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DECUBITUS RISK ASSESSMENT INSTRUMENTS IN ICU PATIENTS: LITERATURE REVIEW

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ABSTRACT
Pressure ulcers can cause various problems for clients and hospitals. For patients, decubitus can cause extreme pain and discomfort, increase the length of stay (LOS), and quality indicators in the hospital cannot be achieved. The chronology of various factors means that a less standard decubitus assessment instrument will cause decubitus to continue to occur. This study aims to analyze the instruments used to prevent pressure ulcers in ICU patients. This study reviews eight relevant articles from 2019-2024. The results of a literature search of 2,662 journals resulted in a total of 15 journals being reviewed with the results of several studies using different pressure ulcer prevention instruments, including the Braden Scale, PUPrep, PUP Instrument, PIPGAI, COMHON, CFA, VALENT, PUKAT, KPUP, and RAPS, all instruments are used as decubitus detection instruments.

Keywords: decubitus; ICU; prevention instrument

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INTRODUCTION

Decubitus is localized tissue damage caused by compression of the soft tissue over a bony prominence and external pressure over a long period of time (Lin et al., 2022). The prevalence of decubitus ulcers in several countries in Asia such as Singapore (18.1%), Malaysia (15.5%), Japan (9.8%), and China (1.8%) (Min et all, 2020). The incidence of pressure ulcers in Indonesia is still a concern. Research conducted in the ICU of a private hospital in Bandung City found 10.8%. As many as 51.4% of them were decubitus ulcers grade 1, 17.1%, grade 2, 15.7% grade 3 and as many as 5.7% were suspected to be deep tissue injuries. Meanwhile, degree 4 and those that could not be classified were not found. The most dominant ulcer locations at stage 1 are the spine (21.4%) and legs (12.9%), while the most common locations other than stage 1 are the sacrum (25.9%), shoulders (25.9%), and hips (22.2%) (Sari, 2019). Pressure ulcers can cause various problems for clients and hospitals. For patients, decubitus can cause extreme pain and discomfort, increase the length of stay (LOS), and quality indicators at the Sultan Agung Islamic Hospital are not achieved. The chronology of various factors means that a less standard decubitus assessment instrument will cause decubitus to continue to occur. Nurses should regularly observe skin integrity disorders in patients to prevent pressure ulcers, especially in patients who are on bed rest for a long period of time because prolonged bed rest carries the risk of skin integrity disorders caused by pressure, skin irritation or immobilization and has an impact on the emergence of pressure ulcers (Saleh & Ibrahim, 2023).

Pressure ulcers are also included in the Hospital Patient Safety Reporting and Learning System Guide (SP2KP) in the Director's Regulations stating that pressure ulcers include incidents that must be reported, namely Unexpected Events (KTD) or adverse events, an

unexpected event that results in patient injury due to carrying out an action or not taking a decision that should be taken, and not because of the underlying disease or patient's condition. The use of instruments for early detection of pressure ulcers is very necessary to make it easier for health workers to prevent the occurrence of pressure ulcers, so this literature review aims to review instruments that can be used to prevent the occurrence of pressure ulcers.

METHOD

A literature review is conducted to map published research and provide an overview of the evidence to provide contextual information or concepts. Scoping reviews can be used to expand or vary the evidence on a particular topic or question (Tricco et al., 2018). The scoping review applies a Participant/Concept/Context structure to determine the scoping review search strategy:

(P) Population: Patients with ICU care

(C) Concept: Pressure ulcer prevention instrument

(C) Context: Decubitus

The Joanna Briggs Institute's scoping review guidelines were used as a framework for this review (Peters et al., 2020). The six steps in the guide include: (a) identifying the research question, (b) identifying relevant studies, (c) selecting studies, (d) mapping the data, and (e) organizing, summarizing, and reporting the results. For example, in the first step a well-defined research question is developed to guide the scope of the review. Review question: "What observational or randomized controlled studies have been conducted to determine which instruments can be used to prevent pressure ulcers in patients in the ICU?

