



ORIGINAL

Risk factors for pressure ulcer development in Intensive Care Units: A systematic review[☆]



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KEYWORDS

Pressure ulcers;
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Abstract

Introduction: Pressure ulcers represent a significant problem for patients, professionals and health systems. Their reported incidence and prevalence are significant worldwide. Their character iatrogenic states that its appearance is preventable and its incidence is an indicator of scientific and technical quality both in primary care and specialized care.

The aim of this review was to identify risk factors associated with the occurrence of pressure ulcers in critically ill patients.

Methodology: The PRISMA Declaration recommendations have been followed and adapted to studies identifying risk factors. A qualitative systematic review of primary studies has been performed and a search was conducted of the PubMed, The Cochrane Library, Scopus and Web of Science databases. Methodological limitations in observational studies have been considered.

Results: From 200 references, 17 fulfilled the eligibility criteria. These studies included 19,363 patients admitted to intensive care units. Six studies were classified as high quality and 11 were classified as moderate quality. Risk factors that emerged as predictive of pressure ulcers development more frequently included age, length of ICU stay, diabetes, time of MAP <60–70 mmHg, mechanical ventilation, length of mechanical ventilation, intermittent haemodialysis or continuous veno-venous haemofiltration therapy, vasopressor support, sedation and turning.

Conclusions: There is no single factors which can explain the occurrence of pressure ulcers. Rather, it is an interplay of factors that increase the probability of its development.

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PALABRAS CLAVE

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Factores de riesgo asociados al desarrollo de úlceras por presión en unidades de cuidados intensivos de adultos: revisión sistemática

Resumen

Introducción: Las úlceras por presión representan un significativo problema para pacientes, profesionales y sistemas sanitarios. Presentan una incidencia y una prevalencia importantes a nivel mundial. Su carácter iatrogénico plantea que su aparición es evitable y su incidencia es un indicador de calidad científico-técnica tanto en el ámbito de la atención primaria como en el de la especializada.

El objetivo de esta revisión ha sido identificar los factores de riesgo relacionados con la aparición de úlceras por presión en pacientes críticos.

Metodología: Se siguieron las recomendaciones de la declaración PRISMA adaptadas a la identificación de estudios sobre factores de riesgo. Se ha realizado una revisión sistemática cualitativa de estudios primarios a través de una búsqueda en Pubmed, The Cochrane Library, Scopus y Web of Science. Se consideraron las limitaciones metodológicas en estudios observacionales.

Resultados: De 200 referencias bibliográficas, 17 cumplieron nuestros criterios de selección. Estos estudios incluyeron 19.363 pacientes ingresados en unidades de cuidados intensivos. Seis se clasificaron como de calidad fuerte y 11 de calidad moderada. Los factores de riesgo que aparecieron más frecuentemente asociados al desarrollo de úlceras por presión incluyeron: edad, tiempo de estancia en UCI, diabetes, tiempo de PAM <60–70 mmHg, ventilación mecánica, duración de la ventilación mecánica, terapia de hemofiltración venovenosa continua o diálisis intermitente, tratamiento con drogas vasoactivas, con sedantes y cambios posturales.

Conclusiones: No aparecen factores de riesgo que por sí mismos puedan predecir la aparición de la úlcera por presión. Más bien se trata de una interrelación de factores que incrementan la probabilidad de su desarrollo.

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Introduction

Pressure ulcers (PUs) have a significant impact upon patient morbidity–mortality and quality of life, and are a cause of concern for both the patients and their families, as well as for health professionals and healthcare systems. Pressure ulcers are commonly found at any healthcare level, particularly in patients with mobility problems and advanced age.¹ Although the development of PUs is not intrinsically regarded as a cause of mortality during hospital admission, such lesions are associated to mortality and to other complications in the course of patient recovery: they increase the risk of infection and of in-hospital malnutrition, prolong hospital stay, increase the nursing care burden, and result in greater healthcare costs.²

Many incidence and prevalence studies have brought the problem into focus, but have been based on different indicator calculation methods, as well as on different inclusion and exclusion criteria. Patients admitted to the Intensive Care Unit (ICU) are at a high risk of developing PUs, with an incidence of between 3.3% and 52.9%.^{3,4} Such patients generally do not notice the increased tissue pressure or fail to react to it adequately because of sedation, analgesia and/or the use of muscle relaxants. Furthermore, the background disease and hemodynamic instability increase the risk of PUs.

Despite the magnitude of this healthcare problem, few studies have quantified the direct association between risk factors and the appearance of PUs, and some of the published articles are fundamented upon assumptions of a general nature.⁵ At present, ICUs use instruments for assessing the risk of PUs that have not been specifically developed for this care setting and therefore might not be

adequate, since they do not take into account risk factors that are practically exclusive of such Units.⁶

The importance of the different aspects implicated in the appearance of PUs in critical patients is the subject of permanent controversy.^{5,7} It is therefore particularly important to examine the direct relationship between the risk factors and the appearance of PUs in these patients, with a view to establishing specific interventional measures. Although there are aspects upon which no direct or effective impact can be made, in some cases interventions targeted to a single element can modify the effects of the rest of the implicated factors.⁸

The aim of this systematic review is to identify the risk factors related to the appearance of PUs in critical patients admitted to the ICU.

Material and methods

A systematic review of primary studies has been carried out. The PRISMA Declaration was followed, and the review protocol was defined prior to data collection, with the purpose of reducing the impact of bias inherent to the authors and to promote transparency regarding the methods and the process.⁹ For the evaluation of methodological quality, we used the Critical Appraisal Skills Program España (CASP) templates^{10,11} according to the type of study, with the aim of assessing the risks referred to screening, measurement, withdrawal or classification bias, as well as to confounding factors, outcome bias and other sources of bias. We selected those studies yielding a score of over 6. The studies with a score of between 6 and 8 were regarded

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