





DERLEME/REVIEW

Assessment of Pain in Different Patient Populations

Farklı Hasta Gruplarında Ağrı Değerlendirmesi

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ABSTRACT

Pain is an experience that negatively affects a person's life. When choosing the intervention strategies to be planned for the treatment of pain, an accurate assessment of the patient's level of pain is crucial. Asking the patient if they are in pain is the simplest way to determine their level of pain. However, a simple "yes or no" assessment is insufficient. To assess pain, both single-dimensional and multidimensional scales are employed nowadays. In this article, due to the subjectivity and individuality of pain; Information about commonly used pain scales developed specifically for certain patient populations will be given.

Key words: Pain, pain measurement, patient population

ÖZET

Ağrı, kişinin hayatını olumsuz etkileyen bir deneyimdir. Ağrı tedavisi için planlanacak müdahale stratejilerini seçerken, hastanın ağrı düzeyinin doğru bir şekilde değerlendirilmesi çok önemlidir. Hastaya ağrı duyup duymadığını sormak, ağrı düzeylerini belirlemenin en basit yoludur. Ancak basit bir "evet veya hayır" değerlendirmesi yetersizdir. Ağrıyı değerlendirmek için günümüzde hem tek boyutlu hem de çok boyutlu ölçekler kullanılmaktadır. Bu yazıda ağrının öznelliği ve bireyselliği nedeniyle; belirli hasta popülasyonları için özel olarak geliştirilmiş yaygın olarak kullanılan ağrı skalaları hakkında bilgi verilecektir.

Anahtar kelimeler: Ağrı, ağrı ölçümü, hasta popülasyonu

Introduction

The International Organization for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience that goes along with or might be associated with actual or potential tissue damage¹. Because pain is a subjective, or personal, symptom, it is important to understand the patient in all of their facets, get the right history, keep an eye on them constantly, and assess their pain using the right techniques². Various conservative, interventional and regenerative methods are used in pain management³. Before using a scale in patients, its validity and reliability must be tested in terms of age, culture, and pain type. Because while a scale is valid in a certain age range and culture, it is not valid in another culture and age range⁴. In the selection of the appropriate method, pain must be correctly defined and evaluated. There are various pain assessment methods in different populations (Table 1). For each population, using various assessment techniques will yield more accurate data regarding pain. Due to the subjectivity of pain, the literature was reviewed in detail for the methods used to evaluate pain in different patient groups and approaches for assessing it in different populations are covered in this review.

Assessment of Pain in The Pediatric Population

Although the ability to recognize and perceive pain in the pediatric population increases with age and experience, it varies at each developmental stage. For this reason, the general condition of the child, age, perception and recognition level of pain should be considered in the method to be chosen to evaluate pain in this population, and the measurements should be repeated systematically⁵. In pediatrics, three different one-dimensional parameters are generally used to assess pain severity: physiological changes, pain behaviors, and self-report measures⁶. Physiological measurements; They include changes in blood pressure, tachycardia, oxygen saturation, and they are insufficient to distinguish changes for pain because they can change with other factors⁷. Behavioral-observational pain scales are frequently used in infants, very young



children, children with impaired ability to speak, and children with impaired cognitive skills⁸. The most reliable way for evaluating children's pain is self-report measures⁹. However, these scales are not appropriate in the case of recurrent and chronic pain because behavioral signs change over time⁹.

Table 1. Pain Assessment Methods in Different Populations

Assessment of pain in the pediatric population	Revised Faces Pain Scale Wong-Baker Faces Pain Rating Scale Photo Oucher pain scale Visual Analog Scale Poker Chips Scale Face, Legs, Activity, Cry, Consolability scale Premature Baby Comfort Scale Children's Hospital of Eastern Ontario Pain Scale Parents' Post-operative Pain Measure COMFORT Scale
Pain assessment in elderly individuals with and without cognitive impairment.	Geriatric Pain Scale Abbey Pain Scale Numerical Rating Scale Verbal Descriptor Scale Face Pain Scale Brief Pain Inventory Pain Assessment in Advanced Dementia Mobilization-Observation-Behaviour-Intensity-Dementia Pain Scale Discomfort Scale for Dementia of the Alzheimer's Type Pain Assessment for the Dementing Elderly DOLOPLUS2 ölçeği Checklist of Nonverbal Pain Indicators The Pain Assessment Checklist for Seniors with Limited Ability to Communicate The Non-Communicative Patient's Pain Assessment Instrument 21- point box scale
Pain assessment in patients with neuropathic pain	Neuropathic Pain Scale Neuropathic Pain Symptom Inventory Mcgill Questionnaire Short Form -2 LANSS PainDetect Scale Douleur Neuropathique en 4 questions
Pain assessment in patients with chronic pain	Chronic Pain Acceptance Questionnaire Graded chronic pain scale revised
Pain assessment in cancer patients	MD Anderson Symptom Inventory The Edmonton Symptom Assessment System
Pain assessment in intensive care patients	The Pain Assessment and Intervention Notation Algorithm Pain Behaviour Assessment Tool Nonverbal Pain Scale Behavioural Pain Scale Critical Care Pain Observation Tool

