

T.R.
YEDİTEPE UNIVERSITY
INSTITUTE OF HEALTH SCIENCES, DEPARTMENT OF
PHYSIOTHERAPY AND REHABILITATION

**RELIABILITY AND VALIDITY OF THE TURKISH
VERSION OF THE GRADED CHRONIC PAIN
SCALE 2.0**

MASTER THESIS

PHYSIOTHERAPIST HÜSNİYE YOL AĞIL

ISTANBUL-2021

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ADVISOR: PROF. DR. RASMI MUAMMER

ISTANBUL-2021

APPROVAL

Institute : Yeditepe University Institute of Health Sciences
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Owner of the Thesis : Physiotherapist Hüsniye YOL AĞIL
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This study have approved as a Master Thesis in regard to content and quality by the Jury.

	Title, Name-Surname (Institution)
Chair of the Jury:	Prof. Dr. Feryal SUBAŞI (Yeditepe University)
Supervisor:	Prof. Dr. Rasmi MUAMMER (Yeditepe University)
Member/Examiner:	Dr. Öğretim Üyesi Gülşah KINALI (Sakarya University of Applied Sciences)

APPROVAL

This thesis has been deemed by the jury in accordance with the relevant articles of Yeditepe University Graduate Education and Examinations Regulation and has been approved by Administrative Board of Institute with decision dated and numbered

Prof. Dr. Bayram YILMAZ
Director of Institute of Health Sciences

DECLARATION

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

Hüsniye YOL AĞIL



TO MY UNIQUE, VALUABLE FAMILY...



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LIST OF SYMBOLS AND ABBREVIATIONS

ACC	Anterior Cingulate Cortex
AGFI	Adjusted Goodness of Fit Index
BMI	Body Mass Index
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CLBP	Chronic Low Back Pain
EFA	Exploratory Factor Analysis
IASP	International Association for the Study of Pain
IC	Insular Cortex
ICC	Intraclass Correlation Coefficient
ICD	International Classification of Diseases
ICF	International Classification of Functioning Disability and Health
IFI	Incremental Fit Index
ITC	International Test Commission
GABA	Gamma Aminobutyric Acid
GCPS 2.0	Graded Chronic Pain Scale Version 2.0
GCPS-CPI	Graded Chronic Pain Scale-Characteristic Pain Intensity
GCPS-DS	Graded Chronic Pain Scale-Disability Score
GFI	Goodness of Fit Index
HADS	Hospital Anxiety and Depression Scale
KMO	Kaiser-Meyer-Olkin
LBP	Low Back Pain
Max.	Maximum
Min.	Minimum
NFI	Normed Fit Index
ODI	Oswestry Low Back Pain Disability Index
PFC	Prefrontal Cortex
POAM-P	Patterns of Activity Measure Pain
QoL	Quality of Life
RMDQ	Roland-Morris Disability Questionnaire
RMSEA	Root Mean Square Error of Approximation
S1	Primary Somatosensory Cortex
S2	Secondary Somatosensory Cortex

SEM	Structural Equation Modeling
SG	Substantia Gelatinosa
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization
WDR	Wide Dynamic Range
χ^2	Chi-Square Test.
χ^2/sd	Chi-Square Fit Test
%	Percentage
N	Number



ABSTRACT

Yol Ağıl, H. (2021). Reliability And Validity of the Turkish Version of the Graded Chronic Pain Scale 2.0. Yeditepe University, Institute of Health Sciences, Yol Ağıl, H. (2021). Reliability And Validity of the Turkish Version of the Graded Chronic Pain Scale 2.0. Yeditepe University, Institute of Health Sciences, Department of Physiotherapy and Rehabilitation, Master Thesis. Istanbul.

Our study was designed to investigate the reliability and validity of the Turkish version of the Graded Chronic Pain Scale 2.0. The first of the eight items that make up the scale asks about the pain days experienced in 6 months and gives information about whether the pain is persistent or not. Items: 2, 3, and 4 create the Characteristic Pain Intensity subscale and measure the pain intensity. Items: 5, 6, 7, and 8 create the Disability Score subscale and determine the patient's degree of disability. In this study, the forms were sent by e-mail. The Snowball sampling method was used in the data collection process. 80 volunteer participants who had chronic low back pain were studied. The mean age of the participants is 36.99 ± 12.03 years. Fifty (62.5%) female and thirty (37.5%) male participants were included in the study. The data collection tools used in this study were; Clinic and Demographic Evaluation Form, Oswestry Low Back Pain Disability Index, Patterns of Activity Measure Pain, Roland-Morris Disability Questionnaire, Hospital Anxiety, and Depression Scale, and Graded Chronic Pain Scale 2.0. The stages of the Beaton Protocol were followed in the translation of the scale. Validity was evaluated with the Face, Content, and Construct validity analyses. Exploratory and confirmatory factor analyses were applied to determine the construct validity of the Turkish version of the scale. Before the factor analysis, KMO and Bartlett's Tests were investigated (KMO = 0.817-good quite and Bartlett's test $p = 0.001$ - significant). It was observed that a 2-factor structure was formed by exploratory factor analysis. The First factor (GCPS-CPI) load 4,663, species. It constitutes 58.2% of the variance explained. The Second factor (GCPS-DS) load was 1,324. It constitutes 16.54% of the variance explained. This two factor structure was confirmed by confirmatory factor analysis. Here we got the fit index value, these are $\chi^2 / df = 1.349$, GFI = 0.941, AGFI = 0.875, CFI = 0.994, RMSEA = 0.042, IFI = 0.994, NFI = 0.948. Reliability was evaluated with the test-retest method, the parallel forms method, and the internal consistency. Cronbach's Alpha was founded as 0,894 in the reliability of the Graded Chronic Pain Scale. Ten days after completing the scale, 30 participants filled out the scale again for the Test-retest method. It was found 0.921 for ICC value GCPS total as Test-Retest reliability. One of the scales we used for

the parallel forms method was RMDQ and the other was ODI. There was a statistically high correlation between ODI and GCPS ($r = 0.759$ $p = 0.001$), and between RMDQ and GCPS ($r = 0.777$ $p = 0.001$). As a result, the Turkish version of the Graded Chronic Pain Scale 2.0 is a valid and reliable measurement tool.

Keywords: Graded Chronic Pain Scale, Chronic Pain, Disability, Chronic Low Back Pain, Validity and Reliability.



ÖZET

Yol Ağıl, H. (2021). Dereceli Kronik Ağrı Ölçeğinin 2.0'nin Türkçe versiyonunun güvenilirlik ve geçerliliği. Yeditepe Üniversitesi. Sağlık Bilimleri Enstitüsü. Fizyoterapi ve Rehabilitasyon ABD. Master Tezi. İstanbul.

Çalışmamız Dereceli Kronik Ağrı Ölçeği 2.0'nin Türkçe versiyonunun geçerlik ve güvenilirliğini araştırmak amacıyla planlandı. Ölçeği oluşturan sekiz maddeden ilki, 6 ayda yaşanan ağrı günlerini sorar ve ağrının kalıcı olup olmadığı hakkında bilgi verir. Maddeler: 2, 3 ve 4, karakteristik ağrı yoğunluğu alt ölçeğini oluşturur ve ağrı yoğunluğunu ölçer. Maddeler: 5, 6, 7 ve 8 özürölülük puanı alt ölçeğini oluşturur ve hastanın özürölülük derecesini belirler. Bu çalışmada formlar e-posta ile gönderilmiştir. Veri toplama sürecinde kartopu örnekleme yöntemi kullanılmıştır. Kronik bel ağrısı olan 80 gönüllü katılımcıyla çalışıldı. Katılımcıların yaş ortalaması 36.99 ± 12.03 yıldır. Elli (%62,5) kadın ve otuz (%37,5) erkek katılımcı çalışmaya dahil edildi. Bu çalışmada kullanılan veri toplama araçları; Klinik ve Demografik Değerlendirme Formu, Oswestry Bel Ağrısı Engellilik İndeksi, Ağrı-Aktivite Paterni Ölçeği, Roland-Morris Engellilik Anketi, Hastane Anksiyete ve Depresyon Ölçeği ve Dereceli Kronik Ağrı Ölçeği 2.0. Ölçeğin çevirisinde Beaton Protokolü'nün aşamaları takip edilmiştir. Geçerlilik, Görünüm, İçerik ve Yapı geçerliliği analizleri ile değerlendirilmiştir. Ölçeğin Türkçe formunun yapı geçerliğini belirlemek için açımlayıcı ve doğrulayıcı faktör analizleri yapılmıştır. Faktör analizinden önce KMO ve Bartlett Testleri incelenmiştir (KMO = 0.817-oldukça iyi ve Bartlett's testi $p = 0.001$ - anlamlı). Açımlayıcı faktör analizi ile 2 faktörlü bir yapının oluştuğu gözlemlenmiştir. Birinci faktör (GCPS-CPI) yükü 4.663'tür. Açıklanan varyansın %58,2'sini oluşturmaktadır. İkinci faktör (GCPS-DS) yükü 1.324'tür. Açıklanan varyansın %16,54'ünü oluşturmaktadır. Bu iki faktörlü yapı doğrulayıcı faktör analizi ile doğrulanmıştır. Burada uyum indeksi değerleri şu şekilde çıkmıştır: $\chi^2 / df = 1.349$, GFI = 0.941, AGFI = 0.875, CFI = 0.994, RMSEA = 0.042, IFI = 0.994, NFI = 0.948. Güvenirlik test-tekrar test yöntemi, paralel formlar yöntemi ve iç tutarlılık ile değerlendirilmiştir. Dereceli Kronik Ağrı Ölçeği'nin güvenirliğinde Cronbach's Alpha 0,894 olarak bulunmuştur. Ölçeği tamamladıktan on gün sonra 30 katılımcı, Test-tekrar test yöntemi için ölçeği tekrar doldurmuştur. Test-Tekrar Test güvenirliği olarak ICC değeri GCPS toplamı için 0.921 bulunmuştur. Paralel formlar yöntemi için kullandığımız ölçeklerden biri RMDQ, diğeri ise ODI idi. ODI ile GCPS ($r = 0.759$ $p = 0.001$) ve RMDQ ile GCPS ($r = 0.777$ $p = 0.001$) arasında istatistiksel yüksek

bir korelasyon vardı. Sonuç olarak Dereceli Kronik Ağrı Ölçeği 2.0'nin Türkçe versiyonu geçerli ve güvenilir bir ölçme aracıdır.

Anahtar Sözcükler: Dereceli Kronik Ağrı Ölçeği, Kronik Ağrı, , Kronik Bel Ağrısı, Geçerlik ve Güvenirlik.



1.INTRODUCTION AND PURPOSE

Pain is a subjective, multidimensional sensory and emotional experience that varies from person to person, and it is a message that the body wants to convey to the person (1). International Association for the Study of Pain (IASP) defined pain as follows; 'An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.' (2). As the mechanisms of pain became more apparent over time, the old definition needed to be revised and replaced by a new definition. The IASP revised the definition again in 1994.

The new definition is: 'An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.' (2). Along with this definition, IASP added 6 key notes about pain.

Of these six key notes, only two were:

'1-Pain is always a personal experience influenced to varying degrees by biological, psychological, and social factors.

2-Pain and nociception are different phenomena. Pain cannot be inferred solely from activity in sensory neurons. ' (2).

From the first and second concepts, we understand that pain is multidimensional, and factors other than tissue damage can also cause pain. The sense of pain is a vital and early warning symptom that shows individual differences resulting from personal experiences and can be affected by environmental, social, and cultural factors (3). Pain is a personal experience that has not yet been resolved, and the definition should be constantly revised along with new studies and findings.

Nociceptive pain begins with a stimulus from the environment or in the body. The action potential is triggered by the stimulation of free nerve endings in the relevant area. Nociceptive pain is the transformed form of the stimulus that is transmitted along the pain pathways to the central nervous system and then to the relevant centers in the brain.

An action potential is triggered at the relevant nerve endings. Nociceptive pain is the transformed form of the stimulus that is transmitted to the central nervous system along the pain paths and then to the relevant centers in the brain. The central nervous system then takes the necessary measures to avoid painful stimuli in the relevant area. When the first stimulus is perceived by the brain and the first response is given, the brain records this experience for later recall. Because the brain wants to be prepared and take precautions against the possibility of repeating this stimulus (4). Although individuals seem to react in the same way

to the same painful stimulus, each individual's exposure and experiences of pain are different. Pain is a common inference of all the experiences a person has accumulated over their lifetime. Personal experiences are influenced by many different factors. That is why pain is multidimensional.

Other symptoms that occur after discomfort in the body other than pain do not cause people to go to the hospital quickly. Since pain causes discomfort in the person, the primary symptom they seek treatment is pain (5). If we want to categorize the pain according to its duration, it is categorized as; acute and chronic. With this information, pains lasting to 3 months are called acute, pains lasting over 3 months, or reoccurs called chronic. As the duration of pain is prolonged, acute pain leaves its place to chronic pain. Then, deterioration in body functions, limitation in the activity of daily living, and decrease in activity participation occur (6, 7). Acute pain responds to treatment and does not last very long, but chronic pain is long and difficult to treat (8,9).

Acute pain refers to tissue damage, and the intensity of the pain gradually decreases, and the pain disappears as the tissue damage heals. However, the situation is different in chronic pain. Tissue damage cannot heal for a long time. As a result, the pain also continues for a long time. During this process, physiological changes occur in the nerves that are always exposed to painful stimuli. Pain becomes chronic as a result of increased sensitivity of central and peripheral nerves and impaired conduction mechanism. Even if nociceptive stimuli decrease over time in chronic pain, the sensation of pain may continue due to increased neural sensitivity (3).

Along with prolonged pain, a decrease in the quality of life (QoL) of the patient, limitation in the person's daily activities, and a decrease in participation in daily life activities are observed. As a result, prolonged pain affects the physical and psychological state of the patient, causes disability due to the limitation in daily activities and the decrease in the desire to participate in these activities (10).

The International Classification of Functioning Disability and Health (ICF) questions three consequences that occur with disability.

- disturbances in body functions and structures
- limitations in activity
- restriction on participation

Disability includes all impairments, activity limitations, and participation restrictions (11).

The Graded Chronic Pain Scale Version 2.0 (GCPS 2.0), for which we studied validity and reliability, is a short, eight-item scale that evaluates the intensity of pain and the disability associated with it (9). ICF identifies 3 major outcomes in chronic pain. GCPS 2.0 asks its questions for these 3 major outcomes. As a result, GCPS 2.0 questions and measures the outcomes of disability associated with chronic pain as defined by ICF. We can determine the level on which the patient is affected, the severity of the pain, and the level of disability with the scale.

The 7-item Chronic Pain Grade Scale, developed by Von Korff et al in 1992 (12), was revised in 2010 as an 8-item GCPS 2.0. The period questioned in the old scale was reduced from 6 months to 3 months, and another item was added to determine the persistence of pain. As a result, a revised scale was developed. It has been made simpler in scoring and classification in the revised scale (9).

Many scales measure pain alone or evaluate only disability. The scale measures these three outcomes, which are defined by ICF for disability (11). Besides, it also determines the intensity of pain. So, it is a scale that measures chronic pain in the strict sense. The scale is a multidimensional measurement tool that can give us information about the persistence of pain while measuring both the intensity of pain and the degree of disability. After scoring, it determines the level that the patient is affected and categorizes the patients into 5 classes according to their condition. Thus, regardless of the severity of the patient's pain, we can see the degree of disability and shape our treatment plan according to this level. Since chronic pain is difficult and long to treat, the sooner it is diagnosed at the beginning of the road, the faster the treatment. With short questions of 8 items, we can measure this level in as little as 1-2 minutes. We can direct the patient to the relevant units without wasting time.

Additionally, this scale not only measures the pain associated with a single body area but also references and measures the pain in the body as a whole (13). The scale is not used for a single disease. It is suitable for many diseases with chronic pain. Thus, when evaluating a patient with chronic pain, instead of using many different scales for pain and disability, using a single scale helps us get the results easily and quickly do our work in the clinic.

Also, a short 3-question scale is available in this scale to determine the chronic pain of primary care patients (Graded Chronic Pain-Primary Care Scale). If GCPS 2.0 is used in primary care services for patients with pain, the diagnosis of such patients will be noticed earlier. Fast and early diagnosis and treatment of a patient with chronic pain are very important. A patient with chronic pain comes to the clinic many times a year for diagnosis. Early treatment of a patient with intense pain and risk of disability saves the time the patient will spend in hospital and clinic visits. Then, the patient's life quality improves with rapid diagnosis and treatment.

Fewer clinic visits reduce the burden the government pays to the healthcare system for individuals (9, 14)

We want to present this scale, which has been adapted to many languages and has been used in studies mostly in the USA and European countries and less in Asian countries, to the Turkish community for use in the diagnosis of Turkish patients with chronic pain. The study aims to investigate the validity and reliability of the scale after the adaptation of GCPS 2.0 to Turkish.

2.GENERAL INFORMATION

2.1. Definition of Pain

Pain is a significant health problem all over the World (8). It is an unpleasant sensory and emotional experience that occurs due to actual or potential tissue damage. According to the definition of IASP, pain arising from a specific part of the body, due to tissue damage or not, is related to the person's past experiences; it is an unpleasant emotional sensation (1, 2, 15). It is also an emotional reaction developed against this sense and a collection of experiences that a person has gathered since birth. It is a complex multidimensional emotion. This feeling may change according to the characteristics of the individual and environmental characteristics. The neurophysiological, psychological, biochemical, and cognitive characteristics of each individual are different. Also, ethnic, cultural, social, religious, and environmental factors may vary. This approach complicates the definition of pain and makes it subjective. In this case, it is expected that people's reactions to pain vary (16).

2.2. The Occurrence, Transmission, and Pathways of Pain

2.2.1. Nociception

All senses are transmitted to the spinal cord. Pain and all senses that can cause pain is carried to the spinal cord. The spinal cord amplifies all senses, then it is modified so that these signals are understood, and all results are combined and transmitted to the brain via the afferent paths. The somatosensory area of the supraspinal structures in the brain determines the severity and localization of the pain, and limbic structures give it affective, cognitive, and autonomic properties. Below we will examine how pain is transmitted from the periphery to the upper centers (6, 7, 17).

After a painful stimulation or tissue damage, the peripheral nerve endings in the area are stimulated. Stimulation of peripheral bare nerve endings causes the release of neurotransmitters. The release of Substance P and tachykinins causes vasodilation and edema. After vasodilation, histamine and bradykinin are released, which sensitize neurotransmitters to prepare for other stimuli (18).

Bradykinin and serotonin are neurotransmitters that are released in the periphery of the tissue and have warning properties. They are released directly associated with tissue trauma. They release prostaglandins and leukotrienes. In these, it increases the sensitivity in

the neurotransmitter, and neuropeptides are released into the surrounding tissue. Thus, edema and inflammation start in the relevant tissue (6, 7, 18).

The pain starts with the stimulus in the external environment. It is then transmitted to the spinal cord by triggering physiological events in the periphery. Finally, it is delivered to the upper centers, that is, the brain.

The perception of pain takes place in 4 stages.

- Transduction,
- Transmission,
- Modulation,
- Perception (7, 17, 19).

Transduction: It is the conversion of the message received from the nerve ends into electrical activity (7, 20, 21).

Transmission: Transmission is the transmission of pain stimulus translated into electrical activity to the spinal cord (7, 20, 21).

Modulation: It belongs to the modulation process that the stimulus transmitted to the spinal cord changes and becomes perceptible by the upper centers (7, 20, 21).

Perception: It is the transmission of the altered pain sensation to the thalamic and somatosensory areas through efferent ways. Here, the sense is reinterpreted and perceived by the psychology of the person and his emotional and subjective experiences. This final state of pain, in which the upper centers perceive it, is called perception (7, 20, 21).

2.2.2. Neurons Involved in Pain Transmission

When the A-delta and C fibers, which are related to pain transmission, enter the spinal cord, they form a part of the Lissauer tract. Axon collaterals enter the dorsal horn. Central terminals of nociceptive neurons synapse with lamina 1 and lamina 2 (Substantia Gelatinosa (SG)). Some of the A-delta fibers synapse with the lamina 5. The first neuron of the pain pathway is located in the dorsal root ganglion. The second neuron consists of fibers from the first neuron entering the spinal cord and synapse with SG. The third neuron of the pain pathway is in the thalamus (7, 17, 22). The C fibers responsible for nociception are of two types. Peptidergic C fibers provide the secretion of histamine from mast cells with peptides secreted after stimulation and initiate inflammation symptoms in the local area. Nonpeptidergic ones enter the spinal cord, connect with the lamina 2, and play a role in

modulating pain. 10-20% of the C fibers do not respond to nociception, and they step in and create hyperalgesia in cases such as nerve damage and inflammation (17, 22).

