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ORIGINAL ARTICLE

VALIDATION OF INSTRUMENT FOR CONTROL AND PREVENTION AND INFECTION OF SURGICAL SITE IN NEUROSURGERY

VALIDAÇÃO DE INSTRUMENTO PARA CONTROLE E PREVENÇÃO E DE INFECÇÃO DE SÍTIO CIRÚRGICO EM NEUROCIRURGIA

INSTRUMENTO DE VALIDACIÓN Y EL CONTROL Y LA PREVENCIÓN DE INFECCIÓN DEL SITIO QUIRÚRGICO EN NEUROCIRUGÍA

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ABSTRACT

Objective: to validate an instrument for the control and prevention of surgical site infection in neurosurgery aimed at directing the actions of the Hospital Infection Control Commission (CCIH). ***Method:*** methodological study, with quantitative approach. After an integrative review, a screening tool was developed, subdivided into pre, trans and postoperative actions. This has been subject to validation of content by expert judges. The content validity index (CVI) was used to calculate the degree of agreement, for the general analysis of the instrument and for the validation of each item. ***Results:*** of the 24 questions proposed, 22 were valid and CVI was 0.96. ***Conclusion:*** the instrument demonstrated content validity. ***Descriptors:*** Neurosurgery; Surgical Wound Infection; Infection Control Services.

RESUMO

Objetivo: validar um instrumento para o controle e a prevenção de infecção de sítio cirúrgico em neurocirurgia destinado a direcionar as ações da Comissão de Controle de Infecção Hospitalar (CCIH). ***Método:*** estudo metodológico, com abordagem quantitativa. Após revisão integrativa, elaborou-se instrumento de checagem subdividido em ações pré, trans e pós-operatórias. Este foi submetido à validação de conteúdo por juízes especialistas. Utilizou-se o índice de validade de conteúdo (IVC) para calcular o grau de concordância, para análise geral do instrumento e para a validação de cada item. ***Resultados:*** das 24 questões propostas, 22 foram validas e obteve-se IVC de 0,96. ***Conclusão:*** o instrumento demonstrou validade de conteúdo. ***Descritores:*** Neurocirurgia; Infecção da Ferida Operatória; Serviço de Controle de Infecção Hospitalar.

RESUMEN

Objetivo: validar un instrumento para el control y la prevención de la infección del sitio quirúrgico en neurocirugía destinado a direccionar las acciones de Control de Infección Hospitalaria (CCIH). ***Método:*** estudio de metodológico, con enfoque cuantitativo. Después de revisión Integrativa, se elaboró un instrumento de verificación sub-dividido en acciones pre, trans y post-operatórias. Esto fue sometido a validación de contenido por jueces expertos. Se utilizó el índice de validez de contenido (IVC) para calcular el grado de acuerdo, para el análisis general del instrumento y para la validación de cada elemento. ***Resultados:*** de las 24 cuestiones propuestas, 22 temas eran válidos y se obtuvo IVC de 0.96. ***Conclusión***: el instrumento demostró la validez de contenido. ***Descriptores:*** Neurocirurgia; Infeccion da Herida Operatória; Servicios de Control de Infección Hospitalaria.

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INTRODUCTION

Surgical Site Infections (SSIs) are infections that occur at the site of the surgical procedure and can occur in the superficial or deep layers of the incision, organs or space that has been manipulated or traumatized, such as the peritoneal space, pleural space, mediastinum, or joint space.[1]

International data shows that SSI contributes to about 15% of all healthcare-related infections and about 37% of surgical hospital-acquired infections.[2-3] Two-thirds of surgical site infections are incisional and one-third, confined to organic space. In Western countries, the frequency of such infections is 15-20% of all cases, with an incidence of 2-15% in general surgery. In the USA, at least 780,000 surgical site infections occur each year.[2,4]

Some surgical modalities have few extrinsic risks for ISC acquisition in the condition of "clean" surgeries, but, with great potential for serious complications if it occured. However, these extrinsic factors for SSI acquisition can be easily neglected, if there are failures in certain processes, which exposes patients unnecessarily to this risk. As an example, we can mention the neurosurgery that was the focus of this study.

