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Co-Creating BRAIN-TRK: Behavioural Resource App for Interventions for Neurocognitive Disorders-Translating Research Knowledge

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Purpose:

Strategies used in acute hospitals to reduce symptoms, risk of harm, or complications of behavioural and psychological symptoms (BPS) associated with neurocognitive disorders rarely adhere to best practice recommendations (Tomlinson, Phillips, Mohebbi, & Hutchinson, 2017). Appropriately tailored, multi-faceted and individualised approaches can help reduce symptoms, risk of harm, or complications of BPS associated with neurocognitive disorders including dementia and delirium (Duceppe et al., 2017; Jackson et al., 2017; Suwanabol & Hinshaw, 2017). The purpose of this research was to promote nurses' use of evidence-based practice in order to prevent harm to people displaying BPS of a neurocognitive disorder in hospital.

Specific aims were

- Co-develop an App-based tailored intervention to promote and sustain uptake of best practice recommendations at the point-of-care, and help consolidate nurses' knowledge.
- Examine acceptability, useability and feasibility of the Behavioural Resource App for Interventions for Neurocognitive disorders – Translating Research Knowledge (BRAIN-TRK) App to nurses for patient care in hospital settings.

Methods:

A three-stage, mixed-methods, process and outcome evaluation approach was used in 2016-17. In stage 1 (four months), baseline data were collected and the BRAIN-TRK App prototype, co-designed with nurses from two participating wards and a consumer representative, was developed. In stage 2 (four months), the App was tested with nurses in the two inpatient hospital wards and iteratively refined to improve its function and usability. In stage 3 (one month), evaluation data were collected. Data collection included 80.5 hours of observations (n=38 patients), usage data extracted from the BRAIN-TRK App (n=32 patients), and individual and focus group interviews with nurses and nurse managers (n=25).

The BRAIN-TRK App is one component of a three-part knowledge translation strategy to improve care of patients displaying BPS in hospital settings. The App complemented an online education module and ward nurse facilitators. The BRAIN-TRK App uses mobile technology to support ecological momentary

interventions (Loo Gee, Griffiths, & Gulliver, 2015) to assist nurses to tailor their care activities to the needs of individual patients in real time and in real world settings. BRAIN-TRK content was derived from best available evidence and practice guidelines (Australian Commission on Safety and Quality in Health Care, 2016a; Australian Commission on Safety and Quality in Health Care, 2016b), and it was co-produced with experts, researchers, clinical nurses and a consumer representative.

During development, BRAIN-TRK was iteratively tested and refined with input from nurses who were using the App when caring for patients with neurocognitive disorders in the two hospital wards. Located on a point-of-care interactive handheld device (in this study an iPad), BRAIN-TRK guided assessment and provided nurses with 'real time' tailored recommendations to support their decision-making to individualise care using best practice interventions to address patients' BPS.

Results:

Observation data captured nurses using the BRAIN-TRK App with 17 (44.7%) of 38 eligible patients. Usage data extracted from the App for a total of 32 patients during the implementation period, showed a cognitive screen was completed for all patients at least once and 146 risk factor assessments were conducted (M=4.71, SD=5.12; range 1-23 per patient). Tailored recommendations, drawn from the 22 individual strategies available in the App, were provided on 99 occasions across the 32 patients, ranging from 1 to 18 different strategies per entry (Mean = 7.81, SD = 4.14). Qualitative data indicated that the acceptability of the App was enhanced by familiarity and perceived benefits but hindered by increased workload (App data were duplicated in the care record during the study), inconsistent use by peers, perceived pressure to use the App, and resistance to change involving the new technology. Feasibility and usability were enhanced by useful and usable content but hindered by unclear expectations about use, lack of familiarity, and device-related factors.

Conclusion:

The BRAIN-TRK App assisted nurses to effectively screen and monitor patients at risk for BPS, and provided immediate advice on implementing evidence-based interventions. Results suggest the BRAIN-TRK App was feasible and relevant for use in acute settings.