A delta fibers are like peptidergic C fibers and terminate in Wide Dynamic Range (WDR) neurons in the lamina 5. In WDR, A-beta fibers also terminate. These carry the superficial sense of touch. The WDR here regulates afferent alert traffic like a traffic cop. It responds to both harmless stimuli (such as superficial touch) and nociceptive stimuli. After the spinal cord level, pain is transferred with the ascending system to the thalamus and cortex. We will see below how pain is carried in Figure 2.1. (7, 17, 22).

2.2.3. Ascending Nociceptive System

2.2.3.1. Spino-Thalamic Pathway

It originates from the 1st, 5th, and 7th laminae. When the stimulation comes into the system, it moves through the anterolateral outlet system and passes to the opposite side of the spinal cord. It ends in the ventral posterolateral nucleus in the thalamus, namely in the 3rd neuron. Thanks to the spinothalamic canal, the pain's location, intensity, and time are perceived together. Also, the spinothalamic pathway is responsible for carrying the place of pain to a conscious level. The fibers that transmit the pain the fastest and perceive its location are here (7, 17, 22).

2.2.3.2. Spino-Reticular Pathway

The tractus spinoreticularis is created from the crossing dorsal horn axons, and they advance throughout ascending anterolateral system. It reaches the thalamus from both sides of the spinal cord. In the thalamus, the anterior part of the cingulate gyrus reaches the amygdala and hypothalamus. These areas are related to memory and emotional responses to pain. It is called the pain pathway. It is a structure tasked with keeping the cortex and subcortical structures awake and being in a state of alert for harmful warnings (7, 17, 22).

2.2.3.3. Spino-Mesencephalic Pathway

The tractus spinomesencephalicus is formed by the progression of the projection neurons in the lamina 1 and 5, located in the dorsal horn, along the anterolateral spinal cord. This path leads up to the periaqueductal gray matter in the mesencephalicus. The connection between the tractus spinomesencephalicus and it is vital as the enkephalinergic neurons that provide analgesic effect in the periaqueductal are exposed at the moment of pain. It has a connection with the cortex, hypothalamus, and limbic system. Spinoreticular and

spinomesencephalic pathways play a role in forming autonomic and affective characteristics of pain (7, 17).

2.2.3.4. Dorsal Colon Tract

It is thought to convey visceral nociception and somatic sense of touch and position to the thalamus (7).

2.2.3.5. Spino-Hypothalamic Pathway

It carries emotional information from the skin, lips, genital organs, gastrointestinal tract, intracranial blood vessel, tongue, and cornea to the hypothalamus. It does not synapse in the reticular formation (7).

2.2.4. Pain and Brain

There is no localized pain center in the brain. Areas of pain are scattered across many areas in the brain and are processed with different characteristics in different regions. Even when there is unilateral pain, this is processed in both thalamus in the brain. Although the effectiveness of the pain event in the cerebral cortex is not fully understood, it has been observed that the interconnected areas in the cerebral cortex are complex. Since pain is a crucial factor for life, the function of almost all areas of the brain is related to pain. Pain is a stimulus related to consciousness, emotion, and behavior. This coincides with the view of Dennis Turk. "The center of pain is basically the brain." (7, 27).

In acute and chronic pain, 6 brain regions come into play, and these are called pain matrices. We can see these areas more clearly in Figure 2.2. The pain matrix consists of:

1. Primary somatosensory cortex (S1),
2. Secondary somatosensory cortex (S2),
3. Anterior cingulate cortex (ACC),
4. The insular cortex (IC)
5. The prefrontal cortex (PFC)
6. Thalamus

The way the pain matrix processes pain is as follows.

- Pain Discrimination (lateral pain system-S1 and S2).
- Subjective evaluation (medial pain system-IC, ACC, and PFC).
- Cognitive assessment (PFC) (28).

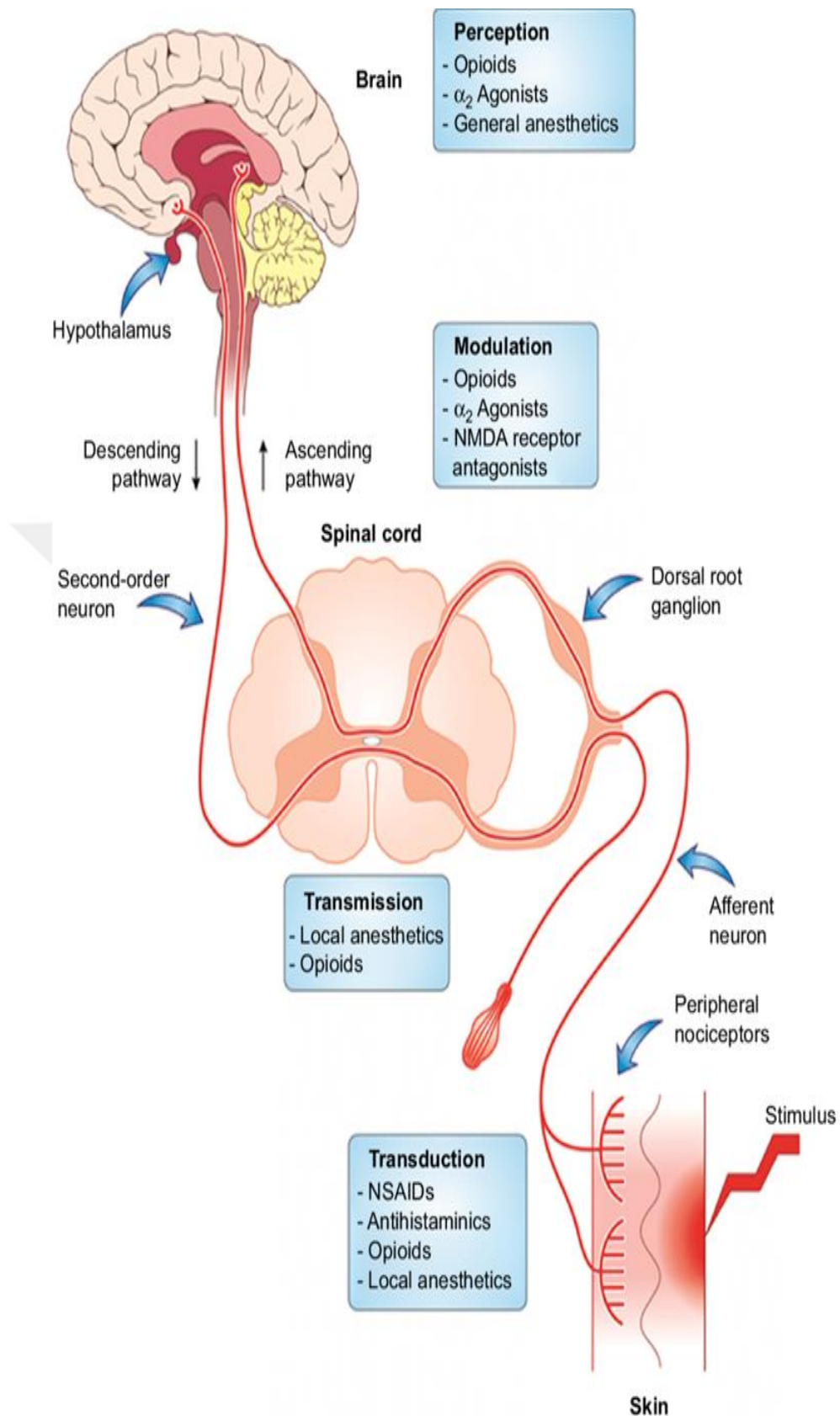


Figure 2.1. Pain-Processing Pathway (25)

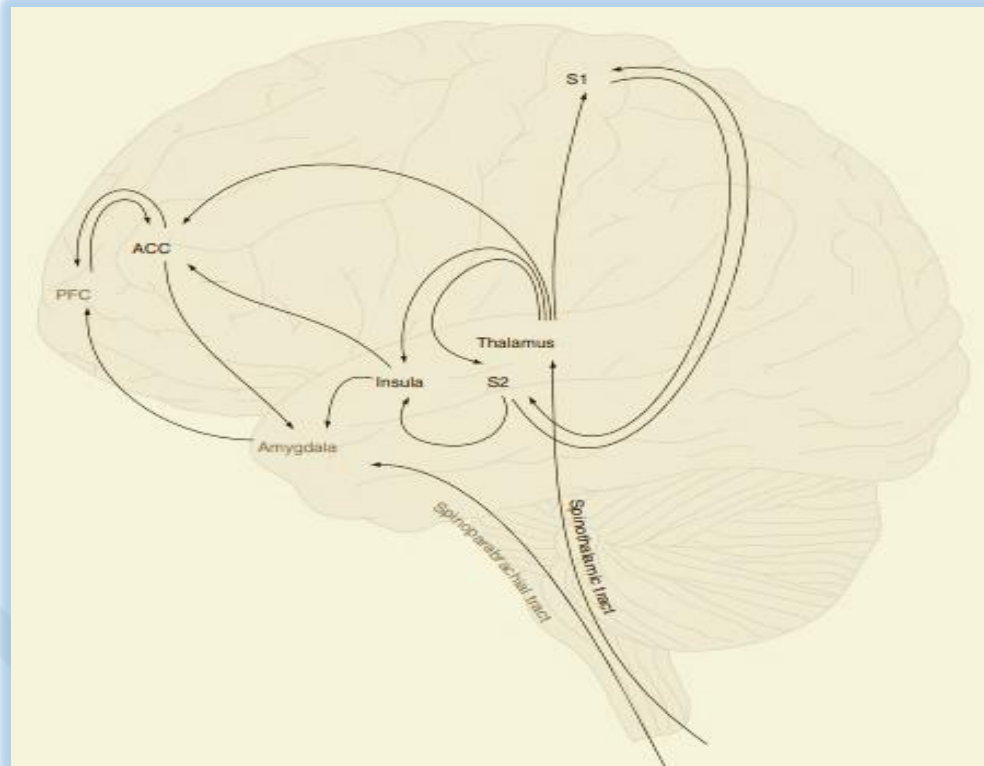


Figure 2.2. Ascending pain pathways and the brain regions involved (28).

S1, primary somatosensory cortex;
S2, secondary somatosensory cortex

PFC, prefrontal cortex;
ACC, anterior cingulate cortex;

2.2.5. Antinociceptive Systems

This system is divided into 3 groups.

2.2.5.1. Enkephalinergic Neurons in the Mesencephalic Periaqueductal Gray Matter

These neurons synapse with endorphin-carrying neurons in the diencephalon. Then they both stimulate the serotonin neurons in the bulbous. This is responsible for supraspinal inhibition (7, 22).

2.2.5.2. Noradrenergic Fibers

It starts from some nuclei of the reticular formation, ends at the posterior horn of the medulla spinalis. The main neurotransmitter is noradrenaline. Supraspinal analgesia is obtained here (7, 22).

2.2.5.3. Spinally Located Enkephalinergic Neurons

Dinorphine-carrying neurons are concentrated here. Gamma-aminobutyric acid (GABA) is a neurotransmitter that provides short-term inhibition and segmental inhibition in the medulla spinalis. Endorphin, Enkephalin, Somatostatin provide long-term inhibition. Somatostatin and bombesin act as an inhibitor (7, 22).

2.3. Theories of Pain

There are many theories about pain. These:

- Intensity Theory
- Cartesian Dualistic Theory
- Specificity Theory
- Pattern Theory
- Gate Control Theory
- Neuromatrix Model
- Biopsychosocial Model (30).

The most accepted and known of these is the gate control theory. Also, we will examine the Biopsychosocial Model, which is a model that will enable us to determine the path we will follow in the treatment of chronic pain and understand chronic pain.

2.3.1. Gate Control Theory

In 1965, Patrick David Wall and Ronald Melzack explained the first theory of pain from a mind-body perspective. According to this theory, pain to the brain should pass through three points through the spinal cord. These:

- the SG in the dorsal horn,
- the fibers in the dorsal column and
- the transmission cells which are located in the dorsal horn

The SG acts as a gate and modulates the incoming signals. So this means this. Unless the pain threshold is reached, the door is always closed, and no signal from the environment is transmitted to the spinal cord. It goes on like this until this pain threshold is exceeded. When the signals reach the spinal cord, they are transmitted to the brain. The brain returns to the individual as a perception of pain. However, in the gate control theory, they argued that psychological factors play a role in pain transmission. In addition to the SG control mechanism, it has been said that there are other additional control mechanisms in the brain

through which cognitive and emotional factors can increase the intensity of pain. For example, a standard stimulus can be perceived as pain since the pain door of a depressed individual may be open frequently (7, 30).

In this theory put forward by Wall and Melzack in 1965, it was suggested that pain is controlled at the spinal cord level.

The door control theory consists of 3 parts:

- Gate Control system,
- Central Control system,
- The activation system (31).

Gate Control System

The theory mainly mentions the following:

When the tissue receives nociception, it goes with afferent fibers to the 5th lamina of the spinal cord. Here, impulses are arranged by SG located in the 2nd and 3rd lamina of the spinal cord. Necessary adjustments are made according to the situation. This zone is the door zone that provides control in the door-control theory. Control of this gate is provided by A alpha and A-beta fibers with a thick diameter. It is responsible for carrying proprioception and sense of touch. When the impulse is transported with these fibers, SG cells become active with the feedback from the cortex, secrete enkephalin, and bind to opioid receptors in pain-bearing thin fibers (A-delta and C fibers). In this way, the door is closed; that is, warning passage to the transmission cells is prevented. However, while the impulse is transported with the thinner fibers A-delta and C fibers, SG cells are inhibited, if there is no extra warning to close the door, the door is open, and the transmission cells are stimulated. In other words, the transition to T cells are regulated by SG cells (6, 31, 32).

Central Control System

When stimulation is received, and before it reaches the T cells, thick fibers inform the cortex about the type, localization, and intensity of the stimulation via the neospinothalamic pathway. According to the information it has acquired, the cortex quickly responds and adjusts this system centrally by sending commands to the spinal gate (SG) and T cells (31, 32).

Activation System

As soon as the stimulus exceeds a critical level in T cells, the activation system is fired, and pain is felt. This system either opens or closes the door in the door control mechanism, influenced by the patient's psychological state, cultural level, emotional states such as anxiety and excitement (31, 32).

2.3.2. Biopsychosocial Model

He was the first of the physicians to offer a comprehensive approach by John Joseph Bonica (1917-1994) to pain relief in soldiers injured during II. World War. Biopsychosocial model: The patient and the disease are an inseparable whole; It is based on the teaching that the disease can be affected by psychological, biological, and social factors and can affect the patient physically and mentally. Today, by taking the role of a biopsychosocial model, many healthcare professionals apply the treatment of chronic patients, and patients are trying to be treated in a versatile way. The current model used for chronic pain is the biopsychosocial model (30).

2.4. Classification of Pain

Pain can be classified in many ways. But we will classify it under 3 main headings as shown below. We can see this classification in detail in Table 2.1 (7, 33).

Table 2.1. Classification of Pain

<i>Pain Classification According to the Region of Origin</i>	<i>Classification of Pain According to Its Mechanisms</i>	<i>Classification According to the Time of Onset of Pain</i>
• Somatic Pain • Visceral Pain • Sympathetic Pain • Peripheral Pain	• Nociceptive Pain • Neuropathic Pain • Deafferentation Pain • Reactive Pain • Psychosomatic Pain	• Acute Pain • Chronic Pain

2.4.1. Pain Classification According to the Region of Origin

2.4.1.1. Somatic Pain

They are sudden onset and well-localized pain caused by the somatic nervous system (7). They are generally defined as musculoskeletal pain. It can be superficial or deep. While the pain that occurs in the skin and mucosa is called superficial somatic pain, the pain caused by structures such as joints, bones, tendons, and muscles is deep somatic pain (19).

Pain due to trauma and strain, injuries to muscles and tendons due to strong tension are included in this group. This type of pain increases with activity and decreases with rest.

2.4.1.2. Visceral Pain

Visceral pain is carried by the autonomic nervous system. Pain is carried to the spinal cord by afferent branches of the autonomic nervous system. Organ stresses, chemical irritants, excessive pressure and contractions, impairment in blood flow may present as diffuse, difficult to localize, and reflected pain. Because these are carried by autonomic nerves, body blood pressure changes, pulse rate changes, hyperesthesia, and muscle rigidity can be seen together (7, 34).

2.4.1.3. Sympathetic Pain

These are vascular pain caused by sympathetic nerve activation such as causalgia and reflex sympathetic dystrophy (7).

2.4.1.4. Peripheral Pain

These are pains caused by muscles, tendons, and peripheral nerves themselves (7).

2.4.2. Classification of Pain According to Its Mechanisms

2.4.2.1. Nociceptive Pain

Nociception plays a role in the perception of pain. Nociception is the complex of electrochemical events that occur between tissue damage and the perception of pain. All nociceptor impulses produce pain, but not all pain is caused by nociceptors. Nociceptors are primary afferent free nerve endings that are sensitive to painful stimuli found in the skin and all subcutaneous tissues. The extensions of the C fibers(0.5-2 m/sn.) and the A-delta fibers(30 m/sn.) form nociceptors. A-delta fibers are myelinated. It receives impulses from thermal and mechanical receptors. These impulses are usually fast-transmitted, sharp, localized, and prickling pains. C fibers, on the other hand, are unmyelinated and slow-

conducting fibers. These fibers are activated by severe mechanical, chemical and extreme hot and cold stimuli. C fibers undertake the transmission of delayed, burning, and persistent pain. Common and non-localized pain is caused by C fibers (6, 7, 17, 18, 19, 22, 33).

2.4.2.2. Neuropathic Pain

After central and peripheral injuries, functional nervous system adaptations develop secondary to this, and related pain occurs. It is a non-nociceptive pain. IASP defined central pain as dysfunction in the central nervous system and pain initiated or caused by the primary lesion (7). Paresthesia, burning, hypoesthesia, dysesthesia, electricity peculiar pain, hyperalgesia, allodynia, etc., shows symptoms. Stroke, multiple sclerosis pains can be given as examples (6, 7, 18, 22, 33).

2.4.2.3. Deafferentation Pain

Central nervous system pains such as peripheral and thalamic pain such as phantom pain are examples. After these injuries, somatosensory stimulus transmission cannot go to the central nerve request and is interrupted. Then this kind of pain occurs (7).

2.4.2.4. Reactive Pain

These pains are myofascial. Motor or sympathetic afferents are reflexively activated and nociceptors are stimulated. Thus, the sensation of pain begins (7).

2.4.2.5. Psychosomatic Pain

It is the type of pain felt as if there is tissue damage in anxiety and depression. There is no pathology that can cause pain, but the person feels pain far beyond the severity of the pathology that would normally exist (7, 33).

2.4.3. Classification According to the Time of Onset of Pain

2.4.3.1. Acute Pain

Acute pain is always a nociceptive pain. An event damages the body, such as injury, burn, ischemia, and disease. The nociceptors then send a message to the brain to protect the body. The brain sends a physiological response with efferent nerves against the painful stimulus of the affected area (35). Later, a protective mechanism for tissue healing is activated, or the body creates a reflex response to escape from the message that creates the pain (36). The pain is actually what the body wants to transmit to the person (1). Acute pain is a symptom that occurs after tissue damage. Therefore, it is not a disease (30, 37). Acute

pain has a sudden onset and decreases with the healing process. If there is no improvement in acute pain and pain is prolonged, acute pain is replaced by chronic pain (36).

2.4.3.2. Chronic Pain

Chronic pain is a significant public health problem that brings an economic and social burden to health systems worldwide (38). It is long and challenging to treat. Acute pain occurs due to tissue damage or disease. It decreases over time with the treatment process. It is a symptom, a beneficial, biological thanks to its protective function (39). Chronic pain is the whole of a subjective sensory experience with a combination of environmental, psychogenic, ethnic, and cultural factors. It is a disease that progresses with chronic pain, psychological disorders, decreased function and QoL, cognitive and motivational decrease, lasting more than 3 months, independent of tissue healing, and can be cured with a well-diagnosed and multimodal treatment (40). In addition to discomfort, uncontrolled acute pain turns into chronic pain, leading to delayed recovery, prolonged hospitalization, and increased morbidity (26). It should be diagnosed and treated at an early stage before it causes psychological disorders such as depression and physical problems such as disability or before the pain turns into chronic pain.

Chronic pain affects 20% of the adult world population (38, 41). Self-limiting activity due to fear of movement, fatigue, pain catastrophizing, depression, and sleep disturbances is common in long-term chronic pain treatment patients. The pain was found to be different in some studies according to education level, age, and gender factors (42). The pain was found to be 10% more in women than in men (43).

That is why pain should be diagnosed in a multifaceted way. Levels of patients should be determined using the diagnostic tools we have, and treatment methods should be applied according to their levels. This method of diagnosis and level determination should be done with tools with proven validity and reliability available in the literature. Thus, patients recover quickly, their disability levels do not increase, and the costs of the state for chronic pain are reduced. Most importantly, the time spent by the patient in the hospital, loss of workforce, and decrease in quality of life is prevented.

