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ORIGINAL ARTICLE

Nursing team knowledge assessment instruments about pressure injury: integrative review

Instrumentos de avaliação do conhecimento da equipe de enfermagem sobre lesão por pressão: revisão integrativa

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ABSTRACT

Objectives: To identify in the scientific literature how the assessment of knowledge of the nursing team about pressure injuries is conducted, which instruments are used, and their psychometric properties.
Methods: Integrative review conducted with 44 scientific articles. The search was conducted between October and December 2021 in the following data sources: BDENF, Cinahl, Lilacs, MEDLINE, Scopus, Google Scholar, and Web of Science, using the strategy in Portuguese: ("lesão por pressão" OR "úlcera por pressão" OR "úlcera de decúbito" OR "escara de decúbito") AND enfermagem AND conhecimento, and, in English, ("pressure ulcer" OR "bed sore" OR "bed sores" OR bedsore OR bedsores) AND nursing AND knowledge. Articles published between 2012 and November 2021 were included, with text available in full, in open access, in English, Portuguese, or Spanish, resulting from original research related to care in the hospital area.
Results: The most used knowledge assessment instrument was the P-PUKT and its versions, used in 50% of the studies, followed by the PUKAT and its versions. Three studies also used instruments constructed and validated by the authors, five qualitative studies, and four studies used non-validated instruments.
Conclusion: Valid instruments to assess knowledge are essential to identify possible failures in patient care. Heterogeneity in the samples and in the classification criteria of the participants' level of knowledge made it impossible to compare the results obtained in the studies, constituting a limitation.

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PALAVRAS-CHAVE

Conhecimento
Estudos de avaliação
Lesão por pressão
Profissionais de
  enfermagem

RESUMO

Objetivos: Identificar na literatura científica como é realizada a avaliação de conhecimento da equipe de enfermagem sobre lesão por pressão, quais instrumentos são utilizados e suas propriedades psicométricas.
Métodos: Revisão integrativa realizada com 44 artigos científicos. A busca foi realizada entre os meses de outubro e dezembro de 2021 nas fontes de dados: BDENF, Cinahl, Lilacs, MEDLINE, Scopus, Google Scholar e Web of Science, utilizando a estratégia em português: ("lesão por pressão" OR "úlcera por pressão" OR "úlcera de decúbito" OR "escara de decúbito") AND enfermagem AND conhecimento, e, em inglês, ("*pressure ulcer*" OR "*bed sore*" OR "*bed sores*" OR *sedsore* OR *bedsores*) AND *nursing* AND *knowledge*. Foram incluídos artigos publicados no período entre 2012 e novembro de 2021 com texto disponível na íntegra, em acesso aberto, nos idiomas inglês, português ou espanhol, resultantes de pesquisas originais relacionadas à assistência na área hospitalar.
Resultados: O instrumento de avaliação do conhecimento mais utilizado foi o P-PUKT e suas versões, utilizado em 50% dos estudos, seguido do PUKAT e suas versões. Três estudos utilizaram instrumentos construídos e validados pelos autores, cinco estudos qualitativos e quatro estudos realizados com instrumentos não validados.
Conclusão: Os instrumentos válidos de avaliação do conhecimento são essenciais para identificação de possíveis falhas na assistência ao paciente. A heterogeneidade nas amostras e nos critérios de classificação do nível de conhecimento dos participantes, impossibilitaram comparar os resultados obtidos nos estudos configurando-se em uma limitação.

INTRODUCTION

Pressure Injury (PI) results from occlusion of blood flow caused by the sustained pressure exerted by a force perpendicular to the skin and underlying tissues, usually at bony prominences along with shear or related to the use of health care devices[1].

The development of PI is an adverse event that increases costs for the health system, prolongs hospital stays and burdening treatments, negatively interferes with the physical, mental and social well-being of the patient and his family, causing discomfort and the risk of developing other complications, favoring patient mortality[2,3].

Despite being predictable injuries and the worldwide incentive to patient safety culture, the occurrence of PIs in healthcare institutions is still worrisome. The lack of knowledge combined with outdated and inadequate practices contribute directly to the persistence of this problem. PIs were the third most common incident, among those listed in the Health-Related Incidents Report of the Brazilian National Health Surveillance Agency (ANVISA), with the first and second most frequent never events, respectively[4,5].

International data show a prevalence in intensive care unit (ICU) patients ranging from 0.63% in China, 28.6% in Turkey, and 26.7% in Iran. In Brazil, studies indicate PI prevalence ranging from 1.4% to 5.3% in medical-surgical and orthopedic inpatient units and between 5.3% and 69% in ICU patients[6-11].

This complexity requires nursing professionals to have knowledge and practice based on scientific evidence, especially nurses, who are the team coordinators and responsible for planning nursing care. The nurse's decision-making process should consider the multicausality of PI, as well as prevention and treatment actions following updated recommendations, ensuring ethical and quality hospital care[12-13]. Therefore, it is necessary to identify knowledge gaps by performing periodic assessments, also considering the perception of

the team's attitudes, which will guide educational and professional improvement actions to achieve an excellent clinical practice.

Therefore, an integrative review was conducted to identify in the scientific literature how the assessment of nursing staff knowledge about pressure injury is performed, which instruments are used, and their psychometric properties. The following research question was defined: how is nursing professionals' knowledge about pressure injuries assessed?

METHODS

This is an integrative literature review since it synthesizes research results on a given subject in a systematic and organized manner. The search for scientific articles occurred from October to December 2021 in the BDENF, Cinahl, Lilacs, MEDLINE, Scopus, Google Scholar, and Web of Science data sources, using the Portuguese search strategy: ("lesão por pressão" OR "úlcera por pressão" OR "úlcera de decúbito" OR "escara de decúbito") AND enfermagem AND conhecimento, and, in English, ("pressure ulcer" OR "bed sore" OR "bed sores" OR bedsore OR bedsores) AND nursing AND knowledge, according to the definitions and related words present in the Descritores em Ciências da Saúde (DeCS) and Medical Subject Headings (MeSH), respectively.

We selected open access scientific articles published between 2012 and November 2021, in English, Portuguese, or Spanish, resulting from original research related to care in the hospital area. Theses, dissertations, editorials, opinion articles, congress publications, review articles, and articles that referred to the development of LP in the perioperative period or associated with other morbidities were excluded, as shown in Figure 1.

For data extraction, we used an instrument that gathered information from selected publications relevant to the purpose of this review: title, authors, year and country of publication, objective, type of study

design, sample, instrument, and criterion used to assess the knowledge of professionals and main results, independently[14].

