Abbey Pain Scale (APS)

Description: The Abbey Pain Scale (The Abbey or APS) is an Australian tool developed to measure severity of pain in people with late-stage dementia that was efficient, effective and able to be used by a variety of care staff. Although there is no presentation of the conceptual basis for the tool, this *informant-based* tool categorizes pain severity (no pain, mild, moderate, severe) based on total pain score and measure "acute pain", "chronic pain" and "acute on chronic," in the same tool. Preliminary studies give no evidence that informants can reliably rate these levels of pain using this tool. Since its original development, additional studies provide supporting data for its use. Testing has occurred in older adults with and without cognitive impairment (Liu, Briggs, & Closs, 2010). The Abbey is recommended by Australian pain guidelines and the British Geriatrics Society/British Pain Society Assessment in Older Adults guidelines.

Psychometric testing: Although used primarily in Australia and British-related territories, much research has been done to validate the Abbey. The original Abbey is purported to have sufficient content and construct validity. Two studies point towards issues with the physiological change indicator on the Abbey.

Construct validity. When compared to the DS-DAT and PACSLAC, the Abbey indicated a single-factor construct only after deletion of the "physiological change" indicators (Liu, Briggs, & Closs, 2010) which explained 40% of the scale variance (Neville & Ostini, 2014). "Item level internal consistency analysis consistently showed that the Abbey would be a more reliable scale if the item 'Physical Changes' were omitted from the scale" (Neville & Ostini, 2014, p. 803). The Abbey is more responsive to detecting pain

during exercise/movement (Liu et al., 2010). Similarly, Takai et al. (2010) also found issues with the "physiological change" and "change in body language" indicators, as evidenced by no correlations with self-report and Verbal Descriptor Scale. They concluded that cultural differences in body language between Japanese older adults and Australian older adults may explain this.

Convergent validity.

- Highly correlated with the PAINAD, DS-DAT, and PACSLAC at rest and during movement, but correlations with PACSLAC was lowest (Liu et al., 2010).

Concurrent validity. "Because there is no gold standard for a nonverbal population, concurrent (or congruent) validity is usually determined by correlating a pain observation score with proxy reports or other existing pain observation scales" (van Herk et al., 2007, p. 35) or self-report scales. There was strong agreement between proxy-reports using Abbey and self-reports for the presence of pain, 78.3% and 66.1% in intact and impaired cognition, respectively (Lukas et al., 2013). However, there was a higher false positive rate in the impaired group (Lukas et al., 2013). Others report poor agreement between the Abbey and Verbal Rating Scale ($\kappa = 0.42$) (Gregersen et al., 2016). Comparisons with individual facial action coding system score (44 facial action units), the Abbey was significantly correlated at the moderate and severe pain intensities but not the mild pain intensity (Sheu et al., 2011).

- 0.59 gamma (Abbey et al., 2004)
- $r = 0.74$-0.82 with FACES self-report scale, impaired group; $r = 0.59$, intact group (Liu et al., 2010)

- *r*= 0.49 between Abbey and Verbal Descriptor Scale (Takai et al., 2010)
- *r*= 0.31 (intact) and *r*= 0.56 (impaired) (Lukas et al., 2013)
- *r*= 0.38 and 0.45 (Neville & Ostini, 2014)

Predictive validity.

- Predictive validity was assessed by change in mean pain score pre-intervention: 9.02(± .48), post intervention: 4.21(± .41). A paired t-test was statistically significant ($p<0.001$). However, it is unclear what unit of analysis was used for examining pre-post score changes (e.g. pain episode, resident or mean score) (Abbey et al., 2004).
- In a sub-sample of 66% of the patients, 88% had a reduction on the Abbey total score ($p<0.001$) after analgesics were given (Danish version) (Gregersen et al., 2016).

Discriminant validity. A discriminant function analysis (DFA) was able to improve: 1) recognition of pain in nearly a fourth of older adults with dementia and by 28% in cognitively intact adults, and 2) correct classification of older adults' self-reported pain intensity level by 42% in cognitively impaired and 34% in cognitively intact older adults (Lukas et al., 2013). Sheu and colleagues demonstrated the Abbey's ability to discriminate between three levels of pain (2011).