2.5. Classification of Chronic Pain

The extension of poorly managed acute pain constitutes chronic pain. Chronic pain was defined as persistent or recurrent pain lasting more than 3 months. Classifying chronic pain is very difficult, but the current version of the World Health Organization's (WHO)

International Classification of Diseases (ICD) classified chronic pain as shown in Figure 2.3. below (41). We will also briefly mention the subtitles of this classification below.

2.5.1. Chronic Primary Pain

Chronic primary pain is persistent or recurrent pain in several parts of the body for more than 3 months related to emotional distress and functional disability in the patient. Biological findings related to pain are sometimes present, sometimes absent. If we give an example to these, back pains of unknown origin associated with fibromyalgia and irritable bowel syndrome are included in this group (41).

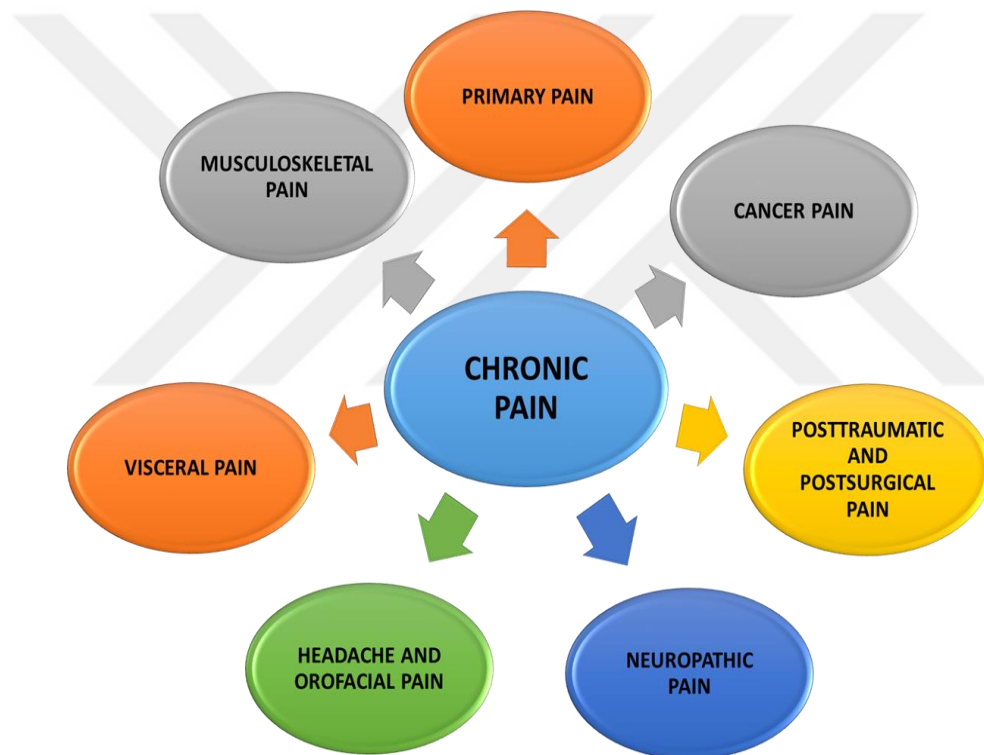


Figure 2.3. Classification of chronic pain

2.5.2. Chronic Cancer Pain

Chronic cancer pain can be divided into two categories: pain caused by cancer (tumor, metastasis pain) and pain caused by cancer treatment (chemotherapy, radiotherapy, drugs). Again, this pain is divided into visceral, musculoskeletal, and somatosensory

according to its location. Classification is made as continuous or intermittent according to whether it is affected by physical movement or not (41).

2.5.3. Chronic Postsurgical and Posttraumatic Pain

It is defined as pain that persists for at least 3 months after a surgical procedure or tissue injury. Since the neuropathic pain was more in most cases, the quality of life was affected more than those with nociceptive pain (41).

2.5.4. Chronic Neuropathic Pain

‘Chronic neuropathic pain is caused by a lesion or disease of the somatosensory nervous system.’ (41). Amputation surgery, postherpetic neuralgia, and painful diabetic neuropathy, stroke are neuropathic pain (44).

2.5.5. Chronic Headache and Orofacial Pain

We can say that head and orofacial pains that continue for 3 months and occur more than 50% of the days are chronic. Chronic headaches include tension headache, migraine; For orofacial pain, temporomandibular disorders and pains such as mouth burning can be given as examples (41).

2.5.6. Chronic Visceral Pain

These pains are usually of internal organ origin and often appear as pain reflected on us. Hyperalgesia develops in the tissue part where the pains are reflected. These pains are persistent or repetitive pains (41).

2.5.7. Chronic Musculoskeletal Pain

Chronic musculoskeletal pain is permanent or repetitive pain in the musculoskeletal system elements such as muscle, bone, joint, soft tissue. In this section, diseases that affect the autoimmune system, such as rheumatoid arthritis and osteoarthritis, cause pain and chronic changes in body structures (41).

2.6. Progression from Acute Pain to Chronic Pain

Acute pain is believed to progress to chronic pain through one of the following processes: central sensitivity, modulation or modification of nociceptors, and altered neuroplasticity. Usually, as a healing process begins, the harmful stimuli decrease, and the pain decreases. The chronicity of pain begins with the emergence of cellular and molecular changes due to prolonged neurogenic inflammation. These changes cause peripheral and

central sensitization. Therefore, changes in the transmission and processing processes of pain also change the perception of pain. Inflammatory substances that become permanent in the environment in chronic inflammation cause sensitization and permanent changes in neurotransmitters (17, 42). The underlying cause of chronic pain is increased pain signal messages due to peripheral and central sensitization of altered sensory neurons.

Peripheral sensitization is characterized by the lowering of the pain threshold and the development of high responses to small stimuli due to long-term exposure of the pain thresholds of sensory neurons to inflammatory mediators. Most commonly, hyperalgesia (increased response to a less painful stimulus), allodynia (pain response to normally not painful stimuli), and increased thermal sensitivity are involved (45).

Central sensitization is a condition in which the permeability of the second neuronal membrane changes. Normally, in acute pain, presynaptic pain input is coordinated with postsynaptic impulse output, but nerves become sensitive in the synaptic horn in chronic pain. Therefore, postsynaptic signals are more than presynaptic input. This causes the pain threshold to drop and the pain felt widely beyond the original injury (42). Central sensitization can continue for a long time after the end of the stimulation and significantly affect the continuity of the pain. Chronic pain can occur both due to increased nociceptive activity in the peripheral pathology region and additional changes in the central nervous system, such as increased excitatory stimulation or decreased inhibitory endogenous pain modulation mechanisms. Spinal neuroplasticity, which develops due to glial cells changing their cell structure, is the most important factor in chronic pain (26, 46, 47).

The etiology of chronic pain is complex. Many components play a role in the transition from acute to chronic. When many genetic, immune, and environmental factors come together, the process is triggered with the injured nerve, and the suppository of chronic pain is ignited. Accordingly, we can say that chronic pain is a disease of the independent nervous system characterized by changes in the activities that occur due to functional plastic and abnormal structural changes on the axons of neurons in the nervous system, from peripheral fibers to cortical areas (28).

After the functional and structural changes that occur, pain memory records chronic pain, just like learning based on experience (28). Pain memory is the factor that plays a very important role in chronic pain. Pain memory provides less or more recall of pain in long memory in patients with chronic pain. In studies, patients who report depression with chronic

pain report their past pain experiences higher than what they said first. Patients without chronic pain report less of the same pain experience they experienced. Depression and anxiety accompanied by chronic pain play a role in the higher reporting of pain (48).

Studies have observed a decrease in gray matter in the brain of patients with chronic pain, changes in the structure, activity, and sensitivity of neurons, and significant decreases in the receptors and functioning of neurotransmitters (47). Gray matter atrophy has been observed in patients with chronic pain. When such patients are compared with patients without pain, the cognitive levels of patients with chronic pain were found to be lower than patients without pain (49).

For this reason, acute pain should be treated early and adequately to prevent the course of chronic pain and to prevent neuronal sensitization (17, 50).

Although the source of chronic pain can often be a nociceptive stimulus, sometimes this stimulus is not caused by nociception. There are no autonomic functions in acute pain, but there is an increase in sympathetic tonus and neuroendocrine function in chronic pain (7).

2.7. Chronic Low Back Pain

Low Back Pain (LBP) manifests itself as pain between the gluteal region and lower ribs and sometimes radiating to one or both legs (51). In Chronic Low Back Pain (CLBP), the pain lasts longer than 3 months. Depending on the intensity and cause of the pain, sometimes neurological symptoms and accompanying limitations in the person's daily life activities can be seen. If the pain lasts for a long time, psychological disorders such as anxiety and depression occur in addition to physical disorders (52). Some studies have shown that pain avoidance and depression may appear together with chronic pain (53). Sleep disturbances and anxiety appear together in most patients with LBP (54).

Some risk factors play a big role in LBP. The following risk factors may trigger the LBP. The Risk Factors for LBP are:

- Personal Risk Factors (gender, race, pregnancy, postural disorders, exercise, smoking, education level),
- Occupational Risk Factors (pulling push, heavy lifting, heavy labor, rotational work, static position, and long working, long-term driving use) and
- Psychosocial Risk Factors (depression, anxiety) (55).

LBP can originate anatomically from many structures such as nerve roots, muscles, fascia, bones, joints, intervertebral discs, and abdominal organs. Since low back pain arises from different origins, differential diagnosis is essential. LBP can be categorized in different ways. We can see the classification of LBP, which is categorized according to frequency and pathology, in Table 2.2 (56). Inclusion criteria in our study were determined according to the 'Commonly Diagnosed Mechanical LBP' section in Table 2.2.

2.8. Scales Used to Assess Pain

Pain assessment is a very difficult, subjective experience. In particular, many scales are used for the assessment of pain. Some scales evaluate one or more dimensions of pain. Scales assessing one dimension of pain are divided into 4 types: numerical, verbal, visual, and mixed (57). In the table below, we can see which scale evaluates pain in which dimensions (58).

2.9. Scale Adaptation Studies

For the measurement tool to gain meaning and value, it must be both valid and reliable. For the measurement results to be used in the evaluation and the decisions made as a result of the evaluation to be correct, the measurement tool used must be standardized (59). Until the standardization of the scale is achieved, each item in the scale should be analyzed and reviewed in detail, and the scoring and interpretation of the scale should be clearly stated. Scales that are standardized in this way are defined as objective scales. For a scale to be standardized, it must be evaluated according to reliability and validity criteria.

We call the degree of validity the degree to which a measurement tool can measure the property that it wants to measure without confusing it with any other property.

Reliability shows the stability of the measurement. Similar results should be obtained from the measurements when applied by different observers, applied in different places, and applied at different times. In the Figure 2.4 below, you can examine the methods by which we evaluate the validity and reliability (60). In addition, this subject is explained in more detail on pages 33-41.

Table 2.2. Low back pain table categorized by frequency and pathology

Commonly diagnosed mechanical LBP •Lumbar strain •Disc herniation •Degenerative disc disease •Facet joint syndrome •Spondylolisthesis •Spinal stenosis
LBP that requires urgent treatment •Neoplastic (Myeloma, Spinal cord tumor, Metastasis.) •Cauda equina syndrome •Infection (Osteomyelitis, Discitis, Epidural abscess) •Fracture
Inflammatory LBP •Ankylosing spondylitis •Reactive arthritis •Psoriatic arthritis •Inflammatory bowel illness •Transverse myelitis
Vascular-Induced LBP •Spinal cord vascular malformation •Spinal cord infarction •Epidural hematoma
Metabolic LBP •Paget's disease •Osteoporosis
Other LBP •Epi Sacroiliac lipoma •Herpes zoster •Lyme disease •Statin dependent myopathy
Extraspinal LBP •Aortic dissection or aneurysm •Nephrolithiasis •Pyelonephritis •Retroperitoneal hematoma or abscess •Psoas abscess •Spleen rupture or infarction •Sickle cell crisis

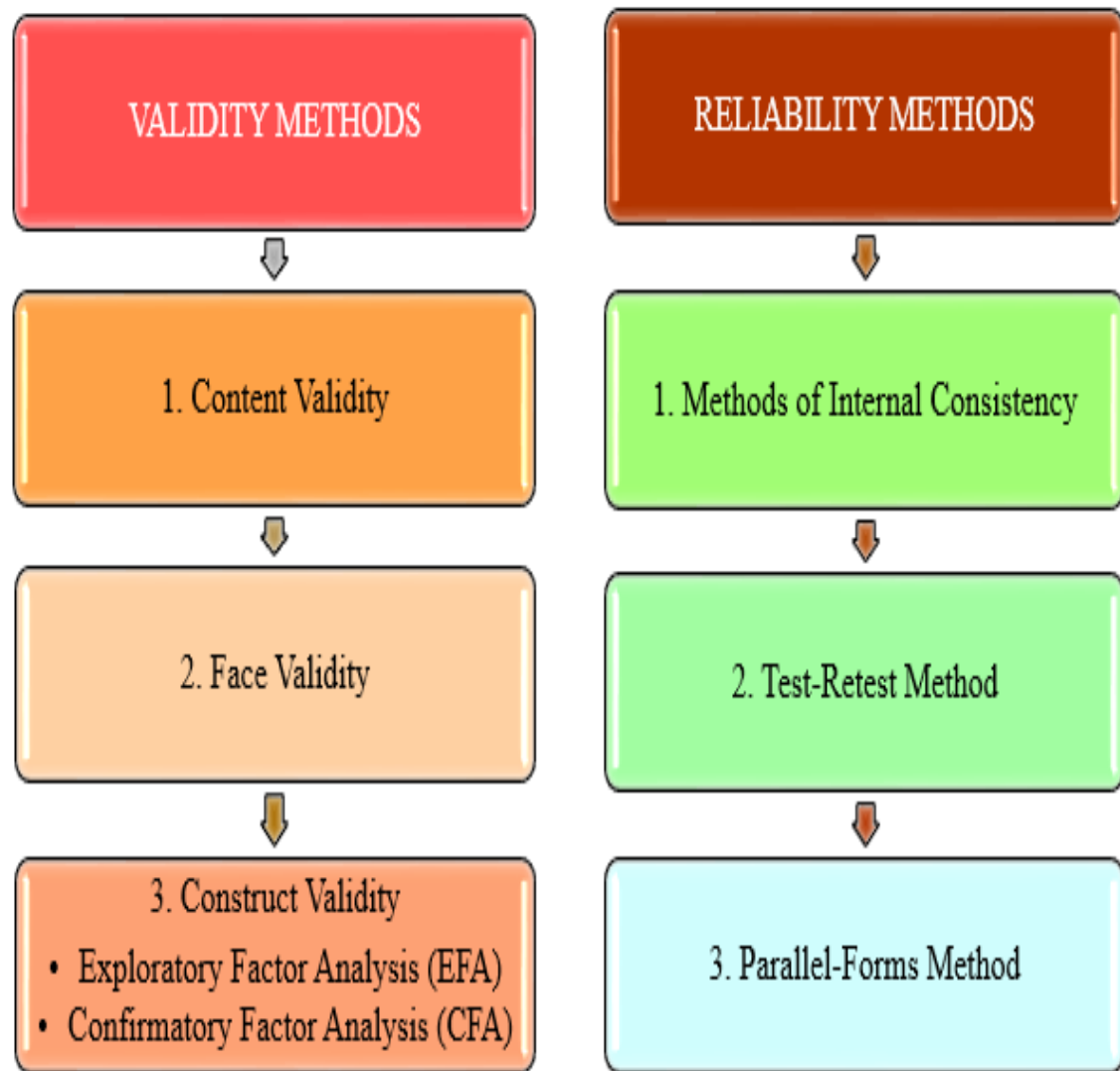


Figure 2.4. Methods used in scale validity and reliability analysis

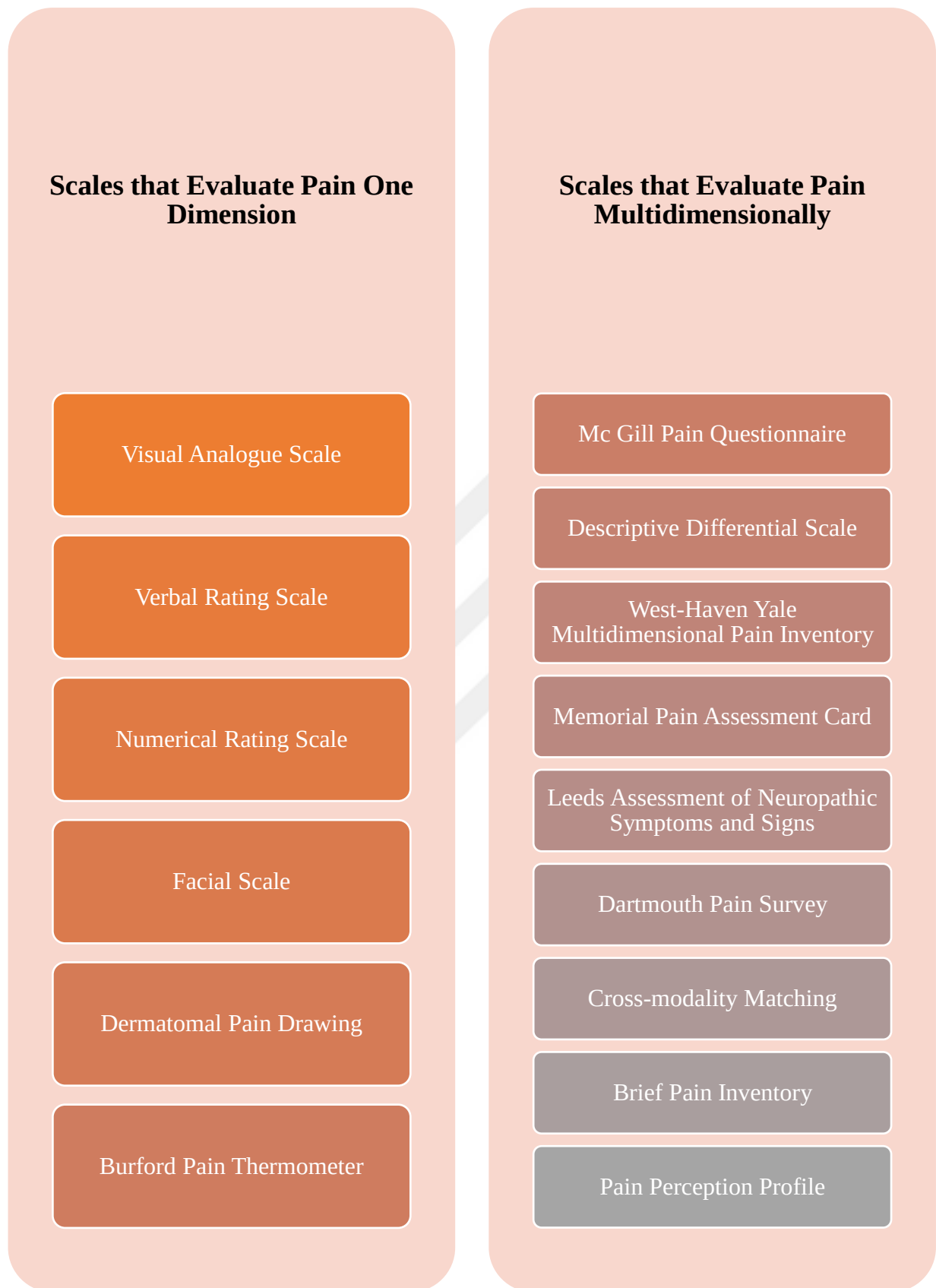


Figure 2.5. The Questionnaires that measure the pain.

3. MATERIALS AND METHODS

3.1. The Aim of the Study

The study aims to evaluate the Turkish reliability and validity of the revised version of the Chronic Pain Graded Scale, which evaluates the three dimensions of chronic pain. It evaluates persistent pain, the intensity of pain, and the score of disability, and is suitable for evaluating chronic pain in many diseases.

3.2. Ethical Aspects of the Study

First, the necessary permission was obtained from the inventor of the GCPS 2.0, Michael Von Korff, via e-mail (Appendix 7.1). Then, permission was obtained from Yeditepe University Clinical Trials Ethics Committee for the study, dated 24/09/2020 and numbered 37068608-6100-15- 1965 (Appendix 7.2). Besides, participants signed an Informed Voluntary Consent Form. It is an online form that explains the performance of this study in detail and in which the participant approves that they want to participate in the study voluntarily (Appendix 7.3).

3.3. Data Collection, Sample, and Duration of the Study

The sample size was calculated by considering the ratio of 10: 1 item (10 participants per item) suggested by Kline and Büyüköztürk (61, 62, 63). Eighty participants were recruited for the 8-item GCPS questionnaire. For the homogeneity of the participants, these eighty participants were preferred to be people with chronic low back pain. The study data were collected by sending the questionnaires to be filled out to the participants who want to participate in the study voluntarily, via e-mail between October 2020 and November 2020. The Snowball sampling method was used in the data collection process (64). The eligibility of these participants was evaluated by considering the following criteria. All participants filled over the age of 18 and under the age of 70 the form online. First, they filled out the informed volunteer participant form. Then they filled out the Clinical and Demographic Assessment form. Based on these data, participants who met the inclusion and exclusion criteria were selected, and they were allowed to fill in other forms.