BRAIN-TRK is recommended for use with patients presenting to hospital with one or more key risk factors for BPS including: aged 65 years or older, known cognitive impairment, history of delirium, severe medical illness, or altered behaviour patterns. The goal of BRAIN-TRK is to promote and sustain uptake of best practice recommendations at the point-of-care, and help consolidate nurses' knowledge. The BRAIN-TRK App provided an evidence-based point-of-care tool that was feasible, useable, and acceptable to support nurses' clinical decision-making.

Title:
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Keywords:
knowledge translation, neurocognitive disorder and technology

References:
Australian Commission on Safety and Quality in Health Care. (2016a). *Caring for Cognitive Impairment - Commit to high quality care for people with cognitive impairment in hospital, including the prevention, recognition and treatment of delirium*. Retrieved from http://cognitivecare.gov.au/

Australian Commission on Safety and Quality in Health Care. (2016b). *Delirium Clinical Care Standard*. Retrieved from: http://www.safetyandquality.gov.au/wp-content/uploads/2016/07/Delirium-Clinical-Care-Standard-Web-PDF.pdf

Duceppe, M. A., Williamson, D. R., Elliott, A., Para, M., Poirier, M. C., Delisle, M. S., . . . Perreault, M. (2017). Modifiable risk Factors for delirium in critically ill trauma patients. *Journal of Intensive Care Medicine*. doi:10.1177/0885066617698646

Jackson, T. A., Gladman, J. R., Harwood, R. H., MacLullich, A. M., Sampson, E. L., Sheehan, B., & Davis, D. H. (2017). Challenges and opportunities in understanding dementia and delirium in the acute hospital. *PLoS Medicine, 14*(3), e1002247. doi:10.1371/journal.pmed.1002247

Loo Gee, B., Griffiths, K. M., & Gulliver, A. (2015). Effectiveness of mobile technologies delivering Ecological Momentary Interventions for stress and anxiety: A systematic review. *Journal of the American Medical Informatics Association, 23*(1), 221-229. doi:10.1093/jamia/ocv043

Suwanabol, P. A., & Hinshaw, D. B. (2017). Interventions to reduce postoperative delirium: Aligning surgical care with patientsâ€™needs and priorities. *JAMA Surgery, 152*(9), 834-834. doi:10.1001/jamasurg.2017.1084

Tomlinson, E. J., Phillips, N. M., Mohebbi, M., & Hutchinson, A. M. (2017). Risk factors for incident delirium in an acute general medical setting: A retrospective case-control study. *Journal of Clinical Nursing, 26*(5-6), 658-667. doi:10.1111/jocn.13529

Abstract Summary:
BRAIN-TRK is an interactive decision-making tool, designed to help nurses engage in regular screening to monitor behaviours and implement evidence-based strategies for patients with a neurocognitive disorder in hospital settings. This paper reports a novel co-design and testing for an ecologically valid tool for nurses in hospital settings.

Content Outline:

- Introduction
    1. The problem of neurocognitive disorders in hospital settings: patient and nurse perspectives
    2. The challenge of knowledge translation into clinical practice
    3. Specific aims
- Research design
    1. Three stages of the research methods and data collection
    2. Co-design and testing the BRAIN-TRK App in clinical settings
    3. Testing with intended users in different settings
- Findings of the App evaluation
    1. Description of the APP elements
    2. Findings of analysis of usability, feasibility for practice, and acceptability to nurses
- Conclusion
    1. Contribution to nursing practice and scholarship
    2. Implications for clinical practice
    3. Future research

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Professional Experience: Associate Professor Bernice Redley has over 30 years' experience as a nurse working in acute, emergency, clinical, academic and government health and care settings. Her research addresses complex problems in acute clinical practice settings including interprofessional teamwork and clinical communication, preventing harm during hospitalisation, and information technology solutions to support communication and acute care delivery.
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