RESEARCH

Revista Brasileira de Enfermagem
REBEn

Risk classification in pediatrics: development and validation of a guide for nurses

Classificação de risco em pediatria: construção e validação de um guia para enfermeiros

Clasificación de riesgo en pediatría: construcción y validación de un guía para enfermeras

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How to cite this article:
Veras JEGLF, Joventino ES, Coutinho JFV, Lima FET, Rodrigues AP, Ximenes LB.
Risk classification in pediatrics: development and validation of a guide for nurses. Rev Bras Enferm. 2015;68(5):630-9.
DOI: http://dx.doi.org/10.1590/0034-7167.2015680521i

Submission: 02-07-2015 **Approval:** 05-21-2015

ABSTRACT

Objective: to develop and validate a short guide for the protocol to user embracement with risk classification in pediatrics. **Method:** methodological study developed in two stages: development of the guide, and face and content validation. The development involved the stratification of the protocol contents into five risk indicators according to the level of complexity; subsequently it was submitted to validation by nine experts divided in two groups: professors who were also researchers, and nurses. **Results:** in the face validation the experts considered the 25 items of the guide clear and understandable, with agreement levels above 70%. In the content validation, 17 (68%) items were considered relevant by 88.9% of the experts. The eight items considered irrelevant were changed according to suggestions of the experts, yielding an overall content validity index of 0.98. **Conclusion:** the study resulted in a guide for the classification of risks in pediatrics that is valid to assess children in emergency services.

Key words: Pediatric Nursing; Nursing Assessment; User embracement; Triage. Validation Studies.

RESUMO

Objetivo: construir e validar um guia abreviado do protocolo de Acolhimento com Classificação de Risco em pediatria. **Método**: estudo metodológico, desenvolvido em duas etapas: elaboração do guia e validação aparente e de conteúdo. A elaboração baseou-se na estratificação do conteúdo do protocolo em cinco indicadores de risco, conforme a complexidade, sendo submetido à validação por nove juízes divididos em dois grupos: docentes-pesquisadores e enfermeiros. **Resultados**: na validação aparente, os juízes consideraram os 25 itens do guia claros e compreensíveis com concordância acima de 70%. Na validação de conteúdo, 17 (68%) itens foram considerados relevantes por 88,9% dos juízes. Os oito itens considerados irrelevantes foram alterados conforme sugestões dos juízes, alcançando-se o Índice de Validade de Conteúdo global de 0,98. **Conclusão**: o estudo resultou num guia de classificação de risco pediátrico válido para avaliar a criança nos serviços de emergência.

Descritores: Enfermagem Pediátrica; Avaliação em Enfermagem; Acolhimento; Triagem; Estudos de Validação.

RESUMEN

Objetivo: construir y validar una guía abreviada del protocolo de Acogimiento con Clasificación de Riesgo en pediatría. **Método**: estudio metodológico, desarrollado en dos etapas: elaboración de la guía y validación aparente y de contenido. La elaboración se basó en la estratificación del contenido del protocolo en cinco indicadores de riesgo, conforme la complejidad, siendo sometido a la validación por nueve jueces divididos en dos grupos: docentes/investigadores y enfermeros. **Resultados**: en la validación aparente, los jueces consideraron los 25 ítems de la guía claros y comprensibles por la concordancia más de 70%. En la validación de contenido, 17 (68%) ítems fueron considerados relevantes por 88,9% de los jueces. Los ocho ítems considerados irrelevantes fueron alterados conforme sugestiones de los jueces, alcanzándose el Índice de Validad de Contenido global de 0,98. **Conclusión**: Se obtuvo una guía de clasificación de riesgo pediátrico válido para evaluar el niño en los servicios de emergencia.

Palabras clave: Enfermería Pediátrica; Evaluación en Enfermería; Acogimiento; Triaje; Estudios de Validación.

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INTRODUCTION

Inadequacy of the demand for care in pediatric emergency services is a reality in many countries and in almost all Brazilian states. Studies shows that the number of patients presenting health problems that could have been solved in the basic care network ranges between 46.9% and 89%[1-2].