Pain Evaluation in Newborn, Non-Speaking and Language Deficient Children (0-2 years)

As the nervous system matures, the level of perception of the painful stimulus increases. In addition, the peripheral and central and nervous systems which are responsible for part of the pain perception process, are active from the early stage of development¹⁰. The ascending pain pathways necessary for the baby to perceive pain are properly developed, but the pain response is not fast enough since the descending pain pathways are not sufficiently developed. As a result, pain intensity in newborns is perceived as in adults, but complex pain responses are not developed enough. Therefore, the evaluator should know that pain is structurally different and that it is not perceived as less pain in newborns¹¹. Newborns usually respond to pain in the form of crying. For this reason, physiological indicators, behavioral observational scales, reports from family and health professionals are used, although they are not at a sufficient level in evaluating pain in newborns and pre-speech children¹².

Pain Assessment in Preschool Children (3-7 years)

From the age of two, children reach the communication skills that can express the presence or intensity of pain. For this reason, self-report methods with the highest reliability are used. But cognitive development is not yet complete, so communication between the assessor and the child is still limited¹³.

Pain Assessment in School Period and Older Children (8-12 and 12-18 Years)

Children in this period can express and communicate concepts such as pain and illness at a good level. However, there are still limitations in cognitive development during school years. Because of this, it's critical to comprehend how this time period and its qualities affect how pain is expressed. As a result, expressions for pain proportional to age include objective, abstract, physical and physiological explanations. In a study, physiological and abstract definitions of pain were found to be 2.5% in the 5-7 age group, while it was 18.5% in the 11-14 age group¹⁴.

Self-Report Scales Used in Children

Self-report measurement methods are preferred relatively more frequently in children with verbal communication skills. As a result of important review studies, 5 different self-report pain scales with high validity and reliability and clinical use were shown. Stinson et al. and Cohen et al. compared 17 self-report scales and recommended 5 scales for children aged 3-18 years¹⁵⁻¹⁶. Similarly, in the acute pain assessment guide, the validity and reliability of the same 5 self-report scales were found to be strong and easy to use and accessible in the clinic².

Revised Faces Pain Scale

It was developed by Hicks et al. In children aged 3 to 16, its reliability and validity have been proven. Acute, chronic, and post-operative pain are also treated with it⁴. This scale does not contain any cultural element. It has been shown to have cultural validity in various societies and has been translated into 25 different languages¹⁷. It has been valid from the age of 3 as it does not require advanced cognitive skills such as counting, but some young children may have difficulties in matching the abstract concept of pain with facial expressions. It includes six gender-neutral facial expressions on the horizontal plane. Scoring can be done between 0-5 points or 0-10 points¹⁸. The leftmost neutral facial expression represents no pain, the rightmost facial expression represents unbearable pain¹⁸. In the study conducted by Esra Dođru et al., horizontal and vertical versions of the scale were investigated on children aged 3-18 years, and vertical application was found to be more valid and horizontal application more reliable¹⁹. In their study involving 299 children aged 4-17 years, Alm et al. evaluated the post-operative pain of children who had undergone tonsillectomy using the Revised Faces Pain Scale²⁰⁻²¹

Wong-Baker Faces Pain Rating Scale (WBFPRS)

Its reliability and validity have been proven in children between the ages 3 and 18; translated into various languages. It measures acute, chronic and postoperative pain. It was developed by Wong and Baker and includes six hand-drawn facial expressions in the horizontal plane. Scoring is done between 0-10 or 0-5 points²². The leftmost smiling face represents the absence of pain, the rightmost tearful facial expression represents unbearable pain, but the representation of extreme pain as a crying face with tears may cause pain to be exaggerated in children aged 4-5 years²³. At the same time, the fact that especially boys do not prefer this expression, even if they are extremely painful, may cause false results such as less pain²⁴⁻²⁵. This scale has not yet been evaluated for its reliability and validity with regard to Turkish children.

