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Validation of the electronic pain assessment tool (ePAT) in residents with moderate to severe dementia: a pilot study

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Background and aims: Pain is subjective and so is its assessment which makes pain management a complex issue. Pain amongst residential aged care residents is common, yet it is under-assessed and under-treated. This is particularly relevant to residents with moderate-to severe dementia in whom poor or no communication occurs as a result of dysphasia or aphasia. Communication difficulties associated with dementia leads to poor pain reporting and assessment, which subsequently results in poor management. The latter is associated with reduced quality of life because it increases behavioural disturbances, inappropriate pharmacotherapy, medication side-effects and hospitalisations among residents with dementia. Despite the abundance of pain assessment tools in this disadvantaged population, all have their short-coming in particular subjectivity. A new tool, ePAT (the electronic Pain Assessment Tool) utilises real-time analysis of facial micro-expressions to detect pain, then uses these data in combination with non-facial pain cues to automatically calculate a pain severity score. This pilot study aimed to validate the ePAT against the Abbey Pain Scale (APS) in residents with dementia.

Methods: A sample of eight residents (50 % males; age: 81.0 ± 11.5 years) with various pain conditions were drawn from a single aged care site in WA using purposive sampling technique. Each resident's pain was independently evaluated using the two assessment tools during routine care, both at rest and on movement. The standard assessment (i.e. APS) was administered by a carer or nurse employed by the facility as part of normal care whilst the new assessment (i.e. using the ePAT) was administered by the primary researcher (MA), health care professionals or students (e.g. RN, EN, and nursing and occupational therapy students). Raters were blind to each other's assessment. Concurrent and discriminative validity were examined.

Results: The number of paired pain assessments per resident varied and ranged from 2 to 10 with a total number of 40 in the selected sample. Concurrent validity of the ePAT vs APS had a correlation coefficient of 0.875 and a concordance correlation 0.725. Discriminative validity showed that pain scores associated with movement were higher than those at rest in the same individual, when assessed using either the APS or ePAT. Statistical analysis of the effect of timing of assessment (i.e. whether the assessment was undertaken at rest or on movement) demonstrated no difference using fixed effects models between the two tools (DF 30, t value 0.86; p = 0.396; DF 30, F Value 0.74, p = 0.396).

Conclusions: This pilot study demonstrated an excellent level of correlation between the APS and ePAT when assessing pain at rest and on movement in patients with moderate to severe dementia. The results and the strong support for the use of tool by the residential aged care facility staff involved are indicative of a need to undertake a larger scale study in the future.

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