



2nd National Nursing Informatics Conference 2007 Proceedings

Informatics Everywhere: Celebrating the Diversity of Informatics Practice
October 1 -3, 2007 – Holiday Inn on King, Toronto, Ontario

THEME: Educating Nurses Across the Continuum

Refinement and Validation of a Case-Based Reasoning (CBR) Application: Increasing nurses' informatics skills and knowledge to support clinical decision-making at the bedside.

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Abstract

Wide variations in nursing care processes have been observed; impacting on patient outcomes and quality of care. CBR systems that benchmark for patient indicators can help support decision making at the point-of-care. The study evaluated and validated a case-based reasoning application to establish benchmarks for nursing sensitive patient outcomes of pain, fatigue and toilet use, using patient characteristic variables for generating similar cases. The study focused on validating the similarity criteria and relative weights for determining matching cases.

Three graduate nursing students participated. Each ranked 25 patient cases using demographics of age, gender, diagnosis and comorbidities against 10 patients from the database. Expert nurses' judgments of case similarity were compared to the CBR system. Feature weights for each indicator were adjusted to make the CBR system's similarity ranking correspond more closely to the expert judgment.

The expert nurses held a Master of Nursing degree with adult medical, intensive care and emergency medicine work experience. Small differences were noted between initial weights and the weights generated from the expert nurses. For example, initial weight for comorbidities was 0.35 while the weights generated by the expert nurses for pain, fatigue and toilet were 0.49, 0.42 and 0.48 respectively. For the same outcomes, the initial weight for gender was 0.15, but the weights generated by the nurses were 0.025, 0.002 and 0.000 respectively. Refinement of the CBR tool established valid benchmarks for patient outcomes in relation to nursing experts' and assist in decision making at the point-of-care.

ABOUT THE AUTHOR

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Tammie is a Doctoral Student at the Lawrence S. Bloomberg Faculty of Nursing, University of Toronto. Prior to entering the Doctoral Program, she worked as a staff nurse in the emergency department. Her research interests focus on health informatics, knowledge translation, evidence-based guidelines, geriatrics, emergency medicine, nursing-sensitive

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