RESULT

Table 1.
Article of analysis

Researcher Name and Year	Title	Design	Results	Strengths	Limitations
(Labeau et al., 2021)	Prevalence, associated factors and outcomes of pressure injuries in adult intensive care unit patients: the DecubICUs study	Studi ini menggunakan prospektif, observasional, dan prevalensi	The risk of pressure injury is assessed using the Braden scale	The Braden Scale in this observational study identified a quarter of ICU patients with pressure injuries although prevalence varied regionally.	In this study the Braden instrument was not used as an instrument to prevent pressure ulcers
(Haavisto et al., 2022)	Consistent practices in pressure ulcer prevention basedon international care guidelines: A cross-sectional study	A cross-sectional study	pressure ulcer preventionpractice (PUPreP) instrument	The results showed that evidence-based pressure ulcer prevention practices were followed at a moderate level by nurses. The PuPreP instrument has demonstrated validity and reliability.	The PuPreP instrument still requires further development
(Mäki-Turja-Rostedt et al.,	Consistent pressure ulcer prevention practice: The	A quasi-experimental interventi	Pressure Ulcer Patient instrument (PUP-Instrument).	This intervention has proven to be effective in pressure ulcer prevention practices	The PUP instrument still requires further development

Researcher Name and Year	Title	Design	Results	Strengths	Limitations
2023)	effect onPU prevalence and PU stages, and impact on PUprevention —A quasi-experimental intervention study	on study			
(Pittman et al., 2022)	Pressure Injury Prevention and Management	Mixed-methods convergent design and participatory action research	The Pressure Injury Prevention Gap Analysis Instrument (PIPGAI)	Valid/reliable PIPGAI analysis instrument	A limitation caused by COVID-19 restrictions is the limited involvement of patients and their caregivers.
(Lovegrove et al., 2022)	Translation and piloting of the Chinese Mandarin version of anintensive care-specific pressure injury risk assessment tool (the COMHON Index)	A four-step approach to instrument	Pressure injury risk assessment tool (the COMHON Index)	An easy-to-use Chinese intensive care-specific pressure injury risk assessment tool has been introduced through cross-cultural translation.	However, this requires further testing of reliability and inter-rater agreement.
(Lovegrove et al., 2024)	The Chinese Mandarin COMHON Index and Braden Scale to assess pressure injury risk in intensive care: An inter-rater reliability and convergent validity study	A reliability and validity study was undertaken.	The COMHON Index is an intensive care specific pressure injury risk assessment tool, which has demonstrated promising psychometric properties.	The COMHON index is more sensitive to changes in patient condition and varying levels of PI risk in the ICU	Using only one ICU and a group of internal nurse assessors were included, limits external validity.
(Moura et al., 2020)	A novel measurement instrument for pressure-injury riskassessment competence: Theoretical procedures,simulation, and psychometric quality	A methodological study was designed.	instrument for pressure-injury riskassessment base Theoretical procedures,simulation, and psychometric quality	This instrument was proven to be a valid, accurate, and reliable educational tool for pressure assessment competency	A limitation of this study is the lack of convergent analysis, as this instrument is presented here for the first time.
(Tajari et al., 2024)	Designing and psychometric evaluation of	sequential-explorator	he confirmatory factor analysis (CFA) and	Safe nursing care instruments in the ICU have good	In this study, specific types of validity such as

