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The **iNursing Journal** is the official journal of the International Nursing School (INS) whose mission is to shape the future of healthcare by advancing the nursing profession, creating a shared learning environment, respecting equality and diversity and inspiring compassionate care in the service of others.

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Chancellor's Message

The advent of the COVID-19 pandemic has brought challenges of enormous magnitude all over the world. Many governments, private institutions and communities have been grappling with circumstances beyond their control. Despite the challenging environment, our resilience as an academic institution allowed us to not only adapt but also thrive even in the direst of situations.

The International Nursing School (INS) envisions itself as an academic institution created to elevate nursing as a profession. Our mission is to shape the future of healthcare by creating a shared learning environment, empowering our nurses to take control of their learning journey, respecting equality and diversity and inspiring compassionate care in the service of others.

Our desire to provide our students with a holistic approach to education fuelled the birth of the iNursing Journal (iNJ). The iNJ, as a healthcare academic journal, aims to provide a new platform and opportunities to promote nursing through the conduct and publication of high-quality research papers.

The publication of iNJ is expected to bring scholarly recognition to INS as a cornerstone of academic and scientific learning. I firmly believe that the iNJ will soon be established as a significant academic reference material about nursing education, health sciences and research all over the world.

I take this opportunity to thank the iNursing Journal editorial board for their sincere and steadfast commitment. The publication of this journal has been possible because of the collaborative and untiring efforts of this dynamic team.

I feel very proud and humbled, as the Chancellor of this academic institution, by the calibre of staff involved and the progress we have made to turn an idea into reality.



Chancellor
Alirio Martinho Belchior
International Nursing School

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Foreword

It is with great honor and humility that I come to assume the role of Editor-in-Chief of the iNursing Journal, a magazine integrated in a broader project, the International Nursing School (INS) that aims to promote knowledge in the area of Health, Education and Research.

The iNursing Journal is committed to publishing high quality articles and providing its readers, be it academics, researchers or students, a journal with scientific information, emerging from the latest research projects, in the different thematic areas that represent, for the most part, the core of the INS as an educational institution.

Just like in science, no one can achieve something while working alone. This project was only made possible with great teamwork. I would like to extend my thanks to the entire editorial team who, with people from four different continents, came together to establish INS and accepted the challenge to create this journal, generously sharing their time and knowledge.

I would also like express my gratitude to our authors, editors and reviewers, who were instrumental in the realization of this first edition of the iNursing Journal. Thank you for choosing INJ as a platform in the dissemination of your work.

Our first edition comes out during a very complex period in our lives, while we are fighting the worldwide pandemic of SARS-COV-2. In so many levels, the past year posted great challenges to all of us. Professionally, we have been dealing with many uncertainties and difficulties in

completing planned work or having our researches interrupted or cancelled.

Still, we are willing to publish work from different areas, not only to meet our initial objective to disseminate knowledge on a periodic basis, but also to encourage researchers to keep sharing their work, even when times seem too hard. We believe in moving forward, towards a better and brighter future.

From this moment on, it is our mission to support the dissemination of knowledge in the fields of Nursing, Health and Education and thus contribute to the improvement of the quality of healthcare, always supported by the best scientific evidence.

I look forward to hearing feedback from our authors and readers. I would also like to extend an invitation to all researchers to submit your latest works to the future editions of iNursing Journal.



Editor-in-Chief
Marilia Rua, MS, PhD
iNursing Journal

Article 4: The Risk of Developing Pressure Ulcer and its Relation to the Patient's Status and Treatment Received in an Intensive Care Unit in Angola

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ABSTRACT

Introduction: Pressure ulcers (PU) are common in patients in intensive care unit (ICU). Many factors contribute to this which include the patient's status and the characteristics and type of the treatment applied in this level of care¹⁻³. In Angola, a low-middle-income country, the study of this topic is still incipient, which makes it relevant to know whether the Braden scale score differs significantly in different groups of critical care patient.

