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Pain Assessments in MDS 3.0—Agreement with Vital Sign Pain Records of Nursing Home Residents

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The minimum data set (MDS) 3.0 implemented on October 1, 2010 is the latest version of a federally-mandated clinical instrument used in Medicare- and Medicaid-certified nursing homes.[1] Improving upon the 2.0 version, MDS 3.0 collects self-assessments of pain from residents who can verbally communicate through a standardized resident interview.[1] MDS 3.0 pain has an excellent nurse-to-nurse interrater reliability and expert content validity.[2,3] However, it remains unclear to what extent the MDS-3.0 pain assessment adequately represents the clinical pain experience of nursing home residents. This study aims to examine the agreement between MDS-3.0 pain assessment and vital sign pain records documented during geriatrics' ward visits.

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Methods

Using a federally-certified nursing home's electronic health records, we included residents with at least one vital sign pain record during the 5 days before an MDS-3.0 complete pain assessment from October 2010 to November 2017. The choice of the prior 5-day period resembles the 5-day recall period for the MDS-3.0 pain measure. We excluded assessments administered within the first month of nursing home care, during which residents tended to have transient medical conditions and varying pain medications that might result in increased variability of pain ratings.

MDS-3.0 pain was measured by residents' recall of worst pain in the past 5 days with a numeric rating scale (NRS) on a 0 (no pain) to 10 (worst pain) score or a categorical, verbal descriptor scale (VDS) with 4 response choices (no, mild, moderate, or severe pain).[3] The NRS and VDS pain were combined based on an empirically validated crosswalk[4] and classified into 2 categories: no-to-mild (0–4) and moderate-to-severe (5–10) pain, because moderate to severe pain can significantly affect physical function and quality of life.[5] Pain intensity of non-verbal residents was assessed by nurse staff with a checklist of nonverbal pain indicators (CNPI).[3] For comparison purposes, the CNPI score was classified as no-to-mild (0–1 behavior) and moderate-to-severe (2–4 behaviors) pain.[6] Vital sign pain was measured with NRS for verbal and CNPI for non-verbal residents to assess their current pain during ward visits of a medical team, independent from the nursing home facility, and converted into no-to-mild or moderate-to-severe pain.

MDS-3.0 pain was compared to two vital sign pain measures: the highest pain experienced (i.e., what was assessed on MDS 3.0) and the most frequent pain value during 5 days before each eligible MDS pain assessment. The second vital-sign pain measure serves as an alternative pain value in the case that residents might have reported the most frequent pain as the worst pain on MDS 3.0. We reported percent agreement and *k* statistics to assess the concordance of no-to-mild or moderate-to-severe pain between MDS 3.0 and vital sign records.[7]

Results

A total of 323 MDS 3.0 assessments of the 249 eligible patients (mean age = 85.8±7.4 years; 67.9% females; 97.2% whites) were paired with vital sign pain records. The percent agreements for the highest and most frequent vital sign pain were 58.5% and 56.4%, respectively (Table 1). The *k* statistics was low for pain reporting for both the highest (k=17%, 95% CI=6–28%) and most frequent (k=13%, 95% CI=2–23%) vital sign pain.

Discussion

This is among the first studies examining how well MDS-3.0 pain assessment agrees with pain experience reported by nursing home residents in clinical assessments. Our findings suggest MDS-3.0 pain assessment does not agree with vital sign measures of pain that residents had experienced in the prior 5 days. While reasons for the poor agreement warrant further investigation, the discrepancy could be due to the difference in pain assessment question, with the MDS 3.0 assessing recall of the worst pain, whereas vital sign recording

transient pain. Findings regarding the agreement between a single rating of weekly recalled pain and current pain experience are inconsistent.[8,9] These studies focused on patients aged less than 65 years, and no literature has been reported in nursing home residents, who often have cognitive and memory issues.[10] In addition, the inconsistent pain reporting could be due to the difference in interviewers— the MDS 3.0 was administrated by nursing home staff members, whereas vital sign checks were performed by medical team members. It remains unclear whether residents tended to more accurately report their pain level to medical team members because such clinical information is imperative in justifying an immediate treatment plan.

In conclusion, the single nursing home study showed that MDS-3.0 pain intensity had poor agreement with vital sign measures of pain in the prior 5 days. Future studies that incorporate a representative sample of nursing home residents and facilities are warranted to establish the generalizability of these results.

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Table 1.

Agreement Between Pain Intensity Assessed in MDS 3.0 and Documented in Vital Sign Records During the 5 days Prior to an Eligible MDS-3.0 Assessment Date

Vital Sign Pain Intensity	Pain Intensity in MDS 3.0			
	No. / Total No. (%)		Agreement (%)	*k* statistic (95% CI)
	No/Mild	Moderate/Severe		
Highest recorded pain score				
(n=323 paired-records)				
No/Mild	101 (31.3)	73 (22.6)	58.5	17% (6%–28%)
Moderate/Severe	61 (18.9)	88 (27.2)		
Most frequent recorded pain score				
(n=323 paired-records)				
No/Mild	107 (33.1)	86 (26.6)	56.4	13% (2% – 23%)
Moderate/Severe	55 (17.0)	75 (23.2)		