Photo Oucher Pain Scale

Children aged 3 to 12 years old can also use it for acute, chronic, and post-operative pain. It is a scale containing six different real facial expressions of an American-Caucasian boy in the vertical plane. Scoring can be done between 0-5 points or 0-100 points. The photograph at the bottom of the scale represents the expression "no pain", and the photograph at the top represents the expression "unbearable pain". The scale is not culturally sensitive. Therefore, it must be modified before being used in another culture¹⁶. Culturally

validated in Taiwanese, South American, Black, Hispanic, Danish and Asian children²⁶. In addition, since the numbered Oucher scale requires the ability to count, it should be tested more for reliability in children aged 3-6 years. As a result, Photo Oucher is cognitively reliable while Number Oucher is not reliable in young children¹⁶. In a study examining the effectiveness of listening to music and playing Lego in children's postoperative pain, pain was assessed at 4 different time points using the Oucher Pain Scale²⁷. In another study, the Oucher Pain Scale was used to assess how changing the burn dressing affected pain in children between the ages of 6 and 12²⁸.

Visual Analog Scale (VAS)

It is used in acute, chronic and post-surgical pain in children above the age of three and in the adult group. In the vertical version of the scale, 0 represents "no pain" at the bottom, and 10 or 100 represents "worst pain" at the top. In the horizontal plane version, 0 points represent "no pain" on the far left, 10 or 100 points on the far right "worst pain". Reliability should be further tested in children younger than 8 years as it requires the ability to count and rate pain intensity. There are many studies using visual analog scale in pediatric population²⁹⁻³⁰. The e-VAS mHealth application has been demonstrated to be a viable and workable approach for pain evaluation in a study with children and adolescents with symptomatic hypermobility³¹.

Poker Chips Scale

It is the only concrete one among the self-report scales, and it is the most culturally and cognitively appropriate for children. It is used in cases of acute pain in children aged 3-18 years. It consists of four chips and is scored between 0-4 points. In the absence of pain, 0 chips are selected, while in the case of unbearable pain, 4 chips are selected¹⁶. Semerci used the poker chips scale to assess pain in her study with children aged 6-12³².

Behavioral Observational Scales

These scales, which are formed by coding pain-related behaviors; It is used in children who do not have communication skills, are unconscious or have communication disabilities¹⁵. Since pain is subjective, its application by someone else is the reason why these scales are not used as the first choice. In a systematic study, 20 behavioral scales applied to children aged 0-18 were examined according to validity and reliability criteria, and 5 scales were recommended³³.

Face, Legs, Activity, Cry, Consolability Scale (FLACC)

It is a scale used in the hospital evaluation of acute and post-surgical pain in children aged 0-18 years. The scale consists of five elements: face, leg movement, crying, activity status, and level of comfort. Scoring for each element is made between 0-2, and in total scoring, 0 points indicate that the patient is comfortable, 1-3 points indicate mild pain, 4-6 points indicate moderate pain, and 7-10 points indicate severe pain³³. The scale was found suitable for use in Turkey by Şenayli et al., but its validity and reliability have not been tested³⁴. Malviya et al. demonstrated that FLACC was created, valid, and reliable for evaluating pain in children with cognitive impairment³⁵. FLACC has been demonstrated to have great sensitivity and specificity for the assessment of pain in children in the study by Ge et al., even in the absence of a gold standard³⁶. In the study in which the interrater reliability of the r-FLACC scale was tested in adolescents and adults with spastic CP, 48 people were video-recorded during a standard examination and then their pain was graded by two raters. It's been demonstrated that the interrater reliability of r-FLACC is not strong in people with spastic CP, but it is sensitive to atypical pain characteristics³⁷.

Premature Baby Comfort Scale

Alemdar and Tüfekçi discovered its validity and dependability in premature infants at a median gestational age of 33 weeks³⁸.

Children's Hospital of Eastern Ontario Pain Scale (CHEOPS)

It was developed by McGrath et al. It is utilized to assess children's acute pain aged 4 months to 17 years. This scale includes six elements. Scoring is as follows: Crying, 1-3 points; facial expression, 0-2 points; verbal expression 0-2 points; trunk movements 1-2 points; touch 1-2 points; leg movements 1-2 points. Total score is between 4-13³⁹. Ahmed et al. used CHEOPS to evaluate postoperative pain in children aged 3 to 7 years and showed that it is a good objective criterion for predicting the presence of postoperative pain⁴⁰.