Aims: To determine if there is a statistically significant difference between the risk of developing pressure ulcers, and the groups of patients sorted by the severity of their disease, organ function/ rate of failure and type of the treatment applied in the ICU. On this behalf the following variables were established: patients treated with sedatives, vasoactive drugs, mechanical ventilation, haemodialysis; Braden Scale average score, the APACHE II (Acute Physiology and Chronic Health Evaluation) score, the SOFA (Sequential Organ Failure Assessment) score and the length of stay (days) in ICU.

Methods: A cross-sectional study with a quantitative nature was developed in an ICU ward in a hospital in Angola.

Results: The sample was composed of 123 patients; the average value of the Braden scale was 14.15 points. Patients being treated with sedatives showed statistically significant difference in the average Braden scale score compared to

those who did not. This difference was also verified in relation to the patients who were treated with vasopressors and mechanical ventilation. Negative, moderate to weak, but statistically significant correlations were found between the Braden scale score and the APACHE score, SOFA score and duration of ICU stay.

Conclusion: The patients have a higher risk of developing pressure ulcers when exposed to risk factors that are already known and specifically associated with some treatments implemented in the ICU. Higher rates of disease severity, mortality risk and longer duration of stay in ICU are associated with a higher risk of PU.

Keywords: Pressure Ulcer; Risk assessment; Risk Management; Intensive Care Units; Critical Care; Disease Severity

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The Risk of Developing Pressure Ulcer and its Relation to the Patient's Status and Treatment Received in an Intensive Care Unit in Angola

Introduction

Patients admitted to Intensive Care Unit (ICU) are considered a population with specific needs in relation to the prevention of pressure ulcers (PU)² due to the pathophysiological characteristics of the disease, the hospitalization itself mainly related to use of multiple medical devices and the individual biological status. Thus, in this population, the risk factors are multiple, both intrinsic and associated with the disease situation. Some risk factors are advanced age¹⁻⁴, prolonged hospital stay¹⁻², diabetes mellitus, cardiovascular diseases, hypotension³, mechanical ventilation, vasopressor agents¹⁻³, mobility and activity limitations^{1,3}, APACHE II (Acute Physiology and Chronic Health Evaluation)¹ disease severity score⁴, skin conditions, moisture, perfusion, circulation and oxygenation factors, nutritional indicators, increased body temperature, sensory perception limitations², low weight, organ replacement support on admission and belonging to a low-middle income country¹.

In screening the risk of PU, in addition to identifying the risk factors, it is important to assess the skin and use a risk assessment tool. No universal recommendations on which risk assessment tool should be used was found in the research developed. What is recommended is that the tool should be reliable and valid for that population, and not only the final score should be valued, but its various subscales, essential for planning nursing interventions in PU prevention². The Braden scale is one of the most common PU

Braden scale is one of the most common PU risk screening tools, used worldwide and in different contexts². This tool consists of six subscales: sensory perception, moisture, activity, mobility, nutrition and friction & shear. Each subscale has four subcategories, except for the subscale friction & shear subscale, which has three. Each subcategory has a definition that intends to describe the patient's condition and thus makes it possible to assign a score, making its evaluation as objective as possible. The final score results from the sum of all subcategories and ranges from 6 to 23 points, and the lower the score, the greater the risk of developing PU⁵.

Due to the specificity of the critical patient's hospitalization, it is considered Gold Standard practice in the prevention of PU, the valuation of the duration of hospitalization in ICU, mechanical ventilation, the use of vasopressors and the severity score value such as APACHE II as risk factors PU, with other specific severity scores such as the SOFA (Sequential Organ Failure Assessment).

Based on these recommendations², it became relevant to know whether the average score on the Braden scale differed significantly with the patient's status and the treatment they were receiving in critical care. The interest of this study is added by the fact that it is carried out in Angola, where there is no accessible data on this matter and because it is considered a low-middle income country¹, which is an additional risk factor for the development of PU found in literature.

In this line, this study aimed to determine if there is a statistically significant difference between the risk of developing pressure ulcers using the Braden scale average score, and the patient's APACHE II score (severity-of-disease classification system), SOFA score (sequential organ failure

assessment score), the treatments they are subject to such as sedatives, vasoactive drugs, mechanical ventilation and haemodialysis; and the length of their stay (days) in the ICU unit.