Aiming to ensure better quality of care in emergency hospitals, the Ministry of Health, through the National Humanization Policy, implemented the User Embracement with Risk Classification (ACCR - *Acolhimento com Classificação de Risco*) strategy, in which nurses embrace patients by means of qualified listening[3-5], identifying urgencies and emergencies based on the assessment of physiological parameters and warning signs set by protocols[3] and prioritizing the most severe cases[1].

In this context, the performance of nurses cannot be associated only with intuition and clinical experience, but also with valid and relevant information based on research. Other components such as context, environment, available resources, conditions and preferences of patients should also be considered as important indicators for quality user embracement with risk classification[6].

However, studies have identified the use of subjective criteria, experience and intuition in such classification by risk[7], as well as flaws in the application of non-validated triage instruments[8]. Therefore, ACCR protocols are being developed and implemented with the support of the Ministry of Health, including the Odilon Beherns Hospital in Belo Horizonte, Minas Gerais, and the ACCR protocol in Pediatrics in Fortaleza, Ceará[9].

The ACCR protocol in pediatrics of Fortaleza consists of 17 pages. However, the hostile environment of emergencies may make it difficult to search the extensive protocols during the assessment of children, increasing the chance of failures in the classification of risks by the nurses working in the embracement[2]. Thus, it is necessary to develop guides to enable instantaneous visualization of the signs and symptoms according to the main complaint, standardizing the approach to the patient.

The following question was used in the development of this research: do the development and validation of a guide for risk classification in pediatrics ensure a reliable instrument that is valid to be used in the ACCR in pediatric emergency? Its objective was to develop and validate the face and content of a risk classification guide based on the ACCR protocol in pediatrics.

METHOD

A methodological study was developed in two stages: bibliographic survey for the development of the guide based on the ACCR protocol in pediatrics[9], with subsequent face and content validation of the material by experts.

The first stage of the study was developed between January and May 2011 with a bibliographic survey in the databases Latin American and Caribbean Center on Health Sciences Information (LILACS), National Library of Medicine (PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Scopus using the MeSH Terms "triage", "pediatrics" and "scale" in order to theoretically conceptualize the construct "risk classification for children" and identify risk indicators. No time frame was adopted and six internationally validated protocols and triage scales were included[10-15], as well as two concise measurement instruments[16-17] that supported this study.

The risk classification guide was developed based on the bibliographic survey and the ACCR protocol in pediatrics with the risk indicators airways/breathing, circulatory system/hemodynamics, level of consciousness, pain and hydration/elimination, in which the clinical conditions of the protocol were distributed and organized in descending order according to level of priority in the colors red, orange, yellow, green and blue according to the proposal of the ACCR strategy[9].

The face and content validation stage of the guide took place between June and September 2011 through an analysis by content judges (experienced in validation studies in the area of children's health) and technicians (clinically experienced in risk classification in pediatrics).

Content validity is based on the opinion of experts in the content domain area, who analyze the items and determine their relevance, comprehensiveness, representativeness and whether or not the content is related to what is desired to be measured[18]. Face validity consists of the judgment according to clarity, understanding and readability of the content of the items, as well as the form of introduction of the instrument, verifying if the items are understandable to the target population of the instrument[18].

The guide was evaluated by content experts, who were both professors and researchers, with experience in the development and validation of instruments and by technical experts, nurses clinically experienced in risk classification in pediatric emergency (target audience to which the instrument was developed).

The selection of the content experts occurred through non-probabilistic intentional sampling based on a search by subject in the Lattes Platform. A total of 23 researchers were found with 70% or more publications on the subject. Ten experts were selected for achieving a minimum score of five points according to the criteria of the expert classification system[19].

The technical experts should have proven expertise in ACCR in pediatrics, pediatric emergency nursing and care of patients in pediatric intensive care unit or child and adolescent health care. The snowball sampling criterion was used to conduct the selection as it is a non-probabilistic and intentional strategy that considers social networks to locate the sampling[18]. Of the 13 nurses found living in Fortaleza, nine were selected as they met the criteria of the experiment set according to requirements of the expert classification system adapted to this research[19].