Parents' Post-operative Pain Measure (PPPM)

It is used by families at home to assess postoperative pain in children aged 1 to 12 years. It consists of fifteen elements. Each item is answered with 'yes' or 'no'. Baeyer and Eakins, in their study to develop the short form of PPPM, showed that the short form of PPPM can be useful in research and clinical care⁴¹. Another study has shown the validity and reliability of the German PPPM in assessing postoperative pain in children aged 2 to 12 following orthopedic or trauma surgery⁴².

COMFORT Scale

It is used in the of pain during clinical care in children aged 0-17 years. This scale consists of six behavioral and two physiological elements. Each element is scored between 1-5. Total score is between 5-35³³. In the study of Wielenga and Haan, it was found that the COMFORT scale is a valid and reliable measurement tool to evaluate the stress of ventilated preterm infants⁴³. Fagioli et al demonstrated that the Italian version of the COMFORT scale was valid and reproducible⁴⁴.

Pain Assessment in Elderly Individuals with and Without Cognitive Disorder

Cognitive impairment, common to most older adults, compromises the ability to self-report pain. Therefore, observational techniques are used⁴⁵. The Numerical Pain Scale, Verbal Category Scale, and Numerical Pain Scale are used as individual reports in elderly individuals who do not have cognitive/communication disorders or are mild to moderate. While the Pain Thermometer and Color Visual Analog Scale are used in elderly individuals with moderate to severe cognitive/communication disorders, the Abbay Pain Scale is used in elderly individuals with severe cognitive/communication disorders. In addition, it has been shown that the Brief Pain Inventory can be used as a multidimensional assessment in elderly individuals with minimal cognitive impairment⁴⁶.

Geriatric Pain Scale

It is a multidimensional scale consisting of 24 items developed by Ferrell BA et al. It describes the pain of patients and evaluates the physical, cognitive, emotional and behavioral responses that occur with pain. Easy to apply in outpatient geriatric patients⁴⁷. The scale consists of 5 dimensions: withdrawal due to pain, pain intensity, pain with movement, pain with strenuous activities, and pain with other activities. The scale's 22 items are scored in pairs, while the remaining 2 items are graded on a scale from 0 to 10. Each item is multiplied by 2.38 and converted into a 0-100 system⁴⁷. The scale's Turkish translation was determined to be reliable and accurate⁴⁸. The scale's psychometric qualities were tested in a study in 2021, and it was discovered that both in daily practice and in clinical investigations, it is a viable and reliable tool for the monitoring and multidimensional evaluation of chronic pain in elderly individuals⁴⁹.

Abbey Pain Scale (APS)

It is an observational pain scale with six items. Vocalization, facial expression, changes in body language, behavioral changes, physiological changes are graded on a 4-point scale. Total Score ranges from 0-18⁵⁰. It has been demonstrated that the most valid and reliable measures for assessing pain in people with dementia are APS and PAINAD⁵¹. However, a current study has revealed that APS is significantly associated with behavior compared to PAINAD⁵². In a study conducted between two groups with cognitively stable and impaired osteoarthritis, 6 different scales, including APS and PAINAD, were used to assess pain. PAINAD and APS were found to be more reliable and valid in assessing OA pain among older people, regardless of their cognitive abilities⁵³.

Numerical Rating Scale (NRS)

Patients utilize a scale of 0 to 10 to indicate the severity of their pain, which is frequently employed in clinical settings. Some older adults may have difficulty using this scale, as it requires the ability to distinguish between differences in pain intensity⁵⁴. It has been reported that the NRS is valid and reliable for measuring pain in the elderly, but those older than 81 years of age fail significantly to complete the NRS⁵⁵. In addition, there are studies showing that older adults prefer the vertical version of the scale⁵⁶.

Verbal Descriptor Scale (VDS)

This scale, which is especially recommended for use with older adults, measures pain intensity by asking participants to choose the word that best describes their pain⁵⁶. The scale's reliability and validity have been established, and it has been reported that it is the easiest to fill out and the most preferred measure by older adults⁵⁷. In a study in which 5 different pain scales, namely VDS, VAS, Numeric Rating Scale, Verbal Numeric Rating Scale, Faces Pain Scale and were used to assess pain severity in older adults, VDS was found to be the most sensitive and reliable scale⁵⁸. In a study conducted in Taiwan to assess the severity of pain in elderly patients with cancer, participants were asked to rate their pain using a numerical rating scale, facial pain scale, VDS, and a mixed scale. For evaluating cancer pain in older patients, all 4 scales were determined to be valid and trustworthy⁵⁹.