Methods

A quantitative, observational, descriptive, cross-sectional study, carried out in an ICU of a public hospital in the province of Luanda, in Angola between September to December 2019.

Inclusion criteria was defined as: age over 18 years, hospital stay over 24 hours, presence or absence of PU at admission and possibility of skin evaluation daily. 123 patients were included in the study, resulting in a sample of 641 evaluation moments.

Data collection was performed daily by an experienced researcher with knowledge in the PU prevention, through an observation check list, based on the National Pressure Injury Panel Advisory guidelines. Patients readmitted to the ICU were considered new patients for the evaluation moments.

The study was authorized by the National Ethics Committee of Angola (Opinion no. 21/2009) and by the President of the Board of Directors of the hospital where the study was conducted.

The anonymity and confidentiality of the patient's and the institution's data was totally guaranteed. The confidentiality of the data was also safeguarded by coding the patients after collection, and it was not possible for the researcher to identify the patient during the data analysis and treatment.

Regarding the participants, due to the type of hospitalization and the possibility of being unable to provide consent, the presumed

consent was used, justified by the public interest of the study, given the need for research in this specific population, given its benefits, and because it would never present a risk for person⁶ nor need any type of implementation of differentiated intervention.

Data analysis was performed using the SPSS software (IBM SPSS) version 26. The following variables were considered: Braden Scale score, sedatives, vasoactive drugs, mechanical ventilation, haemodialysis, APACHE II and SOFA scores and length of stay (days) in ICU.

The differences between samples were determined using parametric techniques, because the sample was large enough⁷, specifically the t-Student test for independent samples. To compare the mean within three or more groups, analysis of variance was used, performing the ANOVA test. Pearson's correlation was used to perform bivariate correlational analysis between continuous variables. The level of statistical significance was set at $p < 0,01$.

Results

The sample consisted of 123 patients, 91.9% Angolans, 3.3% Chinese, 1.6% Portuguese and 3.2% Brazilians, Russians, Moroccans and Indians (0.8% each). 56.9% were male and 43.1% female. 82.9% had darkly pigmented skin and 17.1% have light pigmented skin. Age varied between 21 and 88 years old with an average of 48.34 years and a standard deviation (SD) of 14.20. 75.6% of hospitalizations were non-surgical reasons.

The average score of the Braden scale in this study was 14.15 points (SD = 3,125), ranged between 7 and 19 points. Overall, 46% of patients did not have any sensory perception limitations and 31.7% had completely limited sensory perception; 94.4% had rarely moist skin, 100% were bedridden, 40.7% completely immobile, 64.7% with adequate nutrition and 49.3% with friction & shear problems.

Patients treated with sedatives had, on average, 10.85 points on the Braden scale, while patients without sedatives had, on average, 15.06 (table 1) A statistically significant difference between the two groups was observed ($t = 25.275$; $p < 0.01$) (table 2).

Table 1. Braden scale score averages in sedated and non-sedated patients

Total score of Braden Scale	Sedative drug perfusion	N	Mean	Std. Deviation	Std. Error Mean
	No	503	15,06	2,864	,128
Yes	138	10,85	1,255	,107	

Table 2. t Test for independent samples (sedated and non-sedated patients)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Total score of Braden Scale	Equal variances assumed	165,701	,000	16,817	639	,000	4,208	,250	3,716	4,699
	Equal variances not assumed			25,275	518,913	,000	4,208	,166	3,881	4,535

On behalf of the treatment with vasoactive drugs, there were statistically significant differences ($F = 22.748$; $p < 0.001$) (table 3), which are more evident between those who do not had perfusion of vasoactive drugs and those who had only noradrenaline or conjugation of this with other drugs. Patients who did not had vasoactive drugs in perfusion had higher average Braden scale scores ($M = 14.76$), meaning less risk of developing PU.

Braden's average scores were similar for those with noradrenaline and a combination of noradrenaline and dobutamine ($M = 12.32$; 12.50 , respectively). Those who present the combination of the three drugs (noradrenaline, dobutamine and adrenaline) had lower average scores on the Braden scale ($M = 9.50$) (table 4).