After data collection, we proceeded to a critical analysis of the articles included, with an organized approach to the characteristics of the studies. The articles were classified as to the level of evidence from Level I to level VI.[15] The synthesis of information is presented in Table 1.
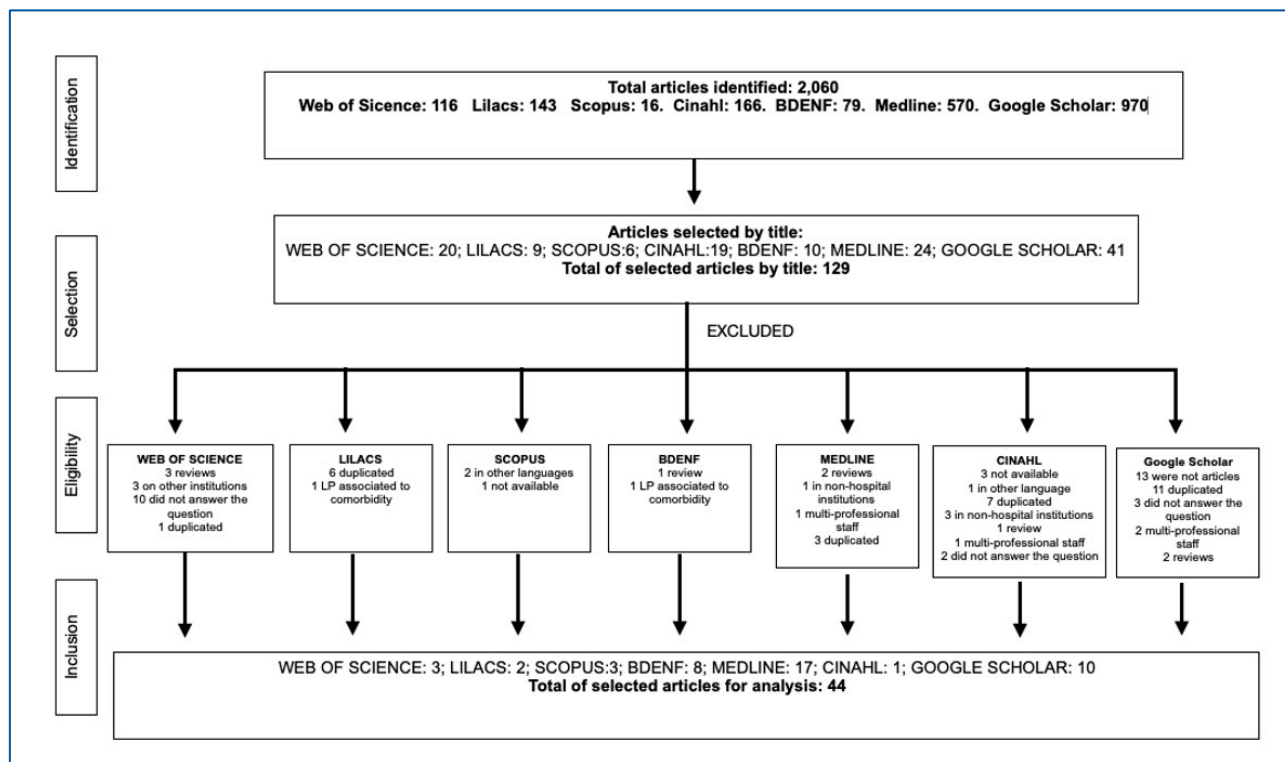

Figure 1 — Flowchart of database search.

RESULTS

In this integrative review, 44 articles were included, described in Table 1, identified as 1 to 44, with the title, year and country of publication, authors, type of study and sample, the instrument used to assess knowledge, assessment criteria, and level of evidence of the study.

Of the articles included, 45.4% were published in Brazil, 88.6% were descriptive studies with a quantitative approach, of which 92.3% were cross-sectional, 47.7% used Pieper's Pressure Ulcer Knowledge Test (P-PUKT) as a tool to assess knowledge, 72.7% presented scores for knowledge classification, and 94.8% of the studies included were classified as level of evidence IV.

In 47.7% (21) of the studies found, Pieper's Pressure Ulcer Knowledge Test (P-PUKT - 1st version) was used in its original version or translated and adapted, most of them (14) in Portuguese (Pressure Ulcer Knowledge Test - TCLP-Caliri-Pieper). The instrument was also translated and adapted into Chinese, Greek, Spanish, and Farsi.

In one of the included studies, the authors assigned values according to the item's degree of difficulty and significance. Items 1, 6, 15, 24, 27, 33, 34, 36, 40, 41, and 42 received a score of 2.0; statements 2, 3, 5, 8, 9, 13, 14, 16, 21, 23, 25, 26, 28, 30, 37, and 30,

received a score of 1.5; and items 4, 7, 10, 11, 12, 17, 18, 19, 20, 22, 29, 31, 32, 35, and 39, received a score of 1.0. The scoring scores were developed by three wound specialist nurses after content validation. No scores were established to classify the participants' level of knowledge. The results were represented by the total number of nurses who correctly answered each item and the overall mean score of the test before and after educational intervention[16]. Another adapted version of the P-PUKT was applied in a study, having the content validated by six experts, with a Content Validity Index (CVI) of 0.91 and internal consistency (coefficient alpha) of 0.814[17].

A version of P-PUKT consisting of 47 items had its content validity examined and confirmed by a panel of nurse experts and professors. The internal consistency of the questionnaire was confirmed by the Kuder-Richardson coefficient (KR) of 0.97[18]. The original P-PUKT was used in a study developed in Iran; however, they rated different scores than the authors of the original instrument. The stability of this instrument was verified by test-retest of two weeks, obtaining an intraclass correlation coefficient (ICC) of 0.85[19]. The instrument used in a study developed in Nigeria, consisting of 24 questions of the P-PUKT referring to preventive measures, showed an internal consistency of 0.861[20].

Table 1 — Summary of included articles.