Infections in neurosurgery are serious complications, which directly affect the patient's prognosis, with high lethality and large number of sequelae among the survivors. It is a subject that has been extensively explored and studied, despite the low absolute prevalence of SSI (1% to 11%), since they are associated with high morbidity and lethality.[5-6] However, it is known that they can be avoided with good practice and active surveillance measures, the latter being a role to be played by the Hospital Infection Control Commission (HICC).[6]

The definitions of surgical procedures, infection and indicators form the basis for the work of HICC. The uniform use of definitions, procedures and criteria to diagnose an infection in a harmonized way, allow effective and reliable surveillance, allowing the comparison between the data and the correct performance of the commission. Otherwise, the data can be misinterpreted. In addition, it is incumbent upon HICC to standardize and implement measures, as well as to conduct process monitoring to reduce the risks of avoidable adverse events, such as SAIs.

There is practically a current consensus on the need for new practices that result in indicators and rates that perform not only epidemiological surveillance but also assess the quality of infection control practices in care. One way to assess quality in care practices is to construct instruments for checking the so-called process and structure vigilances. These include the verification of desirable items, whether or not they are in compliance to prevent a certain infection, measured continuously or periodically, so that deficiencies occur in certain areas of the assistance or structures, favoring the best action of the HICC. These instruments also help in the measurement of changes in the care area, because they can show the reality to those who are not included in it, like the managers and managers of the institutions.[1]

In order to obtain reliable data regarding ISC, it is necessary to obtain rates and comparison of these, surveillance and intervention based on the same surgical specialty. It is possible to affirm that the surgical procedures of different specialties cannot be compared, since the predisposing factors for SSI in the different types of surgeries differ a lot.

Due to the need to obtain a specific instrument for the surveillance of structures and processes that interfere in the risk of ISC acquisition in neurosurgery, an instrument was elaborated by the authors. Its construction was based on the identification of the actions with the greatest impact to control these infections based on the current literature, verified through an integrative review carried out in the main databases. In the case of a new instrument, the need for validation was imposed so that it could be applied safely.

Faced with this problem, this objective study:

- Validates an instrument for the control and prevention of surgical site infection in neurosurgery intended to direct the actions of the Hospital Infection Control Commission (HICC).

METHOD

Methodological study, with quantitative approach. An instrument was elaborated by the authors after an integrative review in the main data bases with the following questioning: << What are the most relevant actions in the control and reduction of surgical site infections in neurosurgery, subject to HICC intervention? >. From this search and after analysis, three categories emerged that were used to delimit subjects-focus in the instrument, namely: Preoperative actions, intraoperative actions and postoperative actions, therefore, the instrument in its first version, which was submitted to validation, was composed of items related to the three categories found in

the integrative review, with a total of 24 items to be marked as "adequate" or "not appropriate" to face-to-face observation or to medical records. Patient identification data and the final outcome of SSI, discharge or death, as well as definition of terms were also present.

The group of evaluators was chosen considering their performance in the stages of surgical treatment. Thus, in order to validate the content regarding the information about the preoperative preparation, the nurses of the surgical units who performed or supervised these procedures were sought. The expert judges, with regard to the content of the intraoperative information were the neurosurgeons, whose knowledge and performance endorse their analysis about the operative moment itself. In the same logic, the nurses of the Intensive Care Center (ICU), who provide care to these patients in the postoperative period, and have expertise in the procedures performed during this period, were selected to answer the validation instrument about the postoperative period; the HICC members were included, as part of the group of specialist judges, who were willing to validate it with regard to the adequacy of the instrument regarding its use for surveillance Of ISC in neurosurgery.

Each group of participants performed the evaluation of the items of the instrument related to their practice, with the exception of the group of judges of the HICC professionals, who evaluated all the items. Thus, the panel of judges-specialists was composed of six nurses from the surgical clinics, five neurosurgeons, eight nurses from the ICU and five members from the HICC.