As the inclusion criteria:

Participants were Turkish speakers and volunteer participants aged 18 years and over and under 70 years of age who had recurrent or persistent chronic LBP for 6 months or more.

The following participants with CLBP diagnosed by a physician were included in the study (56). These;

- Disc herniations
- Mechanical back pain
- Lumbar strain
- Spondylolisthesis
- Degenerative disc disease
- Muscle imbalance
- Lumbago
- A trigger point in the back muscles

As exclusion criteria:

- Having a history of illness such as Psychiatric disorder, Cognitive impairment, Dementia, or Alzheimer's
- Low back pain that needs immediate treatment (neoplasm, cauda equina syndrome, infection, fracture)
- Inflammatory low back pain
- Low back pain due to a vascular cause

171 volunteer participants filled the scales sent via e-mail. 91 participants who did not meet the inclusion criteria were excluded. It was written on the voluntary consent form and in the mail, participants with low back pain should fill the form. However, the number of participants who marked the voluntary consent form without reading it, filled the form, and had no back pain, was 75. The low back pain of the 12 participants ranged from 0 to 3 months. Thus, 12 participants did not meet the inclusion criteria for chronic low back pain. Four of them had a diagnosed psychiatric disorder. In other words, participants who did not meet the inclusion criteria were excluded from the study. The data collection process was terminated when 80 participants meeting the study criteria were reached.

3.4. Data Collection Instruments

- Clinic and Demographic Evaluation Form
- Oswestry Low Back Pain Disability Index (ODI)
- Patterns of Activity Measure Pain (POAM-P)
- Roland-Morris Disability Questionnaire (RMDQ)

- Hospital Anxiety and Depression Scale (HADS)
- Graded Chronic Pain Scale Version 2.0 (GCPS 2.0)

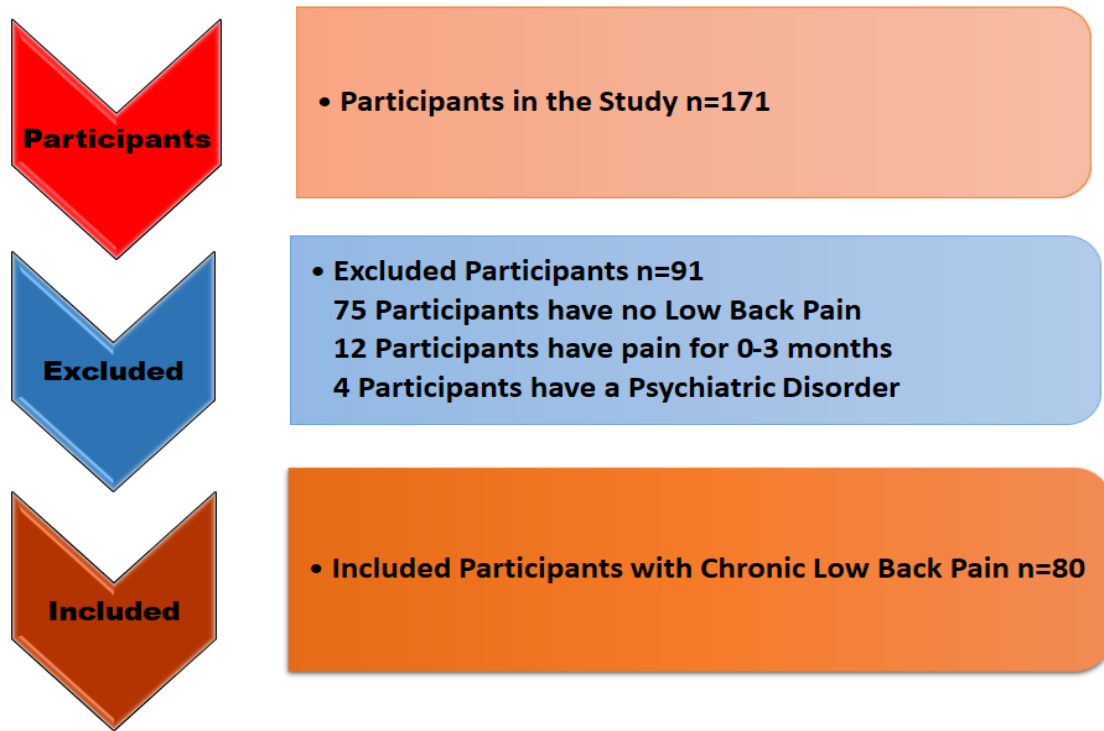


Figure 3.1. Volunteers' Participation Process

3.4.1. Clinic and Demographic Evaluation Form

The clinical and demographic evaluation form is a form that the patient fills in after the consent form. There are questions following the inclusion and exclusion criteria in the clinical part (low back pain of the patient, duration, diagnosis, age range, etc.). If the patient does not respond according to the study's criteria, the system automatically prevents the participant from seeing other questions, thus preventing the patient from wasting unnecessary time. If the patient meets the criteria of the study, the demographic part of the form (age, gender, weight, height) and other forms can be filled (Appendix 7.4).

3.4.2. Oswestry Low Back Pain Disability Index (ODI)

ODI is a questionnaire measuring the effect of low back pain on daily life and the level of disability caused by this pain. In this study, considering that ODI, like GCPS, measures disability and the effects of pain on daily life, we included this form in our assessment tools.

There are 10 questions in total. (Pain Intensity, Personal Care, Lifting, Walking, Sitting, Standing, Sleeping, Sex life, Social life, Travelling) The answer to each question consists of 6 items. While '0' is the item with the lowest score, and '5' is the item with the highest score. A minimum of 0 points and a maximum of 50 points can be obtained at the end of the survey. This score is then converted into a percent system with a simple calculation method. According to this system, the equivalent of the points obtained from the survey expresses the following (Appendix 7.5) (65, 66).

Table 3.1. Interpretation of ODI by Percentage and Corresponding Disability Level

Percentile	Disability
0% to 20%	Minimal Disability
21% -40%	Moderate Disability
41% -60%	Severe Disability
61% -80%	Crippled
81% -100%	Bed-Bound

3.4.3. Patterns of Activity Measure Pain (POAM-P)

Some established activity patterns reduce patients' quality of life with chronic pain, increase their pain, and limit their movement. These are modified patterns such as Overdoing, Avoidance, Pacing. POAM-P determines which of these patterns chronic pain patients use. The reason for using POAM-P in this study is the idea that there may be a relationship between pain and overdoing and disability and avoidance. It consists of 30 questions in total.

There are 10 questions in each subsection and these questions are answered with a 5-point Likert scale. '0' on the scale means not at all '4' means all the time. For each subsection, a minimum of 0 and a maximum of 40 points is taken, and the subsections are scored and evaluated within themselves. The patient is categorized according to the subsection with the highest score (Appendix 7.6) (67, 68)

3.4.4. Roland-Morris Disability Questionnaire (RMDQ)

RMDQ is a sensitive tool that measures the loss of function and disability due to low back pain. We found it appropriate to add RMDQ to our measurement tools, considering that it makes similar measurements with the GCPS.

It is a questionnaire consisting of 24 questions and simple to answer. 0 means no, 1 means yes in the survey. It specifically measures disability due to low back pain and evaluates the following physical functions: walking, personal care, bending, sitting, lying, dressing, climbing stairs, standing up, housework, sleeping, appetite, mood. In total, the lowest 0, the highest 24 points can be taken. '0' means no disability, '24' means the highest disability (Appendix 7.7) (69, 70)

3.4.5. Hospital Anxiety and Depression Scale (HADS)

The hospital anxiety and depression scale have two sub-scales: Anxiety and Depression. 7 single-digit questions in the scale measure anxiety, while 7 questions with two numbers measure depression. Questions get a score between 0 and 3 (71). The cut-off score for anxiety was accepted as 10/11 and for depression as 7/8 (72). Increasing scores above the cut-off scores indicate that the risk level for both depression and anxiety increases (73).

The purpose of putting this scale into our measurement tools is to think that the persistent pain in chronic patients and the disability that occurs over time is related to anxiety and depression (Appendix 7.8).

3.4.6. Graded Chronic Pain Scale Version 2.0 (GCPS 2.0)

The chronic pain graded scale was developed by M. Von Korff as a 7-item scale that measures pain intensity and disability due to chronic pain (12). The scale queries the pain intensity for a period of the past 6 months. In 2010, Von Korff revised the scale, converted it into GCPS 2.0, and questioned the pain intensity for the last 3 months in this scale (9). Differently, to measure the persistence of pain, the first item is added that questions the pain days experienced in 6 months. Others question the situation in the quarterly period. There

are 8 items in the revised form. Items 2, 3, 4 measure pain intensity, and items 5, 6, 7, 8 measure the disability score. As pain intensity; Sum of Pain Right Now (Q2) and the Worst Pain in 3 months (Q3), and the Usual Pain Intensity (Q4) degree in 3 months are questioned. As the degree of disability, the level of usual(Q5) and daily activities(Q6), recreational, social, and family activities (Q7) in the 3 months, and finally the degree of ability to work (Q8) restrictions are questioned (Appendix 9).

Also, primary care patients can be briefly evaluated with 3 items in the same scale. One of these three items is the usual pain intensity (Q4) for pain intensity, the other two are Sum of Interference with Daily Activities (Q6), Score for Days Kept from Usual Activities (Q5) for evaluating the disability score. We would like to add the scoring of this for researchers who want to study. Below you can see the scoring of both the 8-item GCPS 2.0 and the 3-item Graded Chronic Pain-Primary Care Scale (GCP-PCS) (Appendix 7.9)

3.4.6.1. Measurement Method for the Graded Chronic Pain Scale Version 2.0

Questioning the pain experienced by the person in the past six months allows us to discover whether the pain is persistent or non -persistent. While patients who experience pain at least half or more of the 6 months have persistent pain, we can say that other patients' pain is non -persistent. With the answer to the first item, we can say that those who experience pain for 1-89 days have Non -Persistent Pain, and those who experience pain for 90-180 days have Persistent pain. In table 3.2 below, we can see the classification.

Table 3.2. The Classification for Persistent Pain (Item 1) (9).

PERSISTENCE CLASSIFICATION	DAYS
NON-PERSISTENT PAIN	1-89 PAIN DAYS (Item 1)
PERSISTENT PAIN	90-180 PAIN DAYS (Item 1)

Characteristic Pain Intensity:

Sum of Pain Right Now (Q2) + Worst Pain (Q3) + Usual Pain Intensity (Q4) [Range 0 to 30]

$$Q2 + Q3 + Q4 = 0 \leq \text{Sum} \leq 30$$

Four Item Disability Score:

Sum of Interference with Daily Activities (Q6) + Interference with Social Activities (Q7) + Interference with Work/Housework (Q8) + Score for Days Kept from Usual Activities (Q5) [Range 0 to 40]

$$Q5 + Q6 + Q7 + Q8 = 0 \leq \text{Sum} \leq 40$$

Table 3.3. The Table for the Graded Chronic Pain Scale Scoring Rules (9).

CHRONIC PAIN GRADE BASED ON GCPS VERSION 2.0	
PAIN FREE	
GRADE 0	No pain problem (prior three months)
LOW INTERFERENCE	
GRADE I - Low intensity	Characteristic Pain Intensity less than 15 and four item Disability Score less than 17.
GRADE II – High intensity	Characteristic Pain Intensity of 15 or greater and four item Disability Score less than 17.
HIGH INTERFERENCE	
GRADE III – Moderately limiting	Four item Disability Score of 17 to 24.
GRADE IV – Severely limiting	Four item Disability Score of 25 to 40.

3.4.6.2. Measurement Method for Graded Chronic Pain-Primary Care Scale

Pain Intensity

Usual Pain Intensity (Q4) [Range 0 to 10]

$$Q4 = 0 \leq \text{Taken} \leq 10$$

Two Item Disability Score:

Sum of Interference with Daily Activities (Q6) + Score for Days Kept from Usual Activities (Q5) [Range 0 to 20]

$$Q5 + Q6 = 0 \leq \text{Sum} \leq 20$$

Table 3.4. The Table for the GCP-PCS Scoring Rules (9).

CHRONIC PAIN GRADE BASED ON THREE ITEM GCP-PCS	
PAIN FREE	
GRADE 0	No pain problem (prior three months)
LOW INTERFERENCE	
GRADE I - Low intensity	Usual Pain Intensity less than 5 and two item Disability Score less than 9
GRADE II – High intensity	Characteristic Pain Intensity of 5 or greater and two item Disability Score less than 9.
HIGH INTERFERENCE	
GRADE III – Moderately limiting	Two item Disability Score of 9 to 12.
GRADE IV – Severely limiting	Two item Disability Score of 13 to 20.

3.5. Data Analysis Methods

IBM Statistical Package for the Social Sciences (SPSS) Statistics Version 22 software was used for statistical analysis of the findings obtained in the study. Age, weight, height, and Body Mass Index (BMI) variables from the clinical and demographic data of the research group were tabulated as mean, standard deviation, minimum and maximum values. Other variables are shown in tables as numbers and percentages. The suitability of research variables to normal distribution was determined by Kolmogorov-Smirnov / Shapiro-Wilk tests and visual examination of histograms. We take $p > 0.05$ to determine its suitability to a normal distribution. However, by looking at the Skewness and Kurtosis values, the coefficient of variances, the structure of the histograms, and the detrended table, it was decided whether the variables were suitable for normal distribution. Relationships between variables were analyzed using Spearman-Pearson correlation tests according to their suitability to normal distribution. Normally distributed variables were examined with the Pearson correlation test, and those that did not show normal distribution were examined with the Spearman correlation test. When examining the differences between variables, the T-Test was used for normally distributed variables in groups of 2, and the Mann-Whitney U test was used for non-normally distributed variables. For variables containing more than two groups, the ANOVA test was used in normally distributed, and the Kruskal Wallis test was performed in non-normally distributed variables. Post hoc analysis was applied to find out which group was different according to the test results. The posthoc analysis of those with equal variances assumed was analyzed by Scheffe and Tukey. The posthoc analysis of those with equal variances not assumed was analyzed by Dunnett's T3 Tamhane's T2 tests. The relationship between groups was determined by the Chi-Square test. For the reliability of the scale, the intraclass correlation coefficient (ICC) was checked for test-retest reliability. The internal consistency analysis of the scale was evaluated with the Cronbach Alpha coefficient. The items in the scale were removed one by one, the Cronbach Alpha coefficient was recalculated, and the contribution of each item to the Cronbach Alpha value is shown. In the validity of the scale, the sphericity test of Kaiser Meyer Olkin and Bartlett was performed for the scale's construct validity, and the factor analysis of the scale was calculated.

3.6. Reliability and Validity

Two indispensable properties sought in every measurement tool are validity and reliability. Validity determines the degree of service appropriate to the purpose of use of the

test. If a measuring tool can measure the property and it measures consistently, then we can say that tool is valid. If we can get the same results from this measurement tool when the measurements are repeated under the same conditions, we say this measurement tool is reliable (74,75). The purpose of a scale is to evaluate the object, individual, or event to be measured and to make judgments about the evaluation by looking at the findings obtained. If the scale is not standardized, valid, and reliable, the judgment will not be reliable, and the conclusion will be misleading. For this reason, the result is reached based on the standardized, reliable, and validity of the scale, the judgment was given, and the steps to be taken accordingly are taken with courage (76).

3.6.1. The Validity of the Scale

Investigating what a scale measures and whether the scale makes an accurate measurement for its purpose are related to validity. That is, we call the degree of validity the degree to which a measurement tool can measure the property it wants to measure without confusing it with any other property (75, 77). A scale may be reliable but may not be valid, but a scale that is not valid is not reliable. In order for the scale to be used, it must meet both criteria. However, first of all, a scale must be reliable in order to be valid. The validity level of the scale is determined by the validity coefficient between -1 and +1 (78). The higher the validity coefficient, the more our scale serves the purpose for which it is used. At the end of our measurements, we can interpret the scale's validity as low, medium, and high. The scale's validity is about determining the degree to which the scale serves the purpose it wants to measure while being used. We can see the factors that determine validity below (79, 81).

1. Content Validity
2. Face Validity
3. Criterion Validity
4. Construct Validity (81, 82)

3.6.1.1. Content Validity

Content validity is related to the extent to which the whole scale and each item in the scale serve the purpose. Whether or not the measuring tool measures the structure it wants to measure in scope validity is left to expert decisions, not to the developers themselves. Scope validity can be investigated in two ways, logical and statistical (83).

- **Translation Steps and Content Validity of GCPS 2.0**

For the translation of the scale, the Beaton protocol was followed (84). First, the scale was translated from English to Turkish by 1 physiotherapist, a native Turkish and fluent in English, and 1 different person from other unrelated professions. The translated examples were compared one by one, and the appropriate translation for each item was taken and converted into a single draft. Later, this draft was examined by academic physiotherapists, and a second draft was prepared by taking into account their suggestions. Then, two people turned down this draft, one of whom was an engineer whose native language was English and speaks fluent Turkish. The two translations were compared with the original, and it was seen that they were not very different in terms of meaning integrity. All the obtained information was brought together, and opinions were taken from a group of expert physiotherapists on the clarity of the items, incomprehensible items were translated more clearly, and the second draft was prepared for an expert opinion. The scale was examined by physicians, nurses, and 3 specialist physiotherapists. Their views were taken, and it was thought that the word 'recreation' in only the 7th statement would not be understood by the participants in all sociocultural level groups. It was decided to replace the word 'recreation' with the word 'entertainment', which was more understandable in Turkish so that the participants can understand it. Apart from this, other expressions were found understandable and appropriate. With the latest draft, a pilot test was performed on 30 people, 15 of whom had chronic pain, and 15 of whom were healthy. In the pilot test, each statement was written as 'fully understood', 'partially understood', and 'not understood at all', and under these, A comment field has been left for the participants to write what they do not understand in the item. Also, we ask them how we can correct them to better understand the item? After the pilot test, we received reports that the word daily activities in item 6 was causing confusion. Thereupon, we thought it would be better to include examples of daily activities in parentheses to resolve the confusion created by the word daily activity in item 6. The scale was finalized with the comments made by the participants (Appendix 7.10) (85).



Figure 3.2. Flowchart of Turkish Translation of Graded Chronic Pain Scale Version 2.0

3.6.1.2. Face Validity

Face validity is a simple method to understand whether or not your study or test can measure what it is supposed to measure. The scale is translated into Turkish by experts and checked. More than a pilot test is applied for the scale and the intelligibility of the scale is tested. In the pilot study, the expressions that the subjects do not understand are rearranged. Turkish and English forms are applied to the same participants at different times. Results are tested with a paired t-test. If $p > 0.05$ in all items, it concludes that the answers given to the English and Turkish forms are the same. Using the scale items in the surface validity in a smooth and meaningful way, it is important to express, use correct terms, choose appropriate words, have a clear meaning of words, and avoid words with ambiguous and more than one meaning.

Whether a scale really measures the feature it wants to measure is determined by collecting the opinions and comments of the researcher herself, her close friends, other non-experts on the subject being researched, and the respondents participating in the pilot study. Face validity is considered a poor evaluation because it is based on personal judgment (75, 78, 79)

3.6.1.3. Criterion Validity

For criterion validity, the relationship of the scale with one or two scales similar to its purpose is examined. The correlation between the scales applied to the same participants is checked, and the results are expected to be consistent (83).

3.6.1.4. Construct Validity

The items in a test must be related to each other and serve the same structure. The cause-effect relationships of the items show the result of the test as a whole. The most important feature of Construct Validity is the explanation of the theoretical structure. This type of validity is analyzed by the factor analysis method. The purpose of this analysis is to reveal new factors by gathering related items together. Or, the construct validity can be determined by comparing a previously validated tool with a new measurement tool or applying it to a group whose result is known. Two-factor analysis can be done for this.

1.Exploratory Factor Analysis (EFA)

2.Confirmatory Factor Analysis (CFA)

3.6.1.4.A. Exploratory Factor Analysis

Exploratory factor analysis is a method used to determine the number of components. The variance explained in this method made with the SPSS package program is the error variance. The two most popular methods among many alternative factor extraction methods are principal axis factoring and maximum likelihood methods. In factor analysis, it is determined how many factors the basic components contain. When determining EFA factors, non-rotated factors do not give very clear results. Factor structure is revealed clearly with steep and oblique rotation methods, which is a very important step in EFA to find the factor structure with which the data set fits better. The correlation matrix is mostly preferred in explanatory factor analysis. In order to determine the final version of the model, the scale takes its final form by removing the statements that do not fit the model from the scale and performing the factor analysis again. Generally, items with a factor load of 0.30 or less are excluded from the scale. Sometimes items that do not fit the scale's structure and have a higher factor load may be excluded from the scale. The factor analysis methods used in summarizing the study should be written in detail (78, 79).