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2107/ Brazil	Nariani Souza Galvão, Maria Alice Barbosa Serique, Vera Lúcia Conceição de Gouveia Santos, Paula Cristina Nogueira	Revista Brasileira de Enfermagem (Brazilian Nursing Journal)	Conhecimentos da equipe de enfermagem sobre prevenção de úlceras por pressão[52] (Knowledge of the nursing staff about pressure ulcer prevention)	Descriptive-exploratory with a quantitative approach carried out with 40 ICU professionals (14 nurses, 20 technicians and 6 nursing assistants).	Brazilian version of *Pieper's Pressure Ulcer Knowledge Test – P-PUKT.*	Adequate knowledge those who got 90% or more of the items right.	IV
2019/ Australia	Paul Fulbrook, Petra Lawrence, Sandra Miles	Journal Wound Ostomy Continence Nursing	Australian Nurses' Knowledge of Pressure Injury Prevention and Management[44]	Cross-sectional study conducted with 306 nursing professionals (240 nurses, 30 technicians and 33 nursing assistants).	Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT) version 2 adapted by the authors.	70% to 79.9% right answers indicate satisfactory knowledge level; between 80% and 89.9%, good knowledge level; and 90% or more very good knowledge level.	IV
2021/ China	Li Hu, Wipa Sae-Sia, Luppana Kitrungrote	Risk Manag Healthc Policy	Intensive Care Nurses' Knowledge, Attitude, and Practice of Pressure Injury Prevention in China: A Cross-Sectional Study[27]	Cross-sectional study conducted with 510 ICU Nurses.	*Pressure Ulcer Knowledge Test Tool (PUKAT) 2.0. translated and adapted into Chinese.*	80% right indicates sufficient knowledge.	IV
2014/ Uganda	Ivan Mwebaza, Godfrey Katende, Sara Groves, Joyce Nankumbi	Nursing Practice	Nurses' Knowledge, Practices, and Barriers in Care of Patients with Pressure Ulcers in a Ugandan Teaching Hospital[37]	Cross-sectional study conducted with 84 nurses from medical, surgical, burn unit and orthopedic clinics.	Self-administered, pre-tested questionnaire (knowledge about LP and risk factors, current practices to prevent and manage LP).	It was considered average knowledge if at least five items for each section were identified correctly.	IV
2014/ Jordan	Jamal Qaddumi, Abdullah Khawaldeh	BMC Nursing	Pressure ulcer prevention knowledge among Jordanian nurses: a cross-sectional study[53]	Cross-sectional study conducted with 194 nurses from the medical clinic, surgery, burn unit, ICU, coronary unit and orthopedic unit	*Pressure Ulcer Knowledge Test Tool (PUKAT).*	The participant is considered approved when he/she gets 50% right (13 questions).	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2020/ Ethiopia	Ezedin Molla Muhammed, Berhanu Boru Bifftu, Yemataw Zewdu Temachu, Tarkie Abebe Walle	BMC Nursing	Nurses' knowledge of pressure ulcer and its associated factors at Hawassa University comprehensive specialized hospital Hawassa[54]	Cross-sectional study conducted with 356 nurses from all units of the hospital	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	Knowledge rated as insufficient when it scored below average.	IV
2019/ Ethiopia	Werku Etafa Ebi, Getahun Fetensa Hirko, Diriba Ayala Mijena	BMC Nursing	Nurses' knowledge to pressure ulcer prevention in public hospitals in Wollega: a cross-sectional study design[55]	Multicenter cross-sectional study with 220 nurses from 5 hospitals.	*Pressure Ulcer Knowledge Test Tool* (PUKAT).	Considered approved when you get 50% right (13 questions).	IV
2019/ Iran	Mojgan Lotfi , Ahmad Mirza Aghazadeh, Hossein Asgarpour, Afsaneh Nobakht	Nursing Open	Iranian nurses' knowledge, attitude and behaviour on skin care, prevention and management of pressure injury: A descriptive cross-sectional study[19]	Cross-sectional study with 214 nurses from internal, surgical and specialized departments of teaching hospitals.	*Pieper's Pressure Ulcer Knowledge Test* (P-PUKT).	Desirable knowledge level - 70% or more right; relatively desirable between 50% and 69% right; and undesirable less than 50% right.	IV
2019/ Turkey	Sinan Aydogan, Nurcan Caliskan	Wound Managent & Prevention	A Descriptive Study of Turkish Intensive Care Nurses' Pressure Ulcer Prevention Knowledge, Attitudes, and Perceived Barriers to Care[56]	Cross-sectional study with 214 ICU nurses.	PUPKAI-T Turkish version of Pressure Ulcer Knowledge Test Tool (PUKAT).	A knowledge score of ≥60% correct was considered satisfactory.	IV
2018/ Nigeria	Deborah Tolulope Esan, Ayodeji Akinwande Fasoro, Elizabeth Funmilayo Ojo, Brenda Obialor	Wound Managent & Prevention	A Descriptive, Cross-sectional Study to Assess Pressure Ulcer Knowledge and Pressure Ulcer Prevention Attitudes of Nurses in a Tertiary Health Institution in Nigeria[28]	Cross-sectional study with 93 nurses from medical, surgical, gynecological, pediatric, orthopedic and emergency departments.	Instrument developed by the researchers with sections on knowledge (11 items on etiology, prevention, care, legal implications, staff influence and practice).	Scores at or above the median were categorized as high/adequate knowledge.	IV

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Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2015/ Ethiopia	Nurhusien Nuru, Fisseha Zewdu, Senafikish Amsalu, Yohannes Mehretie	BMC Nursing	Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia[30]	Cross-sectional study with 255 nurses from a university hospital.	Self-applied questionnaire with 22 about knowledge and 22 practical questions about LP prevention.	Above average scores indicate good knowledge and good practices.	IV
2017/ Turkey	Asiye Gul, Isil Isik Andsoy, Birgul Ozkaya, Ayten Zeydan	Wound Managent & Prevention	A Descriptive, Cross-sectional Survey of Turkish Nurses' Knowledge of Pressure Ulcer Risk, Prevention, and Staging[57]	A cross-sectional study of 308 nurses from a training and research hospital.	Modified and translated version of Pieper's Pressure Ulcer Knowledge Test with 49 items.	70% right answers corresponded to a satisfactory level of knowledge; greater than 80% indicated a good level of knowledge, and 90% or more indicated very good levels.	IV
2016/ Brazil	Miriam Viviane Baron, Cézane Priscila Reuter, Miria Suzana Burgos, Veniria Cavalli, Cristine Brandenburg, Suzane Beatriz Frantz Krug	Revista Latino-Americana de Enfermagem (Latin American Nursing Journal)	Estudo experimental com equipes de Enfermagem acerca do conhecimento sobre úlceras por pressão[58] (Experimental study with nursing staff about knowledge on pressure ulcers)	Experimental study conducted with 71 nurses in an Intensive Care Unit (50 from the intervention group and 21 from the control group)	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT)	90% or more correct indicates adequate knowledge, and the question was considered known when 90% or more of the participants answered it correctly.	II
2012/ Nigeria.	Rose Ekama Ilesanmi, Bola Abosede Ofi, Prisca Olabisi Adejumo	Wound managent & prevention	Nurses' knowledge of pressure ulcer prevention in Ogun state, Nigeria: results of a pilot survey[20]	Cross-sectional study with 111 nurses from the medical, surgical, neurological and orthopedic units of the university hospital.	Adapted version of Pieper's Pressure Ulcer Knowledge Test with 24 true or false statements about prevention.	80% or more right answers indicated high knowledge; between 59% and 79% right: moderate knowledge; below 59% right: low knowledge.	IV
2021/ Slovakia	Beáta Grešš Halász, Anna Bérešová, Ľubomíra Tkáčová, Dagmar Magurová, Ľubomíra Lizáková	International Journal of Environmental Research and Public Health	Nurses' Knowledge and Attitudes towards Prevention of Pressure Ulcers[26]	Cross-sectional study with 225 nurses from 4 hospitals.	Slovak translated and adapted version of the Pressure Ulcer Knowledge Test Tool (PUKAT).	A score of 60% or higher is considered satisfactory.	IV

Table 1 — Summary of included articles (cont).