After the selection of the expert judges, according to pre-established criteria, the data collection was started, which was carried out between March and October 2015.

In this study, the Validity of Content method was used by the judgment of specialists, referring to the consistency and value of each item to evaluate the practices that are aimed at the control of ISC in neurosurgery.[7-8]

To obtain the consensus of the experts, a questionnaire was used with a Likert scale of four points. The Likert Scale is a non-comparative scale, where items related to the evaluator's opinion are obtained. When it counts on four points, the evaluators classified the questions as: 1 = Not clear, 2 = Unclear, 3 = Clear, 4 = Very clear.[9] Subsequently, the analysis was used with the calculation of Content Validity Index (CVI) to effectively validate the instrument.[10]

The following criteria were considered for acceptable agreement among specialists: in groups of up to five participants, all should agree, and in the case of six or more participants, the agreement should have, a Content Validity Index rate greater than 0,78. The score of the index is calculated by means of the sum of agreement of the items that were marked by "3" and "4". Items that received the score "1" and "2" were deleted.[7-8,10-1]

The items were evaluated separately for the proportion of agreement among the specialists, using the average of the values of each question divided by the number of items considered in the evaluation. This calculation can be expressed by the formula: CVI = number of answers "3" or "4" / total number of answers.[7-8,10-1]

For the complete instrument, the Content Validity Index by Scale (CVIS) was calculated, which brings the proportion of the items with score "3" and "4" by all the evaluators involved. To verify the validity of new instruments, as in this research, minimum agreement should be 0.80 to 0.90.[7-8] The results were entered and analyzed in Microsoft Excel 2010 program worksheet.

Participants, were guaranteed confidentiality and non-use of information to the detriment of individuals or the institution. That is why they were identified by E1, E2 and, so on. The research was approved by the Research Ethics Committee of the Hospital Universitário Antonio Pedro, on 08/08/2014, under the opinion no. 725.095, registration CAAE: 31289314.0.0000.5243, according to resolution 466/2012 of the National Health Council.

As described, the HICC professionals participated in the validation of all items: the nurses from the surgical clinic participated in the validation of the first part, which refers to the preoperative period; the neurosurgeons validated the questions regarding the trans operative and the ICU nurses, validated the questions about the postoperative. Therefore, the total number of participants for each subgroup of the instrument was:

-11 professionals for questions related to the preoperative (questions 1 to 4);

-10 professionals for intraoperative issues (questions 5 to 19) and

-13 professionals for questions related to the postoperative (questions 20 to 24).

There was high agreement among the experts regarding the individualized evaluation of the items that make up the instrument. Of the 24 items, 17 obtained maximum agreement, with CVI of 1.00.

Items 5, 7, 21 and 23 obtained CVI between 0.85 and 0.90 concordance, values considered adequate for validation. Regarding items 21 and 24, which refer to the observation of the dressing cover in the postoperative period, two nurses made observations in the form field for the suggestions. Both referred to the need to observe the execution of the dressing technique and not only the observation of the aspect of the dressing after its execution.

Items 1 and 4 did not obtain agreement from the expert judges, with CVI of 0.45 and 0.73 respectively and, therefore, were eliminated from the final version of the instrument.

It can be assumed that the relative homogeneity observed in the scores, both for the tendency to approve the questions and for the contrary, is due to the fact that specialists have considerable experience in the area sought, since these are practical procedures that are easily identifiable in their own daily life. All this data are shown in table 1.

Table 1 - Distribution of items classified in 3 or 4 in a four point Likert Scale among 24 specialists - Niterói (RJ), 2016.