Table 3. Comparison of the mean between groups of type of vasopressor drug instituted using the ANOVA test

	Total score of Braden Scale				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	782,216	4	195,554	22,748	,000
Within Groups	5467,407	636	8,597		
Total	6249,622	640			

Table 4. Averages of the Braden scale score by type of vasopressor drug instituted

	N	Descriptives						
		Total score of Braden Scale						
		Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound			
No vasopressor drug	485	14,76	3,008	,137	14,49	15,03	7	19
Noradrenaline	114	12,32	2,601	,244	11,83	12,80	10	19
Dobutamine	2	10,00	,000	,000	10,00	10,00	10	10
Noradrenaline + Dobutamine	36	12,50	3,028	,505	11,48	13,52	8	17
Noradrenaline + adrenaline + dobutamine	4	9,50	1,000	,500	7,91	11,09	8	10
Total	641	14,15	3,125	,123	13,91	14,39	7	19

There were statistically significant differences in the average score of the Braden scale in patients without mechanical ventilation, with invasive mechanical ventilation (IMV) and with non-invasive mechanical ventilation (NIV) ($F = 274.624$; $p < 0.01$) (table 5). These differences were significant among those who were not ventilated and under VMI and between patients subject to VMI and NIV. Those who were not ventilated and under NIV had higher average scores in the Braden Scale, which implies a lower risk of developing PU ($M = 15.50$ and 15.98 , respectively) (table 6). The average Braden scale score of the patients under IMV was 10.98.

There were no statistically significant differences in the average scores of the Braden scale between those who were submitted and not submitted to haemodialysis in the ICU (M = 14.34 and 14.14, respectively) ($t = -0.420$; $p = 0.675$).

Table 5. Comparison of the mean between depending on the type of ventilation using the ANOVA test

Total score of Braden Scale					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2891,220	2	1445,610	274,624	0,000
Within Groups	3358,403	638	5,264		
Total	6249,622	640			

Table 6. Averages of the Braden scale score by type of ventilation instituted

Descriptives								
	N	Total score of Braden Scale				Minimum	Maximum	
		Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean			
								Lower Bound
No Mechanical Ventilation	382	15,50	2,624	,134	15,24	15,76	9	19
Invasive Ventilation	198	10,98	1,392	,099	10,78	11,17	7	17
Non-Invasive Ventilation	61	15,98	2,426	,311	15,36	16,60	10	19
Total	641	14,15	3,125	,123	13,91	14,39	7	19

There was a moderate, negative and statistically significant correlation between the Braden scale and the APACHE score ($r = -0.494$; $p < 0.001$), in which the lower the APACHE II score (less severe disease and lower mortality risk) the higher the Braden score (which predicts a lower risk of developing PU). A weak negative correlation was also obtained between the SOFA score and the Braden scale ($r = -0.361$; $p < 0.001$) but none the less, significantly statistical, which signifies that the lower the SOFA (lower mortality) higher the Braden score (less risk of developing PU). A weak negative correlation between the Braden scale and the number of days of hospitalization in ICU was also verified ($r = -0.343$; $p < 0.001$), which signifies that there was an increased risk of PU (lowest Braden score) with the increase of days hospitalized in ICU (Table 7).

Table 7. Bivariate correlational analysis between the Braden scale score and the APACHE, SOFA and length of stay in ICU

Correlations			
		Total score of Braden Scale	APACHE score
Total score of Braden Scale	Pearson Correlation	1	-.494**
	Sig. (2-tailed)		,000
	N	641	286
APACHE score	Pearson Correlation	-.494**	1
	Sig. (2-tailed)	,000	
	N	286	286
		Total score of Braden Scale	SOFA score
Total score of Braden Scale	Pearson Correlation	1	-.361**
	Sig. (2-tailed)		,000
	N	641	279
SOFA score	Pearson Correlation	-.361**	1
	Sig. (2-tailed)	,000	
	N	279	279
		Total score of Braden Scale	Length of stay (days) in ICU
Total score of Braden Scale	Pearson Correlation	1	-.343**
	Sig. (2-tailed)		,000
	N	641	123
Length of stay (days) in ICU	Pearson Correlation	-.343**	1
	Sig. (2-tailed)	,000	
	N	123	123