Year/Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2017/ Mexico	Rosalinda Garza Hernández, María de los Meléndez Méndez, Fang Huerta Ma. Ángeles Concepción, Salinas Juana Fernanda González, Hortensia Castañeda-Hidalgo, Pérez Norma Edith Argumedo	Ciencya y Enfermería	Conocimiento, actitud y barreras en enfermeras hacia las medidas de prevención de úlceras por presión[59]	Cross-sectional study with 119 nurses from ICU, emergency department, internal medicine, general surgery and trauma/orthopedics.	*Pressure Ulcer Knowledge Test Tool* (PUKAT).	21 or more correct items indicated adequate knowledge; 14 to 20 correct indicated regular knowledge; 13 or fewer correct answers, indicated very low knowledge.	IV
2019/ Brazil	Ana Paula Figueiredo de Montalvão França, Maria Elizabete de Castro Rassy, Rafaelly da Conceição Barra Portilho, Ana Carla Figueiredo de Montalvão Serrão, Amanda Souza França, Etely do Socorro da Silva Miranda	Revista Eletrônica Acervo Saúde (Acervo Saúde Electronic Journal)	Conhecimento de enfermeiros sobre o manejo de lesões por pressão em unidade de terapia intensiva[38] (Nurses' knowledge on the management of PUs in intensive care units)	Exploratory, descriptive study with a quantitative approach with 9 ICU nurses.	Questionnaire prepared by the researchers on the risk factors, assessment, classification, and treatment of LP with multiple choice and association questions.	It did not establish rating scores.	IV
2019/ Brazil	Paula Arquioli Adriani, André Oliveira Paggiaro, Marcus Castro Ferreira, Viviane Fernandes de Carvalho	Revista Enfermagem Atual In Derme (Current Nursing Journal In Derme)	Aplicação do *pressure ulcer knowledge test* em enfermeiros de um hospital de atenção secundária – estudo transversal[60] (Application of the pressure ulcer knowledge test in nurses of a secondary care hospital - cross-sectional study)	Cross-sectional study with 102 nurses from a hospital.	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	Scores of 100-80% right represented optimal knowledge level; 79%-59% moderate knowledge level, and less than 59% as low knowledge level.	IV
2017/ Brazil	Laura Aparecida de Aquino Cracco, Rosilaini Leal da Silva Merli, Fábio Renato Lombardi, Ana Cláudia de Souza Bacci, Silvio Fernando Guideti Marques	Estudos & Pesquisas (Studies & Researches)	Conhecimento da equipe de enfermagem sobre prevenção, avaliação e tratamento da úlcera por pressão[61] (Nursing staff knowledge on pressure ulcer prevention, assessment and treatment)	Cross-sectional study conducted with 5 nurses and 6 ICU Nursing Technicians.	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more of items answered correctly indicates adequate knowledge	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2019/ Brazil	Rayne Caitano de Sousa, Andréa Mathes Faustino	Revista De Pesquisa Cuidado É Fundamental (Research Journal Care is Fundamental)	Conhecimento de enfermeiros sobre prevenção e cuidados de lesão por pressão[62] (Nurses' knowledge about pressure injury prevention and care)	Cross-sectional study conducted with 38 nurses from the medical and surgical clinics	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more hits indicates adequate knowledge and the question known when 90% or more of the participants answered it correctly.	IV
2012/ Brazil	Aline Moreti de Oliveira, Ana Carolina Moreti de Oliveira, Rafaela de Andrade Gonçalves Vieira Soller, Simone Shirasaki Orosco	Enfermagem Brasil (Nursing Brazil)	Conhecimento dos profissionais de enfermagem da unidade de terapia intensiva sobre úlcera por pressão e medidas de prevenção[63] (Knowledge of intensive care unit nursing professionals about pressure ulcers and prevention measures)	Cross-sectional study conducted with 45 nursing professionals from the Intensive Care Unit of a hospital (10 nurses, 12 nursing auxiliaries and 23 nursing technicians).	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	The test results were classified into score ranges equal to or above 90%, between 70% and 89.9%, between 50% and 69.9%, and below 50% correct.	IV
2020/ Brazil	Ianne Mayara Barros Costa, Francisca das Chagas Alves de Almeida, Keyth Sulamitta de Lima Guimarães, Ronny Anderson de Oliveira Cruz, Thalys Maynard Costa Ferreira, Wellynson Souza Nascimento	Enfermería Actual de Costa Rica	Percepção de enfermeiros acerca dos cuidados e a utilização de hidrogel em lesões por pressão[33]	A descriptive and exploratory study with a qualitative approach carried out with 17 ICU, Red Room and Skin Commission nurses.	Semi-structured interview form, with questions about treatment and prevention, and about the use of hydrogel in LP.	Not established. Content analysis proposed by Bardin was performed.	IV
2013/ Brazil	Jaiany Alencar Rolim, Josilene de Melo Buriti Vasconcelos, Maria Helena Larcher Caliri, Iolanda Beserra da Costa Santos	Revista RENE (RENE Magazine)	Prevenção e tratamento de úlceras por pressão no cotidiano de enfermeiros intensivistas[34] (Prevention and treatment of pressure ulcers in the daily life of intensive care nurses)	A descriptive and exploratory study with a qualitative approach carried out with 9 ICU nurses.	A semi-structured interview script with six questions about the prevention and treatment actions for CLP, the importance attributed to these interventions, and the difficulties encountered in their practice.	Not established. For data analysis, the Discourse of the Collective Subject (DSC) technique was used.	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2015/ Brazil	Layrianne Emmanuely Silva Rocha, Edna de Freitas Gomes Ruas, Jaciara Aparecida Dias Santos, Cássio de Almeida Lima, Jair Almeida Carneiro, Fernanda Marques da Costa	Revista Cogitare Enfermagem (Cogitare Nursing Journal)	Prevenção de úlceras por pressão: avaliação do conhecimento dos profissionais de enfermagem[66] (Pressure ulcer prevention: assessment of nursing professionals' knowledge)	Cross-sectional study conducted with 85 professionals (9 nurses and 76 nursing technicians) from the Medical Clinic, Surgical Clinic, Adult ICU and Emergency Room sectors.	Instrument with 19 statements about evaluation, classification, and preventive measures for CLP, based on the Brazilian version of P-PUKT.	The classification scores were divided into less than 70% right, 70 to 89% right, and more than 90% right (adequate knowledge).	IV
2020/ Brazil	Natália de Brito Mendes Martins, Maria Girlane Sousa Albuquerque Brandão, Leonardo Alexandrino da Silva, Aline Maria Veras Mendes, Joselany Áfio Caetano, Tiago Moura de Araújo, Lívia Moreira Barros	Revista Atenção a Saúde (Health Care Journal)	Percepção de enfermeiros de terapia intensiva sobre Prevenção de lesão por pressão[32] (Intensive Care Nurses' Perceptions on Pressure injury Prevention)	Mixed study conducted with 18 ICU nurses from an educational institution.	Quantitative data were collected using a structured instrument about nurses' perception of LP prevention, followed by a semi-structured interview.	Descriptive statistics for quantitative data. Qualitative data were submitted to content analysis according to Bardin	IV
2014/ Brazil	Adriana Montenegro Albuquerque, Maria Amélia de Souza, Valdicleia da Silva Ferreira Torres, Virginia de Araújo Porto, Maria Julia guimarães Oliveira Soares, Idolda Maria Barros Torquato	Revista de Enfermagem UFPE Online (UFPE Online Nursing Journal)	Avaliação e prevenção da úlcera por pressão pelos enfermeiros de terapia intensiva: conhecimento e prática[41] (Evaluation and prevention of pressure ulcers by intensive care nurses: knowledge and practice)	Cross-sectional study conducted with 40 ICU nurses.	Instrument with 35 statements about evaluation (2) and preventive measures (33) of LPs, based on the Brazilian version of P-PUKT.	No classification scores.	IV
2019/ Brazil	Dieffeson Da Silva Cardoso; Francisco Matheus Oliveira Carvalho; Gedeilson Bonfim Da Rocha; Jadilson Rodrigues Mendes; Saraí De Brito Cardoso; Francisca Cecília Viana Rocha	Revista de pesquisa Cuidado é fundamental (Research Journal Care is Fundamental)	Conhecimento dos Enfermeiros sobre Classificação e Prevenção de Lesão por Pressão[65] (Nurses' Knowledge on Pressure Injury Classification and Prevention)	Cross-sectional study conducted with 26 nurses from a hospital.	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more correct indicates adequate knowledge.	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2015/ Brazil	Nathalia Ingrid Crosewski, Débora de Sousa Lemos, Aline Batista Mauricio, Hellen Roehrs, Marineli Joaquim Meier	Revista Cogitare Enfermagem (Cogitare Nursing Journal)	Conhecimento dos profissionais de enfermagem sobre úlceras por pressão em duas unidades cirúrgicas – parte 1[66] (Nursing professionals' knowledge about pressure ulcers in two surgical units - part 1)	Case study conducted with 25 professionals (6 nurses, 10 nursing technicians and 9 assistants).	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more correct indicates adequate knowledge.	IV