		CCIH						Nurses of the surgical clinic					Neurosurgeons					CTI Nurses										
	Item	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E18	E20	E21	E22	E23	E24	Total	Agreement	IVC
PRE-OP	1	X	**	X	**	X	**	**	X	**	X	**														11	5	0,45
	2	X	X	X	X	X	X	**	X	**	X	X														11	9	0,82
	3	X	X	X	X	X	X	X	X	X	X	X														11	11	1,00
	4	X	X	X	X	X	X	**	X	**	**	X														11	8	0,72
INTRAOPERATORY	5	X	X	X	X	X							X	X	**	X	X									10	9	0,90
	6	X	X	X	X	X							X	X	**	X	X									10	9	0.90
	7	X	X	X	X	X							X	X	**	X	X									10	9	0,90
	8	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	9	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	10	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	11	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	12	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	13	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	14	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	15	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	16	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	17	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	18	X	X	X	X	X							X	X	X	X	X									10	10	1,00
	19	X	X	X	X	X							X	X	X	X	X									10	10	1,00
POST-OP	20	X	X	X	X	X												X	X	X	X	X	X	X	X	13	13	1,00
	21	X	X	X	X	X												X	**	X	X	**	X	X	X	13	11	0,85
	22	X	X	X	X	X												X	X	X	X	X	X	X	X	13	13	1,00
	23	X	X	X	X	X												X	**	X	X	**	X	X	X	13	11	0,85
	24	X	X	X	X	X												X	X	X	X	X	X	X	X	13	13	1,00
																										IVCE= 0,96		

IVC = Content Validity Index
IVCE = Scale Content Validity Index

It can be verified that the CVIS found in this study was 0.96 and thus, it can be verified that the instrument showed high agreement, approving its applicability in practice. The final model of the instrument is shown in figure 1.

HOSPITAL INFECTION CONTROL COMMITTEE
SURGERY SURVEILLANCE - SURGICAL CENTER INFECTION SURVEILLANCE (ISC)
I) General Information

Name_____ Registration_____ Age_____
Hospitalization date _____ Surgery Date _____ ASA _____
Diagnosis_____
Surgery _____ Classification: L ( ) PC ( ) C ( ) I ( )
Team: Surgery _____
Assistant 1 _____
Assistant 2 _____
Anesthetist _____

Devices:
DVE: S ( ) N ( ) Removal Date _____
Drains: S ( ) N ( ) Removal Date _____
DVP: S ( ) N ( )
II) Preoperative information:

Direct observation	Adequate	Inadequate	Not Observed
1- Properative Bath (time)			

III) Intraoperative information

Direct Observation	Adequate	Inadequate	Not Observed
2- Tricotomy (method)			
3- Antibiotic prophylaxis (time)			
4- Antibiotic prophylaxis (drug choice)			
5- Antibiotic prophylaxis (peal)			
6- Antisepsis of the hands (time)			
7- Antisepsis of the hands (method / technique)			
8- Antisepsis of the operative field (method)			
9- Antisepsis of the operative field (technique)			
10- Antisepsis of the operative field (time)			
11- Antisepsis of the operative field (solution)			
12- Inspection of surgical boxes			
13- Circulating exclusive for the room			
14- Room Temperature			
15- Paramentation of the surgeon and assistants			
16- Use of adornments by the team			
17- Maintenance of northerapy of the patient			

IV) Post operative information:

Direct Observation	Adequate	Inadequate	Not Observed
18- Antibioticoprofilaxia (time ≤ 24h)			
19- Dressing 2nd day (coverage)			
20- Dressing 2nd day (Nursing Register)			
21- Dressing 4th day (coverage)			
22- Dressing 4th day (Nursing Register)			

V) Surgical Site Infection:

N ( ) Y ( ) Date_____
Microorganism _____ Material_____
Classification of ISC:
1) Incisional / Surface
2) Intracranial Infection: ( ) Brain abscess
( ) Subdural or epidural infection ( ) Encephalitis
3) Meningitis or ventriculitis
4) Spinal abscess without meningitis
VI) Outcome:
Discharge ( ) Date _____
Death ( ) Date _____ Related to ISC Y ( ) N ( )

Responsible for completing _____
VII) Definitions of criteria for evaluation and source of information:

