



Where's the Evidence?

What the data say.

The Braden scale has been widely studied to determine whether it predicts pressure ulcer risk. Early studies established its value.¹⁻³ Although rigorously conducted, these studies were done when pressure ulcer prevention was not a standard part of nursing care. As pressure ulcer prevention has become routine in hospital care, study results have changed. Today when a prevalence study is conducted, it measures the number of people who have pressure ulcers *with some pressure ulcer prevention having been undertaken*. Thus, the psychometric properties of the Braden scale cannot be assessed as purely as before.

Initial research on the reliability of the Braden scale was conducted in a skilled nursing facility.⁴ Interrater reliability, a measure of the extent to which assessment by multiple evaluators results in identical ratings, was high ($r = 0.99$) for RNs and ranged from 0.83 to 0.94 for nurse's aides and LPNs. Percent agreement, which is computed by adding the number of cases the raters agreed upon and dividing that by the total number of cases assessed, was good for the RNs (88%) but poor between pairs of nurse's aides (11%) and pairs of LPNs (19%) and between LPN–nurse's aide pairs (12% to 46%). Validity was assessed with sensitivity and specificity in two samples ($n = 99$, $n = 100$) of medical–surgical patients. Using a cutoff score of 16, sensitivity for both samples was 100% and specificity in one sample was 64% and 90% in the other.⁴ Subsequent work also using a cutoff score of 16 in a sample of critical care patients ($n = 60$) showed that sensitivity was 83% and specificity was 64%. Positive predictive validity was 61% and negative predictive validity was 86%.³

Current data show that the Braden scale better identifies those who are *not at risk* for developing an ulcer than those who are.^{3,6} A recent systematic review of 33 research studies compared the sensitivity, specificity, and predictive validity of the Braden, Norton, and Waterlow scales.⁵ The Braden scale has been the most extensively validated and has

reasonably good sensitivity (57.1%) and specificity (67.5%). Predictive validity, expressed as an odds ratio, was 4.08 (95% confidence interval; 2.56–6.48). Data, however, were not analyzed specifically by age, although the authors note that the inclusion criteria in most studies required participants to be over about 60 years of age. This large systematic review shows that the Braden scale functions better than the Norton scale, Waterlow scale, and nurses' clinical judgment in assessing pressure ulcer risk.⁵ No data are provided on the severity of the participants' illnesses or the consistency with which preventive measures are taken, factors that may account for the lack of pressure ulcer effectiveness in these prevalence studies.

In contrast, data provided by Schoonhoven and colleagues ($n = 1,229$) also compared the Norton, Braden, and Waterlow scales.⁶ This study found the Braden scale's sensitivity to be 43.5%, its specificity to be 67.8%, and its positive predictive validity to be 8.1%. The predictive validity of the other scales was similar (Norton, 7.1%; Waterlow, 6.7%), indicating that none of the scales worked well for predicting pressure ulcers in this sample. The researchers note that prevention is not consistently provided and one must question whether the samples are comparable since acuity was not addressed.—Nancy A. Stotts, EdD, RN, FAAN, and Lena Gunningberg, PhD, RN

REFERENCES

1. Bergstrom N, et al. Using a research-based assessment scale in clinical practice. *Nurs Clin North Am* 1995;30(3):539-51.
2. Braden B, Bergstrom N. *Braden Scale for Predicting Pressure Sore Risk*. Prevention Plus; 2006.
3. Bergstrom N, et al. A clinical trial of the Braden Scale for Predicting Pressure Sore Risk. *Nurs Clin North Am* 1987; 22(2):417-28.
4. Bergstrom N, et al. The Braden Scale for Predicting Pressure Sore Risk. *Nurs Res* 1987;36(4):205-10.
5. Pancorbo-Hidalgo PL, et al. Risk assessment scales for pressure ulcer prevention: a systematic review. *J Adv Nurs* 2006; 54(1):94-110.
6. Schoonhoven L, et al. Prospective cohort study of routine use of risk assessment scales for prediction of pressure ulcers. *BMJ* 2002;325(7368):797.