3.6.1.4.B. Confirmatory Factor Analysis (Structural Equation Modeling (SEM))

In the confirmatory factor analysis, the test of the established model is provided in light of the information we obtain from the exploratory factor analysis. SEM is a multivariate analysis method that is formed by the combination of factor analysis and multivariate regression analysis. SEM analysis shows to what extent the result obtained by testing all observed and unobservable variables of the model created is compatible with the available data. If the fit indices obtained by testing the model show a fit between the model and the data, the structurally formed hypotheses are accepted, and if the fit indices reveal that there is no such fit, the hypotheses are rejected. While various statistical methods other than SEM are trying to discover the relationships on the data set, SEM confirms the compatibility of the theoretically established relations with the data (86).

In this technique, multiple fit indexes are used to evaluate the validity of the model. We can see the most commonly used ones of these indices in table 3.4 below (87, 88, 89).

Table 3.5. Normal and Acceptable Fit Indices Values of Confirmatory Factor Analysis

The Criterion of Model Fit	Good Fit	Acceptable Fit
CMIN/DF	$\chi^2/df \leq 3$	$\chi^2/df \leq 5$
GFI	$GFI \geq 0.90$	$GFI \geq 0.85$
AGFI	$AGFI \geq 0.90$	$AGFI \geq 0.85$
CFI	$CFI \geq 0.97$	$CFI \geq 0.95$
RMSEA	$RMSEA \leq 0.05$	$RMSEA \leq 0.08$
IFI	$IFI \geq 0.95$	$IFI \geq 0.90$
NFI	$NFI \geq 0.95$	$NFI \geq 0.90$

CMIN/DF (χ^2/df): Chi-Square Fit Test (Minimum Discrepancy (chi-square) / Degrees of Freedom)

GFI: Goodness of Fit Index

AGFI: Adjusted Goodness of Fit Index

CFI: Comparative Fit Index

RMSEA: Root Mean Square Error of Approximation

IFI: Incremental Fit Index

NFI: Normed Fit Index

3.6.2. Reliability of the Scale

Measurements should be stable in terms of reliability. In other words, similar results should be obtained when applied by different observers, when applied in different places, when applied at different times. Therefore, reliability shows the stability of the measurement (79). The stability of the scale is interpreted by two methods. The first approach is the constancy of the individual's rank within the group in successive measures; The second approach is to obtain a similar measurement value from the same person in successive measurements and expects the standard measurement error to be at the lowest possible level. A reliable scale is a scale that measures without error. The error can be related to both scale and non-scale items. Of course, since a scale cannot measure accurately, it is very important to minimize the margin of error in terms of eliminating error elements of the scale and increasing reliability (75).

There is a relationship between reliability and validity. When the sources of error of the scale are removed, the scale's reliability increases, and simultaneously the validity of the scale increases. They are different concepts, and the two exist separately on each scale. A scale can be valid or reliable. But scale finds meaning when it is both reliable and valid. In other words, a scale must contain both items to be stable and consistent (74).

Reliability evaluation of a scale is understood by looking at the reliability coefficient of the scale. The reliability coefficient is the ratio of the variance of the actual values to the variance of the observed values. It shows the likelihood that a test will produce the same results when applied to the same individuals, i.e. very few errors. The reliability coefficient varies numerically between 0 and 1. The number 1 indicates an appropriate relationship, while the number 0 indicates a random relationship. The reliability of a scale can be made by applying it once or twice for a scale or by applying once for two equivalent scales. (76).

Three methods will be applied to determine the reliability of the scale (79). These are:

1. Methods of Internal Consistency
2. Test-Retest Method
3. Parallel-Forms Method

3.6.2.1. Methods of Internal Consistency

In this method, the consistency of the scale, which is applied to the participants one time, within their items will be examined. In other words, it is the measure of the degree of change of these items together. The purpose of the internal consistency method is to calculate how much each item of a test measures the same attribute (78).

Cronbach's alpha coefficient is generally used in Likert-type scales. Cronbach alpha coefficient is the method that best reflects the reliability coefficient. The presence of a correlation between the items and the scores obtained from the scale is an indicator of the scale's internal consistency. By proportioning the sum of item variances to the general variance, the alpha coefficient is found, and reliability is calculated accordingly. Alpha Coefficient is a coefficient that reveals the similarity and closeness of the items to each other if the scores are found by summing the answers given to the items on a scale. The higher the alpha coefficient, the more consistent the items of the scale are with each other (90).

The intervals where the alpha coefficient can be found and the information about the scale's reliability are given below (91).

- If $0.00 \leq \alpha < 0.40$, the scale is not reliable.
- If $0.40 \leq \alpha < 0.60$, the scale is of low reliability,
- If $0.60 \leq \alpha < 0.80$, the scale is very reliable,
- If $0.80 \leq \alpha < 1.00$, the scale is highly reliable

3.6.2.2. Test-Retest Method

Test-retest results are obtained by applying a scale to the same people in the same environment and at different times (10-20 days). The scale should be applied twice in a time interval long enough to prevent significant recalls but short enough not to allow significant changes in the property to be measured (79). Test-retest studies help us understand how reliable our measurement tools can be when we use them widely (92).

For test-retest reliability, Intraclass Correlation Coefficients (ICC) and Pearson's product-moment correlations are used. Intraclass Correlation Coefficients are more preferred than Pearson's correlations in studies. Unlike Pearson's correlation, ICC is an acceptable measure of reliability between two or more measurements on the same individual/case (92).

Test-retest reliability is checked by looking at the correlation values between the values measured at two different times. Correlation tests evaluate the total score and

consistency of the items in the two measurements taken. Correlations are examined within each subscale. If the value found is positive and close to +1, we say it is reliable for the test. Questions with a correlation value below + 0.3 are considered incompatible questions. Besides, scales with a correlation coefficient less than 0.70 are not often used in literature (81, 93).

3.6.2.3. Parallel-Forms Method

For reliability estimation by this method, at least two equivalent forms of a test should be selected. For the two scales selected to be considered equivalent, both tests must be similar in terms of quality, number of items, and the behavior they measure.

The reliability coefficient is found by examining the correlation between the two forms and the main scale applied to the same group, and the scores obtained from the two different forms. The researcher can apply the tests simultaneously with the scale whose reliability he wants to measure, or he can apply it by spending some time between two applications (75, 79).

4. RESULTS

The suitability of research variables to normal distribution was determined by Kolmogorov-Smirnov / Shapiro-Wilk tests and visual examination of histograms. We take $p > 0.05$ to determine its suitability to a normal distribution. It was observed that the variables larger than this value were normally distributed, and the smaller ones were not normally distributed. Then, it was decided whether these variables were suitable for normal distribution according to the Skewness and Kurtosis values, the coefficient of variances, the structure of the histograms, and the detrended table. Parametric tests were applied to variables with normal distribution. Nonparametric tests were applied to variables, which are not within normal distribution.

4.1. Distribution of Sociodemographic Data

80 volunteer participants with CLBP were included in the study. Sociodemographic and clinic data collected from these participants are shown in Table 4.1, Table 4.2, Table 4.3, and Table 4.4. According to Table 4.1, 62.5% (n=50) of the participants were women and 37.5% (n=30) were men. The distribution and percentages of the participants by age groups were also shown in the same table. Most participants were between the ages of 26-41, with 57.5%. The least participant was between the ages of 42-49, with 7.5%. As shown in Table 1, 67.5% of the participants were married, 52.5% have university and higher education, 3.7% were literate, the rest were primary and secondary education graduates. When we examine women and men according to their education levels, 16% of female participants and 6.7% of male participants continue their higher education after university. This rate was slightly higher for women. But at the same time, 3.7% of literate participants that we see in total belong to only female participants. While 44% of female participants were working, 50% were unemployed. While 80% of male participants were working, 13.3% were retired. If we look at the BMI groups, 40% of women, 66.7% of men, and 50% of all participants were overweight. Besides, 2.5% of all participants were underweight, while 12.5% were obese.

Table 4.1. Distribution of Sociodemographic Characteristics by Gender

	Female(n=50)		Male(n=30)		Total(n=80)	
	n	%	n	%	n	%
Gender	50	62,5	30	37,5	80	100
Age Group(years)						
18-25	10	20	2	6,7	12	15
26-33	13	26	9	30	22	27,5
34-41	13	26	11	36,7	24	30
42-49	4	8	2	6,7	6	7,5
50-57	6	12	3	10	9	11,3
58-65	4	8	3	10	7	8,8
Marital Status						
Single	15	38	7	23,3	22	27,5
Married	31	62	23	76,7	54	67,5
Widowed or Divorced	4	8	0	0	4	5
Education Level						
Literate	3	6	0	0	3	3,7
Primary School	9	18	6	20	15	18,8
Secondary School	6	12	0	0	6	7,5
High School	6	12	8	26,7	14	17,5
University	18	36	14	46,7	32	40
Master / Doctorat	8	16	2	6,7	10	12,5
Employment Status						
Employed	22	44	24	80	46	57,5
Unemployed	25	50	2	6,7	27	33,7
Retired	3	6	4	13,3	7	8,8
BMI Group						
Thinness	1	2,0	1	3,3	2	2,5
Normal	21	42,0	7	23,3	28	35
Overweight	20	40,0	20	66,7	40	50
Obese	8	16,0	2	6,7	10	12,5

Table 4.2. Distribution of Profession by Gender

	Female(n=50)		Male(n=30)		Total(n=80)	
	n	%	n	%	n	%
Profession						
Housewife	18	36	0	0	18	22,5
Worker	2	4	8	26,7	10	12,5
Engineer	1	2	7	23,3	8	10
Student	6	12	1	3,3	7	8,8
Physiotherapist	6	12	0	0	6	7,4
Teacher	4	8	1	3,3	5	6,2
Technician	2	4	5	16,7	7	8,8
Government official	3	6	1	3,3	4	5
Dietician	2	4	0	0	2	2,5
Retired	0	0	2	6,7	2	2,5
Finance	1	2	1	3,3	2	2,5
Tradespeople	1	2	1	3,3	2	2,5
Others	4	8	3	10	7	8,8

Table 4.2 shows the distribution of the profession. The majority of females were 36% housewives, 12% physiotherapists, and 12% students. The majority of males were 26.7% workers, 23.3% engineers, and 16.7% technicians.

Table 4.3 shows the distribution of clinical characteristics by gender. Table 4.3 shows the participants, who 21,2% with pain for 6-12 months, 18,8% with pain for 1-2 years, and 60% with pain for more than 2 years. Of these, disc herniation was 68,8%, mechanical back pain of 16,3%, and other diagnoses 14,9%. While 52.5% of the participants had low back pain with radiating leg pain, 42.5% only had low back pain, and 5% only had radiating leg pain. While 73.8% of them do not use pain medication for these pains they experience, 26.2% use pain medication.

Table 4.3. Distribution of Clinical Characteristics by Gender

	Female(n=50)		Male(n=30)		Total(n=80)	
	n	%	n	%	n	%
Pain Durations						
6-12 months	11	22	6	20	17	21,2
1-2 years	7	14	8	26,7	15	18,8
More than 2 years	32	64	16	53,3	48	60
Diagnoses						
Disc herniations	38	76	17	56,7	55	68,8
Mechanical back pain	5	10	8	26,7	13	16,3
Others*	7	14	5	16,6	12	14,9
Localization of Pain						
Low Back Pain	18	36	16	53,3	34	42,5
Only Radiating Leg Pain	4	8	0	0	4	5
Low Back Pain with Radiating Leg Pain	28	56	14	46,7	42	52,5
Use of Pain Medication						
Yes	13	26	8	26,7	21	26,2
No	37	74	22	73,3	59	73,8

***Others (total):** Lumbar strain(n=3), Spondylolisthesis (n=3), Degenerative disc disease (n=2), Muscle imbalance(n=2), Lumbago(n=1), Trigger point in the back muscles (n=1)

Table 4.4 shows the mean age of female participants (n=50) as 36.18 ± 12.15 and the mean age of male participants (n=30) as 38.33 ± 11.90 . The mean weight of all participants was 71.53 ± 11.82 , and their mean height was 166.26 ± 8.77 . Accordingly, women's mean body mass index was 25.81 ± 4.72 , and the mean body mass index of men was 26.11 ± 3.01 .

Table 4.4. Descriptive Statistics of the Demographic Characteristics of the Participants by Gender

	Female (n=50)		Male (n=30)		Total (n=80)	
	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)
Age (year)	36,18±12,15	18-63 (34,50)	38,33±11,90	19-65 (35,50)	36,99±12,03	18-65 (35)
Weight (kg)	67,42±11,83	50-96 (65,50)	78,37±8,16	58-96 (78)	71,53±11,82	50-96 (73,50)
Height (m)	161,92±6,56	150-175 (160,50)	173,50±7,09	160-185 (171,50)	166,26±8,77	150-185 (166)
BMI (kg/m ²)	25,81±4,72	17,65-35,16 (25,71)	26,11±3,01	17,90-32,87 (26,08)	25,92±4,14	17,65-35,16 (25,82)

Table 4.5 shows the mean and minimum-maximum scores of the other scales. In the first three, we see the avoidance, overdoing and, pacing subscales of the Patterns of Activity Measure-Pain (POAM-P). The minimum score that the participant should get from each subscale was 0, while the maximum score was 40. The mean subscales of avoidance (26.17 ± 8.84) and pacing (24.53 ± 7.74) were high in male participants. Overdoing subscale (24.06 ± 7.08) was high in women. We also see the anxiety and depression subscales of the Hospital Anxiety and Depression Scale (HADS) under them. The minimum score obtained from both subscales was 0, and the maximum score was 21. Looking at the table, male and female anxiety means were very close to each other, but the depression means female and male participants were different. The mean depression of men (7.20 ± 2.79) was higher than the mean depression of women (5.90 ± 3.87). Again in the table, we can see that the mean of Oswestry Low Back Pain Disability Index (ODI) was high for males (16.20 ± 9.56). While the lowest score that can be obtained from the ODI was 0, the highest score was 50. Finally, we see the Graded Chronic Pain Scale (GCPS) and its subscales: Characteristic Pain Intensity (GCPS-CPI) and Disability Score (GCPS-DS). The minimum score to be obtained

from the GCPS and its subscales was 0, the maximum score was 70 for GCPS, 30 for GCPS CPI, 40 for GCPS-DS. In this table, it is possible to see that the mean of all was very similar.

Table 4.5. Descriptive statistics of POAM, HADS, RMDQ, ODI, GCPS by Gender

	Female(n=50)		Male(n=30)		Total(n=80)	
	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)
POAM-P Avoidance	21,76±7,53	3-40 (23)	26,17±8,84	4-40 (28)	23,41±8,28	3-40 (25)
POAM-P Overdoing	24,06±7,08	10-35 (25)	22,27±6,41	9-37 (21)	23,39±6,85	9-37 (24)
POAM-P Pacing	20,04±6,98	1-39 (20)	24,53±7,74	4-36 (25,5)	21,73±7,55	1-39 (22,5)
HADS-A	8,10±4,32	2-18 (8)	8,30±3,21	3-14 (8)	8,17±3,92	2-18 (8)
HADS-D	5,90±3,87	0-7 (5)	7,20±2,79	1-12 (6,50)	6,39±3,54	0-17 (6)
HADS-T	14±7,43	2-33 (13)	15,50±5,33	6-25 (16)	14,56±6,72	2-33 (14,50)
RMDQ	6,70±5,19	0-21 (6)	7,10±5,65	0-19 (7)	6,85±5,34	0-21 (6)
ODI	14,12±8,14	0-38 (13,50)	16,20±9,56	2-38 (14,50)	14,90±8,70	0-38 14
GCPS-CPI	15,42±7,25	1-30 (16,50)	15,43±6,60	4-29 (16)	15,42±6,97	1-30 (16)
GCPS-DS	11,82±9,14	0-36 (10)	11,07±9,13	0-30 (9)	11,53±9,08	0-36 (9)
GCPS	27,24±14,97	2-66 (27,50)	26,50±13,02	4-59 (29)	26,96±14,18	2-66 (28)

HADS-A: Hospital Anxiety and Depression Scale-Anxiety Subscale

HADS-D: Hospital Anxiety and Depression Scale-Depression Subscale

GCPS-CPI: Graded Chronic Pain Scale - Characteristic Pain Intensity

GCPS-DS: Graded Chronic Pain Scale – Disability Score

GCPS: Graded Chronic Pain Scale

RMDQ: Roland Morris Disability Questionnaire

POAM-P: Patterns of Activity Measure-Pain

ODI: Oswestry Low Back Pain Disability Index

4.2. Validity Analysis of Graded Chronic Pain Scale Version 2.0

4.2.1. Content Validity of Graded Chronic Pain Scale Version 2.0

During the language adaptation, all expressions of the scale were presented to expert opinions, and after the feedback received from the experts, the items that should be edited were arranged. Since most experts mark the option 'suitable' for the items of the scale, it has been concluded that the scale was valid in terms of content validity.

4.2.2. Face Validity

Face validity is a simple method to understand whether or not your study or test can measure what it is supposed to measure. To validate the study via face validity, the researcher collaborated with close friends, non-experts on the researched subject, and the participants in the pilot study.

4.2.3. Construct Validity of the Graded Chronic Pain Scale 2.0

For the construct validity of the Graded Chronic Pain Scale, exploratory factor analysis was used. Kaiser-Meyer-Olkin for the suitability of the scale to factor analysis (KMO) and Bartlett's tests were performed. Bartlett's test whether the correlation matrix was significant and if $p \leq 0.05$, the data were suitable for factor analysis, and it was said that there was a correlation between the items. The KMO test tests whether the number of samples was sufficient and whether the data set was suitable for factor analysis and shows that the data set was more suitable for factor analysis as a result approaches 1.

Table 4.6. KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,817
Bartlett's Test of Sphericity	Approx. Chi-Square	447,917
	df	28
	Sig.	0,000

Table 4.6 shows the results of the KMO and Bartlett's Test. The value of KMO was found quite good with 0.817 (0.80-0.89), and the sample size was found sufficient. Bartlett's test result was found 447,917 ($p=0.001$), and the data were found suitable for factor analysis.

The first item was questioning how many days the patient had pain in 6 months. The answer of item 1 consisted of days. According to the answer to the first item, we classify the patient according to persistence classification by looking at the pain days. If the answer to the first item was; pain days were 3 months or more, then it indicates that the patient has persistent pain. If the answer was less than 3 months, then that means the patient has non-persistent pain. The Cronbach alpha value of the whole inventory dropped to 0.224 when this item was analyzed in day form. If the item was removed from the analysis, the Cronbach's alpha of the inventory increased to 0.890. We multiplied the days in the 5th item by 2 and adapted the 11-point Likert scale for the first item to make this item compatible with the other items.

In this conversion

- 0 - **'none'**,
- 1 - **'1-3 days'**,
- 2 - **'4-5 days'**,
- 3 - **'6-9 days'**,
- 4 - **'10 -13 days'**,
- 5 - **'14 - 20 days'**,
- 6 - **'21 -30 days'**,
- 7 - **'31 -50 days '**,
- 8 - **'51-120 days'**,
- 9 - **'121-150 days'**,
- 10 - **'151-180 days'** means.

When we analyzed the item 1 in this way, the Cronbach's alpha of the entire scale increased to 0.894, and its correlation with the other items became consistent. Table 4.7 shows the transformed form of the item 1 to Likert-type scale . Table 4,8 shows the adapted version of the item 1 according to the risk scores table (Appendix 7.11) and the table of persistence classification together.

Table 4.7. The Converted Version to 11 Likert of Item 1

11 Likert Version	0	1	2	3	4	5	6	7	8	9	10
Number of Days	None	1-3 days	4-5 days	6-9 days	10-13 days	14-20 days	21-30 days	31-50 days	51- 120 days	121- 150 days	151- 180 days
Frequency	0	6	11	3	8	9	7	3	16	2	15

Table 4.8. Descriptive Information for Item 1

Number of days with pain	n	%	Min- Max	Mean	sd.	Risk Score Value	Persistence Classification %
0-30 days	44	55,0	1-30	12,25	9,70	0	Non-Persistent Pain 61,25%
31-89 days	5	6,3	40-80	53	17,17	1	
90-120 days	14	17,5	90-120	99,28	12,68	2	Persistent Pain 38,75%
121-160 days	2	2,5	150-150	150	0	3	
161-180 days	15	18,8	180-180	180	0	4	
Total	80	100,0	1-180	64,92	67,48		100%

Table 4.9 shows the average, standard deviation, minimum and maximum values of Graded Chronic Pain Scale items.