For the analysis of the guide, the 19 selected individuals received (by mail or email) the following instruments: a letter of invitation, a free and informed consent form, the experts' characterization questionnaire, a checklist for the face

and content validation, and a copy of the ACCR Protocol in Pediatrics of Fortaleza[9] for consultation. However, only four content experts and five technical experts returned the instrument duly filled, totaling a sample of nine experts and meeting the recommendations of the literature[20]. The instruments were returned to the researcher occurred by mail or e-mail.

The aspects clarity and understanding (confusing, unclear, or clear), and relevance of the items to the risk classification and indicator (no, partially, or yes) were considered for control and organization of the face validation stage of each item, considering a level of agreement of 70% among the experts. Regarding content validity, the relevance (no, partially, or yes) and the level of relevance (irrelevant, unimportant, really important, or very important) were evaluated. Finally, a space intended for comments and suggestions by the experts was included.

The content of the guide was validated using the content validity index (CVI), which was calculated based on three mathematical equations: the S-CVI/AVE (mean of I-CVIs for each item of the scale), S-CVI/UA (proportion of items in a scale that reaches a relevant rating of 3 or 4 for all experts), and the I-CVI (content validity of the individual items: proportion of experts that give the item the relevant rating of 3 or 4). Items with a CVI equal or greater than 0.80 are considered relevant[21]. Data were processed using the Statistical Package for the Social Sciences (SPSS), version 17.0, and analyzed by means of descriptive statistics with relative and absolute frequencies.

The study was approved by the Research Ethics Committee of the Federal University of Ceará (Brazil) under the protocol 110/2011. All ethical principles for research involving human subjects specified in Resolution 196 of 1996 of the National Health Council were respected. In this sense, the Free and Informed Consent Form was signed by the experts and sent to the researcher along with the instruments.

RESULTS

The first version of the short guide submitted to validation by the experts was introduced in a material with a 35-cell table, divided into five columns and seven rows. The content of the short guide was taken from the ACCR protocol in pediatrics. The first row presented the risk indicators classified in Airways/Breathing, Circulation/Hemodynamics, Level of Consciousness, Pain, Elimination/Hydration.

These five risk indicators were distributed in the columns that were divided in order to list the main complaints (symptoms) and objective signs. Each risk indicator indicates the level of complexity of the patient in descending order of care priority in the colors red (level of complexity and priority I), orange (level of complexity and priority II), yellow (level of complexity and priority III), green (level of complexity and priority IV), and blue (level of complexity and priority V), as shown in Figure 1.

1st line: Risk indicators.This line is divided into five columns. The first column represents Airway/Breathing, the second column represents Circulation/Hemodynamics, the third represents Level of Consciousness, the fourth Pain, and the fifth Elimination/Hydratation.

Airways/Breathing	Circulation/ Hemodynamics	Level of consciousness	Pain	Elimination/Hydratation

2nd line: Main complaint (Symptoms) and Objective signs. It subdivides each risk indicator into ten columns. The first column represents the "Main Complaint (Symptoms)" and the second column represents the "Objective Signs", as shown below.

Main complaint (Symptoms)	Objective signs	Main complaint (Symptoms)	Objective signs	Main complaint (Symptoms)	Objective signs	Main complaint (Symptoms)	Objective signs	Main complaint (Symptoms)	Objective signs

3rd to 7th lines: These show the content of the clinical conditions in descending level of complexity. It subdivides each risk indicator into two columns, totaling 10 sub-columns, organized in descending level of complexity (priority I, II, III and IV) in the colors red, orange, yellow, green and blue).