2014/ Brazil	Aline Batista Mauricio, Débora de Sousa Lemos, Nathalia Ingrid Crosewsk, Hellen Roehrs	Revista de Enfermagem da UFSM (UFSM Nursing Journal)	Conhecimentos dos profissionais de enfermagem relacionados às úlceras por Pressão[67] (Knowledge of nursing professionals related to pressure ulcers)	Cross-sectional study with 37 professionals (5 nurses, 6 technicians and 26 nursing assistants) from a Semi-Intensive Care Unit.	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more correct indicates adequate knowledge.	IV
2014/ Brazil	Aline Batista Mauricio, Nathalia Ingrid Crosewski, Débora de Sousa Lemos, Hellen Roehrs, Marineli Joaquim Meier	Revista de enfermagem da UFPI (UFPI Nursing Journal)	Conhecimentos dos profissionais de enfermagem sobre úlceras por Pressão na Clínica Médica[68] (Nursing professionals' knowledge about pressure ulcers in medical practice)	Estudo transversal com 28 profissionais (6 enfermeiros, 10 técnicos e 12 auxiliares de enfermagem) de uma unidade de Clínica Médica.	Brazilian version of Pieper's Pressure Ulcer Knowledge Test (P-PUKT).	90% or more correct indicates adequate knowledge.	IV
2017/ Mexico	Ricardo Rodríguez-Renobato, Guadalupe del Rocío Esparza-Acosta, Silva Patricia González-Flores	Revista de enfermagem Instituto mexicano Seguro social	Conocimientos del personal de enfermería sobre la prevención Y el tratamiento de las úlceras por presión[22]	A descriptive, correlational study conducted with 102 nurses from the Internal Medicine, ICU, Emergency, Trauma and Orthopedics Units and surgical clinic of a hospital.	ReAc-PUKT (*Renobato-Acosta Pressure Ulcer Knowledge Test*).	70% right indicated sufficient knowledge.	IV
2017/ Brazil	Adna Ribeiro Braquehais, Fábia Sostisso Dallarosa	Revista de enfermagem da UFPI (UFPI Nursing Journal)	Nurse's knowledge on the prevention of ulcers by pressure in an intensive therapy unit[39]	Cross-sectional study conducted with 20 nurses from 3 ICUs in a hospital.	Semi-structured questionnaire constructed from the literature on LP prevention.	It did not classify by scores.	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2018/ Brazil	Thalys Maynnard Costa Ferreira, Carla Lidiane Jácome de Lima, Josefa Danielma Lopes Ferreira, Patrícia Simplício de Oliveira, Glenda Agra, Ianne Mayara Costa Ferreira, Wellyson Souza do Nascimento, Marta Miriam Lopes Costa	Revista de enfermagem UFPE Online (UFPE Online nursing journal)	Conhecimento de enfermeiros sobre o uso da colagenase em lesões por pressão[35] (Nurses' knowledge about the use of collagenase in pressure injury)	This is an exploratory study, with a qualitative approach, carried out with 20 nurses who work in the Clinical Medicine unit of two hospitals.	Semi-structured interview script.	Not established. Content analysis proposed by Bardin was performed.	IV
2019/ Greece	Charalambos Charalambous, Agoritsa Koulouri, Zoe Roupa, Aristidis Vasilopoulos, Mary Kyriakou, Marios Vasiliou	Journal Tissue Viability	Knowledge and attitudes of nurses in a major public hospital in Cyprus towards pressure ulcer prevention[21]	Cross-sectional study conducted with 20 nurses from 3 ICUs in a hospital.	Greek translated and validated version of Pieper's Pressure Ulcer knowledge Test (P-PUKT).	90% or more correct indicates adequate knowledge.	IV
2020/ Iran	Shahrokh Khojastehfar, Tahereh Najafi Ghezeljeh, Shima Haghani	Journal Tissue Viability	Factors related to knowledge, attitude, and practice of nurses in intensive care unit in the area of pressure ulcer prevention: A multicenter study[18]	Cross-sectional study conducted with 308 nurses from 3 Intensive Care Units.	*Pieper's Pressure Ulcer knowledge* (P-PUKT)test with 47 questions.	90% or more of the items answered correctly indicate adequate knowledge.	IV
2020/ Turkey	Tuba Sengul, Ayişe Karadag	Journal Tissue Viability	Determination of nurses' level of knowledge on the prevention of pressure ulcers: The case of Turkey[25]	Cross-sectional study conducted with 471 nurses from the areas of internal medicine, surgery, emergency, pediatrics, gynecology, ICU, operating room, outpatient clinic of two hospitals.	PUPKAI-T Turkish version *Pressure Ulcer Knowledge Test Tool* (PUKAT).	The cut-off value for classification of sufficient knowledge was 60% right or better (16 questions).	IV
2021/ China	Ya-Bin Zhang, Li He, Ling Gou, Ju-Hong Pei, Rui-Ling Nan, Hai-Xia Chen, Xing-Lei Wang, Ye-Hui Du, Hui Yan, Xin-Man Dou	International Wound Journal	Knowledge, attitude, and practice of nurses in intensive care unit on preventing medical device-related pressure injury: A cross-sectional study in western China[51]	Cross-sectional study conducted with 1002 nurses in an Intensive Care Unit.	*Clinical Nurses Prevention Medical Device Related Pressure Injury of Critically Ill Patients for the Knowledge, Attitude, Practice Assessment Scale*	Not established.	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2019/ Brazil	Thiago Moura de Araújo, Márcio Flávio Moura de Araújo, Lívia Moreira Barros, Francisca Jane Gomes de Oliveira, Leonardo Alexandrino da Silva, Joselany Áfio Caetano	Revista RENE (Revista RENE)	Intervenção educativa para avaliação do conhecimento de enfermeiros intensivistas sobre lesão por pressão[16] (Educational intervention to assess intensive care nurses' knowledge about pressure injury)	Longitudinal study, before and after an educational intervention carried out with 9 nurses of an Intensive Care Unit of a hospital.	Brazilian version of *Pieper's Pressure Ulcer Knowledge Test* (P-PUKT).	The statements received scores (1.0, 1.5 or 2.0), according to the degree of difficulty and significance of the item.	III
2021/ Brazil	Sabrina Guterres da Silva Galetto, Eliane Regina Pereira do Nascimento, Patricia Madalena Vieira Hermida, Daniele Delacanal Lazzari, Nara ReisdorferJosefine Busanello	Revista Escola de Enfermagem Anna Nery (Anna Nery School of Nursing Journal)	Percepção de profissionais de enfermagem sobre lesões por pressão relacionadas a dispositivos médicos[36] (Nursing professionals' perception of medical device-related pressure injury)	A qualitative descriptive study carried out with 12 professionals (7 nursing technicians and 5 nurses).	Semi-structured interview script.	Not established. For data analysis, the Discourse of the Collective Subject (DSC) technique was used.	IV
2019/ India	Debalina Ghosh, Yuha Nida, Umasanker Yadav	International Nournal Of Nursing Education	A Study to Assess the Knowledge on Decubitus Ulcer and its Management among the Staff Nurses in Selected Tertiary Care Hospital of Moradabad, Uttar Pradesh: An Original Study[40]	Cross-sectional study conducted with 60 nurses from a hospital.	Self-administered questionnaire with questions about knowledge, attitude scale, and statements about practice.	Not established.	IV
2020/ South Africa	Thembelihle Patricia Dlungwane	Africa Journal of Nursing and Midwifery	Nurses' Knowledge, Attitudes and Practices regarding Pressure Ulcer Prevention in the Umgungundlovu District, South Africa[31]	Cross-sectional study conducted with 223 nurses from medical, surgical, orthopedic and intensive care units of a hospital.	Questionnaire adapted from previous study on nurses' knowledge, attitudes and practices about LP prevention.	A score of "1" was given for a correct answer and "0" for an incorrect answer. Good knowledge refers to a score of 70% correct.	IV
2020/ China	Ling Jiang, Lisa Lommel	Journal of Clinical Nursing	Nurses' knowledge, attitudes, and ehaviours related to pressure injury prevention: A large-scale cross-sectional survey in mainland China[23]	Cross-sectional study conducted with 1806 Nurses from 10 hospitals.	Chinese version of *Pieper's Pressure ulcer Knowledge Test* (P-PUKT).	Cut-off point of 80% (32 questions or more answered correctly), to consider knowledge adequate.	IV