** Correlation is significant at the 0.01 level (2-tailed).

Discussion

In the context where this study was carried out, the determination of the incidence of PU is still ongoing. We do know that PU are a common problem in patients admitted to the ICU, despite the implementation preventive measures⁸. Intensive care patients represent a highly specific patient population, and the risk of developing PU in this population possibly differs from other populations, specifically considering the general condition of the skin and tissue perfusion due to the severity of the problems presented and the intensity of the treatments implemented exclusively in the context of the critical care patients⁹.

One of the particularities found in this population was the use of sedatives and vasopressors during treatment. Sedation arises with a factor that is related to mobility and sensory perception, which is often necessary in patients on invasive ventilation¹⁰. In this study it was verified the existence of statistically significant differences in the average score of the Braden scale in the patients who were sedated compared to the patients who were not

verifying that the first ones had lower average scores in the Braden scale, that is, a greater risk of develop PU. In a previous study, the use of sedatives was an independent risk factor for the development of PU¹¹. A more recent study, however, found no difference in the number of PU diagnosed in the two groups (with and without sedation), although it found that the location of the PU differed between the two groups, and the non-sedated patients had PU mainly related to the medical devices, while sedated patients develop PU mainly on the sacrum and heels¹².

Like other studies^{4,9,13-15}, our study identifies a relation between the use of vasopressors and the risk of developing PU, and people who were being treated with noradrenaline, combined or not with other vasopressors, had lower Braden scale scores, which implies a greater risk of developing PU.

In a study that assessed the relation between the development of PU and vasopressors, it was concluded that the association of another vasopressor with noradrenaline is an alert to initiate additional preventive measures to prevent PU considering the impossibility of suspending these drugs¹⁵. Additionally, the vasopressors use determines a significant difference in the development of PU in all categories¹⁷. Our findings support this evidence in the sense that lower Braden scores (higher risk of developing PU) were also found in those who had perfusion of vasoactive drugs, however, those who presented the combination of the three drugs (noradrenaline, dobutamine and adrenaline) were at a higher risk of PU evidenced by even lower Braden scores. Thus, the variable use of vasopressors is considered a risk factor for the development of PU^{18,19}, which makes it relevant and as an additional risk factor and therefore a reason for nurses to adopt more

therefore a reason for nurses to adopt more effective measures¹⁷.

Regarding the use of mechanical ventilation, this study revealed that those who were not ventilated and those who were under non-invasive ventilation had higher average scores on the Braden scale, that is, they had a lower risk of developing PU, which corroborates with studies point to MV more than 72 hours as a predictor of PU development^{10,15}.

The absence of a statistically significant difference between the Braden scale average score and patients who were treated or not with haemodialysis, may be related to the fact that, in this study context, intermittent dialysis lasting 4-6 hours was performed rather than non-continuous renal replacement techniques, which are more common internationally in ICU. In previous studies, patients treated with haemodialysis were considered to have a higher risk of PU^{13,14}.

The correlations carried out between the Braden scale, the APACHE score, the SOFA score and the number of days of hospitalization in ICU were in a negative direction, what meets the expectable since the higher the risk of PU the lower the score of the APAHE and SOFA scale. In a study where the correlation between the Braden scale and the APACHE score was sought, opposite what was found in this study, a moderate positive correlation was found⁸. Another study although the severity of the disease translated by APACHE was not predictive of PU, patients who developed PU had significantly higher mean scores than patients who remained without PU⁹ which is according to our study.

The correlation between the Braden scale and

the SOFA score found in our study, was not surprising as organ failure and septic shock appears, along with other factors, as a predictor of PU¹⁴, appearing as a frequent medical diagnosis in people with PU¹⁶.

The length of stay (days) in ICU was shown to be correlated with the risk of developing PU, this finding is not innovative and has been associated with the development of PU, and the patients with the most PU are those who stay the longest^{4,8-9,13,16}.