Level of complexity– Priority I

Level of complexity– Priority II

Level of complexity– Priority III

Level of complexity– Priority IV

Level of complexity– Priority V

Figure 1 - Proposal for the development of a short guide to the ACCR Protocol in Pediatrics, Nursing Graduate Program, Universidade Federal do Ceará, Brazil, 2011

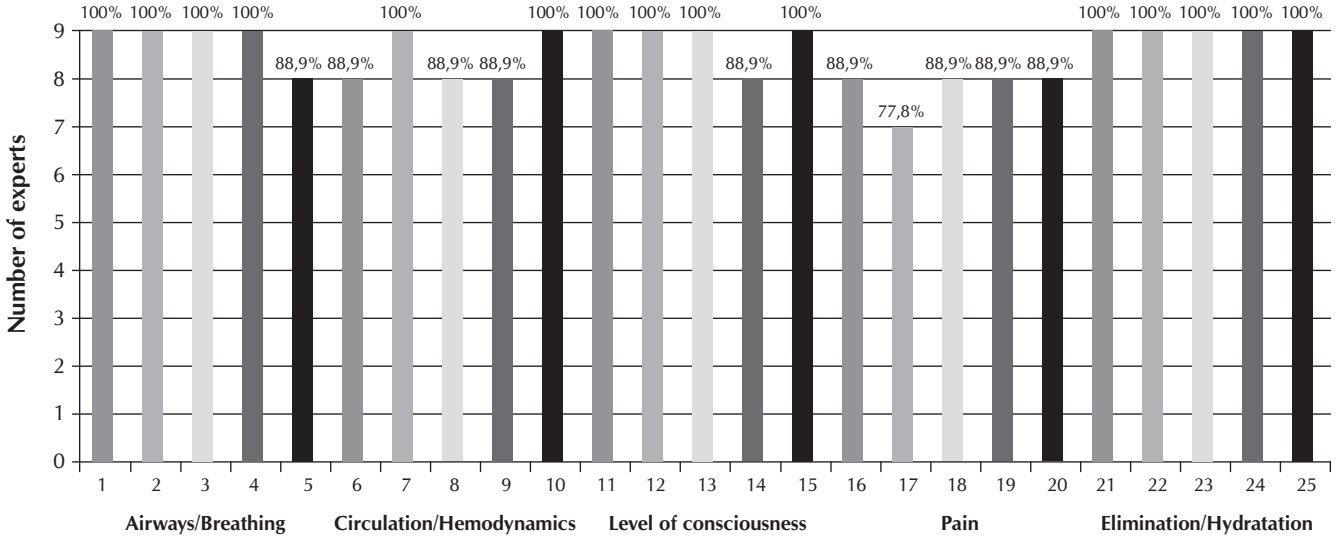

Figure 2 - Distribution of the statements considered clear and understandable by the experts who evaluated the short ACCR guide in pediatrics, Fortaleza, Ceará, Brazil, 2011

Legend:
Items 1,6,11,16 and 21 – red rating;
Items 2,7,12,17 and 22 – orange rating;
Items 3,8,13,18,23 – yellow rating;
Items 4,9,14,19,24 – green rating;
Items 5, 10, 15, 20 and 25 – blue rating.

The content arranged in 5 rows and 5 columns (row 3 to 7) comprised 25 items that characterized the clinical condition of patients between the main complaint (symptoms) and objective signs. For a better understanding, numerical values between 1 and 5 were attributed for the indicator airways/breathing, between 6 and 10 for indicator of circulation/hemodynamics, between 11 and 15 for level of consciousness, between 16 and 20 for the indicator pain and between 21 and 25 for elimination/hydration.

As shown in Figure 1, of the 25 items of the guide, 15 (60%) were considered clear and understandable by all experts (n = 9; 100%), and 9 items (36%) presented rates above 80%. Despite being considered clear and understandable by most of the experts, item 17 (referring to the risk indicator "pain", and related to the risk classification "orange") was the item presenting the highest number of suggestions for content changes and improvement (Figure 2).

The experts evaluated the relevance of the items (main complaints, and signs and symptoms) in relation to the risk classification (red-priority 1; orange-priority 2; yellow-priority 3, green-priority 4, and blue-priority 5). They considered 23 (92%) items as relevant, with a level of agreement above 70%. Other two (8%) items (item 3 - "airways/breathing" in orange and, item 18- "pain" in yellow) presented agreement in relation to relevance by six (66.7%) of the experts.

