

## Commentary on Pain Behaviors in Dementia: Letter to the Editor with Reference to the Article by Morrison et al. (2020)

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To the Editor,

We read with keen interest the recent study by Morrison et al. [1], entitled “Differences in Staff-Assessed Pain Behaviors among Newly Admitted Nursing Home Residents by Level of Cognitive Impairment,” published in the journal *Dementia and Geriatric Cognitive Disorders*. In the period 2010–2016, the research examines differences in the prevalence of pain behaviors among US nursing home residents ( $n = 1,036,806$ ) with varying levels of cognitive impairment (CI) [1].

In this study, there are a number of interesting findings:

1. The association between the level of CI and the frequency of documentation of pain behaviors, established using modified Poisson models. Of particular note, newly admitted residents with moderate-to-severe CI were less likely to have their pain documented/assessed by aged care staff compared to those with no or mild CI [1]. This may explain the undertreatment of pain in the residential aged care setting, particularly in those living with later stages of dementia [2]. We know that the correct recognition of pain in residents with moderate-severe CI is a key factor to identify those at greatest risk of undertreatment and to deliver optimal pain management.

2. Regardless of CI, residents with no vocal complaints ( $n = 144,061$ ) had more frequent documentation of non-verbal pain behaviors (such as, facial expressions and body movements), suggesting that this population may have more reliance on these behaviors to convey the experience of pain. This may also be an evolutionary and compensatory mechanism for partial or complete loss of verbal communication of pain [3].
3. Compared to those with no or mild CI, facial expressions of pain are more commonly documented for residents with moderate-to-severe CI, independently of the effect of covariates, such as depression and anxiety [1]. This finding is not surprising and aligns well with previous literature [4–6]. Thus, the need to use validated facial cues in pain assessment tools [e.g., Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC-II), PainChek<sup>®</sup> (formerly known as the electronic Pain Assessment Tool “ePAT”)] for this population [7–9]. Further, the authors rightly point out the importance of using novel and automated methods in capturing facial expressions of pain in an attempt to improve pain assessment in this population [8, 10]. These methods have proven to be effective in recognizing pain with strong psycho-

metric and clinimetric properties in people living with dementia [8, 11–13].

In order to advance this area of research, a rich real-world data source like the one reported by Morrison et al. is crucial for our understanding of pain behaviors in cognitively impaired individuals. Given the first objective of this study, i.e. “...to provide a comprehensive description of nonverbal pain behaviors...,” it would be reasonable to report the frequency of specific nonverbal pain behaviors in aged care residents with moderate-severe CI, including those living with dementia. However, this is not possible given the limitations of the Minimum Data Set 3.0 as it is a health screening test that does not collect such information and is only confined to an abstract list of “indicators of pain or possible pain in the last 5 days.” This additional information might have been better addressed if the collected data were using more specific and itemized descriptors – such as coarse or fine-grained facial expressions of pain (e.g., grimace or brow lowering, respectively). Further, when evaluating the impact of pain on the care needs, collecting more granular data would add a much greater clinical value over generalized behavior descriptors. This is particularly useful if the description of pain behaviors can be reasonably attributed to individual-level data. Another clinically useful approach is the utilization of “big” data in identifying pain (assessment) patterns (e.g., diurnal vs. nocturnal or rest vs. movement pain scores). Using a combination of various technologies such as artificial intelligence, smart automation, internet of things and cloud computing makes capturing real-world data on a large scale a tangible possibility. The above (i.e., data-driven and technology-based) approaches would improve the epidemiological evidence on pain behaviors in people with CI or dementia, both quantitatively and qualitatively.

Finally, we commend the data reported by Morrison et al. in their article and appreciate any additional clinical or demographic information (e.g., pain behaviors by ethnicity; orofacial pain data) related to this important topic.

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## Statement of Ethics

Ethics approval was not required as the submitted manuscript is a letter to the editor.

## Conflict of Interest Statement

Mustafa Atee and Jeff Hughes are co-inventors of the PainChek<sup>®</sup> instrument, which is marketed by PainChek Ltd. (ASX: PCK). Both are also shareholders of PainChek Ltd. Mustafa Atee previously held the position of a Senior Research Scientist (October 2018 to May 2020) at PainChek Ltd. and is currently serving the position of Research and Practice Lead at The Dementia Centre, HammondCare. He is also a PhD Candidate at School of Pharmacy and Biomedical Sciences, Curtin University. Jeff Hughes currently holds the position of Chief Scientific Officer at PainChek Ltd., while serving as a Professor at School of Pharmacy and Biomedical Sciences, Curtin University. The co-inventors had a granted patent titled “A pain assessment method and system; PCT/AU2015/000501” in Australia, China, Japan and the USA, which was assigned to PainChek Ltd. The remaining authors have no further conflicts of interests.

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## Author Contributions

M.A. wrote the initial draft of the letter and conducted the literature review. The remaining authors reviewed and contributed to the draft. All authors approved the final version of the letter.

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