Table 1 — Summary of included articles (cont).

Year/ Country	Authors	Journal	Title	Type of study/sample	Assessment tool	Assessment Criteria	Evidence Level
2019/ Turkey	Elif Kopuz, Anita Karaca	Clinical and Experimental Health Sciences	Evaluation of Nurses' Knowledge about Risk Monitoring and Risk Prevention for Pressure Ulcers[29]	Cross-sectional study conducted with 250 nurses in a hospital.	Form prepared by the authors based on the literature with 66 items divided into 5 sections.	It does not establish knowledge rating scores.	IV
2018/ Iran	Batool Tirgari, Leili Mirshekari, Mansooreh Azzizadeh Forouzi	Advanced Skin wound care	Pressure Injury Prevention: Knowledge and Attitudes of Iranian Intensive Care Nurses[69]	Cross-sectional study conducted with 89 ICU nurses.	*Pressure Ulcer Knowledge Test Tool* (PUKAT).	It does not establish knowledge rating scores.	IV

The Greek version of P-PUKT was adapted, consisting of 21 questions that, when compared to the 44 questions of the original instrument, produced good quality data and satisfactory internal consistency (KR of 0.82)[21].

The P-PUKT was translated and adapted to Spanish (ReAC-PUKT), considering the recommendations of the Clinical Practice Guide for the prevention and treatment of pressure ulcers at the intra-hospital level adapted to the context of the country (Mexico). The translated version was submitted to a pre-test with 25 nurses from a general hospital, with a reliability of 0.417. After the experts' evaluation, the items with small variance were excluded, remaining 37 items (19 on prevention measures, 11 on treatment, and 7 general questions about LP), with a reliability of 0.728[22].