Face Pain Scale (FPS)

The FPS was first created to gauge pain levels in children, but it is frequently applied to older persons with cognitive impairments. Validity and safety in older adults demonstrated by Kim and Buschmann⁶⁰. FPS and revised FPS consist of facial expressions that range from the least possible pain to the most pain. The FPS is preferred above other visual scales among adults because the portrayed faces are neither age, gender, or ethnicity specific⁵⁷.

Brief Pain Inventory and PEG

The functional impact of pain is frequently evaluated using the Brief Pain Inventory. For a quick evaluation of how pain interacts with activities, the PEG Scale, a compact 3-item variant of this scale, is advised⁶¹. A score of 0 to 10 is made and measures the average pain experienced by patients over the past week, and the interaction of pain with general activity. In a 2021 study investigating the association between chronic musculoskeletal pain and foot reaction speed in older persons, pain was assessed using a quick pain inventory⁶² and in a feasibility study in pain neuroscience education in older adults with chronic pain in 2022⁶³.

Pain Assessment in Advanced Dementia (PAINAD)

The five components of the scale body language, facial expression, breathing, suggestibility, and negative vocalizations were designed to measure pain in people with severe dementia. The total score ranges from 0 to 10, with each component having a 0 to 2 rating⁶⁴. In a study of 19 patients with advanced dementia, PAINAD was shown to be a simple, valid and reliable tool for measuring pain in patients who cannot communicate⁶⁵. In a study examining the psychometric properties of the PAINAD, PACSLAC, and DOLOPLUS-2 tool to assess pain in elderly individuals with dementia, it was found that PAINAD showed good psychometric properties in terms of reliability, validity, and homogeneity⁶⁶. The Turkish version of PAINAD has undergone testing for reliability and validity⁶⁴.

Mobilization-Observation-Behaviour-Intensity-Dementia Pain Scale (MOBID-2)

In the evaluation of pain in people with advanced dementia, its validity and reliability have been proven⁶⁷. The scale consists of 2 parts. Part 1 covers musculoskeletal pain during a standardized and directed set of movements during morning care; Part 2 considers pain that can originate from the head, skin, and internal organs. In determining pain behavior, pain intensity is rated by the caregiver using a 0 to 10 numerical rating scale. It is the only pain scale that takes into account the co-occurrence of musculoskeletal and internal organ pains and reveals hidden pain⁶⁷. It has been shown that MOBID2's Italian version is validity⁶⁸.

Discomfort Scale for Dementia of the Alzheimer's Type (DS-DAT)

It was developed to evaluate the feeling of discomfort in patients with advanced Alzheimer's type dementia. DSDAT focuses on measuring discomfort rather than pain. The scale includes nine items. 5 minutes after the observation is made, the observer records the duration, intensity and frequency of each item. The overall score is between 0 and 27. 0 represents no discomfort and 27 represents a high level of discomfort⁶⁹. The disadvantage of DS-DAT is that it has a comprehensive scoring instruction and requires intensive training⁷⁰.

Pain Assessment for the Dementing Elderly (PADE)

It was developed to determine pain in dementia patients. It is used to evaluate patients' activities of daily living, facial expressions, and the caregiver's general judgment about pain. It consists of three categories: functional, physical and global assessment. 5 minutes after observation, each item is graded by VAS. The uncertainty of completion time, the complexity of some elements, and the need to review chart documentation from the last 24 hours may make PADE unsuitable for clinical practice⁷⁰. A validation study was conducted on 40 patients with advanced dementia who were in the care center and complained of pain. Internal consistency coefficients for the subscales were sufficient, and inter-rater reliability and test-retest correlations were found to be good⁷¹.

DOLOPLUS2 Scale

It was developed to rate pain in the elderly who do not have the ability to communicate or have cognitive impairment. Based on observations of behavior seen in 10 different situations that can cause pain. Scores range from 0 to 3, and the overall score can be anywhere between 0 and 30. It is easy to use and completed in a short time⁷⁰. Validation studies have been conducted in various countries⁷². In a study of individuals with moderate to severe dementia, APS, DOLOPLUS-2 Scale, and CNPI were used to assess pain and DOLOPLUS-2 was found to provide a more reliable measurement⁷³.

