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Editorial

From bed sores to skin failure: Linguistic and conceptual confusion in the field of skin and tissue integrity

Promoting skin integrity and preventing adverse skin conditions is core in nursing practice (Kottner and Surber, 2016). Pressure ulceration receives particular attention. In recent years, three trials focusing on pressure ulcer/injury prevention have been published in the International Journal of Nursing Studies (Chaboyer et al., 2016; Gunningberg et al., 2017; Pickham et al., 2018) indicating the continued importance of this topic. Because nursing practice has a huge influence on effective pressure ulcer prevention, measures such as pressure ulcer incidence are also considered as quality indicators for the quality of nursing care (Jull and Griffiths, 2010).

Substantial advances have been made in understanding pressure ulcer aetiology, risk, prevention and treatment in the last decades. However, there are still many areas of uncertainty ranging from the most appropriate risk assessment and early pressure ulcer detection to the most effective treatment (National Pressure Ulcer Advisory Panel et al., 2014). One particular area of continuous debate is the terminology used to describe this phenomenon. Historically called 'bedsores' (Nightingale, 2008), 'pressure sores' (Exton-Smith and Sherwin, 1961), 'decubitus ulcers' (Dinsdale, 1973), or 'pressure ulcers' (1989); 'pressure injury' is emerging as the preferred term in some regions of the world (Ayello et al., 2018; Ayello and Sibbald, 2017; Edsberg et al., 2016; Haesler et al., 2012). However, it seems unlikely that international consensus will be achieved soon (Bader and Schoonhoven, 2016). In the latest International Classification of Diseases 11th Revision the term 'pressure ulceration' (including pressure injury, pressure ulcer and bedsore as synonyms) (EH90) is used (World Health Organization, 2018) that is also applied in this editorial. Irrespective of the different terms used, there is a general agreement that the concept is the same. A common conceptual understanding of the phenomenon (despite minor differences in linguistics) provides a sound (if not perfect) basis for practice and research.

Unfortunately, there is significant linguistic and conceptual confusion when 'pressure ulceration' occurs at the end of life. For instance, in 1989 the term 'Kennedy Terminal Ulcer' was introduced into the literature. It was described as a 'terminal pressure ulcer' because it often occurred in patients weeks or months before death (Kennedy, 1989). A myriad of other terms has been used to describe skin changes at the end of life including decubitus ominosus, Trombley-Brennan terminal tissue injury, Skin Changes at Life's End (SCALE) and Skin Failure (Alvarez et al., 2016; Ayello and Sibbald, 2017). When these changes occur in areas of the body subjected to pressure or pressure in combination with shear (e.g., over bony prominences or under medical devices) both clinicians and the researchers face a dilemma. Should these areas of injury be classified as 'pressure ulcerations' or as 'skin failure'? If classified as 'skin failure', is it necessary to have supporting evidence of skin failure (e.g., mottling, blisters, gangrene) in other areas of the body? If classified as 'pressure ulceration', was it 'unavoidable? Is 'pressure ulceration' a symptom of 'skin failure'? Or, is 'skin failure' a risk factor for 'pressure ulceration'?

Although previously defined in the dermatological literature (Irvine, 1991), the concept of 'skin failure' was redefined in the pressure ulcer literature as 'an event in which the skin and underlying tissue die due to hypoperfusion that occurs concurrent with severe dysfunction or failure of other organ systems.' (Langemo and Brown, 2006). It should be noted that, hypoperfusion of the tissue that leads to hypoxia and cell death is one event in a sequence of events leading to pressure ulceration (Fromy et al., 2012). Chronological aging or diseases like diabetes induce a reduction in vascular density and vascular function leading to a reduction of skin blood perfusion before any other severe organ failure. Skin microcirculation functionality has been suggested to be an indicator of large artery functionality and has been also reported to be impaired before large artery damage during aging and diabetes (Levy et al., 2008). Organ failure will exacerbate the hypoperfusion and facilitate the occurrence of pressure ulceration. However, skin failure and pressure ulceration are not the same. Langemo and Brown (2006) also made a connection to the concept that is known today as 'unavoidable' pressure ulceration stating that 'the skin and underlying tissue will, in many cases, ultimately fail, despite the most modern and comprehensive interventions in the presence of a heavy disease burden'. The definition and criteria for "unavoidability" was subsequently refined (Black et al., 2011). Although pressure ulcerations occurring at the end of life should not be reclassified as 'skin failure' they may well meet current criteria for unavoidability.

There has been an ongoing discussion regarding the interrelated concepts of skin failure, skin changes at the end of life, pressure ulceration and criteria for unavoidability. Levine (2017) proposes 'skin failure' as the common denominator in exploring these concepts. However, Olshansky (2016) identifies important differences and distinctions among the concepts. Clearly, a more rigorous analysis of these concepts, including similarities, differences and interrelationships, is needed.

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Every new concept that is introduced into the scientific discussion must be based on a strong (biomedical) theoretical framework, supported by robust empirical evidence. Scientists are responsible to enhance clarity, to better explain phenomena with the overall aim to improve clinical practice and health outcomes. Skin failure is currently a poorly defined concept. What are the risk factors, causes and antecedent conditions? What are the clinical signs and symptoms that differ from pressure ulceration? Are there unique biomarkers for skin failure?

We believe that researchers are responsible to carefully select terms and labels before introducing them into the literature. For instance, the word 'skin failure' suggests, that only skin (epidermis and dermis) are affected but in the context of pressure ulceration subcutaneous and muscle tissues are included as well (Langemo and Brown, 2006). It appears that skin failure is a broad concept that cannot be specific to pressure ulceration. In 1991 the term 'skin failure' was proposed in dermatology as well, as 'a loss of normal temperature control with inability to maintain the core temperature, failure to prevent percutaneous loss of fluid, electrolytes and protein with resulting imbalance and failure of mechanical barrier to penetration by foreign materials' (Irvine, 1991). It characterizes acute and severe skin diseases such as toxic epidermal necrolysis, erythroderma, or pemphigus that is a dermatological emergency requiring rapid and intensive treatment to promote survival (Inamadar and Palit, 2005). Using identical terms for different concepts in the field of skin and tissue integrity adds to the confusion.

We believe that innovation is a normal part of scientific progress and practice development. Terms should be updated to reflect this. At the same time care must be taken to be absolutely sure, that new terms bring advantages and solve problems instead of creating them. Concepts must have a solid theoretical and biological basis. For instance, there is wide agreement today, that limited perfusion is only one factor contributing to pressure ulceration. Direct deformation damage in particular plays a crucial role in early tissue damage (Oomens et al., 2015). Therefore, every concept and aetiological theory related to pressure ulceration must take this into account. Theory development has a long tradition in nursing science and criteria for theory acceptance have been proposed (Soderstrom and Pugh, 2008). In particular, the art of concept analysis would be helpful to define phenomena and to evaluate possible scientific value (McKenna, 1997). Terms such as 'terminal pressure ulcer' or 'skin failure' should not be used in the context of pressure ulceration, unless based on a thorough conceptual framework and convincing empirical evidence. Finally, changing any terminology must lead to practice improvement and patient benefit globally. A Babylonian language confusion must be avoided.

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