Researcher Name and Year	Title	Design	Results	Strengths	Limitations
	safe nursing care instrument in intensive care units	y mixed-method	xploratory factor analysis (EFA)	psychometric properties based on research conducted using consensus-based standards for pressure ulcer measurement instrument selection criteria.	convergent, divergent, comparison on known groups, and experimental were not performed, but could be explored in future research.
(Jansen et al., 2020a)	Braden Scale in pressure ulcer risk assessment	A cross-sectional, quantitative study	In this study, the Braden Scale showed a better balance between sensitivity and specificity, thus showing itself as a better risk prediction tool in this group of patients.	Considering patient safety and, therefore, the multidisciplinary and interdisciplinary nature of the problem of pressure ulcers, it is important to highlight the relevance of professionals working in hospital ICUs.	Among the limitations of this study, we can highlight the sample size, since a larger number of individuals would contribute to the determination of the risk of pressure ulcers.
(Luna-Aleixos et al., 2022)	Development and Validation of a Meta-Instrument for NursingAssessment in Adult Hospitalization Units (VALENFInstrument) (Part I)	cross-sectional studies based on data collection	The VALENF instrument was developed from a combination of Barthel, Braden and Downton index items.	This study aims to develop and validate a meta-instrument that integrates the assessment of functional capacity, risk of decubitus ulcers and risk of falls with a more parsimonious approach to nursing assessment in adult inpatient units.	The VALENF instrument needs to be performed first; therefore, in another article (section 2) to present the results regarding content validity, construct validity, and interobserver reliability.
(Halász et al., 2021)	Nurses' Knowledge and Attitudes towards Prevention of Pressure Ulcers	A quantitative exploratorycross-sectional design	Measurement instruments PUKAT (Pressure Ulcer Knowledge Assessment Tool)	The results of the study show that there is still a lack of knowledge and attitudes of nurses towards preventing decubitus.	It is important to focus on general and continuing education and practice of nurses in the quality of services provided.
(Shanley et al., 2020)	Development and psychometric evaluation of the patientknowledge of, and attitudes and behaviours	The design comprised of a prospective psychometricinstrument	Pressure Ulcer Prevention Instrument (KPUP)	This study was designed to develop a valid and reliable instrument to assess knowledge, as well as attitudes and behavior of elderly people towards preventing pressure ulcers.	limitations of this study, we can highlight the sample size.

Researcher Name and Year	Title	Design	Results	Strengths	Limitations
	towardspressure ulcer prevention instrument (KPUP)	validation			
(Luna-Aleixos et al., 2023)	Development and Validation of a Meta-Instrument for theAssessment of Functional Capacity, the Risk of Falls andPressure Injuries in Adult Hospitalization Units (VALENF Instrument) (Part II)	A cross-sectional study with data collection on 1,352 nurses	Assessment of pressure ulcer prevention using the VALENF II instrument. The VALENF instrument is a meta-instrument developed with a combination of seven items from the Barthel (mobility), Braden (sensory perception, humidity and mobility) and Downton (previous falls, medication and sensory deficiency) indices.	The VALENF instrument is a better solution for nursing assessment that allows assessing the risk of pressure injuries in inpatient units. In fact, the VALENF Instrument is currently being implemented in electronic clinical records at the hospital where it was developed.	Limitations that must be taken into account are that this research is a retrospective study based on registration data from one hospital and sample selection was not carried out randomly.
(Hung et al., 2021)	Pressure ulcer prevention based on international care guidelines: A cross-sectional study	A cross-sectional study	The assessment used is PUPreP	This instrument is used in several hospitals to detect pressure ulcers	Further development is still needed to test this instrument
(Wåhlin et al., 2021)	Development and validation of an ICU-specific pressure injuryrisk assessment scale	This research was designed as a prospective study of instrument development and validation.	Skala Penilaian Risiko Tekanan Ulkus Risk Assess-ment Pressure Ulcer Scale (RAPS)	The final version of RAPS-ICU consisted of six items: vital organ failure, mobility, humidity, sensory perception, level of consciousness and special treatment in the form of mechanical ventilation, continuous dialysis and/or inotropic drugs.	A limitation of this study is the choice of inclusion criteria for patients when they were admitted to hospital due to high workload or staff turnover.

