

Measuring Pain Intensity in Older Patients

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ABSTRACT

Pain intensity is considered as the fifth vital sign. However, it is the only vital sign which is subjective, with there being many pain measurement tools for adults to rate their level of pain. Additionally, there is an increasing number of aging populations throughout the world, and pain measurement in this group of people is challenging as geriatrics have both physical and cognitive impairment.

The most frequently utilized pain measurement tools are; the Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), Numerical Rating Scale (NRS); and faces scales [Faces Pain Scale (FPS) and Faces Pain Scale-Revised (FPS-R) are the faces scales studied most often] tend to be valid for measuring pain severity in cognitively intact elderly. When problems arise, the VAS is the pain measurement tool found to have more difficulties (including higher rates of failure) than the other tools. In elderly with cognitive deficits, fewer difficulties tend to occur as the tools become simpler, with the most valid and useful tools in the following order: the FPS/FPS-R, the VRS, the 0-10 NRS, and the VAS. Furthermore, simpler pain measurement tools tend to be favored over more complicated tools.

Keywords: aging; elderly; geriatrics; older; pain measurement; pain measurement tools

INTRODUCTION

Pain intensity is commonly measured in research and clinical settings.¹ Different pain intensity domains can be assessed, depending on the specific goals of the researcher or clinician. These include current pain, recalled

average pain, least pain and worst pain in the previous 24 hours or 7 days. Although, average pain (in the previous 24 hours or 7 days) is arguably the most common pain intensity domain assessed by researchers and clinicians, some researches indicate that in chronic pain samples,

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worst pain is more strongly related with disability than average pain.² Thus, while current pain is likely the most appropriate pain intensity domain in acute pain contexts (e.g., during medical procedures), both average and worst pain are significant domains to consider while assessing the chronic pain context. As such, research to understand the most reliable and valid measures for assessing these domains within different pain populations are critical for both researchers and clinicians.

PAIN MEASUREMENT IN GENERAL

The majority of clinical guidance's; such as those of the American Pain Society (APS), recommend routine pain measurement. Pain intensity can be evaluated by using self-report scales, observational measures, and/or physiological measures. Among these, self-report measures are regarded as the gold standard, because pain severity is always a subjective experience.³ The Australian and New Zealand Society for Geriatric Medicine has launched a position statement emphasizing that self-reporting should be the gold standard, while observational and behavioral measures should be employed for individuals unable to reliably indicate pain due to cognitive deficit or communication difficulty.⁴ Self-reporting requires an individual to communicate this personal unpleasant sensory and emotional experience as well as to process external information.⁵

The 3 most frequently utilized self-report pain severity measurement tools are the Visual Analog Scale (VAS), Numerical Rating Scale (NRS), and the Verbal Rating Scale (VRS). The Faces Pain Scale-Revised (FPS-R), originally developed for use with children, is increasingly used in pediatric populations as well as populations who might find the complexity of the VAS, NRS, and even the VRS challenging (e.g., individuals with very low educational levels, or individuals with cognitive deficits).⁶ Each of these 4 scales has its own strengths

and weaknesses, and there is no single scale recommended for use with all patient groups in all situations.⁷

As indicated previously, faces pain scales such as the FPS-R were originally developed for use in young children and adults with low educational degrees or cognitive deficits. Nevertheless, concerns have been expressed that faces pain scales may not be as valid as the other measures for assessing pain intensity only; as they may also reflect the patient's emotional response to the pain.⁸ In addition, there are discrepancies in the way different people interpret measurement tools⁹; the most suitable tool for any population may depend on that population's age, education level, or culture.¹⁰

Although, the VAS has traditionally been thought to be sensitive to small changes in pain than the other commonly used pain intensity measures, research suggests that it is more difficult to comprehend than other tools; especially for the elderly and those with cognitive impairments.¹¹

AGING SOCIETY

In July 2019, the world population reached 7.7 billion people. The world population is estimated to reach 8 billion people in 2023 and 10 billion people in the year 2056. Thailand is the 20th country among the top 20 largest countries by population.¹² As life expectancy increases, the geriatric population also increases, and the number of people older than 60 years of age has tripled since 1950 and exceeded 700 million in 2006. It is estimated that the older population will reach 2.1 billion by the year 2050.¹³ Hence, we can anticipate in the years and decades ahead, many more elderly patients will be receiving health care.

Given decreases in both physical function and cognitive abilities, geriatric people are considered vulnerable. Although, pain is an important issue for this population, inadequate attention has been provided to its assess-

ment and management. Uncontrolled pain can be physically and psychologically harmful. As a consequence, the quality of life (QOL) and ability to function in the elderly is at risk, due to inadequate or inappropriate treatment of pain. Importantly, valid and reliable pain assessments are central for the appropriate management of pain.¹⁴ In order to provide the highest quality of health care, health care providers should be able to recognize, assess and manage pain appropriately.¹⁵

PAIN MEASUREMENT IN THE GERIATRIC POPULATION

A number of studies have been conducted in other wise healthy and pain older adults to assess the psychometric properties of commonly used pain assessment tools as well as preferences for a tool of choice. For example, 167 patients with a mean age of 80.5 years were included in a study to determine the validity and utility of 3 different pain rating scales: a VAS, a Graphic Rating Scale (GRS), and a NRS. They found that all 3 pain rating scales were valid for assessing pain severity in elderly patients. However, the agreement between verbally expressed experience and the rated experience of pain tended to decline with advancing age.¹⁵