Internal consistency. Strong evidence for internal consistency exists as a number of studies have evaluated this psychometric property.

- α= 0.74-0.81 (Abbey et al., 2004)
- Cronbach's α= 0.75 (at rest and movement) (Liu et al., 2010)

- Cronbach's α= 0.645 (total sample); α= 0.719 (severe cognitive impairment) (Takai et al., 2010)
- Cronbach α for two time points across two rates ranged from 0.650-0.796 (Neville & Ostini, 2014)
- Cronbach's α= 0.52 (Danish version) (Gregersen et al., 2016)

Interrater reliability. There is low to moderate inter-rater reliability. When examining the facial action coding system with the Abbey's facial expression dimension,

- ICC = 0.63 and r = 0.44 (Abbey et al., 2004)
- ICC= 0.78 (rest) and ICC= 0.86 (exercise) (Liu et al., 2010)
- κ= -0.20-0.42 (mild pain),κ= -0.10-0.52 (moderate pain), κ= 0.11-0.48 (severe pain) (Sheu et al., 2011)
- ICC= 0.824 (Japanese version) (Takai et al., 2010)
- ICC= ranged from 0.68-0.76 between researchers, nurses, and care workers (Japanese version) (Takai et al., 2014)
- ICC= 0.750 and 0.704 (Times 1 and 2 respectively) (Neville & Ostini, 2014)
- K= 0.335 and 0.475 (Times 1 and 2 respectively) (Neville & Ostini, 2014)
- ICC= 0.84 (Danish version) (Gregersen et al., 2016)

Test-retest reliability. At the present, there is the minimal research on the Abbey's for test-retest reliability.

- ICC= 0.657 (Japanese version) (Takai et al., 2010)
- *r*= 0.680-0.618 (Neville & Ostini, 2014)

Languages and Settings: English, Danish, Japanese, Italian languages; aged care facilities such as nursing homes and retirement houses, geriatric unit in acute care hospitals, and emergency departments. The APS has also been used in Polish nursing homes; however, it is unclear if the tool was translated for this study or if the English version was used.

Feasibility/Clinical Utility: According to its developers, the Abbey takes approximately one minute to administer, but no data exists to support this. Japanese nurses reported fair utility and feasibility, citing issues with scoring criteria, difficulty observing residents, and a need for a care manual to assist with management of pain (Takai et al., 2014). One study reported that emergency nurses preferred the PAINAD as compared to the Abbey, Doloplus-2, and PACSLAC; one reason being that a fair amount of the information required for the Abbey Pain Scale cannot be obtained or observed in emergency settings, due to time constraints and temporary interaction with patients (Fry, Arendts, & Chenoweth, 2017).

Scoring and Interpretation: The tool includes six items: vocalization, facial expression, change in body language, behavioral change, physiological change, and physical change. Each item is leveled on a four point scale for severity of the behavior (Absent: 0; Mild: 1; Moderate: 2; Severe: 3) with total score ranging from 0 to 18. The total score is then interpreted as severity of pain: No pain: 0-2; Mild: 3-7; Moderate: 8-13; Severe: 14+. The rater is asked to indicate which type of pain the older adult has: chronic, acute, or acute on chronic.

Summary/Critique: Clinicians considering this tool need to be aware of conceptual issues. There is conceptual blurring between acute and chronic pain with no discussion in the paper on distinguishing characteristics of the pain types, but the tool can differentiate between mild, moderate, and severe pain. Although the tool does include at least one cue from each of the 6 categories of non-verbal pain behavior indicators from the AGS Guideline on Persistent Pain in Older Adults, the inclusion of physiological indicators is not supported in the literature on chronic pain. More research in other settings, including pre-hospitalization (Lord, 2009), is needed to explore its utility.

Contact Information for Tool Developer:

We were unable to obtain permission to post the contact information.

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