Checklist of Nonverbal Pain Indicators (CNPI)

It was developed to assess pain in elderly individuals with cognitive impairment and needing care. It includes 6 behaviors. There are three levels of pain: 1-2 mild, 3-4 moderate, and 5-6 severe. It is an easy to use scale. In the study examining the psychometric properties of the scale in 88 hospitalized patients with cognitive impairment and postoperative pain, good inter-rater reliability and higher scores during activity were reported⁷⁴.

The Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC)

It consists of 4 categories with 60 items. Subscale scores are calculated by counting the tick marks in each box. The total score is between 0 and 60⁷⁵. A pre-validation study has been carried out; Internal consistency was high and inter-rater reliability was excellent⁷⁴. A validation study was conducted on 50 Brazilian elderly with dementia⁷⁶.

The Non-Communicative Patient's Pain Assessment Instrument (NOPPAIN)

It focuses on the assessment of pain by the caregiver in patients with dementia. The daily activities of the patients are observed during care and the caregiver completes the scale⁷⁷. Validation was performed using video recordings of a bedridden patient with advanced dementia during care. Inter-rater reliability is good and construct validity is moderate. Maintenance and observation time was determined as 8 minutes on average and completion time less than 30 minutes⁷⁸.

21- point Box Scale

The scale has a row of 21 boxes labeled in increments of five from 0 to 100. 0, no pain; 100 represents as bad pain as possible. To complete the scale, participants tick the box that best represents their pain. Has low verbal and high numerical characteristics⁷⁹. Chibnall and Tait compared the psychometric properties

of the facial pain scale, the verbal rating scale, and the 21-point horizontal and vertical box scale in the hospitalized elderly population with different levels of cognitive impairment. Regardless of the mental status, it was found that the best scale in terms of both psychometry and validity was the 21-point horizontal boxed scale⁷⁹. Recently, technology-based pain assessment methods have also been used in elderly individuals. Atee et al. developed the electronic Pain Assessment Tool (ePAT) in their study on individuals with dementia. ePAT uses facial recognition technology to detect facial microexpressions that indicate pain⁸⁰. The usefulness of a recently created iPhone pain assessment application was examined in a study on pain assessment in older persons with cognitive impairment, and it was shown to be a useable approach for pain assessment⁸¹.

Pain Assessment in Patients with Neuropathic Pain

The severity and quality of neuropathic pain can be evaluated using generic scales, but neuropathic pain-specific assessment scales have been developed to measure different components of neuropathic pain, considering that certain symptoms and signs may be indicative of underlying pathophysiological mechanisms.

Neuropathic Pain Scale (NPS)

It is a self-assessment scale. It was the first scale created to evaluate neuropathic pain's quality. It contains 10 items and each item is evaluated with a numerical scale between 0-10. It has limitations in that it does not include allodynia and paroxysmal pain features. It's been demonstrated to be fully valid only in patients with multiple sclerosis. For this reason, the Pain Quality Assessment Scale (PQAS) was created by adding 10 items related to neuropathic pain quality to the scale. However, its sensitivity to change has not been sufficiently demonstrated and its validity has been shown only in patients with carpal tunnel syndrome⁸². In a study on GBS patients, neuropathic pain was evaluated with NPS and they showed that neuropathic pain is associated with sensory impairment in GBS and significantly affects quality of life⁸³.

Neuropathic Pain Symptom Inventory (NPSI)

It is a self-rating scale. It was developed to evaluate different aspects of neuropathic pain. It includes 10 items, each questioning 5 different pain qualities, and 2 items related to the temporal characteristics of pain⁸⁴. In 2022, Medeni et al. demonstrated that the scale's Persian translation is a reliable and valid tool but they were unable to identify a cutoff point⁸⁵. Again, a recent study demonstrated the reliability and validity of NPSI to assess pain in Iranian Parkinson's patients⁸⁶.

McGill Questionnaire Short Form -2 (SF-MCGILL-2)

It is an expanded version of the McGill Questionnaire by adding 7 items specific to neuropathic pain. Each item is rated numerically between 0-10. The initial validity study of the questionnaire was conducted in a drug study for diabetic polyneuropathy⁸⁷.