The guide was also analyzed in relation to adequacy of the risk indicator regarding the content of the main complaints, and signs and symptoms. Considering that the guide featured five risk indicators with five items each (main complaint, and signs and symptoms) and that it was analyzed by nine experts, the answers by the experts could range between 1 and 45.

Four risk indicators (airways/breathing, circulation/hemodynamics, level of consciousness and pain) were considered appropriate to the content of the items (main complaint, and signs and symptoms) with agreement by all experts (n = 9; 100%). One risk indicator (elimination/hydration) presented agreement by all experts for almost all of the items (sum = 44; 97.8%). The findings confirm that the content of the guide is related to the purpose for which it was developed.

With regard to the content validity, relevance of the presence of each item in the guide was observed. The experts considered 17 (68%) items relevant and 8 (32%) irrelevant; therefore items 3, 6, 7, 8, 11, 13, 16 and 18 should be removed. However, it was deemed appropriate to calculate the CVI[21] and it was verified that the I-CVI of the items ranged between 0.88 and 1. In addition, an overall CVI (S-CVI/Ave, S-CVI/UA) of 0.98 was identified (Table 1). However, changes suggested by the experts were performed in some items so they could remain in the guide.

The main suggestions of the experts included changing the title of the columns "Main Complaints (Symptoms)", and "Objective Signs" to "Main Complaint", and "Signs and Symptoms", as well as the alignment between them. In the risk indicator "Airways/Breathing", some experts suggested the insertion of respiratory rate and heart rate values in order to provide a better visualization of these parameters.

In the risk indicator "Circulation/Hemodynamics" it was important to accept the suggestion of the experts to include in the sub-column "Main Complaint" the term "Severe infections, sepsis" as it is a relevant clinical condition for the hemodynamic evaluation of children (item 7 of the guide). In the risk indicator "Level of Consciousness", the cognitive deficit was described as signs and symptoms of the main complaint "Altered mental status" in the item 12; and as suggested by the experts, this was removed from the definitive version of the guide.