The translation and adaptation of P-PUKT into Chinese constituted a questionnaire with 41 items, and a pilot test was conducted with 30 nurses. The instrument showed construct validity of 0.762 and internal consistency of 0.678, described by the authors as acceptable[23].

The second most used knowledge assessment tool identified was the Pressure Ulcer Knowledge Assessment Tool-PUKAT and its adaptations, used in 8 studies, translated, and adapted to Turkish, Slovakian, and Chinese. The questionnaire includes 26 multiple-choice questions divided into 6 categories: etiology and development (6 questions), classification and observation (5 questions), risk assessment (2 questions), nutrition (1 question), preventive measures to reduce the amount of pressure (7 questions), and preventive measures to reduce the duration of pressure items (5 questions). Each question has four answer options, with the fourth option being "Do not Know" to avoid random hits. Each correct answer corresponds to 1 point, and wrong answers or answers marked as 'Do not know' do not score[24].

This instrument was validated for item difficulty, discriminant index, and quality of response alternatives, presenting satisfactory psychometric characteristics. The internal consistency reliability was 0.77, and the 1-week test-retest ICC (stability) was 0.88. The CVI was 0.78 to 1.00. The difficulty index of the items ranged from 0.27 to 0.87, while the discrimination values ranged from 0.10 to 0.65[24].

The Turkish version of the PUKAT was translated in 2016, showing satisfactory psychometric properties similar to the original instrument: internal consistency (KR) of 0.803; 2-week test-retest ICC ranging from 0.37 - 0.80; CVI of 0.94; item difficulty index ranged from 0.21 to 0.88, and item discrimination values ranged from 0.20 to 0.78[25]. The PUKAT was translated into Slovak and validated; however, the authors do not clarify how the adaptation and validation process occurred, presenting only the alpha coefficient value (internal consistency) of 0.514[26].

To classify the professionals' knowledge levels, the authors considered the recommendations of the original instrument, in which the level of knowledge was classified as satisfactory with an index of 60% or more of correct answers. However, as identified in the studies conducted with the P-PUKT, heterogeneity in the classification scores was also identified among the different studies with the PUKAT.

The Chinese adaptation of the PUKAT consists of 22 questions rated with the response options "True," "False," and "Do not know." The authors rated the level of knowledge as sufficient 80% correct answers, different from the original version. The instrument was validated for content (CVI 0.97) and had an intraclass correlation coefficient of 0.72[27].

In three studies, instruments constructed and validated by the authors were used. The instrument developed by Esan and collaborators[28] included questions about etiology, care, legal implications, team influence, and recent prevention practice. It was pre-tested with 10 nurses, then 2 clinical nurses and 2 statisticians performed face and content validation, but the authors did not present the CVI or internal consistency values.

The questionnaire used in another study was composed of 66 questions divided into 5 sections: risk factors (16 items), medical interventions that cause LP (10 items), skin care assessment (7 items), LP staging (5 items), and nursing care for prevention (28 items). The instrument was submitted to content validation by 5 judges (nurse experts), who evaluated the understanding and relevance of the items (CVI of 0.91)[29].

A self-administered questionnaire with 22 items on knowledge and 22 questions on LP prevention practices was designed by the authors and pilot-tested with nurses, and adjusted and reviewed by experts; however, the authors did not report how many nurses participated in the pre-test, the number of judges who performed the review and did not specify the CVI. The internal consistency of the instrument was verified, obtaining an alpha coefficient value of 0.76[30].

An adaptation of a developed and validated questionnaire consisting of 22 questions about LP development, risk assessment, skin care, nutrition, maintaining healthy skin, managing mechanical loads, and educational program for the patient, family, and staff was applied in another study. No CVI was presented; however, the authors showed an alpha coefficient of 0.74 for the 11 questions used, resembling the reliability of the original instrument (22 questions), which showed a KR coefficient of 0.74[31].

We found five qualitative studies and four studies that collected data using instruments developed by the authors, but no evidence of validity was found. Risk factors, etiology, classification, and preventive and therapeutic measures were evaluated. Although they did not establish parameters for assessing the levels of knowledge, the participants had limited knowledge, as verified by the restricted and incomplete answers, especially in items related to the etiology and classification of LP[32-40].

DISCUSSION

The most used instrument for evaluating the knowledge of nursing professionals was the P-PUKT. It consists of two parts, with sociodemographic data (first part) and the knowledge test with 47 items distributed in subcategories of Prevention (33 items), staging and classification (7 items), and lesion description (7 items), with the possibility of true or false answers. This instrument was submitted to content validation by four nurse specialists who evaluated its clarity and understanding, with reliability (coefficient alpha) of 0.91[41].

The Portuguese version of the P-PUKT used in 14 studies identified in this review is an adaptation based on the North American guidelines for practice with adjustments for the context of critical patient care. The instrument consists of 41 statements, 6 of which refer to classification/staging, 2 refer to the description of the injury, and the remaining 33 items are related to prevention measures. Each statement has three answer options, true, false, or "Do not know", and each correct answer corresponds to one (1) point. Wrong items or those answered with the option "Do not know" are not scored. The instrument was submitted to face and content validation through application to six nursing professionals before being applied to the target population[42].

According to the author's recommendation of the original version, the test score corresponds to the sum of all correct answers in each subcategory and per item. For an item to be considered known, 90% of the professionals would have to answer it correctly. In this review, we found 4 studies that classified the knowledge level based on the total number of correct answers in the test, classifying knowledge as adequate or sufficient when the participant answered 90% of the items correctly[42].

Although the version of the P-PUKT translated and adapted to Brazil is widely used, none of the studies presented the instrument's psychometric properties, which are essential to demonstrate its reliability and validity. However, a study conducted with 106 nurses pointed out that this instrument had a reliability of 0.83[65]. Furthermore, there was heterogeneity in the scores for classifying the levels of knowledge since five studies used scores different from those recommended by the authors of the original instrument[43].

The P-PUKT has been updated (PZ-PUKT), consisting of 72 items on prevention (20 items), staging (25 items), wound description (27 items), and 11 questions on sociodemographic data. Of the questions regarding the assessment, 42 were true and 30 items were false. The authors obtained a Cronbach's alpha of 0.80 for the 72 items and concluded that the PZ-PUKT is valid, remaining reliable after test-retest[43].

In this review, one study that applied the PZ-PUKT was included, and it showed good internal consistency with a Kuder-Richardson coefficient (KR) of 0.86. However, two of its subscales showed moderate internal consistency (Prevention: 0.67; Staging: 0.65) and the Assessment subscale showed good internal consistency (KR = 0.76), corroborating the original study, in which the internal consistency for the subscales was 0.67, 0.64, and 0.56 for staging, assessment, and prevention measures, respectively[43,44].

