97
3	0.70	0.67	0.70	0.57
4	0.97	0.77	0.77	0.63
5	0.97	1.00	1.00	1.00
6	0.90	0.87	0.87	0.80
7	0.63	0.93	0.93	0.77
8	0.87	1.00	1.00	0.97
9	0.73	1.00	0.97	0.90
10	0.87	0.97	0.97	0.93
11	0.90	1.00	1.00	1.00
12	0.90	1.00	0.97	0.93
13	0.87	0.97	0.97	0.90
14	0.93	0.90	0.90	0.87
15	0.93	1.00	1.00	1.00
16	0.87	1.00	1.00	1.00
17	0.87	1.00	1.00	1.00
18	0.97	0.87	0.77	0.77

Table 2. General assessment of the scale by the judge-nurses.

Questions	Yes		No		Partially	
	N	%	N	%	N	%
Is the scale easy to read and understand for nurse practitioners?	26.0	86.7	0.0	0.0	4.0	13.3
Does it make it possible to assess the knowledge of patients in the preoperative period about the cardiac surgery to which they are eligible?	26.0	86.7	0.0	0.0	4.0	13.3
Any questions that you think should be added to the instrument?	12.0	40.0	18.0	60.0	0.0	0.0
Any questions that you think are unnecessary considering the totality of the instrument and its proposed objective?	18.0	60.0	12.0	40.0	0.0	0.0
Is there consistency between the proposed items and the patients' need for knowledge about cardiac surgery, in a way that indicates learning needs and health education opportunities?	29.0	96.7	0.0	0.0	1.0	3.3

stated that there were unnecessary questions, considering the totality of the instrument and its proposed objective. Finally, a question was asked in order to ratify and explore the previous ones and, for this, 29 (96.7%) judges assessed that there was consistency between the proposed items and the need for knowledge on the part of patients about cardiac surgery (Table 2).

There was no suggestion to change the way to evaluate the responses in each item and score them. Considering the CVI and the response to the items that the nurses found unnecessary on the scale, items 3 (describing this type of surgery) and 4 (what is fasting) were removed in the final version. After removing these items, the CVI of the four aspects evaluated was high (CVI≥0.85). Based on the nurses' suggestions, the following items were included: the bath routine in the immediate preoperative period (6 suggestions), the presence of tubes, drains, tubes, etc. upon awakening in the postoperative period (8 suggestions).

The final version thus remained with the same number of items as the first version, being evaluated in the same way.

DISCUSSION

The construction and validation of scales, which aim at assessing the knowledge of patients, is essential for means to be sought to provide better knowledge about their disease.[13,14]

Although there is no strong evidence for this, a survey found that patients who were not proficient in the language in which they received guidance had higher rates of infection and hospital stay, reinforcing the importance of adapting language to the population and patients in health education strategies.[15] This publication reinforces the need to carry out face and content validation so that the resources developed are effective in healthcare practice.

Despite this relevance, steps to validate nursing instruments, protocols, or diagnoses are still difficult to perform due to the difficulty in finding professionals who can be considered experts, as well as making those found as respondents and evaluators.[12] In this work, despite the fact that most of the invited nurses had been linked to the same institution at some point during their training (former residents, graduate students, members of research groups), only two thirds responded to the invitation to participate.

The evaluation scales, when used by well-educated professionals about their applicability, allow them to identify changes in the patients' clinical condition and can, with these instruments, propose intervention measures to provide better quality of care to individuals.[16]

Assessment instruments are devices that can be used in educational proposals in the health field and that aim to make it possible to measure the efficiency of the teaching and learning process, in order to propose changes in behavior related to the disease.[14,16] The changes made by the evaluation of judges, with the replacement of two items for others that had not been contemplated, allowed the instrument in its version to be better tuned to meet these purposes.

The educational actions propose the formation of a set of actions that aim to provide knowledge to patients, their family members and caregivers about a certain issue related to their health status, thus favoring the organization and changes related to their care.[16]

Studies show that adherence to the rehabilitation process is associated with the fact that patients are aware of the procedure that they will undergo and their recovery process.[16-20] Nursing interventions in the preoperative period,

with special emphasis on educational interventions, are essential for patients to become responsible, with the team, for their recovery and self-care process, and may even impact clinical variables that indicate surgery success.[16-20]

As a study limitation, at this stage, a more refined result could be achieved if nurses from other regions of the country were included, who contributed with regional aspects of language and other realities of surgical care in cardiology.

CONCLUSION

The first version required few adjustments, with only two items removed and replaced by two others. In general, in the judges' assessment, the EACCC proved to be useful for achieving its objective, having been designed to be applied by nurses to patients in the preoperative period of cardiac surgery. This version of the scale must also be validated with patients to assess reliability, applicability, and factor structure, and after this stage of elaboration and validation (face and content by judges), it is ready to be used (Appendix 1).

We suggest the scale in clinical validation with patients to be constantly improved to assess its psychometric properties by checking the possibility of grouping the items into domains and possible cutoff points in which the presented knowledge is classified (for example, as sufficient or insufficient knowledge).

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Appendix 1. Assessment Scale of Patient Knowledge about Cardiac surgery (*Escala de Avaliação do Conhecimento de Pacientes acerca da Cirurgia Cardíaca* - EACCC).

Scale use:
After the interviews with patients, for each item evaluated, the scale must be filled in considering that:
- patients do not have knowledge about the question when there is no answer on their part or when they are completely wrong;
- patients partially have knowledge about the question when they do not use the terms correctly or do not know details, but they know the main thing about the care to which the item refers;
- patients have knowledge about the question when they respond with their own words correctly about the main aspects related to the care to which the item refers.

About the cardiac surgery to which he/she is candidate, the patient knows:	Does not know	Partially knows	Knows
1. The type of surgery to be performed.			
2. The reason for performing this surgery.			
3. The bath routine in the immediate preoperative period.			
4. How long it is necessary to fast before surgery.			
5. The reason for the fast.			
6. The necessary trichotomy.			
7. If he/she can cough and care for their cough after surgery.			
8. The position for the patient who undergoes cardiac surgery needed to sleep in the hospital.			
9. That he/she will wake up in an intensive care unit (ICU).			
10. The presence of tubes, drains, probes, etc. upon awakening in the postoperative period.			
11. The care he/she should have with food and diet after surgery.			
12. The possibility of returning to daily life activities performed before surgery.			
13. The possibility of returning to physical activities.			
14. If exhausting physical effort can be made, such as picking up heavy objects after discharge.			
15. The possibility of normal sexual life after discharge.			
16. Care for the surgical wound after discharge.			
17. Signs of infection of the surgical wound.			
18. You he/she can smoke after surgery.			

Result analysis:
The scale score will be given as follows:
- 0 point for each item that the patient does not have knowledge about the question;
- 1 point for each item that the patient have partial knowledge about the question;
- 2 points for each item that the patient have knowledge about the question.

The total score will vary from 0 to 36 points, the highest score being related to a better knowledge of the severe cardiac patient about the cardiac surgery to which he/she may be submitted.