Table 4.9. Descriptive Statistical Values of the Participants' Graded Chronic Pain Scale Scores

	N	Mean	SD	Min.	Max.
Item 1 On how many days in the last six months have you had pain?	80	5,91	3,01	1	10
Item 2 How would you rate your pain RIGHT NOW?	80	4,30	2,57	0	10
Item 3 In the last three months, how would you rate your WORST pain?	80	6,00	2,48	0	10
Item 4 In the last three months, ON AVERAGE, how would you rate your pain?	80	5,12	2,54	0	10
Item 5 In the last three months, how many days did your pain keep you from doing your USUAL ACTIVITIES like work, school, or housework?	80	2,06	2,32	0	8
Item 6 In the last three months, how much has pain interfered with your DAILY ACTIVITIES?	80	3,18	2,77	0	10
Item 7 . In the last three months, how much has pain interfered with your RECREATIONAL, SOCIAL AND FAMILY ACTIVITIES?	80	2,81	2,72	0	10
Item 8 In the last three months, how much has pain interfered with your ABILITY TO WORK, including housework?	80	3,47	2,83	0	10
Total	80	32,87	16,16	3	74

4.2.3.1. Exploratory Factor Analysis

Table 4.10. Factor structure of Graded Chronic Pain Scale

Items	Factor Loads	Total Factor Load	Explained Variance %	Cumulative Explained Variance %
Item 1	Factor 1	0,665	4,663	58,289
Item 2		0,920		
Item 3		0,861		
Item 4		0,937		
Item 5	Factor 2	0,879	1,324	74,833
Item 6		0,790		
Item 7		0,739		
Item 8		0,698		

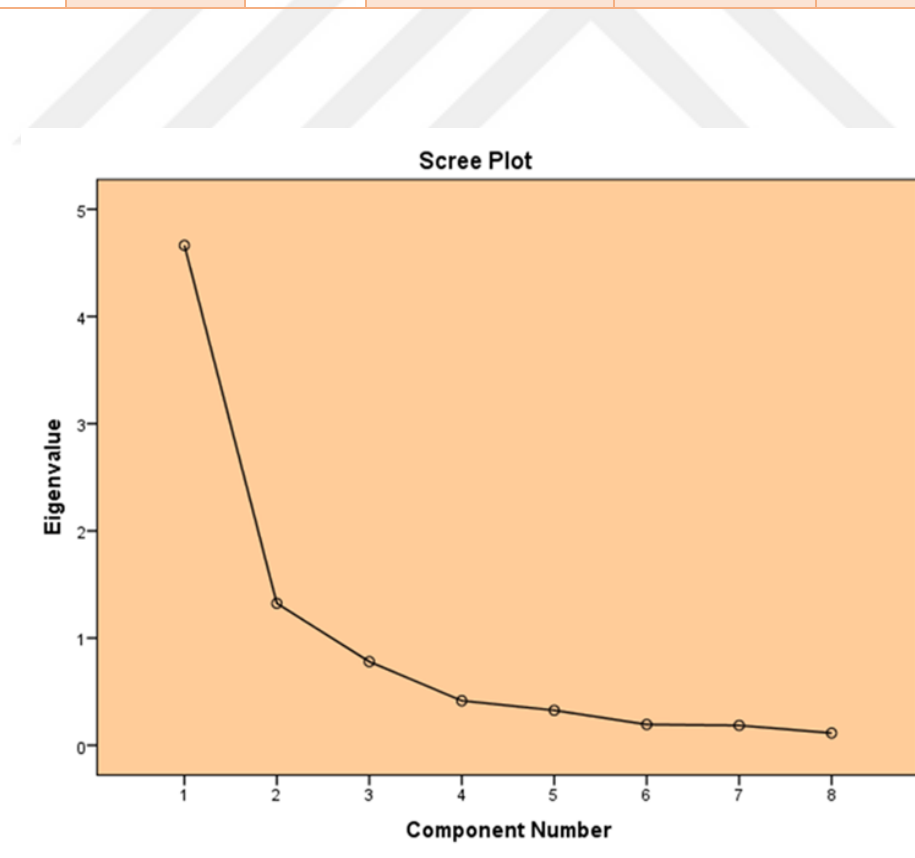


Figure 4.1. Scree Plot of Graded Chronic Pain Scale

In factor analysis application, direct oblimin rotation for rotation method and principal component analysis for extraction method was selected to keep the structure of the relationship between factors the same, and factor components were formed. At this stage, items with a factor load of less than 0.6 were removed to reduce the variances between possible dimensions (68). As a result of factor analysis, variables were grouped under 2 factors with a total explained variance of 74,833%. While the total factor load of the 1st factor was 4,663, the total factor load of the 2nd factor was 1,324. The total factor load of the other factors was below 1. The percentage of variance explained for factor 1 was 58%. Both factors consist of 4 items. The resulting factor structure of the scale is shown in Table 4.10.

When deciding on the number of factors of the scale, the Screeplot chart and eigenvalue numbers, which were among the most important criteria, were examined. Figure 4.1 shows Scree Plot regarding the factor structure forming as a result of the analysis. When the eigenvalue scatter plot was examined, it was seen that there was an accelerated breakdown in the first and second factors. A flat plateau was seen in factors after the second factor. This finding shows that GCPS has a two-factor structure. The first factor includes items 1, 2, 3, and 4. In this factor, persistent pain was calculated with item 1; Characteristic pain intensity score was calculated with items 2, 3, and 4. The second factor includes items 5, 6, 7, and 8. The disability score was calculated with the sum of these.

4.2.3.2. Confirmatory Factor Analysis

It was built as a two-factor structure with GCPS 2.0 EFA. In order to verify the factor structures we have found in EFA, we need CFA. According to the results of our analysis, two factors in EFA were confirmed in CFA. Figure 4.2 shows the path diagram of the factor loads between the subscales.

In the confirmatory factor analysis performed with 80 people, my RMSEA value was 0.96. There was no modification index for this model. We calculated the z scores of the scale items, then we removed 6 people from the calculation, who were outliers. After this extraction, our model was normalized. In order not to delete more outliers, the modification indices in the new model were examined. Since the modification indices were among the first and the fourth item, a covariance was created between them. Then a second covariance was established between items 5 and 6 as a new modification.

The compliance indexes of the CFA analysis of the study are shown in table 4.11. They have CMIN / SD good fit, GFI good fit, AGFI acceptable fit, CFI good fit, RMSEA good fit, IFI good fit, and NFI acceptable fit indices according to the given reference values.

Table 4.11. Fit Indices of Confirmatory Factor Analysis

The Criterion of Model Fit	Good Fit	Acceptable Fit	Fit in this Study
CMIN/DF	$\chi^2/df \leq 3$	$\chi^2/df \leq 5$	1,349
GFI	$GFI \geq 0.90$	$GFI \geq 0.85$	0,941
AGFI	$AGFI \geq 0.90$	$AGFI \geq 0.85$	0,875
CFI	$CFI \geq 0.97$	$CFI \geq 0.95$	0,994
RMSEA	$RMSEA \leq 0.05$	$RMSEA \leq 0.08$	0,042
IFI	$IFI \geq 0,95$	$IFI \geq 0,90$	0,994
NFI	$NFI \geq 0,95$	$NFI \geq 0,90$	0,948

CMIN/DF (χ^2/df): Chi-Square Fit Test (Minimum Discrepancy (chi-square) / Degrees of Freedom)

GFI: Goodness of Fit Index

AGFI: Adjusted Goodness of Fit Index

CFI: Comparative Fit Index

RMSEA: Root Mean Square Error of Approximation

IFI: Incremental Fit Index

NFI: Normed Fit Index

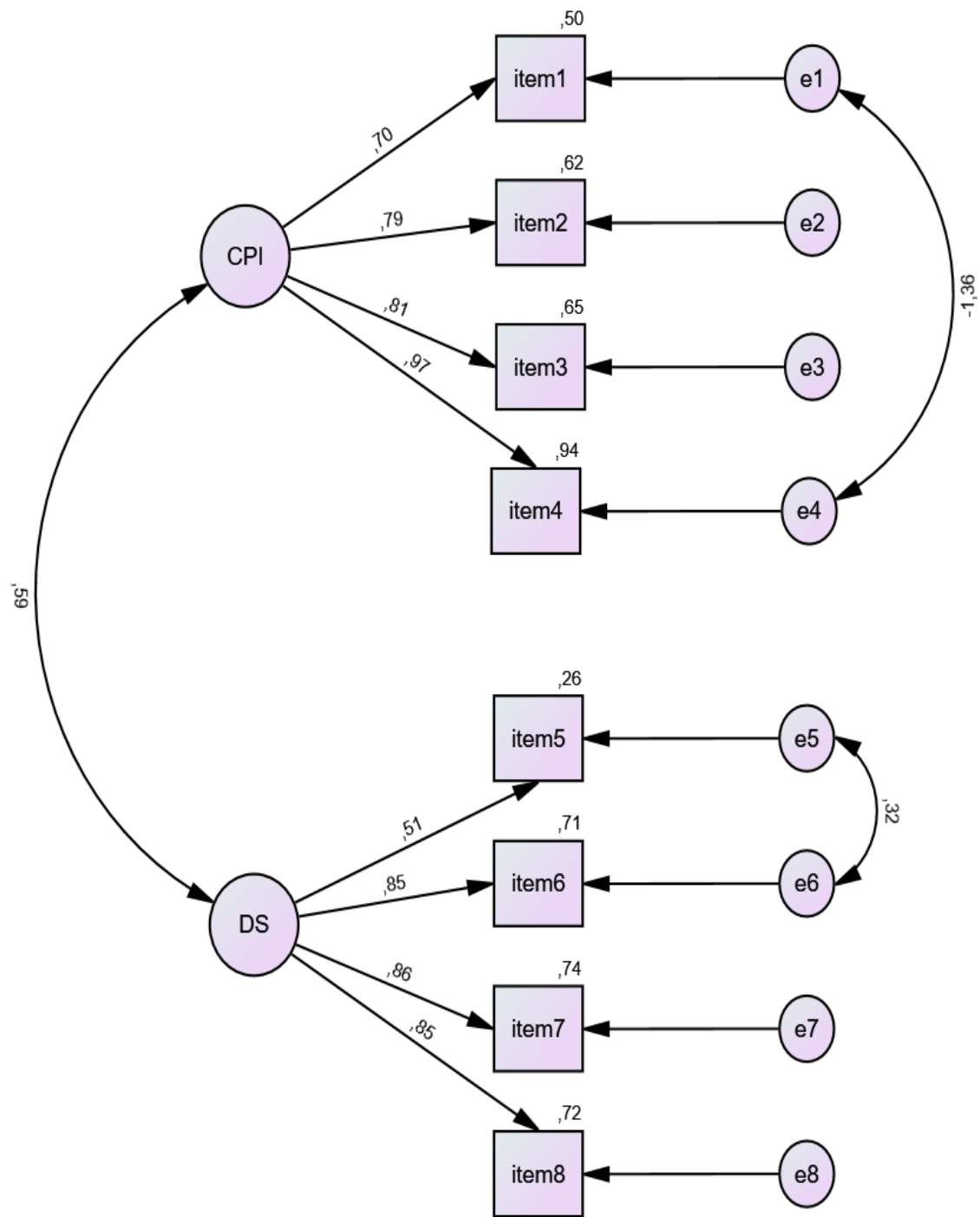


Figure 4.2. GCPS's Path Diagram of CFA

4.3. Reliability Analysis of Graded Chronic Pain Scale Version 2.0

Cronbach's alpha coefficient was used to determine the internal consistency of GCPS 2.0. For this, Cronbach's Alpha was calculated using the data in the initial forms filled out by 80 participants. Cronbach's Alpha values for both the total test scores and the subscales were calculated separately. Additionally, the Coefficient's Alpha If Item Deleted was calculated to determine how much and how the questions affected the alpha coefficient. Cronbach's Alpha was found as 0,894 in the reliability of the Graded Chronic Pain Scale (GCPS). The Cronbach's alpha of the characteristic pain intensity subscale, which was one of the subscales of the Graded Chronic Pain Scale was 0,882, and the Cronbach's alpha of the disability score subscale was 0,872 in Table 4.13. So this shows that the internal consistency of the scale and its subscales were highly reliable.

The Corrected item-total Correlation of the Scale and Cronbach's Alpha if Item Deleted are shown in Table 4.12. Item total correlation values were found to be 0.4 and above. At the same time, when the item was deleted, the decreases in the Cronbach's Alpha value indicate that the items were consistent and their contribution was high. None of the items were deleted due to the high reliability value of all items.

Table 4.12. Item Analysis of GCPS

Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	0,595	0,890
Item 2	0,680	0,880
Item 3	0,723	0,876
Item 4	0,744	0,874
Item 5	0,408	0,902
Item 6	0,754	0,872
Item 7	0,735	0,874
Item 8	0,755	0,872

Table 4.13. Analysis of GCPS and Its Subscales

Scale and Subscales	Cronbach's Alpha
Chracteristic Pain Intensity	0,882
Disability Score	0,872
Graded Chronic Pain Scale Total	0,894

4.3.1. Test-Retest Reliability

In the study, test-retest reliability was examined using the ICC method, which was preferred by the researchers and they thought to be more reliable. In this study, the test-retest method was applied to 30 participants with an interval of 10 days. (92, 94, 95).

In the study, ICC was used for test-retest reliability, and both all scala and subscales provided high test-retest reliability. If the ICC for scales was greater than 0.6 and the p value was smaller than 0.05, we say the scale was reliable. We found our ICC value in GCPS and its subscales highly. While the ICC for the items was in the range of 0.812-0.966, the ICC of the scala and subscales was highly reliable in the range of 0.877-0.966. The results of ICC are shown in Tables 4.14 and 4.17. Descriptive Statistics and Frequence table of the Retest Participants are shown in Tables 4.15 and 4.16.

Table 4.14. ICC Analysis Results of GCPS Items

	ICC	Interval
Item 1	0,966	0,929 - 0,984
Item 2	0,872	0,731 - 0,939
Item 3	0,812	0,605 - 0,910
Item 4	0,897	0,784 - 0,951
Item 5	0,902	0,794 - 0,953
Item 6	0,869	0,724 - 0,937
Item 7	0,855	0,696 - 0,931
Item 8	0,920	0,833 - 0,962

Table 4.15. Frequency Table of Gender and Pain Duration of Retested Participants

	Female		Male		Total	
	n	%	n	%	n	%
Gender	19	63,3	11	36,7	30	100
Pain Durations						
6-12 months	3	15,8	3	27,3	6	20
1-2 years	3	15,8	1	9,1	4	13,3
More than 2 years	13	68,4	7	63,6	20	66,7

Table 4.16. Descriptive Statistics of the Demographic Characteristics of the Retested Participants by Gender

	Female		Male		Total	
	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)
Age (year)	36,21±11,12	19-59 (34)	40,63±14,07	20-64 (37)	37,83±12,24	19-64
Weight (kg)	67,94±11,59	50-90 (66)	76,36±6,53	58-83 (78)	71,03±10,73	50-90
Height (m)	159,42±5,83	150-172 (160)	172,18±6,17	163-181 (171)	164,10±8,56	150-181

Table 4.17. Test-Retest Reliability of GCPS and Its Subscales

	Test(n=30)	Re-Test(n=30)	ICC	p
	Mean±SD	Mean±SD		
Number of days with pain	76,03±69,00	71,53±72,35	0,966	0,001**
Characteristic Pain Intensity	16,60±6,34	17,03±7,14	0,877	0,001**
Disability Scor	12,96±10,38	12,36±9,29	0,900	0,001**
Graded Chronic Pain Scale Total	29,56±14,92	29,40±15,15	0,921	0,001**

4.3.2. Parallel Form Reliability

A positive relationship between the Graded Chronic Pain Scale (GCPS) and parallel forms indicates consistency. In the study, Roland Morris Disability Questionnaire (RMDQ), Oswestry Low Back Pain Disability Index (ODI) were used as the parallel form of the scale.

The correlation coefficient (r) between GCPS and ODI, RMDQ was examined.

The interpretation of the correlation coefficient (r);

$r < 0.20$ and values close to zero indicate no or very weak relationship.

- Weak correlation between 0.20-0.39
- Medium correlation between 0.40-0.59
- High level of correlation between 0.60-0.79
- If it is 0.80-1.0, it is interpreted that there is a very high relationship (81, 91).

Test results are in Table 4.18. Accordingly, a high level of correlation was found between GCPS, GCPS-CPI, GCPS-DS and RMDQ, and ODI. There was only a medium correlation between ODI and GCPS-DS ($r = 0.571$, $p = 0.001$).

Table 4.18. Correlation Test Results Related of GCPS Total and Subscale Scores with “RMDQ” and “ODI” Scores

	GCPS-CPI		GCPS-DS		GCPS	
	r	p	r	p	r	p
RMDQ	0,621	0,001**	0,605	0,001**	0,717	0,001**
ODI	0,777	0,001**	0,571	0,001**	0,759	0,001**

4.3.3. Comparing and Correlating Graded Chronic Pain Scale and Its Subscales with Variables and Other Scales

The correlation between the GCPS and its subscales and the parallel forms was examined. Since the correlation varies according to gender, the correlation between men and women was examined separately in table 4.19. It was determined that,

- GCPS and its subscales were found to be positively correlated with RMDQ for both sexes and total ($p= 0.001$).
- GCPS and its subscales were found to be positively correlated with ODI for both sexes and total ($p= 0.001$).
- HADS-A was positively correlated with GCPS-CPI in women ($p=0,025$).
- HADS-D was positively correlated with GCPS-DS ($p=0,006$) and GCPS ($p=0,023$) in men.
- HADS-D was positively correlated with GCPS in total ($p=0,042$).
- HADS-T was positively correlated with GCPS ($p=0,042$) and GCPS-DS ($p=0,041$) in total.
- HADS-T was positively correlated with GCPS ($p=0,049$) and GCPS-DS ($p=0,008$) in men.
- In women, HADS-T was positively correlated with GCPS-CPI ($p =0,046$).
- POAM-P overdoing was positively correlated with GCPS-CPI in women ($p=0,049$).
- POAM-P overdoing was positively correlated with GCPS-CPI in total ($p=0,026$).

Table 4.19. Correlation Tests between GCPS and GCPS-CPI and GCPS-DS with Self-Report Instruments by Gender

		GCPS-CPI		GCPS-DS		GCPS		
	Gender	r	p	r	p	r	p	N
RMDQ	Female	0,787	0,001**	0,678	0,001**	0,747	0,001**	50
	Male	0,473	0,001**	0,495	0,001**	0,625	0,001**	30
	Total	0,621	0,001**	0,605	0,001**	0,717	0,001**	80
ODI	Female	0,787	0,001**	0,598	0,001**	0,746	0,001**	50
	Male	0,735	0,001**	0,422	0,020*	0,669	0,001**	30
	Total	0,777	0,001**	0,571	0,001**	0,759	0,001**	80
HADS-A	Female	0,317	0,025*	0,062	0,667	0,191	0,185	50
	Male	-0,068	0,720	0,296	0,112	0,173	0,360	30
	Total	0,205	0,068	0,146	0,197	0,185	0,101	80
HADS-D	Female	0,122	0,397	0,061	0,676	0,119	0,412	50
	Male	0,117	0,540	0,493	0,006**	0,413	0,023*	30
	Total	0,186	0,099	0,213	0,058	0,228	0,042*	80
HADS-T	Female	0,283	0,046*	0,080	0,581	0,185	0,198	50
	Male	0,061	0,748	0,472	0,008**	0,362	0,049*	30
	Total	0,218	0,053	0,229	0,041*	0,228	0,042*	80
POAM-P Overdoing	Female	0,279	0,049*	0,207	0,149	0,261	0,067	50
	Male	0,195	0,302	0,036	0,849	0,124	0,513	30
	Total	0,249	0,026*	0,151	0,180	0,219	0,051	80
POAM-P Avoidance	Female	0,267	0,061	0,112	0,437	0,198	0,169	50
	Male	0,021	0,912	0,113	0,551	0,090	0,635	30
	Total	0,149	0,186	0,135	0,232	0,179	0,111	80
POAM-P Pacing	Female	0,182	0,205	-0,092	0,523	0,032	0,826	50
	Male	-0,104	0,585	0,123	0,518	0,034	0,860	30
	Total	0,051	0,656	0,004	0,971	0,052	0,649	80

*Pearson and Spearman methods were used in the analysis

Table 4.20. Comparison RMDQ and ODI Degrees with GCPS Classification

		GCPS GRADES					
		LOW INTERFERENCE		HIGH INTERFERENCE			
		Grade I Low Intensit y %	Grade II High Intensity %	Grade III Moderately Limiting %	Grade IV Severely Limiting %	Total	x²
ODI	Minimal Disability	20 25,0%	3 3,8%	1 1,3%	0 0,0%	24 30,0%	0,001
	Moderate Disability	8 10,0%	17 21,3%	11 13,8%	5 6,3%	41 51,2%	
	Severe Disability	0 0,0%	3 3,8%	5 6,3%	1 1,3%	9 11,3%	
	Crippled	1 1,3%	3 3,8%	0 0,0%	2 2,5%	6 7,5%	
	Total	29 36,3%	26 32,5%	17 21,3%	8 10,0%	80 100%	
RMDQ	%(0-25)	25 31,3%	3 3,8%	0 0,0%	1 1,3%	29 36,3%	0,001
	%(25-50)	11 13,8%	12 15,0%	3 3,8%	0 0,0%	26 32,5%	
	%(50-75)	4 5,0%	5 6,3%	7 8,8%	1 1,3%	17 21,3%	
	%(75-100)	1 1,3%	5 6,3%	2 2,5%	0 0,0%	8 10,0%	
	Total	41 51,2%	25 31,3%	12 15,0%	2 2,5%	80 100%	

x²: Chi-Square Test.

