Pain Intensity Measure for Persons with Dementia (PIMD)

Description: The Pain Intensity Measure for Persons with Dementia (PIMD) was developed to identify a parsimonious set of items from existing measures to best predict pain intensity in persons with dementia. The PIMD is a seven-item observational scale for pain intensity developed by evaluating 140-items across 12-published pain scales. The seven items rated on intensity are: *Bracing, Rigid/stiff, Sighing, Complaining, Grimacing, Frowning, Expressive Eyes.*

Psychometric Testing: *Tool Development:* In phase 1 of development a modified Delphi technique was used to identify a range of items. Expert clinicians were provided a set of 140 candidate items from 12-published observational pain tools. The tools included the MOBID, PAINE, PROMIS-SF, MDS, ADD, Keefe & Smith, PAINAD, CNPI, PACSLAC, NOPAIN, Doloplus, and Abbey. In round one, each item was rated as not useful, somewhat useful, or very useful. In round two, the panel received a listing of all original items with the ratings across panel members and were asked to re-score items, group items into categories, and identify redundant items. In round 3, all members received a summary of round 2 and participated in a conference call with a psychometrician to discuss the findings. The conference call was transcribed for review by investigators. The results from the Delphi panel identified 39-items grouped into eight categories that were scored based on intensity or frequency over a 5- to 10-minute observation period. In phase 2, 33 of 39-cadidate items were tested with N=95 nursing home residents with dementia and each item was rated on intensity and frequency. Correlations between the items and expert clinician pain intensity rating were completed along with item evaluation using the least absolute shrinkage and selection operator

model (LASSO). Based on these findings, seven-items were identified to be included in the final PIMD scale that would be rated on intensity rather than frequency of behavior.

Validity: Validity of the PIMD has been tested with persons with dementia both at rest and during movement. Concurrent validity was established using expert clinician pain intensity ratings (ECPIR) which involves medical record review, targeted physical examination, consultation with care staff and family, resident interview, and observation during rest and activity. During movement, the PIMD had high and moderate association with the ECPIR for concurrent pain (ρ=.75) and worst pain (ρ=.49), and moderate association with the MOBID (ρ=.59). At rest, the PIMD had no significant association with the ECPIR (ρ=.14) and low association with the MOBID (ρ=.24). The PIMD showed a low convergent validity with the number of painful diagnoses (ρ=-.17), and no association with depression (ρ=.14), sleep (ρ=.-.09), and CMAI (ρ=.09).

Reliability: Inter-rater reliability for the PIMD is good, with an ICC of 0.82 during movement and an ICC of 0.70 during rest. Internal consistency is acceptable during movement (α=.72), but low during rest (α=.18).

Language and Settings: The PIMD was developed and has been tested in nursing homes across the Southern and Eastern US for use with residents with cognitive impairment.

Feasibility/Clinical Utility: There has been no formal reporting on feasibility/clinical utility. However, this observational scale is brief at 7-items and scored by simply summing the items (range 0-21). During tool development a 5- to 10-minute observation period was recommended.

Scoring and Interpretation: Seven-items rated as absent=0, mild=1, moderate=2, severe=3 based on clinician observation. Items are summed to yield a total score of 0-21 with higher scores indicating a higher pain intensity.

Summary/Critique: The PIMD has excellent content validity. A robust process was undertaken to develop the PIMD by evaluating and combining 12 well-established pain scales into a brief and feasible 7-item scale. The PIMD needs to undergo further psychometric testing as it has been limited to testing with a sample of 190 persons with dementia in the US. Further evaluation is needed to determine if the PIMD is appropriate for evaluation of pain at rest or if it is only a valid measure during movement.

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