BREATHING		CIRCULATION/HEMODYNAMICS		LEVEL OF CONSCIOUSNESS		PAIN		ELIMINATION/HYDRATION	
Main Complaint	Signs and Symptoms	Main Complaint	Signs and Symptoms	Main Complaint	Signs and Symptoms	Main Complaint	Signs and Symptoms	Main Complaint	Signs and Symptoms
Stop code (beep) Respiratory failure	PCR* Imminence of PCR; unresponsive patient; absent/ unstable vital signs Central Cyanosis, FR* altered Extreme dyspnea, SpO2* < 90%, Airway obstruction	Major trauma Shock	Thoracic, abdominal, or head trauma with perforation Hypotension, tachycardia, accentuated pallor, cold skin, sweating, weak pulse Impalpable carotid pulse	Stop code Major trauma Shock ECG between 3 and 8	PCR* Non-responsive Absent vital signs TCE (ECG 3 to 8) Sensory changes associated to signs of shock Unresponsive patient, only responsive to pain Seizure Lethargy – mental confusion Metabolic disorders (hypoglycemia)	Major trauma	Thoracic, abdominal, or head trauma with: severe pain (9 to 10/10)	Severe dehydration (> 6 signs of dehydration)	Lethargy Difficulty to drink Very dry mouth Very sunken eyes Very depressed fontanelle Skinfold dissolves very slowly (>10 sec) Pulse is too weak and capillary refill is too slow (>5 sec)
Dyspnea, Previous asthma, recurrent wheezing Anaphylaxis	Normal vital signs Stridor, Hypersalivation, severe respiratory distress, muscle strain Severe previous asthma Sat O2 < 92% Tight feeling in the throat, laryngeal edema	Severe trauma Hemodynamic compromise Burn Gastrointestinal bleeding, hemoptysis, epistaxis Severe infections, sepsis Altered vital signs with symptoms	Extensive injury with active bleeding Amputation, normal vital signs Pallor, sweating Unexplained tachycardia Dizziness when standing 2nd or 3rd degree burns 10% >SCQ< 25 or in critical areas (face, perineum) or circumferential Voluminous hematemesis Frank hemoptysis Epistaxis with altered PA Unstable vital signs Temperature >38.5ºC, chills Purpuric erythema (meningitis) FR, FC and PAS or PAD <or > according to age T <35ºC or T>40ºC	Altered mental status Head trauma Psychiatric or behavioral disorder Severe alcohol or drug abstinence	Agitation, lethargy Irritability, drowsiness, coma ECG 9 to 13 Loss of consciousness, seizure, mental confusion, Nausea and vomiting Altered behavior Extreme agitation Unconsciousness Seizure, hallucinations, agitation, palpitation	Head trauma Severe trauma Chest pain Visceral-type chest pain Abdominal pain Headache Severe pain	Coma: ECG between 9 and 13, severe headache, neck pain Moderate to severe pain (5 to 8/10) Fracture with deformity or bleeding Amputation, normal vital signs Altered vital signs Associated to sweating, nausea, dyspnea Associations: nausea, vomiting, sweating Severe pain, altered vital signs Severe and uncontrollable Stiff neck Nausea and vomiting Focal neurologic signs (paresis, aphasia) Acute, central (head, chest, abdomen) Dislocation, back pain (traumatic or not), disabling, with reduction of lower limb function	Moderate dehydration WITH vomiting (3 to 6 dehydration signals) Child History of diabetes mellitus	Irritation Excessive thirst Dry mouth Sunken eyes Crying without tears Depressed fontanelle Skinfold dissolves very slowly (>10 sec) Weak and rapid pulse, slow capillary refill (3 to 5 sec) Lethargy Refusal to eat, vomiting and/ or diarrhea with or without fever, with signs of dehydration (sunken eyes, depressed fontanella, oliguria, anuria, over six hours) Signs of dehydration Sweating (hypoglycemia), vomiting, abnormal pulse, Abdominal pain

Continues

Figura 3 (cont.)

BREATHING		CIRCULATION/HEMODYNAMICS		LEVEL OF CONSCIOUSNESS		PAIN		ELIMINATION/HYDRATION	
Main Complaint	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**
Mild to moderate dyspnea Altered vital signs* absence of symptoms	Asthma with dyspnea on exercise Chronic cough Asthma and SpO2 between 92 and 94% 50* < 140ipm, T > 38.5ºC Altered FR	Moderate trauma Burns History of diabetes mellitus Gastrointestinal bleeding Complaints on joints and soft tissues Altered vital signs without symptoms	Normal vital signs Minor injury (small) with compressible bleeding Extensive injury by biting 2nd and 3rd degree burns in non-critical areas (SCQ<10% 1st degree burn > 10% SCQ or non-critical areas, face, perineum, hands or feet 1st degree burns on the face, perineum, hands and feet Glycemia > 300mg/dl or below 50mg/dl No current bleeding (last 24 hours) Normal vital signs Joints or limbs with severe pain, impotence, heat, edema, erythema, fever Cut-contused wound FC<50 or >140ipm, Temperature >38.5ºC FR > 200ipm	Head trauma Seizure Psychiatric or behavioral disorder Mental disability	No loss of consciousness ECG 14 to 15 Nausea and vomiting Normal vital signs Crisis in the last 24 hours or first, but short episode (<5min) Less intense agitation, but conscious Hallucination, disorientation ———	Head trauma Moderate trauma Abdominal pain Pain	Moderate headache No loss of consciousness Nausea and vomiting Thoracic trauma with mild or moderate pain and with no dyspnea Normal vital signs Abdominal distension Urinary retention Prostration Fever Migraine Renal colic	Moderate dehydration WITHOUT vomiting (< 3 signs of dehydration) History of diabetes mellitus	Irritation Excessive thirst Dry mouth Sunken eyes Crying without tears Depressed fontanelle Skinfold dissolves very slowly (>10 sec) Weak and rapid pulse, slow capillary refill (3 to 5 sec) Strong dehydration, vomiting, abdominal pain Glycemia > 300 or <50mgdl

Continues

Figure 3 (cont.)