DISCUSSION

Based on the results of a literature search of 2,662 journals, 15 journals were reviewed and the results were obtained from several studies using different pressure ulcer prevention instruments, including the Braden Scale, PUPrep, PUP Instrument, PIPGAI, COMHON,

CFA, VALENT, PUKAT, KPUP, and RAPS, all instruments are used as pressure ulcer detection instruments.The Braden scale was used in three studies with the results that the Braden instrument could assess the severity of pressure ulcers (Labeau et al., 2021; Jansen et al., 2020; Luna-Aleixos et al., 2022). The PUPrep instrument was used in two studies to assess pressure ulcers (Haavisto et al., 2022; Haavisto et al., 2022). The PUP instrument was used in one study to prevent pressure ulcers in patients in the ICU (Mäki-Turja-Rostedt et al., 2023). The PIPGAI instrument is used to assess pressure ulcers during the Covid-19 pandemic (Pittman et al., 2022). Two studies used the COMHON instrument which was developed in different years (Lovegrove et al., 2022; Lovegrove et al., 2024). The CFA instrument is used to assess treatment in preventing pressure ulcers (Tajari et al., 2024). Two studies used the VALENF instrument to detect the occurrence of pressure ulcers (Luna-Aleixos et al., 2022; Luna-Aleixos et al., 2023). The PUKAT instrument is used to assess nurses' ability to assess pressure ulcers (Halász et al., 2021). The KPUP instrument is used to detect pressure ulcers that occur in the elderly (Shanley et al., 2020), and the RAPS instrument is used to assess pressure ulcers in patients in the ICU with various problems including impaired mobility and decreased consciousness (Wåhlin et al., 2021).

The advantage of the Branden Instrument is that it is the instrument used most frequently and commonly in assessing the severity of pressure ulcers in patients. The PUPrep Instrument, PUP Instrument, PIPGAI are instruments that were developed from several previous instruments used to assess pressure ulcers, COMHON is an instrument that is often used in assessing the occurrence of pressure ulcers. The CFA, VALENF, PUKAT and KPUP instruments are a combination of several decubitus detection instruments which were redeveloped to assess pressure ulcers more effectively. The RAPS instrument uses an approach based on the patient's condition and Caring nurses in assessing the risk of pressure ulcers in patients in the ICU (Lovegrove et al., 2024).The limitations of some of the instruments used in assessing pressure ulcers are that the Braden Instrument is less effective in preventing the occurrence of pressure ulcers in patients. Meanwhile, other development issues such as PUPrep, PUP Instrument, PIPGAI, CFA, VALENT, PUKAT need to be tested on several respondents with different conditions to find out more about the level of effectiveness of these instruments. The COMHON instrument needs to be tested further in assessing the risk of pressure ulcers, the RAPS instrument has limitations in assessing criteria and nurses' understanding of using this instrument (Wu et al., 2023).

Preventing decubitus is important because decubitus can prolong the patient's stay and increase unnecessary costs. There are several ways to prevent pressure ulcers, but an important step in preventing pressure ulcers is to identify patients who are truly at risk of developing pressure ulcers (Kirby, J.P. and Gunter, O.L. 2021). Therefore, an assessment of the risk of decubitus when the patient is admitted must be carried out, because assessing the risk of decubitus correctly can predict the formation of decubitus ulcers in groups of patients at high risk so that this can be the basis for nursing intervention to prevent the occurrence of decubitus (Bates-Jensen 2021). This is in accordance with the results of several studies which state that the use of pressure ulcer risk assessment scales and prevention protocols can reduce the frequency of pressure ulcers and reduce treatment costs. Nurses as the spearhead of health services play an important role in preventing the emergence of pressure ulcers by early detection of the risk of pressure ulcers. So nurses need to use an appropriate scale for measuring the risk of pressure ulcers that can assess the degree of risk of pressure ulcers effectively, so that the scale can be used to predict the risk of pressure ulcers and then prevent pressure ulcers in patients treated in the ICU (Sdo et al., 2023).

Decubitus risk assessment using the Braden Scale has been widely studied to determine its effectiveness in various clinical settings. The Braden Scale assesses six aspects: sensory perception, humidity, activity, mobility, nutrition, and friction and shear. The total score ranges from 6 to 23, with lower scores indicating a higher risk of pressure ulcers. Another study compared the Braden Scale with the Glamorgan Scale in predicting the risk of pressure ulcers in pediatric patients. The results show that the Glamorgan Scale has higher accuracy than the Braden Scale. This is due to the wider coverage of risk factors on the Glamorgan Scale, covering 44.4% of the total factors causing pressure ulcers, while the Braden Scale only covers 33.3% (Zang et al., 2020).Other literature studies confirm the validity of the Braden Scale in assessing the risk of early pressure ulcers in patient populations in Indonesia. However, some studies suggest the use of other scales that are more specific to certain care units, such as the Glamorgan Scale in pediatric care. Overall, the Braden Scale is an effective and valid instrument in assessing the risk of pressure ulcers, especially in the ICU environment. However, the choice of assessment scale must be adapted to the characteristics of the patient and treatment setting to ensure accuracy and effectiveness in preventing decubitus (Alshahrani et al., 2021).