A quasi-experimental study was conducted in a group of younger and older (age 65–94) healthy volunteers. Responses of subjects to induced noxious thermal stimuli were measured with 5 pain scales: a vertical VAS, a 21-point NRS, an 11-point VNS (e.g., participants were instructed to give their responses to a VRS verbally, rather than on a paper-and-pencil form), an 11-point Verbal Descriptor Scale (VDS) and a FPS. All 5 scales were found to be reliable and valid across all ages, although the VDS was preferred over the other measures in the older adults; including those with mild to moderate cognitive impairment.¹⁶ A study conducted in nursing home residents with various levels of cognitive impairment revealed that the association among 5 different scales

(VRS, NRS, FPS, color analogue scale and mechanical VAS) was strong among participants with no to moderate cognitive impairment, but poor for those who were severely impaired. The findings also revealed no systematic differences in the means of the pain scores between the measures as a function of cognitive status.¹¹ Cognitively impaired and intact nursing home residents with a mean age of 78.4 years participated in a study to compare 4 standard pain intensity instruments (a VRS from the McGill Pain Questionnaire, Wong-Baker Pain Faces Scale, a VAS and a VRS). They concluded that the VRS was the most useful for assessing pain severity in this sample.¹⁷

Another study performed in a sample of Chinese postoperative adult patients who presented without and with mild cognitive impairment compared the psychometric properties of 5 pain intensity scales (VDS, NRS, FPS, 21-point Box Scale (BS-21), Colored Analogue Scale [CAS]). The findings supported the validity of all 5 pain scales in the sample; including those with mild cognitive impairment. However, a slight the FPS appeared to evidence somewhat stronger validity, followed by the VDS and NRS.¹⁸

In a study comparing the VAS, VDS, Pain Thermometer (PT) and NRS in 40 elderly women who experienced chronic arthritic pain, almost half of the subjects rated the Pain Thermometer as the easiest and most accurate reflection, followed by the VDS, VAS and NRS.¹⁹ A preliminary study in younger (21–55 years old) and older (65–87 years old) adults with arthritic pain who were administered different rating scales prior to and after joint injection demonstrated that the Iowa Pain Thermometer (IPT) was the most sensitive to the effects of the injection on pain intensity. Additionally, it had the lowest failure rate, and was the most preferred, when compared to the NRS, verbal NRS (VNS), FPS, and VAS.²⁰ A study in older minority adults demonstrated that samples with intact cognitive function and cognitive impairment were capable of using each of the 4 pain scales [IPT, NRS, Verbal

Descriptor Scale (VDS) and Faces Pain Scale-Revised (FPS-R)].²¹ Another study was conducted in a sample of African American older individuals with both intact and impaired cognitive function. The findings indicated that cognitive impairment did not interfere with the older adults in their use any of the tools evaluated (FPS, VDS, NRS, and IPT). However, both the cognitively impaired and intact groups preferred the FPS over the other measures.²²

A descriptive correlational designed study was carried out in a sample of cognitively intact and cognitively impaired older adults to evaluate the reliability and validity of the FPS, VDS, NRS and IPT. The average Mini Mental State Exam (MMSE) score was 16, with a range of 1–29. Eighty-five percent of the sample had some degree of cognitive impairment (e.g., a MMSE score of 24 or lower), while 15.0% were classified as being cognitively intact. Concurrent validity of the VDS, NRS and IPT was supported in the entire sample. However, the FPS demonstrated weak correlations with other scales in the cognitively impaired group. Test-retest reliability at a 2-week interval was acceptable in the cognitively intact group, and unacceptable for all in the cognitively impaired group.²³ One hundred and seventy-seven subjects, aged 65 years or older were questioned to rate their pain severity by using FPS-R and pain thermometer (PT), in 5 hypothetical painful circumstances (Geriatric Painful Events Inventory) at 2 different times. The results showed that the pain severity ratings reported with FPS-R and PT were very comparable. Also, all of the participants preferred the FPS-R over the PT, regardless of age or gender.²⁴

Five commonly used pain scales (a horizontal VAS, a vertical VAS, an 11-point BS, a 21-point BS and a VDS) were studied in younger and older patients with persistent pain. It was found that Box-21 was an excellent choice across different age groups, although patients older than 75 years favored the verbal descriptor scale.¹⁰

Comparing the 11 face modified version of the McGrath nine face Faces Pain Scale (FPS) with an 11-point

NRS in a sample of older Korean adults, 85 years old or more, Kim and colleagues found that the 11-point NRS was appropriate for this population.²⁵

Difficulties with the VAS among surgical elderly patients were recognized; including, high rates of unscorable data and low face validity, and therefore, it has been suggested that its use should be discouraged in elderly postoperative patients.²⁶

CONCLUSION

Overall, this body of research indicates that all of the most commonly used measures of pain intensity; including the VAS, VRS, NRS, and faces scales (the FPS and FPS-R are the faces scales examined most often) tend to be valid for measuring pain intensity in healthy, cognitively intact elderly patient populations. However, when problems do emerge, the VAS is the scale found to have more problems (including higher failure rates) than the other scales. In elderly individuals with cognitive deficits, fewer problems tend to emerge as the scales become more simple, with the most valid and useful scales in order being: the FPS/FPS-R, the VRS, the 0–10 NRS, and the VAS. Moreover, simpler scales tend to be preferred over more complicated scales.

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