AN INVESTIGATION OF THE ACCURACY OF EARLY PRESSURE ULCER DAMAGE ASSESSMENT USING SUBEPIDERMAL MOISTURE MEASUREMENT VERSUS NURSES’ VISUAL SKIN ASSESSMENT

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BACKGROUND

• Pressure ulcers have a detrimental effect on the health and wellbeing of patients and have a significant impact on resource costs in health care.
• Despite investment in resources and education, the problem persists, with estimated rates of up to 25% of hospital acquired pressure ulcers (HAPUs) occurring in the acute care setting.
• Currently risk assessment tools and nurses visual skin assessment guide pressure ulcer prevention strategies, however risk assessment tools vary in reliability, and nurses visual skin assessment and staging of pressure ulcers is often inaccurate.
• Elevated sub-epidermal moisture (SEM) is associated with early pressure ulcer damage. Studies have demonstrated the feasibility of using SEM measurement which rises in the inflammatory process as a predictor of early pressure damage. SEM is a medical device that calculates this measure allowing for early intervention thus improving patient outcomes.

RESEARCH QUESTION

What is the relationship between nurses assessment of early pressure ulcer damage and sub-epidermal moisture measurement?

RESEARCH DESIGN

• Descriptive prospective observational design.
• Ethical approval granted.
• Written informed consent
• Data collected daily for 4 weeks, from patients at risk of pressure ulcer damage within one clinical setting in an acute health care facility.
• Baseline data included:
  • Underlying medical condition;
  • Norton risk score;
  • History of a pressure ulcer.
  • SEM readings and visual skin assessment recorded daily for 4 weeks:
    • Both heels;
    • Sacrum.
• Data analysed using SPSS, using descriptive and inferential statistics.

RESULTS 1

47 patients were included (figure 1)

Fig 1: Flow of participants through the study

• 38% (n=18) male, 62% (n=29) were female, with a median age of 74.7 years.
• Data included nurses (n=372) documented assessment of the patient’s skin condition and researcher led sub-epidermal moisture measurement (figure 2)
• Median number of assessments per patient: 7 (SD: 4).

RESULTS 2

• The mean Norton Score was 12 (medium risk), the minimum Norton Score was 8 (high risk) and the maximum Norton Score was 17 (low risk) (figure 3)
• 34% (n=16) developed signs of early pressure damage (fig 4).

RESULTS 3

• Correlations were low for the left heel (r=.23), medium for the right heel (r=.43) and strong for the sacrum (r=.65) between nurses’ visual assessment and sub-epidermal moisture measurement.
• Mean number of days for nurses to detect this damage was 5.0 (SD 5.15; max 11, min 3).
• Mean number of days that it took sub-epidermal moisture measurement to detect damage was 1.1 (SD 0.75; max 2, min 1).
• All patients with sustained elevated sub-epidermal moisture levels went on to develop visual signs of pressure ulceration.
• Sub-epidermal moisture measurement identified early damage, on average, 3.9 days earlier than nurses’ assessment.

DISCUSSION

Given that pressure ulcers develop from within the deeper tissues, knowing that early pressure ulcer damage is present can facilitate heightening of prevention strategies to avoid extension. This is of particular importance clinical practice as the earlier that pressure ulcers can be detected; the earlier interventions can be implemented to prevent further extension, avoiding their associated morbidity and mortality.

IMPLICATIONS FOR PRACTICE

SEM detects pressure ulcer damage sooner than nurses’ skin assessment. This information will allow for construct with appropriate departments such as nursing management, including nurse practice development and the quality and risk department with regard to potential adaptation of SEM into existing hospital policy regarding prevention, assessment and management of HAPU.

REFERENCES


LIMITATIONS

• Time frame of study & bed closures, limited number of potential participants.
• Purposive sample of 47 patients in an acute general hospital in Ireland limits generalisability of findings.

CONCLUSION

SEM is an emerging science that has been shown to detect early pressure ulcer damage, before it becomes visible on the skin surface. Findings from this study support findings from previous studies. Earlier identification may prohibit deterioration to higher grades..

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