The RAPS Scale (Risk Assessment Pressure Sore) is a pressure assessment instrument that combines elements of the Norton Scale and Braden Scale. This scale was designed to increase accuracy in identifying patients at risk of pressure ulcers. Although its use is not as popular as other scales, several studies have evaluated the effectiveness of the RAPS Scale in various clinical contexts. Several studies have compared the RAPS Scale with other pressure assessment instruments. The results show that the RAPS Scale has a level of sensitivity and specificity that is comparable to other scales, such as the Braden Scale and Norton Scale. However, some studies suggest that the choice of rating scale should be tailored to the specific patient population and clinical setting to achieve optimal accuracy (Jansen et al., 2020b).The RAPS scale is a comprehensive pressure assessment tool by integrating components from other assessment scales. Although research on its effectiveness is limited compared to other scales such as the Braden Scale, the RAPS Scale offers a holistic approach in identifying at-risk patients. The selection of appropriate assessment instruments should consider patient characteristics and the care environment to ensure effective pressure ulcer prevention (Chung et al., 2022).

Pressure ulcer risk assessment instruments are an important tool in clinical practice to identify patients at risk of developing pressure ulcers. One known instrument is the Cubbin and Jackson Scale, which was designed specifically for patients in intensive care units (ICU). This scale assesses various risk factors that are relevant in the ICU environment. Studies have shown that the Cubbin and Jackson Scale has good predictive validity in identifying the risk of pressure ulcers in ICU patients. Comparative studies between various risk assessment scales show that they are effective in intensive care settings (Bongga et al., n.d.). Use of the Cubbin and Jackson Scale in clinical practice requires training of healthcare professionals to ensure accurate and consistent assessment. Implementation of this scale can assist in clinical decision making regarding the prevention and management of pressure ulcers, especially in the ICU environment. The Cubbin and Jackson scale is a pressure assessment instrument specifically designed for patients in intensive care units. By assessing various relevant risk factors, this scale helps health workers identify at-risk patients and implement appropriate preventive interventions (Firmansyah et al., 2022).

Most ICU patients experience decreased sensory perception, decreased consciousness, and immobilization. Such as GBS patients who experience paralysis of all extremities (quadriplegia) who require assistance for full mobilization, meningitis patients who

experience decreased consciousness, stroke patients who experience paralysis of half the body (hemiplegia), and quite a few patients also experience paralysis from the waist to the lower extremities making it difficult to move (Nisak et al., 2024).Mechanical forces favor the occurrence of decubitus wounds, especially for patients with reduced mobility and decreased consciousness, through the occurrence of 'slumping' movements in bed or when the patient is moved or positioned inappropriately (for example, pulling the patient up towards the head of the bed). Spastic and paralyzed muscles increase the patient's vulnerability to decubitus injuries related to friction and traction (Brunner & Suddart, 2020). In accordance with the opinion of Corwin (2021), who said that decubitus ulcers can be found in people who are treated in bed or have decreased mobility (Supriyanti et al., 2024).

CONCLUSION

Nurses as the spearhead of health services play an important role in preventing the emergence of pressure ulcers by early detection of the risk of pressure ulcers. Nearly all respondents with a minimum level of dependency had no risk of developing pressure ulcers. Respondents with a partial care dependency level are almost half at risk of developing decubitus, so nurses need to use an appropriate scale for measuring the risk of decubitus that can assess the degree of risk of decubitus effectively, so that the scale can be used to predict the risk of decubitus and can then prevent decubitus in patients treated in the ICU..

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