It is important to mention that in this study, the variables presented and discussed were not the only variables considered, but are, at the time of this preliminary analysis, those that emerged as important to consider in the identification of PU risk factors in this specific population, in the sense of to act in a more directed way towards its effective prevention in this concrete context.

Conclusion

There were statistically significant differences in the averages of the Braden score between people exposed and not exposed to sedatives, vasoactive drugs and mechanical ventilation. People sedated, with vasoactive drugs (noradrenaline or combined) and under IMV were at higher risk of PU.

There were negative correlations, weak to moderate, but statistically significant between the Braden score and the severity indices and the length of stay in ICU. In this sense, higher Braden scores were associated with a lower risk of developing PU and a lower mortality rate. It is concluded that these patients had, in general, characteristics similar to the studies carried out in other continents, that is, the patients in this study when exposed to already known risk factors present lower scores on the Braden scale, that is, greater risk of developing PU. In addition, severity rates and longer the length

There were negative correlations, weak to moderate, but statistically significant between the Braden score and the severity indices and the length of stay in ICU. In this sense, higher Braden scores were associated with a lower risk of developing PU and a lower mortality rate. It is concluded that these patients had, in general, characteristics similar to the studies carried out in other continents, that is, the patients in this study when exposed to already known risk factors present lower scores on the Braden scale, that is, greater risk of developing PU. In addition, severity rates and longer the length of stay in ICU were associated with a higher risk of PU.

The limitations of this study include not measuring blood pressure to relate to vasopressors use, the number of hours of vasopressor infusion and invasive mechanical ventilation, the reduced sample number and the need to study these indicators in larger samples, and from different institutions, to better understand the reality in this country. Thus, it is recommended to conduct a multicentric study, in Angola, and in the ICU, to study the risk factors in this specific population, considering that the characteristics of the skin can have an impact on the development of PU.