BREATHING		CIRCULATION/HEMODYNAMICS		LEVEL OF CONSCIOUSNESS		PAIN		ELIMINATION/HYDRATION	
Main Complaint	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**	**Main Complaint**	**Signs and Symptoms**
Flu-like symptoms	Severe sore throat Earache Productive cough Purulent rhinorrhea Temperature between 37.8°C and 38.5°C Myalgia	Minor trauma Fever Burns and wounds	Normal vital signs Non-extensive bite Temperature between 37.8°C and 38.5ºC 1st degree burns <10% SCQ, non-critical area	Head trauma Psychiatric or behavioral disorder Special situations	No loss of consciousness, no vomiting Alert (ECG = 15) Accident occurred more than 6 hours ago Normal vital signs Suicidal thoughts Gesturing, but not agitated No risk to themselves or to others Handicapped	Head trauma Minor trauma Abdominal pain Headache Pain	Low impact, no loss of consciousness Accident occurred more than 6 hours ago and < 10 days Normal vital signs Thoracic with no rib pain or dyspnea Sprains, contusions, torsions (possible fracture) Acute, moderate Absence of prostration Non-sudden, Non-intense, Non-migraine More intense back pain Arthralgia with limitation without phlogiston signs	Vomiting AND diarrhea WITHOUT dehydration	Normal vital signs Wet mucosa Usual diuresis Normal skin turgor Defecation/day < 5 episodes Vomiting/day < 5 episodes
Flu-like symptoms	Coryza Mild complaints Sore throat No respiratory symptoms Normal vital signs	Minor trauma Wounds	Superficial injury Wound not requiring closure Clean, without systemic symptoms of infection Eschars without systemic signs Control of chronic ulcers Suture removal 1st degree burn, small, non-critical areas	Psychiatric disorder	Recurrent chronic depression Social crisis Normal mental status	Minor trauma Abdominal pain Mild to moderate pain	Pain, contusions, strains, myalgia Mild, acute pain (< 4/10) Constipation Normal vital signs Superficial thoracic pain, chronic, worsens with compressions Chronic neck pain, non-traumatic Dysuria	Vomiting OR diarrhea	**WITHOUT dehydration** **Normal mental status** **Normal vital signs**

Figure 3 - Guide for Risk Classification in Pediatrics developed based on the Protocol to User Embracement with Risk Classification in Pediatrics of Fortaleza, Fortaleza, Ceará, Brazil, 2011

Note:
**PCR Cardiac arrest;*
IR: Respiratory failure;
SSVV: Vital signs;
FR: Respiratory rate;
FC: Heart rate;
MMII: Lower limb;
TCE: Traumatic brain injury;
SpO2: Oxygen Saturation;
ECG: Glasgow Coma Scale;
SCQ: Body surface area burned;

Table 1 - Relevance and distribution of the individual content validity index of each item (I-CVI) according to the opinion of the experts, Fortaleza, Ceará, Brazil, 2011

Items of the guide	Relevance n(%)	Level of relevance (I-CVI)
1	9(100)	1
2	8(88.9)	1
3	7(77.8)	1
4	9(100)	1
5	8(88.9)	1
6	6(66.7)	1
7	7(77.8)	1
8	7(77.8)	1
9	9(100)	1
10	8(88.9)	1
11	7(77.8)	1
12	8(88.9)	1
13	7(77.8)	1
14	8(88.9)	1
15	8(88.9)	0.888889
16	7(77.8)	1
17	9(100)	1
18	7(77.8)	0.888889
19	8(88.9)	0.888889
20	8(88.9)	0.888889
21	8(88.9)	1
22	8(88.9)	0.888889
23	8(88.9)	1
24	9(100)	1
25	9(100)	1

In the evaluation of the risk indicator "Pain", the experts considered the pain descriptions "intense, central, and chronic" as being confusing. The clarity of the expression "moderate, acute pain" was also questioned. Changes in the risk indicator "Elimination/Hydration" were suggested in order to better distinguish the priority level between the items 21, 22, 23 and 24. With the changes in the layout and content for adequacy, the latest version of the guide is represented in Figure 3.