We compared the classification of the GCPS with the chi-square test in Table 4.20. It was found that there was a significant relationship between the other scale degrees and the pain intensity (1st and 2nd degree) and disability score (3rd and 4th degree) of GCPS.

- There was a significant relationship between ODI and GCPS grades (p = 0.001 Fisher's Exact Test).
- There was a significant relationship between RMDQ and GCPS grades (p = 0.001 Fisher's Exact Test).

By looking at Table 4.20, you can examine both the percentage of participants in each group and the p values of the relationship between the groups.

- Table shows ODI and RMDQ participants were mostly concentrated in grades I and II.
- Participants with a severe disability according to ODI classification and GCPS were 31.3%.
- The number of participants with disability was over 50% (n=24) in RMDQ and grade I and II of GCPS.

Table 4.21. Investigation of the Difference between GCPS Chronic Pain Grade Groups and RMDQ and ODI Scores

	Chronic Pain Grade of GCPS	N	Mean	sd.	Min.	Max	F	p	Difference
RMDQ	Grade I	29	3,06	4,25	0	21	15,160	0,001	1-2
	Grade II	26	7,11	3,57	2	16			1-3
	Grade III	17	10,64	5,20	0	19			1-4
	Grade IV	8	11,62	4,62	4	18			
ODI	Grade I	29	8,27	6,35	0	34	15,583	0,001	1-2
	Grade II	26	17,23	8,24	8	38			1-3
	Grade III	17	18,94	5,72	10	30			1-4
	Grade IV	8	22,75	7,95	15	36			

* Investigation with Kruskal Wallis Test

Table 4.21 shows the Investigation of the difference between GCPS chronic pain grade groups and RMDQ and ODI scores with the Kruskal Wallis Test. When the difference

between GCPS pain grade groups and RMDQ and ODI scores was examined using the Kruskal Wallis test, a significant difference was found between the groups. The groups with which this difference existed were examined by post-hoc analysis and it was found that there was a significant difference between the 1st and the other groups.

The relationship GCPS and the subscales of GCPS between education level and risk of depression were examined with the parametric test, the independent sample T-test, and the non-parametric test, the Mann-Whitney U test. We can see the relationship in Table 4.22.

- A statistically significant difference was found between those who received education at high school and primary education levels and GCPS-CPI ($p = 0.04$).
- A statistically significant difference was found between the risk of depression and GCPS-DS ($p = 0.005$).
- A statistically significant difference was found between the GCPS total score, both those who received education at high school and primary education levels ($p = 0.024$) and those at risk of depression ($p = 0.012$).

Table 4.22. Comparison for GCPS and Its Subscales versus Education Level and Risk of Depression.

		GCPS-CPI			GCPS-DS			GCPS		
		Mean	t-value	p	Mean	U	p	Mean	t-value	p
Education Level	Pre-University	5,70	2,094	0,040*	1,58	605,5	0,063	4,38	2,308	0,024*
	High Education	4,63			1,43			3,36		
Risk of Depression	No	4,83	-1,545	0,126	2,35	468,5	0,005*	3,41	-2,561	0,012*
	Yes	5,65			3,76			4,57		

t-value: Independent-Samples T Test

U: Mann-Whitney U Test

$p < 0,05$

According to table 4.22, it was clear that there was a relationship between the risk of depression and GCPS. Therefore, in our population of participants, you can see the frequency and percentiles of participants at risk of depression calculated according to Appendix 7.11 in table 4.23 below.

Table 4.23. Graded Depression Risk Score According to HADS-D Scores

Risk score	N	%	Percentile to cut-off point
0 (0-3 point)	15	18,8	Below the cut-off point 62,5% (n=50)
1 (4-7 point)	35	43,8	
2 (8-10 point)	20	25,0	Above the cut-off point 37,5% (n=30)
3 (11-12 point)	6	7,5	
4 (13+ point)	4	5,0	
Total	80	100,0	100,0 (n=80)

Table 4.24. Comparison RMDQ and ODI with Education Level, Pain Duration, BMI Groups.

		RMDQ			ODI		
		Mean	U	P-value	Mean	U	P-value
Education Level	<i>Pre-University</i>	8,50	558	0,020*	16,65	612	0,073
	<i>High Education</i>	5,35			13,30		
Pain Durations	<i>6monats-2 years</i>	5,31	565	0,046*	11,03	458	0,002*
	<i>More than 2 years</i>	7,87			17,47		
BMI Groups	<i>BMI<24</i>	4,83	528	0,027*	12,53	604	0,146
	<i>BMI≥24</i>	8,06			16,32		

U: Mann-Whitney U Test

Table 4.24 shows the results of Mann Whitney U Test:

- The RMDQ and ODI scores were statistically significantly different in those with pain for 2 years or more compared to those with pain between 6 months and 2 years.
- RMDQ scores were statistically significantly different in high school and primary school graduates compared to higher education graduates.
- RMDQ scores were statistically significantly different in participants with a BMI of 24 and above from participants with a BMI of less than 24.

Table 4.25. Examining the Difference between HADS and Use of Pain Medication

		HADS-A			HADS-T		
		Mean	t-value	p-value	Mean	t-value	p-value
Use of Pain Medication	Yes	1,394558	2,209	0,030*	1,2415	2,296	0,024*
	No	1,087167			0,9685		

t-value: Independent-Sample T-Test.

Table 4.25 shows there was a statistically significant difference between the use of pain medication versus the HADS anxiety score ($p = 0.03$) and HADS total score ($p = 0.024$). Table 4.25 shows there was a statistically significant difference between the use of pain medication and the HADS anxiety score ($p = 0.03$) and HADS total score ($p = 0.024$).

We examined the difference between subscales of POAM-P and variables in table 4.26.

According to table 4.26,

- It was found a difference between avoidance and women ($p = 0.02$).
- It was found a difference between BMI group below 24 and avoidance ($p=0,03$)

- It was found a difference between the use of pain medication and overdoing ($p = 0.028$).
- It was also found a difference between women and pacing ($p = 0.009$).

We examined the difference between demographic variables and age and BMI in table 4.27.

According to table 4.27,

- There was a statistically significant relationship between age and those who use pain medication, those with a low level of education, those who have pain over 2 years, and those who were married.
- There was a statistically significant relationship between the BMI score and those who were married, those with pain for more than 2 years, and those with low education levels.

Table 4.26. Examination of the Difference between Subscales of POAM-P and Use of Pain Medication, BMI Groups and Gender

		POAM-P Avoidance			POAM-P Overdoing			POAM-P Pacing		
		Mean	t-value	p-value	Mean	t-value	p-value	Mean	t-value	p-value
Use of Pain Medication	Yes	2,1857	-1,003	0,319	2,6190	2,237	0,028*	2,0810	-0,645	0,521
	No	2,3966			2,2390			2,2051		
BMI Groups	BMI<24	2,0833	-2,211	0,030*	2,2767	-0,625	0,534	1,9967	-1,631	0,107
	BMI≥24	2,4960			2,3760			2,2780		
Gender	Female	2,1760	-2,372	0,020*	2,4060	1,135	0,260	2,0040	-2,676	0,009*
	Male	2,6167			2,2267			2,4533		

t-value: Independent-Sample T-Test.

Table 4.27. Examination of the Difference between Demographic Variables and Age and BMI

		Age			BMI		
		Mean	U	p-value	Mean	t-value	p-value
Use of Pain Medication	Yes	44,19	347	0,003*	26,46	0,699	0,487
	No	34,42			25,72		
Education Level	<i>Pre-University</i>	42,87	443	0,001*	26,94	2,154	0,034*
	<i>High Education</i>	31,67			24,99		
Pain Durations	<i>6months-2 years</i>	30,87	369,5	0,001*	24,63	-2,332	0,022*
	<i>More than 2 years</i>	41,06			26,77		
Marital Status	Unmarried	30,69	361	0,001*	22,90	-5,206	0,001*
	Married	40,02			27,37		

U: Mann Whitney U test

t-value: Independent-Sample T-Test

5. DISCUSSION AND CONCLUSION

Chronic pain is a significant health problem that decreases people's quality of life and sleep. It causes restrictions on the daily life activities of patients. It can also cause psychological and cognitive problems (40). Chronic pain affects an overall 20% of the world's population (38, 41). The treatment of chronic pain is long and demanding. Chronic pain is a significant public health problem that causes an economic and social burden to health systems (38). When chronic pain stays longer on the patient's body, then the rate of exposure in the body increases. Therefore, chronic pain should be diagnosed and treated as soon as possible.

This study was designed to conduct Turkish adaptation, cross-cultural adaptation, validity, and reliability study of Graded Chronic Pain Scale 2.0 in order to use it for Turkish people with Chronic Pain. The Graded Chronic Pain Scale (GCPS) was developed to be used in studies on patients with general chronic pain and primary care patients with chronic pain. It evaluates the severity of chronic pain, the presence of persistent pain due to pain days, and the degree of disability due to pain. It is a multidimensional pain scale that enables patients with chronic pain to be classified into 5 hierarchical categories. It has been adapted to many languages (Spanish, Italian, English, Persian, Arabic, Japanese, Portuguese, Korean, German, Greek, Indonesian) (96-106). It has been used in many studies in America and European countries. It has been used in Asian countries in recent years.

The GCPS scale is a short, simple, multidimensional, useful tool with high validity and reliability that can be applied to all chronic pain patients (9, 12).

We will discuss the findings of our study under two subtitles:

- Discussing the Data Related to the Descriptive Characteristics of the Sample and Discussing the Correlation and Comparison Test Results.
- Discussion the Results of the Reliability and Validity

5.1. Discussing the Data Related to the Descriptive Characteristics of the Sample and Discussing the Correlation and Comparison Test Results.

80 participants with chronic low back pain between the ages of 18-65 were included in our study. 50 of these participants were female (62.5%) and 30 (37.5) were male. There were 60.1% female participants with low back pain in the study of Özgen et al (107). According to the study of Edirne et al. the prevalence of pain in Turkey was higher in women (108). For this reason, we can say that it was not coincidental that 62.5% of the painful individuals participating in the study were women. All these findings have similar results to

the distribution of the number of participants in our study. We see that 67.5% were the married participants in the study. 5% of participants were widowed or divorced, and they were all female participants.

57.5% of participants' ages were between 26-41 ($n = 46$). The mean age of the participants was 36.99 ± 12.03 . In other studies, the average age of participants with low back pain varies between 40-46 (14,109).

The majority of the participants in the study were university graduates (40%). Education of the other participants as follows; primary school (18.8%), high school (17.5%), and higher education graduates (12.5%), respectively. Participants who were educated at the university or higher institutions made up 52.5% of the entire participants. At this point, we see that the younger generation, which was more interested in technology in comparison to the older generation, can easily and quickly fill the form, thanks to online testing. Thus, we can understand why the distribution of education and age levels were different from other studies. However, there was still a significant relationship between older age, low education level, and pain, disability levels. There was a statistically significant relationship between GCPS, GCPS-CPI, RMDQ, and age in individuals with high school or lower education levels in tables 4.22, 4.24, and 4.27. Ketenci et al.'s study found that people with low education levels had more back pain. They said that individuals with a low level of education who work in more challenging and harder jobs that require physical strength were exposed to more stress, which increases the incidence of low back pain in these people (110).

When we look at Employment Status, 50% of women were unemployed, and 6.7% of men were unemployed. When we look at Table 4.2, we see that 36% of women were housewives. The remaining 14% of unemployed women were twice more than unemployed men. Men working under the conditions of Turkey were close to 2 times of women. In this case, it should be carefully examined whether being a housewife was a choice or a necessity. If we assume that being a housewife was a choice, the number of unemployed women was still high. Looking at these statistics, we can conclude that unemployed women may have depression and accompanying chronic pain. Additionally, we can conclude another aspect women with chronic pain fall into depression first, and then unemployment comes into the picture. Conversely, both situations can trigger each other. According to the results of the study conducted by Giladi et al. It was reported that unemployed patients developed depression and that patients with depression also had higher rates of pain and disability (111). According to the table of Distribution of Profession were 22.5% of the participants

were housewives, 12.5% were workers, 10% were engineers, and 8.8% were students. Overall, these numbers make up more than half of the participants. Ayvat et al. statistically showed that the majority of patients with low back pain were housewives (112). On the other hand, Karkucak et al. wrote that the majority of patients with low back pain were housewives, but the patients who apply to polyclinics constitute the majority of housewives who do not work during working hours (109). However, in our study, 22.5% of our participants were housewives. An important aspect of our study was that it was online and open to everyone 24/7. So it appeals not only to housewives but also to all working people, allowing them to join the study out of working hours. Our findings also support the findings of other studies. According to our study, the majority of participants with low back pain were female participants who were housewives (14,110,112).

When we look at the duration of pain, 60% of the participants experienced pain for 2 years or more. When we look at table 4.24, we found a significant relationship between RMDQ and ODI scores and duration of pain. According to this table, the incidence of disability may be higher with those who suffer more than two years of pain. In Table 4.27, we found a statistically significant relationship between age and duration of pain. We also found a statistically significant relationship between BMI groups and age. As the age gets older, BMI was increasing for the ages over 24. We also observe that the pain duration was more in older ages respectively. We see that the duration of the participant's pain was longer when the participant's age was older. That was because cell regeneration becomes slower when the patient becomes older. As a result, related pain becomes chronic and lasts longer. As recovery slows down with age, patients have to cope with pain longer. In Table 4.27, we found a statistically significant relationship between the BMI score and those with pain duration longer than 2 years. Because participation in activities decreases with increasing time, a sedentary lifestyle happens in patients. Along with being inactive, weight also increases. For this reason, it was normal for the BMI to be very high.

The most common diagnosis was disc herniation with 68.8%. Disc herniation was present in 76% of female participants. 52.5% of the participants experience pain radiating to both the waist and leg. Campbell et al. In their 5-year study on the prognostic indicators of low back pain in primary care, they found that 62.1% of the participants were women. They stated that 42.4% of the participants had a low education level, and 60.9% were working. %61.3 of participants had low back pain and leg pain. They found the mean HADS-A score to be 8.1 and the mean HADS-D score to be 6.2. 62.5% of the participants in our study were

women, 47.5% have a high school or lower education level, 57.5% were working, and 52.5% have back pain and leg pain. HADS-A and HADS- D mean scores were 8.17 and 6.39. Campbell's study indicates that similar results were obtained in our study (113).

When we look at table 4.19, we found a statistically significant correlation between RMDQ and ODI between GCPS and its subscales, just as we thought. All three scales made parallel measurements and have a correlation with each other. In Table 4.21, we analyzed the RMDQ, ODI, and GCPS classes with the Kruskal Wallis test, where we found a difference between the groups. In order to understand from which group this difference arises, we analyzed with post-hoc in ANOVA. We found a difference between the first group of GCPS and the other groups. The groups with which this difference existed were examined by post-hoc analysis, and it was found that there was a significant difference between the 1st group and the other groups.

There was a statistically significant relationship between the anxiety score of the female participants and the GCPS-CPI pain score and between the GCPS-DS and the HADS-D score of the male participants. There was a statistically significant correlation between the GCPS total and the HADS-D score of the male and total participants. There was also a significant relationship between the HADS-T and the GCPS-CPI score of the female participants. The total and male participants had a significant association with the HADS-T. There was a significant relationship between the GCPS-total and the HADS-T score of the male and total participants. With this interpretation, we can say that women were associated with pain and anxiety and men with disability and depression. When we look at table 4.22, there was a statistically significant relationship between the participants at high risk of depression and GCPS total, GCPS-DS. According to this table, we found a relationship between disability and depression. Again, when we look at Table 4.23, we can see the depression risk score and the number of patients located above and below the cut-off point. According to the study of Gülseren et al. We calculated the patients above and below the cut-off point by taking the depression cut-off point as 7/8 (72). Our patient below the cut-off point was 50 participants with 62.5%, and our patient above the cut-off point was 30 participants with 37.5%. Our participant with severe depression risk finding above 13 points was only 4 participant with 5%.

Only 26.2% of the participants use pain medication for pain. There was no difference between men and women in terms of the percentage of pain medication use. However, there was a statistically significant relationship between the use of pain medication and HADS-A,

HADS-T and POAM-P Overdoing scores. Accordingly, the use of pain medications of the participants increases with the risk of anxiety and depression. In Table 4.19, we found a statistically significant relationship between women with GCPS-CPI and POAM-P Overdoing. According to this relationship, the attitude of women towards pain was to continue the activity even if they were painful.

In addition, we see that the participants who showed pain avoidance behavior for the POAM-P Overdoing pattern tend to use pain medication. When we look at table 4.27, we found a statistically significant difference between the use of pain medication and age. According to the analysis result in the table, the use of pain medication increases in older ages. According to all this information, we can say that individuals who use pain medication were of the old age group, were female, have developed a pain avoidance pattern, and were at risk of depression and anxiety. Haythornthwaite reported the prevalence of depression with chronic pain as 22-78% (114). Waxman reported the prevalence of depression in patients with chronic low back pain as 30-54% (115). In our study, the rate of participants with depression risk (37,5%) was in parallel with these studies.

When we looked at the descriptive statistics table of the scales, there was a significant difference by gender between the scores of the POAM-P Avoidance and Pacing subscales. When we look at Table 4.26, statistically significant differences were found for the genders in the t-test belonging to these subscales. The mean scores of both subscales were higher in men (POAM-P Avoidance $p = 0.02$ and Pacing $p = 0.009$). That was, we can say that men used more avoidance and pacing patterns against pain compared to women.

50% of the scale participants were overweight, and 12.5% were obese. We can say that 62.5% of the participants with low back pain have weight problems. Overweight male participants were 66.7%, while this rate was 40% for women. Özdemir et al. found a high prevalence of low back pain in overweighted participants and reported that low back pain was significantly more common in overweighted participants (116). We associate this with the increased load on the waist bones, discs, muscles and ligaments, and the wear of the lumbar structures under extreme stress. When we look at table 4.27, a statistically significant relationship between the BMI score and those married can be seen. Those with pain for more than 2 years, and those with low education levels. When we look at table 4.24, there was a statistically significant relationship between the RMDQ score and overweight individuals. We can see in table 4.26 that those who show POAM-P Avoidance behavior were

overweight participants. If we recall that men who show avoidance behavior were more common, we can say that overweight men show more avoidance patterns.

When we look at demographic characters in table 4.4, there was no significant difference between male and female participants except height and weight. It was due to male and female gender differences.

The first item of the scale questioned the pain days of the participants over the past six months. According to the first item, we say that there was non-persistence pain in those who have pain under 3 months, while those who have pain for 3 months or more have persistent pain. In our study, the percentage of people with persistent pain was 38.75% (n=31).

5.2. Discussion of the Results of the Reliability and Validity

To be used in international and country standards, the scale must meet specific criteria and norms. It was also vital to ensure its reliability and validity while developing it. High error rate and bias may occur in scales developed without complying with the standards. In addition, scale adaptation studies were a more straightforward, reliable, and cost-effective method than developing a scale from the beginning (117). For our scale to be reliable and valid, we complied with the criteria and standards specified in the scale adaptation (118). We have worked meticulously to ensure that there was an error and no bias.

Content, Face Validity: While evaluating the validity of the scale, we examined the scale with Content, Face and Construct Validity methods. With Face validity, it was questioned whether the scale measured what it wanted to measure, and then expert opinion was obtained for Content validity. Expert opinion was taken in the language translation and adaptation process for content validity. WHO was stated that it should be our primary goal to translate in a way that provides conceptual equivalence instead of literal translation of the word or sentence (119). Before starting the adaptation of the scale, it was important to obtain permission from the owner of the scale. Then, following the language adaptation instructions, the scale was translated (99). After getting the necessary permission, we followed the Beaton protocol during the language adaptation phase (120). Even though the Turkish equivalent of the word 'recreation' in the 7th item was 'recreation', we thought, it was more appropriate to replace it with the word 'entertainment', as it was more understandable in daily language. As stated by the International Test Commission (ITC), words that were not culturally adaptable can be changed without distorting the whole, and

words with similar meanings can replace them (121). In the Spanish version, they have chosen to use the word leisure activities rather than recreation, similar to our version (98). In the comments of the pilot test participants, it was written that the word daily activities in item 6 was not understood. To explain the daily activities in item 6, we gave short examples of them in parentheses (taking a bath, eating, going shopping, etc.). As Scholz stated in his work, when a word was not understood, it should be clearly stated (122). In our study, we found it appropriate to give an example for this unclear word group. In the German version, they have been made an explanation for the same item. According to our estimates, they may have received negative feedback for this item (106).