The translation and cultural adaptation of the PZ-PUKT for Brazil was validated as to content. In the Brazilian version, the 72 items remained; however, the number of questions in the subscales was changed to consist of 29 items on prevention, 20 items on staging, and 23 items on wound description, being an instrument considered valid and reliable by the authors (Cronbach's alpha of 0.825). However, as in the original study, the alpha values related to the subscales were lower than what the literature recommends as acceptable (0.379 for prevention, 0.421 for staging, and 0.349 for wound description)[43].

The studies carried out with the PUKAT presented the difficulty index and discrimination index of the items with satisfactory values and internal consistency. The difficulty of the items refers to the percentage of subjects who correctly answered the item, the ideal values being between 0.30 and 0.70, i.e., items answered correctly by 30% of the subjects are considered difficult, while items with 70% of correct answers are easy. Items with 100% or 0% of correct answers are useless to differentiate individuals because they do not add any information[45,46].

The item discrimination index represents the ability to differentiate between subjects with different construct levels. The value ranges from 0 to 3, with values considered adequate between 0.6 and 1.8; however, the higher the discrimination, the better the item and the higher the measurement accuracy[45].

The PUKAT was also revised, resulting in PUKAT 2.0. The instrument was submitted to face and content validation by members of the European Pressure Ulcer Advisory Panel (EPUAP) and professionals specialized in wound care who evaluated the relevance of the items, clarity, and accuracy of the alternatives. After modifications, pilot testing was conducted with students and nurses on the clarity of the questions and alternatives. The final version consisted of 25 questions with four alternatives (two positives and two negatives) and included cases and photographs to assess theoretical and practical knowledge[46].

The psychometric properties of PUKAT 2.0 were similar to those of the first version. The item difficulty index of the questions ranged from 0.25 to 0.83, and the discriminant values of the items ranged from 0.02 to 0.34. The instrument's stability verified by the test-retest (10 days) showed an ICC of 0.69, considered insufficient by the authors. The CVI and internal consistency were not presented[46].

The most used way to estimate the coefficient of accuracy of a test is by analyzing the internal consistency of the items, which means calculating the correlation between each item of a test and the other items. In this review, the studies verified the internal consistency of the instruments by calculating the alpha coefficient or KR, used in a specific case when the items are dichotomous[47].

The coefficient alpha is calculated considering the total variance of the test, the variance of each item individually, and the sum of item variances. The more homogeneous the individual items, that is, with little variance and the higher the variance they produce together, the higher the coefficient value will be, which should vary between 0 and 1, where 0 is the total absence of internal consistency[47].

Alpha values above 0.90 indicate excellent internal consistency; values between 0.89 and 0.80 represent good internal consistency; from 0.79 to 0.70, they are considered acceptable values; between 0.69 and 0.60, the internal consistency is questionable; between 0.59 and 0.50, the internal consistency is considered bad, and values below 0.50 are unacceptable.In this review, of the studies that presented coefficient values, only one presented a value considered bad (0.514), and another was questionable (0.678). The other studies presented values above 0.70, ranging from acceptable to excellent[48].

Another way to estimate a test's reliability or accuracy is by obtaining the correlation coefficient, which expresses the relationship between two events, in this case, applying the same test twice to the same subjects; therefore, identical results are expected, producing equal means and variances. Thus, the closer to 1, the more accurate and reliable the test is. Values between 0.70 and 0.80 are considered weak, and below 0.70 is unacceptable[47].

In this review, few studies presented the correlation coefficient, determined mainly using the test-retest technique and represented by the stability coefficient (intraclass correlation-ICC), which ranged from 0.73 (P-PUKT Farsi version) to 0.94 (PUKAT). However, as there is no definition of the ideal time between applications, the studies performed retests in different periods, a disadvantage, besides the difficulties related to the subjects (memory, negative attitudes)[47].

Content validity analyzes whether the instrument meets the specific purpose it was developed, i.e., if the set of items represents a defined universe or a domain of a given content. Evidence of test content validity may include logical or empirical analysis of test items' adequacy and relevance for construct interpretation[48].

In the included studies, assessment of the evidence of content validity was based on inter-rater agreement on item relevance, clarity, and comprehension. The ideal CVI varies according to the number of judges, with the minimum number being 5 judges and a CVI value of 0.99 agreement. Other authors consider that 6 judges and a CVI of 0.78 to 1.00 are sufficient for content validation, values, therefore, similar to those found in this review[49].

Medical device-related pressure injury - MDRPI was addressed in two studies, including a qualitative study and a survey in which the knowledge, attitude, and practice assessment scale for prevention of MDRPI in clinical nurses was applied. The scale consists of four sections, with items on sociodemographic data, 15 items on knowledge, 9 questions on attitudes, and 14 on prevention practice. Responses were presented on a 5-point Likert-type scale, ranging from 38 to 190.The higher the score, the higher the levels of prevention[50].

Therapeutic measures were little explored in the studies, being more emphasized in qualitative studies, specifically on using hydrogel and collagenase in PI. The evaluation of therapeutic measures included the indication of products and dressings used by nurses according to the LP classification.

Evaluation of the type of dressing/product used to treat PI based only on the depth/staging of the lesion is not the most appropriate method. The decision process for wound treatment is complex and should be based on a careful assessment of the wound (considering tissue type of the wound bed, exudate characteristics, wound edge conditions), the patient's clinical conditions, and the patient's context[51].

Validation is a complex process since there is no single source of evidence of sufficient validity that can address the various aspects of a test. Most studies have provided only one piece of validity evidence. Thus, the more studies show the validity evidence of an instrument, the safer the interpretation of its results will be[49].

CONCLUSION

Most of the quantitative studies included did not present values of internal consistency of the instrument, presenting as a limitation the sampling process since thirteen studies were conducted with small samples. We also verified disproportion between nurses and nursing

assistants/technicians and lack of uniformity in the scores of the classification of knowledge levels, making it difficult to make inferences.

Using reliable and valid instruments to evaluate the knowledge of professionals is essential to identify flaws in the work process, which can reflect on the quality of patient care in hospitals. However, to meet the scientific purposes, such instruments must be accurate to ensure the necessary conditions for adequate replication of the results.

This review contributes to the advancement of nursing production as it synthesizes the literature, pointing out gaps and weaknesses in the nursing staff theoretical knowledge of the process assessment: some content related to LP are not addressed or are insufficiently addressed. Thus, new studies should be conducted with more representative samples, and they should present different dimensions of validity evidence, which can be based on the test content, the response process, the internal structure, the relationships with other variables, and the consequences of the test.

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