Item	Source of Information	Criteria for evaluation
1. Properative Bath (time)	Inquiry with staff or patient	Consider adequate bathing performed in the morning of the day of surgery with chlorhexidine degermante 2%.
2. Tricotomy (method)	Direct observation or team inquiry	Consider suitable if done with trimmer or scissors.
3. Antibiotic prophylaxis (time)	Evaluation of the medical record or face-to-face analysis	Consider appropriate if the antibiotic has been given up to 1h before surgery.
4. Antibiotic prophylaxis (drug choice) 5. Antibiotic prophylaxis (peal)	Evaluation of the medical record or face-to-face analysis	Consider appropriate if one of the following schemes is used: 1-Cefazolin 1 - 2g in anesthetic induction, followed by 1g 4 / 4h during surgeries with time greater than 240 min, 1g IV 8 / 8h

		until completing 24 hours. 2-Cefuroxime 1.5g IV in anesthetic induction and 750 mg IV 4 / 4h during surgeries with time greater than 240 min, 750mg IV 8 / 8h until completing 24 hours. For allergy to beta-lactams or colonization by MRSA: Vancomycin 1g single dose 120 min before surgery.
6. Antisepsis of the hands (time)	Direct Observation	Consider appropriate when
7. Antisepsis of the hands (method / technique)	Direct Observation	Consider appropriate when using 2% chlorhexidine (using brushes or not), using a suitable technique, lasting from three to five minutes.
8. Antisepsis of the operative field (method)	Direct Observation	Consider appropriate when movements are made from the place where the incision will be to the periphery. Three applications of the antiseptic should be performed.
9. Antisepsis of the operative field (technique)	Direct Observation	Adequate when using aseptic technique, with sterile instruments and sterile gloves.
10. Antisepsis of the operative field (time)	Direct Observation	Consider appropriate when three applications of the antiseptic are carried out, taking into account the time of action of chlorhexidine, which is two min.
11. Antisepsis of the operative field (solution)	Direct Observation	Consider appropriate when chlorhexidine solution is used, followed by alcoholic chlorhexidine.
12. Inspection of surgical boxes	Direct Observation or medical records analysis	Consider appropriate when the pointer indicators are attached to the chart.
13. Circulating exclusive for the room	Direct Observation	Consider suitable if there is a circulating to the operating room.
14. Room Temperature	Direct observation or team record	Consider suitable if the temperature is between 18 and 22 o C.
15. Paramentation of the surgeon and assistants	Direct Observation	Consider appropriate if the team is wearing gloves and sterile cloaks, cap and mascara covering nose and mouth.
16. Use of adornments by the team	Direct Observation	Consider it appropriate if the team of surgeons and anesthetists are unadorned in hands and arms, earrings and necklaces.
17. Maintenance of northerapy of the patient	Direct Observation or medical records analysis	Consider appropriate if measures are used to warm the patient, such as thermal blankets or blankets and infusion of heated intravenous solutions.
18. Antibioticoprofilaxia (time ≤ 24h)	Medical records analysis	Consider suitable patients with antibiotic prescription ≤ 24h.
19. Dressing 2nd day (coverage)	Direct Observation	Consider appropriate if cover has been changed, cleaned and dried.
20. Dressing 2nd day (Nursing Register)	Medical records analysis	Consider appropriate if there is record as to the appearance of the wound and drains.
21. Dressing 4th day (coverage)	Direct Observation	Consider appropriate if cover has been changed, cleaned

		and dried.
22. Dressing 4th day (Nursing Register)	Medical records analysis	Consider appropriate if there is record as to the appearance of the wound and drains.

Figure 1: Instrument validated version. Niterói (RJ), 2016.

DISCUSSION

The application of the Content Validity Index (CVI) for each item validated 22 out of the 24 proposed items. The minimum rate of 0.78 was used as a parameter to maintain the item in the validated version of the instrument. After these two items were removed, the CVIS calculation was performed and the value found was 0.96, which gives validity to the contents of the instrument.