Lanss Pain Survey

It is very useful in differentiating neuropathic pain from nociceptive pain. It consists of a total of 7 items in which pain symptoms are questioned and are aimed at sensory examination. A total score above 12 suggests neuropathic pain. Turkish validation was performed by Yücel et al. in 2004⁸⁸. In a recent study to evaluate neuropathic pain in patients with prediabetes, LANSS and DN4 were used and it was shown that neuropathic pain increases in prediabetes⁸⁹.

PainDetect Scale

It is a questionnaire evaluation without clinical evaluation, and the temporal characteristics, spread and sensory perception of pain are evaluated in the scale. A total score of 19 or higher indicates the probability of neuropathic pain. Sensitivity is 85% and specificity is 80%⁶⁹ (69). Turkish validity and reliability were performed by Alkan et al.⁹⁰. It has been developed and validated in with low back pain patients, but it has also been applied to investigations of diabetic neuropathy, neuralgia, and knee osteoarthritis to determine the prevalence of neuropathic pain⁹¹.

Douleur Neuropathique en 4 questions (DN4)

The scale, developed by the clinicians of the French Neuropathic Pain Group, consists of 4 questions evaluating sensory examination and descriptors. While the first 2 questions question the pain character, the other 2 questions are for the sensory examination evaluating hypoesthesia and allodynia. A total score of 4 or more suggests neuropathic pain. It has been validated and reliable in our country by Çevik et al⁹². Spallone et al performed the first validation study to support the usefulness of the DN4 in screening for neuropathic pain in diabetes and the diagnostic workup in painful diabetic polyneuropathy⁹³.

Pain Assessment in Patients with Chronic Pain

Chronic pain is a disease that lasts longer than 3 months and affects behavior and lifestyle⁹⁴. Measurements such as VAS, McGill pain questionnaire can be used, as well as the use of chronic pain-specific scales can be more effective.

Chronic Pain Acceptance Questionnaire

The scale, which has 20 items and 2 subscales, is a 7-point Likert type scale. The first subscale, activity participation, measures how much the patient's everyday activities are impacted by the presence of pain. The willingness to pain subscale, which is the second subscale, measures how much pain can be tolerated without being avoided or being tried to be controlled. A study on validity and reliability was conducted by Akmaz et al⁹⁴.

Graded Chronic Pain Scale Revised (TurGCPS-R)

It has an 11-point Likert scale with seven items and scored between 0-70 points. Originally designed and validated in English for the assessment of the intensity of chronic pain⁹⁵.

Pain Assessment in Patients with Cancer

McGill pain questionnaire and short form, VAS, VRS, NRS, LANSS are evaluation parameters that can be used in cancer patients as well as in some other patient populations. Scales specific to the assessment of pain in cancer patients have been developed.

MD Anderson Symptom Inventory (MDASI)

It is used to measure multiple patient-reported cancer-related symptoms. It consists of 13 basic items such as pain, fatigue, nausea, sleep disturbance, emotional distress, shortness of breath, loss of appetite, lethargy, dry mouth, sadness, vomiting, memory difficulties and numbness that cancer patients frequently experience. Each symptom is graded from 0 to 10. Also includes the use of optional technology in data collection⁹⁶.

The Edmonton Symptom Assessment System (ESAS)

It is intended to evaluate nine signs that patients with advanced cancer frequently experience: pain, nausea, fatigue, depression, anxiety, appetite, well-being, lethargy and shortness of breath. There is also the option to add a patient-specific tenth symptom. Scores for each symptom range from 0 to 10⁹⁷. Recent research has been done to analyze the usefulness and viability of electronic adaptations of the current pain and symptom assessment methods. Utilizing computer-based evaluation tools offers conveniences such easy use, data collecting and storage, and speedy score calculation. Jaatun et al. developed the computerized pain body map (CPBM) as a pain aid for patients with advanced cancer and shown its applicability to cancer patients⁹⁸. In their study evaluating the feasibility of using a computer-based symptom assessment tool in advanced cancer patients, Hjerstad et al. concluded that it is feasible although patients with low performance status need help completing the items⁹⁹. Stukenborg et al provided a tablet computer to complete patient-reported outcome data online in a palliative care outpatient setting, and most patients reported ease of use in completing measurements with a tablet device¹⁰⁰. In a pilot investigation on the efficacy of portable tablet computers for gathering patient-reported outcome data, Aktaş et al. reported outstanding completion rates, user-friendliness, and realistic completion times¹⁰¹.