DISCUSSION

The evaluation by the experts evidenced a guide for risk classification that is valid with an overall CVI of 0.98[21]. The layout of the guide followed the trend of the instruments available at the website of the Ministry of Health and in the literature. For this purpose, the formatting was adapted to the size of a poster - 460x350mm – with comprehensive language and easy viewing and handling by the professionals[22].

The suggestions of the experts to change the subtitles of the columns to "Main Complaints" and "Signs and Symptoms" confirmed the principles of the ACCR strategy in which the assessment of the patient should focus on the signs and symptoms based on the related main complaint[8]. Some experts requested the inclusion of respiratory and heart rate parameters in the risk indicator Airways/Breathing, but it was decided not to enter these. The suitability as the heart and respiratory rate parameters was included as annex A to ACCR protocol in children which led to the guide[9].

The experts considered relevant the remarks on some aspects of the circulatory status, heart rate and respiratory effort in the assessment of the hemodynamic status of the child. This result confirms the literature as it facilitates the identification of alert signs and the definition of priority levels[9-10,16].

The cognitive deficit was removed from the guide at the suggestion of the experts as they considered it irrelevant in the assessment of health conditions of the child. Agreeing with the analyses of the experts, by comparing the cognitive deficit among students and children after traumatic brain injury a study found evidence against the validity of this criterion when applied to the pediatric population[23]; therefore it is not important in the assessment of children or as a priority level measurement parameter.

Most experts considered the description of the characteristics of the expression "Severe, central, chronic pain" very confusing and requested the inclusion of the terms "normal vital signs" and "scale of pain", since these parameters best viewed in annexes A and C of the protocol[9]. Pain assessment in children should be conducted via the identification of its severity through the use of instruments that reduce the subjectivity of the pain and ensure the accuracy of the information; it should not be based on the opinion of the professional about what the child is experiencing[24].

In relation to the assessment of dehydration, the ACCR protocol in pediatrics does not quantify the signs and symptoms clearly. Studies indicate that the signs of dehydration evolve rapidly and they are not always reliable; full physical exam and evaluation of physiological parameters are required[25]. Thus, the signs and symptoms were quantified in the guide so that the child presenting severe dehydration classified as priority level I should present more than six signs and symptoms; with moderate dehydration, between three and six; and with mild dehydration, less than three signs and symptoms.

As limitation of the study, points to poor adherence of the judges for the validation step, which can be explained by the time required for such work. Recommend new studies that allow check their clinical appropriateness and must be applied by nurses in pediatric emergency research in different scenarios.

CONCLUSION

The present study enabled the development of the Guide for Risk Classification in Pediatrics based on the ACCR protocol with five risk indicators identified by Airways/Breathing, Circulation/Hemodynamics, Level of Consciousness, Pain, and Elimination/Hydration related to physiological functions through main complaints, and signs and symptoms. It presents a significant contribution as it provides an instrument that

accurately assesses children in emergency situations based on scientifically proven actions.

Therefore the instrument meets the purpose for which it was developed and it can be submitted to clinical validation. It may be subsequently used in the everyday life of nursing professionals caring for children for embracement in emergency situations. The use of the guide enables embracement nurses to perform their functions associating theory with clinical practice, and reducing the practice based on the dyad of intuition and experience. However, it should not replace the ACCR protocol in pediatrics; instead, these should be used simultaneously in a complementary manner.

As a limitation of the study, the low adherence of the experts to the validation stage is noteworthy, possibly explained by the time required for this type of work. Further studies are recommended in order to enable the verification of clinical appropriateness, being applied by nurses in pediatric emergencies in different scenarios of investigation.

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