Some validation studies in different contexts and with a varied number of participants obtained CVI values of 0.96, 0.86, 0.92 and 0.77[10,11-4] and were considered valid, and, therefore, similar values to those found in the present study.

For better understanding, the following discussion was categorized according to the subtopics found in the instrument.

Validation of preoperative items

In the analysis of the items with lower level of consensus, it can be verified that, both the trichotomy and the hygiene of the scalp were points of divergence among the professionals. These are also divergent points in the literature as to whether or not they will be performed (in the case of trichotomy) and when it will occur (both trichotomy, and hygiene of the scalp).[4,15-7]

The hospital neurosurgery routine has different but equally acceptable practices regarding trichotomy in craniotomies. One of the teams routinely has trichotomy, in the operating room, moments before surgery. The other group does not perform trichotomy, in craniotomies, only a small decrease in the hair at the incision site, which is done moments before surgery in the Surgical Center.

Thus, question no.1 of the instrument, which refers to the suitability of the trichotomy as to time, does not apply to the practice of the professionals who performed the validation of this study and the routine of the hospital in question. This item considers it to be adequate when the trichotomy is performed up to two hours before the procedure, however, the trichotomy when performed in this hospital does not occur in the ward but in the Surgical Center. Soon, this item was removed from the final instrument.

It should be noted that the hair removal procedure, when performed, should be done in a place outside the room where the surgery will take place, as loose hairs can potentially contaminate the surgical site and sterile field.[18] This instrument did not include verification of it, however, an item may be added if the proposed instrument is subsequently submitted to other levels of validation or when applied in practice.

Item # 2 also refers to the trichotomy, but this refers to the method used (scissors, trichotomizer or blade). According to the practice described above, we conclude that this item should be reallocated next to the items verified in the Surgical Center, because this is the place where this action occurs. Then, item # 2 became the first item of observations made in the "trans-operative" in the final instrument, to facilitate observation and checking for whoever uses it.

The use of antiseptics in the preoperative bath is clearly recommended in the literature, when dealing with large surgeries, such as neurosurgeries.[17-20]

The recommendations include not only body hygiene, but also scalp and nail hygiene, highlighting the need to "pay particular attention to head washing in cranioencephalic surgeries"[18]. However, scalp washing is controversial as it brings controversies, however, it may have undesirable effects when they are not very dry, causing damages related to the electric current of the scalpel. This was the justification reported by three expert judges for the validation of this item, believing that the execution of this procedure could entail more risks than benefits. According to the report of one of these expert judges, written in the field for "suggestions", the hospitalization of these patients often occurs the day before the procedure, which makes it impossible to totally dry the hair in the case of women.

Thus, item # 4 was withdrawn from the instrument because it did not obtain agreement among the specialists. However, given the recommendations on this practice and benefits in the reduction of the local microbiota and possible decrease in SSI, this issue can be resumed with the HFL neurosurgery service. Routine implantation for outpatient orientation of these patients may be discussed, including guidelines for prior

hygiene of the scalp and use of antiseptic days prior to home surgery. In this case, this extremely important issue for the prevention of SSI in neurosurgery may be later included and validated in the instrument. Finally, the item kept in the preoperative evaluation was number 3, which evaluates the performance of the bath with chlorhexidine degermante to 2%, with unanimous agreement among the specialists, corroborating the guidelines found in the literature.[17-8,20]

♦ Validation of intraoperative items

Intraoperative issues were fully concordant in 12 of the 15 proposed items, which reflects the consensus in the literature on the evaluated items. Two items did not obtain complete agreement, although validated by the CVI.