Pain Assessment in Patients in The Intensive Care Unit

The order of priority in evaluating pain in intensive care patients is the patient's own pain expression, the presence of pathological conditions or processes that may cause pain, behavioral symptoms, and physiological symptoms¹⁰². There are developed scales specific to these patients.

The Pain Assessment and Intervention Notation Algorithm (PAIN)

It was developed by Puntillo et al. It consists of 4 fields. (1) Squinting, frowning, grimacing. (2) Wrinkle on forehead. (3) Tension around the mouth and eyes. (4) Crying/Tears in the eyes¹⁰³.

Pain Behaviour Assessment Tool (PBAT)

It was developed by Puntillo et al. It consists of grimacing, clenching teeth, frowning, crying, opening the eyes by raising the eyebrows, squinting, closing the eyes, looking in the opposite direction of the painful area, opening the mouth wide¹⁰⁴.

Nonverbal Pain Scale (PBAT)

It was developed by Odhner et al. The scoring is as follows: No distinctive facial expression or smile, 0 points; occasional grimace/frown, withdrawn/disinterested, 1 point; constant tremors and jaw clenching, 2 points¹⁰⁵.

Behavioural Pain Scale (BPS)

It was developed by Payen et al¹⁰⁶. Vatansever conducted a validity and reliability study in Turkey¹⁰⁷. Slack is scored 1 point, partially tense 2 points, fully tense 3 points, grimacing 4 points. Eti Aslan et al., in their study using BPS on intensive care patients, found that 62.3% of 441 painful applications were caused by intratracheal aspiration¹⁰⁸. In a study by Ayarash, BPS was used in 247 patients who were connected to mechanical ventilators and it was found that 89.9% of the patients had pain¹⁰⁹.

Critical Care Pain Observation Tool (CPOT)

It was developed by Gélinas et al¹¹⁰. Turkish reliability and validity study was conducted by Aktaş Yaman¹¹¹. Comfortable; no muscle tension 0 points, nervous; Frowning, lowering the eyebrows, squinting, levator muscle contraction are scored as 1 point, grimacing, and closing the eyelids are scored as 2 points.

Evaluation of Pain in Covid-19 Patients

In the study of Kurçaloğlu et al., which included 178 patients followed up for COVID-19, the Turkish version of the Brief Pain Inventory was used and it was concluded that the pain could be easily treated in these patients with mild to moderate clinical severity¹¹². The Pain Quality Assessment Scale, which measures the presence of arthralgia-myalgia and the severity of pain, was used to evaluate the pain in the study conducted to determine the Muscle Joint Pain and Associated Factors in Patients with COVID-19¹¹³. In their study on pain assessment and treatment in dementia during COVID-19, Scuteri et al. recommended MOBID and CPOT tools to assess pain¹¹⁴. In another study, Numerical Rating Scale was used to evaluate pain in patients with fibromyalgia after COVID-19¹¹⁵. In a study of patients with post-COVID-19 pain, neuropathic symptoms were evaluated using S-LANSS and PainDETECT. Conclusion; Two different scales measure different aspects of neuropathic pain, S-LANSS was associated with symptom duration and severity, while PainDETECT was associated with sensitivity-related symptoms and anxiety levels¹¹⁶. A study to evaluate risk factors for persistent neuropathic pain in people recovering from COVID-19 used the DN4 scale and demonstrated an increased likelihood of pain after COVID-19¹¹⁷. In a case report in which a patient with Covid-19, who had recent mild cognitive impairment, was examined, the most appropriate pain assessment scale for e-health practice, the MOBID-2 pain scale, was used¹¹⁸.

Finally, the pain threshold; It can be evaluated with a pressure algometer and an electronic algometer, which is measured by giving electrical stimulation¹¹⁹. The pressure algometer device is a useful and reliable device for determining the pressure pain threshold¹²⁰. The results in the literature show that electronic and pressure

algometers have comparable reliability¹²¹. However, the costs of electronic pressure algometers limit their use in routine clinical practice and studies. However, pressure algometers are cheaper, more convenient, and more widely used¹²². In addition, pressure algometry can be used in clinical research to measure the effectiveness of therapeutic interventions for the treatment of pain, as well as in general psychophysiological studies¹¹⁹.

Conclusion

Since pain is unique to both the individual and the population, it should be evaluated in a reliable and valid manner that does not lead to different interpretations. This evaluation should take into account the features, type, duration, and change of pain over time. Assessments like this will help with pain management and early interventions to solve pain-related issues.

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