References

1. Labeau SO, Afonso E, Benbenishty J, Blackwood B, Boulanger C, Brett SJ, et al. Prevalence, associated factors and outcomes of pressure injuries in adult intensive care unit patients: the DecUBICUS study. *Intensive Care Med* [Internet]. 2020 Oct [cited 2021 Jan 17]. Available from: <https://doi.org/10.1007/s00134-020-06234-9>.
2. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. *Prevention and treatment of pressure ulcers/injuries: clinical practice guideline*. 3rd ed. Haesler E, editor. Melbourne; 2019. 1–391. ISBN: 9780980739657.
3. Cox J. Pressure Injury Risk Factors in adult Critical Care Patients: a review of the literature. *Ostomy Wound Manag* [Internet]. 2017 Nov [cited 2021 Jan 17]; 63(11). 30–43. Available from: <https://pubmed.ncbi.nlm.nih.gov/29166261/>.
4. Alderden J, Rondinelli J, Pepper G, Cummins M, Whitney J. Risk factors for pressure injuries among critical care patients: A systematic review. *Int J Nurs Stud* [Internet]. 2017 Mar [cited 2021 Jan 17]; 71:97–114. Available from: <http://dx.doi.org/10.1016/j.ijnurstu.2017.03.012>.
5. Bergstron N, Braden B, Laguzza A, Holman V. The Braden scale predicting pressure sore risk. *Nurs Res* [Internet]. 1987 Jul-Aug; 36:205–10. DOI: doi:10.1097/00006199-198707000-00002
6. Council for International Organizations of Medical Sciences. *International Ethical Guidelines for International Ethical Guidelines for Health-related Research Involving Humans*. CIOMS, editor, 4th edition. Geneva. 2016. 1–120. ISBN: 9789290360889.
7. Marôco J. *Análise Estatística com o SPSS Statistics*. 6th ed. Pêro Pinheiro: ReportNumber; 2014. 990p.
8. He M, Tang A, Ge X, Zheng J. Pressure ulcers in the intensive care unit: An analysis of skin barrier risk factors. *Adv Ski Wound Care* [Internet]. 2016 Nov [cited 2021 Jan 17]; 29(11):493–98. DOI: 10.1097/01.ASW.0000494779.66288.c9
9. Cox J. Predictors of pressure ulcers in adult critical care patients. *Am J Crit Care* [Internet]. 2011 Feb [cited 2021 Jan 17]; 20(5):364–75. DOI: <http://dx.doi.org/10.4037/ajcc2011934>
10. Manzano F, Navarro MJ, Roldán D, Moral MA, Leyva I, Guerrero C, et al. Pressure ulcer incidence and risk factors in ventilated intensive care patients. *J Crit Care* [Internet]. 2010 Oct [cited 2021 Jan 17]; 25(3):469–76. DOI: doi:10.1016/j.jccr.2009.09.002
11. Slowikowski GC, Funk M. Factors associated with pressure ulcers in patients in a surgical intensive care unit. *J Wound, Ostomy Cont Nurs* [Internet]. 2010 Nov–Dec [cited 2021 Jan 17]; 37(6):619–26. DOI: 10.1097/WON.0b013e3181f90a34
12. Nedergaard HK, Haberlandt T, Toft P, Jensen HI. Pressure ulcers in critically ill patients – Preventable by non-sedation? A substudy of the NONSEDA-trial. *Intensive Crit Care Nurs* [Internet]. 2018 Feb [cited 2021 Jan 17]; 44:31–5. Available from: <https://doi.org/10.1016/j.iccn.2017.09.005>
13. Bly BD, Schallom M, Hour CE. A Model of Pressure, oxygenation, And Perfusion risk Factors for Pressure ulcers in the intensive care unit. *Am J Crit Care* [Internet]. 2016 Mar [cited 2021 Jan 18]; 25(2):156–64. DOI: <https://doi.org/10.4037/ajcc2016840>
14. Cox J, Schallom M, Jung C. Identifying Risk Factors for Pressure Injury in Adult Critical Care Patients. *Am J Crit Care* [Internet]. 2020 May [cited 2021 Jan 17]; 29(3):204–13. DOI: 10.4037/ajcc2020243
15. Cox BJ, Roche S. Vasopressors and development of pressure ulcers in adult critical care patients. *Am J Crit Care* [Internet]. 2015 Nov [cited 2021 Jan 18]; 24(6):501–11. DOI: <http://dx.doi.org/10.4037/ajcc2015123>
16. Sala JJ, Mayampurath A, Solmos S, Vonderheid SC, Banas M, D'Souza A, et al. Predictors of pressure injury development in critically ill adults: A retrospective cohort study. *Intensive Crit Care Nurs* [Internet]. 2021 [cited 2021 Jan 18]; 62(xxxx):102924. Available from: [https://www.noeccn.org.uk/resources/Documents/Practice%20development/Predictors%20of%20PI%20in%20critically%20ill%20Sala%20et%20al%202020%20\(00000002\).pdf](https://www.noeccn.org.uk/resources/Documents/Practice%20development/Predictors%20of%20PI%20in%20critically%20ill%20Sala%20et%20al%202020%20(00000002).pdf) DOI: <https://doi.org/10.1016/j.iccn.2020.102924>
17. Smit I, Harrison L, Letzkus L, Quatrara B. What Factors Are Associated With the Development of Pressure Ulcers in a Medical Intensive Care Unit? *Dimens Crit Care Nurs* [Internet]. 2016 Jan–Feb [cited 2021 Jan 17]; 35(1):37–41. DOI: 10.1097/DCC.0000000000000153
18. Lima Serrano M, González Méndez MI, Carrasco Cebollero FM, Lima Rodríguez JS. Risk factors for pressure ulcer development in Intensive Care Units: A systematic review. *Med Intensiva (English Ed)* [Internet]. 2017 May [cited 2020 Dec 29]; 41(6):339–46. Available from: <http://linkinghub.elsevier.com/retrieve/pii/S2173572717300942> DOI: <http://dx.doi.org/10.1016/j.medin.2016.09.003>
19. Cox J, Roche S, Murphy V. Pressure Injury Risk Factors in Critical Care Patients: A Descriptive Analysis. *Adv Ski Wound Care* [Internet]. 2018 [cited 2020 Dec 19]; 31(7):328–34. DOI: 10.1097/01.ASW.0000534699.50162.4e