The items that did not obtain total agreement (items 5, 6 and 7) refer to antibiotic prophylaxis, as well as their adequacy over the time of administration before surgery, drug choice and peal, respectively. In items 5 and 7, the time required to reach the appropriate serum level for patient protection regarding infections was considered, considering the pharmacodynamic and pharmacokinetic characteristics of the drug. In the instrument proposed for validation, the time of administration before surgery and the choice of drug based on drugs normally used for these surgeries were considered adequate. These drugs are Cefazolin and Cefuroxine. However, the judge who did not consider these three questions validated and suggested the inclusion of drugs used in the case of patients allergic to these substances, or patients known to be resistant to these substances, such as the example of resistant oxacillin, *S. aureus* (MRSA). These considerations were extremely pertinent considering the prevalence of this germ in SSI in neurosurgery, as already discussed in the present study.[16] Vancomycin was therefore included with its dosage, time of administration, and referred to in the Criteria Definitions of the final instrument.

♦ Validation of post-operative items

The nursing diagnosis of "risk of infection" already in the immediate postoperative period is reported as one of the five most frequent nursing diagnoses.[21] However, some disagreements were evidenced in the validation of items related to the postoperative period. The disagreements found were related to the evaluation questions of the dressing cover in the operative wound. In the field of the validation form where there was room for suggestions, these were on the direct observation of the dressing execution and not only on the coverage aspect and the nurse's report on the dressing performed. Even with the disagreements, these items obtained acceptable CVI values to be maintained in the instrument.

In spite of the suggestions, the questions were not modified, since the original intention is the analysis of the maintenance conditions of the dressing, it's a possible source of contamination and risk for SSI, and not the performance of the professionals performing the care. That is: the observation made is to verify the maintenance of the dressing and not the performance of the professionals. It is considered that this form of evaluation is more agile to detect problems in the processes that can determine or contribute to SSI, obtaining a "cut" of the situation in a given period of the assistance. On the other hand, the direct observation of the procedure would imply the demand of time and professionals of the HICC, since it would be necessary to be available for the moment of the dressing. It is also emphasized that if, the observations were made in this way, there would still be a possibility of bias in the performance of the observed professionals when knowing that they would be observed. It is clear, however, that this evaluation allows, indirectly, the evaluation of the technical capacity of the care of the professionals with the operative wound and evaluation of the necessity or not of training on this aspect. Criteria definitions of these items have been improved so there is no doubt about what is being evaluated.

CONCLUSION

This study evidenced the challenge of elaborating and validating a screening instrument for evaluation and follow-up of patients submitted to neurosurgery with a view to the prevention of ISC for the use of HICC professionals. This challenge was evident both in the elaboration of the instrument, due to the complexity of the theme, and in the validation by the specialists, observed by the diversity of the analysis made by the participants. Of the 24 proposed items, 22 were validated as to their content, and five items were modified in their Criteria Definitions.

Regarding the two items that were not validated, they were both relevant to the literature and of recognized importance, but, could not be applied in view of the routines of the reality in question. As a consequence, it is

concluded that the relevance of a given action is not a sufficient condition to be included in measures for its evaluation if local practice does not allow its correct application. However, one of the excluded items, which concerns the hygiene of the scalp, will be the object of discussion for later validation, given its importance in the control of ISC in neurosurgery.

The validated items obviously do not exhaust all practices pertinent to ISC control in neurosurgery, but it is directed to those fundamental, according to scientific literature and broad consensus in the practice of care. The use of this instrument, together with other control measures normally performed by HICC members, may provide conditions for the development of new ways of evaluating and monitoring the quality of general practices for infection control, contributing to the formulation of management systems in health institutions themselves. Although validated, the instrument of verification, will need to be adjusted as to the form of data collection, definition of the sample and specificity of care of each institution. In this way, it will guarantee the reliability of the results.

It is also worth noting that, in this study, it was intended to obtain the opinion of different groups of professionals, such as nurses, neurosurgeons and HICC professionals, since SSI can occur due to several factors and at various moments in the patient's pathway in the disease process and treatment. Therefore, it was considered imperative that the opinion and experience of the various groups of professionals involved in this process be included in the validation of this instrument.

The instrument demonstrated content validity, as expressed by the experts through their responses. However, it still needs to undergo further tests to evaluate other psychometric properties, including, internal consistency and reliability.

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