Construct Validity: Exploratory and confirmatory factor analysis were the methods performed for construct validity. Before the factor analysis, KMO and Bartlett's Tests were made (KMO = 0.817-good quite and Bartlett's test $p = 0.001$ - significant). According to the KMO result, our sample size was sufficient and suitable for factor analysis. According to Bartlett's Test, we can say that there was a correlation between the items. First, the exploratory factor analysis of our scale was performed with SPSS. In this method, the results were included in the analysis without knowing under which factor all items would be kept together (68). In the analysis, we saw the number of factors that happens and which items were kept together. Also, we saw the factor loading of each item quickly too. While doing this, we used the principal component analysis for the extraction method. We used direct oblimin rotation as a rotation method to keep the structure of the relationship between factors as one. The direct oblimin rotation was chosen as a rotation method because it allows correlation between factors (123). Because our factors were interrelated. (123, 124).

When we apply exploratory factor analysis to our scale, the scale appears with 2 factors. This approach confirms the existence of two subscales. Our 1st factor consists of items 1, 2, 3, and 4. Total factor load 4,663, species. It constitutes 58.2% of the variance explained. Our second factor consists of items 5,6,7 and 8, and the total factor load was 1,324. It constitutes 16.54% of the variance explained. The percentage of the factor load of both subscales total according to the supposed explanation was 74,83%. The factor loads of the items vary between the lowest 1. item 0.665 and the highest 4. item 0.937. Unlike other studies, we included the 1st item in the analysis while calculating the factor load. Then, we observed whether the structure of our two-factor scale, which emerged in the exploratory factor analysis, was appropriate with confirmatory factor analysis. Here we got $\chi^2 / df = 1.349$, GFI = 0.941, AGFI = 0.875, CFI = 0.994, RMSEA = 0.042, IFI = 0.994, NFI = 0.948.

We have confirmed our two-factor structure formed in the exploratory factor analysis according to the goodness of fit results (125).

Von Korff et al. reported that the original scale's characteristic pain intensity and disability score constituted a one-dimensional scale. However, he also reported that although this scale is unidimensional, it can be used as two subscales (9). In a study conducted by Smith et al in the UK, the scale was found to be one factor in 1997 (96). In the adaptation study conducted in Fasta by Soleymani et al in 2019, the scale was again found to be a single factor (97). In the adaptation studies of the scale to other languages, we can observe that they also found that the scale consists of two factors, just like in our study. This observation indicates that they were consistent with our scale, which includes two-factor structures. The Spanish version found that the first factor was the disability score, and the second factor was the pain intensity. In addition, it found the explained total variance of the two factors as 72.37% (98). In the Brazilian version, the first factor was found to be the characteristic pain intensity (Items 2-4) (99). In the German version, the first factor consists of the 6th, 7th, and 8th items. They removed the first item from the scale and did not include the 5th item in the analysis (106). A two-factor structure was found in the Indonesian (100), Greek (101), Italian (102), Korean (103), and Arabic (104) versions.

Internal Consistency: While testing the reliability of the scale, we used the internal consistency, test-retest method, and parallel forms method (75). The internal consistency method usually calculates how much each item measures the same feature (78). Cronbach's alpha method is preferred in Likert type scales to realize this approach. When we look at the results, we can interpret that the higher the alpha coefficient, the higher the consistency between the scale items. When we look at the internal consistency of the Turkish adaptation of the scale, the GCPS total was 0.894. The internal consistency of the subscales was found as GCPS-CPI 0.882 and GCPS-DS 0.872. If the alpha coefficient is between $0.00 \leq \alpha < 0.40$, 'the scale is not reliable', if it is between $0.40 \leq \alpha < 0.60$, the scale is 'low reliable', if it is between $0.60 \leq \alpha < 0.80$, 'the scale is very reliability' If it is between $0.80 \leq \alpha < 1.00$, it means 'the scale is highly reliable' (91). It is accepted that the closer the Cronbach alpha coefficient is to 1, the higher the consistency among the items of the measuring tool that measure the same value (90). According to this classification, our scale was highly reliable according to internal consistency. When we look at other studies conducted so far, the lowest 0.70 (disability score in the brazil version) and the highest 0.95 (disability score, in the greek version) were found for internal consistency (99, 101).

We found it appropriate to include item 1 while calculating the internal consistency of our scale. Item 1 questioned the pain days experienced by the participants within 6 months. While the lowest answer that the participants could give was 0, the highest answer was 180 days. When we tried to evaluate this item with the day form without any change, we found that the number of days did not match the form of the other items. The analysis, in which the first item was included in the scale in day form, reduced the internal consistency of the scale. The Cronbach's alpha value was found at 0.224. When the first item was converted into Likert form and included in the analysis, the Cronbach's alpha value of the scale increased to 0.894.

Test-retest: Another method frequently used in the reliability analysis of scales is the test-retest method. The test-retest method was used for repeatability and the temporal invariance of the measurement. The measurement tool is applied twice to the same sample group at different times, under the same conditions as possible, and the relationship between the scores is examined with ICC (79,126). Deyo et al. Stated in studies conducted in the field of health that the test-retest interval should not be too short or too long. They suggest that 1-2 weeks time interval will be sufficient (127). 'How would you rate your pain NOW?' The existence of the item gave us the idea not to keep the interval long. Because instant pain is a symptom that changes rapidly depending on time and other factors. For this reason, we determined our test-retest interval as 10 days. So neither too short nor too long. Ten days after completing the scale, 30 participants filled out the scale again (92, 94, 95). The distributions and descriptive statistics of variables belonging to these participants were given in tables 4.15 and 4.16. For Test-Retest reliability, it was 0.921 for ICC GCPS total. ICC for the items was in the range of 0.812-0.966. The ICC value of the original scale was 0.88 (9). In the Spanish version (n=75) of the study (98), they enrolled 46 patients 10 days apart and found an ICC of 0.81. In the Brazilian version (n=283) (99), they recruited 131 patients at 6-10 days intervals and found an ICC of 0.76 for GCPS-CPI and 0.72 for GCPS-DS. In the Indonesian version (n=202) (100), 45 participants completed the test 2 weeks later and found an ICC of 0.78 for CPI and 0.70 for DS. When we review all this information, we can say the following comment: It was found that the repeatability and the temporal invariance of the measurement was highly reliable with the test-retest method.

Parallel forms: While designing the study, we chose 2 scales, such as GCPS, which can classify participants with a disability and whose reliability and validity in Turkish have been performed. One was RMDQ (69), the other was ODI (70). While GCPS and ODI make a

classification according to the total score, RMDQ calculates the disability status of the patient in the percentage system. It shows that the higher the score on the scale, the higher the level of disability. When we looked at the correlation between these two forms and GCPS, there was a high correlation between ODI and GCPS ($r = 0.759$ $p = 0.001$), and between RMDQ and GCPS ($r = 0.777$ $p = 0.001$). The RMDQ relationship with the Spanish version of GCPS was examined, and the correlation was found to be $r = 0.509$ (98).

We evaluated the reliability and validity of the GCPS and analyzed the results. According to the results, we can say that the Turkish version of GCPS is a useful, reliable, and valid tool.

5.3. Conclusion and Recommendations

In this study, in which the validity and reliability analysis of the Turkish version of Graded Chronic Pain Scale 2.0 were performed, the following results were obtained:

1. With this work; It was concluded that the Turkish version of GCPS 2.0 is a valid and reliable tool in the evaluation of patients with chronic pain.
2. Descriptive statistical information of the study participants was as follows.
 - 80 participants with CLBP were included in the study. 62.5% ($n=50$) of the participants were women and 37.5% ($n=30$) were men.
 - 52.5% of the participants had university and higher education, 3.7% were literate, the rest were primary and secondary education graduates.
 - While 44% of female participants were working, 50% were unemployed. While 80% of male participants were working, 13.3% were retired.
 - If we look at the BMI groups, 40% of women, 66.7% of men, and 50% of all participants were overweight. 12.5% of participants were obese.
 - 67.5% of the participants were married.
 - The mean age of the participants was 36.99 ± 12.03 . The majority of females were 36% housewives. The majority of males were 26.7% workers, 23.3% engineers.
 - 60% of the participants experienced pain for more than 2 years.
 - 68,8% of the participants had disc herniation.
 - 52.5% of the participants had low back pain with radiating leg pain
 - 26.2% of the participants were using pain medication.

- 37.5% (n = 30) of the participants were at risk of depression.
 - 38.75% (n=31) participants have persistent pain.
3. There were 62.5% female participants in our study. 36% of the female participants were housewives. According to the study, it was found that chronic low back pain appears to be more common among women, and specifically more common within housewives.
 4. 52.5% of the participants in the study were individuals with education at university or after. However, it was concluded that there was a relationship between lower educated people with high severity of pain, severe disability, and old age.
 5. We concluded that the incidence of disability was high in those who suffered from pain for more than two years.
 6. We found a statistically significant relationship between old age and pain duration. We associate old age-related reduction in regeneration with prolonged pain duration.
 7. There was a statistically significant relationship between the BMI score and those who were married, those with pain for more than 2 years, and those with low education levels.
 8. There was a statistically significant relationship between the RMDQ score and overweight individuals.
 9. We also found a statistically significant relationship between BMI groups, and age. With old age, BMI was increasing. Aging, increasing pain and long duration of pain cause a sedentary lifestyle. For this reason, we think that BMI was higher in the people in the study.
 10. We found a statistically significant correlation between RMDQ, ODI, and GCPS, GCPS subscales.

11. There was a statistically significant relationship between the anxiety score of the female participants and the GCPS-CPI pain score and between the GCPS-DS and the HADS-D score of the male participants. We can say that women were associated with pain and anxiety and men with disability and depression.
12. There was a statistically significant relationship between the participants at high risk of depression and GCPS total, GCPS-DS. We found a relationship between disability and depression.
13. There was a statistically significant relationship between the use of pain medication and HADS-A, HADS-T, and POAM-P Overdoing scores. Accordingly, we can say, the use of pain medications of the participants increases with the risk of anxiety and depression, and people who tend to overdo it use more pain medication.
14. We found a statistically significant difference between the use of pain medication and age.
15. We found a relationship between the participants who tend to overdo in pain and use more pain medication.
16. We found a statistically significant relationship between women with GCPS-CPI and POAM-P Overdoing. According to this relationship, the attitude of women towards pain was to continue the activity regardless of the pain, even if it was painful.
17. A statistically significant difference was found between gender and POAM-P Avoidance, POAM-P Pacing. The scores of Avoidance and Pacing Patterns were significantly higher in males. So we can say that males used more avoidance and pacing patterns against pain than females.
18. Overweight participants show POAM-P Avoidance behavior. If we recall that men who show avoidance behavior were more common, we can say that overweight men show more avoidance patterns.

19. In our study, exploratory and confirmatory factor analysis was performed for the construct validity of the Turkish version of GCPS 2.0. In the exploratory factor analysis, the interrelated two-factor structure of GCPS 2.0 was defined. It was found that the fit indices and factor loadings were sufficient as a result of the confirmatory factor analysis.
20. As a result of the internal consistency analysis, it was found that the Cronbach alpha coefficient was 0.882 for pain intensity, 0.872 for disability score and 0.894 for GCPS total. A high alpha coefficient indicates that the scale has high internal consistency. According to the item analysis results of GCPS 2.0, it was determined that each item of the scale was consistent with each other.
21. As a result of the test-retest reliability analysis, it was found that the repeatability and the temporal invariance of the measurement were highly reliable with the test-retest method.
22. With GCPS 2.0, ODI and RMDQ were analyzed using the parallel form method. The correlation between them was examined. In their analysis, it was found that there was a high degree of positive correlation between GCPS 2.0 and the scales.

As a result, the GCPS 2.0 scale was a reliable, valid, compact, easy-to-apply tool that is also suitable for all kinds of chronic pain. It can be used safely in the Turkish community and fills the gap in Turkish literature.

5.4. Limitations

- This study was an online study. It was able to reach every segment of society that has a connection to technology somehow. At this point, we can say that the participation of individuals who could not access the internet for any reason was restricted. For example, this was an obstacle to older individuals who did not know how to fill in online forms on the internet. This was a limitation of our study.
- The study's main limitation was that only participants with chronic low back pain were included in this study. Another point, the sensitivity of the scale was not examined. The sensitivity of other chronic diseases with the new studies should also be examined.

6. REFERENCES

1. Raja SN, Carr DB, Cohen M, et al. The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. *Pain*. 2020;161(9):1976-1982.
2. International Association for the Study of Pain. IASP Terminology. Definition of Pain. Available from: <https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1698>. Accessed 1 February 2021.
3. Ünal Çevik I. Ağrının kronikleşmesine neden olan faktörler, patofizyoloji temelli tedaviler. *TOTBİD Dergisi*. 2017;16:77-80.
4. Uludağ B. Memory of pain. *Ağrı*. October 2005;17(4):10-16.
5. Grisart JM, Linden M. Conscious and automatic uses of memory in chronic pain patients. *Pain*. 2001;94:305-313.
6. Yağcı Ü, Saygın M. Pain Physiopathology. *Med J SDU*. 2019;26(2):209-220
7. Aydın ON. Ağrı ve ağrı mekanizmalarına güncel bakış. *ADÜ tıp fakültesi dergisi*. 2002;3(2):37- 48.
8. Orhurhu VJ, Roberts JS, Ly N, Cohen SP. Ketamine In Acute and Chronic Pain Management. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan. 2020 Aug 16. Accessed 19 March 2021.
9. Von Korff M. Assessment of chronic pain in epidemiological and health services research: empirical bases and new directions. *Handbook of pain assessment*. 3rd ed. Turk DC, Melzack R, editors. New York: Guilford Press, 2011;455-73.
10. Yılmaz, A., Altuğ, F., Coşkun, E. Pain, Disability Status and Psychological Factors in Patients with Chronic Low Back Pain. *Türkiye Klinikleri J Med Sci*. 2012;32(5):1278-83.
11. Centers of disease control and prevention. (2020). ICF: An Overview. Retrieved August 31, 2020, from https://www.cdc.gov/nchs/data/icd/ICFoverview_FINALforWHO10Sept.pdf.
12. Von Korff M, Ormel J, Keefe F, Dworkin SF. Grading the severity of chronic pain. *Pain*. 1992;50:133-49.
13. Von Korff M. et al. Graded chronic pain scale revised: mild, bothersome, and high-impact chronic pain. *Pain*. 2019;1-12.
14. İçağasıoğlu ve ark. Kronik Bel Ağrısının Maliyeti. *Türk Fiz Tıp Rehab Derg*. 2015;61:58-64.

15. Williams, AC and Craig, KD. Updating the definition of pain. *Pain*. 2016;157(11):2420-2423.
16. Çeliker R. Kronik ağrı sendromları. *Turkish Journal of Physical Medicine and Rehabilitation*. 2005;51(2):14-18.
17. Uyar M. and Köken İ. Kronik Ağrı Nörofizyolojisi. *TOTBİD Dergisi*. 2017; 16:70–76.
18. Araç N. Nöropatik-Nosiseptif Ağrı Tanımı ve Ayırımı. *Türkiye Klinikleri J Neurol-Special Topics*. 2010;3(4):30-3.
19. Kendroud S, Fitzgerald LA, Murray I, Hanna A. Physiology, Nociceptive Pathways. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021.
20. Erdine S (Editör). Ağrı mekanizmaları. Ağrı. 2000; 20-29.
21. Erdine S (Editör). Ağrı Mekanizmaları. Ağrı Sendromları ve Tedavisi. İkinci Baskı. 2003; 33-42.
22. Marchand S. The physiology of pain mechanisms: from the periphery to the brain. *Rheum Dis Clin North Am*. 2008;34(2):285-309.
23. Barke A, Korwisi B, Casser HR et al. Pilot field testing of the chronic pain classification for ICD-11: the results of ecological coding. *BMC Public Health*. 2018; 18:1239.
24. Oğuz H (Editör). Kronik Ağrı Tedavisi. Tıbbi Rehabilitasyon. Birinci Baskı. İstanbul:Nobel Tıp. 1995:685-696.
25. Ağzıkara M. Medulla Spinalis Yaralanmalı Hastalarda Ağrı, Ankara Tez. 1998.
26. Das G. Evidence and consensus recommendations for the pharmacological management of pain in India. *Journal of Pain Research*. 2017;10:709-736.
27. Turk D and Rudy E. IASP taxonomy of chronic pain syndromes: preliminary assessment of reliability. *Pain*. 1987;30:177-189.
28. Lithwick A, Lev S, Binshtock A. Chronic pain-related remodeling of cerebral cortex – ‘pain memory’: a possible target for treatment of chronic pain. *Pain Management* 2013;3(1): 35-45.
29. Morgen GE and Micheal MG. Pain Management. Clinical Anaesthesiology Second Edition. New Jersey: Pernttice-Hall International, Inc.1996;274-316.

30. Trachsel LA and Cascella M. Pain Theory. In book: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019.
31. McMubbay GA. Theories of Pain And Congenital Universal Insensitivity to Pain. Canadian Journal of Psychology. 1975;29(4):302-315.
32. Moayedı M, Davis KD. Theories of pain: from specificity to gate control. J Neurophysiol. 2013;109(1):5-12.
33. Öngel K. Ağrı Tanımı Ve Sınıflaması. Klinik Tıp Aile Hekimliği Dergisi. 2017;9(1).
34. Christianson JA, Davis BM. The Role of Visceral Afferents in Disease. In: Translational Pain Research: From Mouse to Man. Boca Raton (FL): CRC Press/Taylor & Francis; 2010. Chapter 3.
35. Carr DB, Goudas LC. Acute pain. The Lancet. 1999; 353(9169): 2051-2058.
36. Raj PP. Taxonomy and classification of pain. In: Kreitler S, Beltrutti D, Lamberto A, Niv D (eds). The handbook of chronic pain, 1st ed. New York, Nova Science Publishers. 2007; 41-56.
37. Erdine S (Editör). Ağrının Tanımı. Ağrı Sendromları ve Tedavisi (İkinci Baskı). İstanbul: Gizben Matbaacılık. 2003; 1-6.
38. Goldberg DS, McGee SJ. Pain as a global public health priority. BMC Public Health. 2011;11:770.
39. Gürel FS. Ağrının fizyolojisi. Türkiye Klinikleri J Fam Med-Special Topics. 2011; 2(2): 10-4.
40. Cole E. Pain Management: Classifying, understanding, and treating pain. Hospital Physician. 2002; 23-30.
41. Treede RD, Rief W, Barke A et al. A classification of chronic pain for ICD-11. Pain. 2015;156(6):1003–1007.
42. Marcus, Dawn A. Chronic Pain : An Atlas of Investigation and Management. Clinical Publishing. 2009.
43. Gerdle B. Prevalence of current and chronic pain and their influences upon work and healthcare-seeking: a population study. J Rheumatol. 2004;31:1399-406.
44. Jensen MP et al. The impact of neuropathic pain on health-related quality of life: review and implications. Neurology. 2007;10;68(15):1178-82.

45. Latremoliere A, Woolf CJ. Central sensitization: a generator of pain hypersensitivity by central neural plasticity. *The Journal of Pain*. 2009;10(9): 895-926.
46. Puretić MB, Demarin V. Neuroplasticity mechanisms in the pathophysiology of chronic pain. *Acta Clin Croat*. 2012;51(2):1.
47. May A. Chronic pain may change the structure of the brain. *Pain*. 2008;137(1):7–15.
48. Kalso E. Memory for pain. *Acta Anaesthesiologica Scandinavica. Supplementum*, 1997;110:129–130.
49. Burgmer M, Gaubitz M, Konrad C, Wrenger M, Hilgart S, Heuft G, Pflleiderer B. Decreased gray matter volumes in the cingulo-frontal cortex and the amygdala in patients with fibromyalgia. *Psychosom Med*. 2009;71:566–573.
50. Sinatra R. Causes and consequences of inadequate management of acute pain. *Pain Med*. 2010;11(12):1859–1871.
51. Van Tulder MW, Koes BW, Bouter LM. Conservative treatment of acute and chronic nonspecific low back pain. *Spine*. 1997;22: 2128-2156.
52. Dündar Ü et al. Kronik bel ağrılı hastalarda ağrı, yeti yitimi ve depresyonun yaşam kalitesi ile ilişkisi. *Genel Tıp Dergisi*. 2009;19(3):99-104.
53. Linton SJ. A review of psychological risk factors in back and neck pain. *Spine (Phila Pa 1976)*. 2000;1;25(9):1148-56.
54. Mammadov T, Bölük Şenlikci H, Ayaş Ş. A public health concern: Chronic low back pain and the relationship between pain, quality of life, depression, anxiety, and sleep quality. *J Surg Med*. 2020;4(9):808-811.
55. Sinaki M, Mokri B. Low back pain and disorders of the lumbar spine. In: Braddom RL, Buschbacher RM, Dumitru D, Johnson WE, Sinaki M, editors. *Physical Medicine and Rehabilitation*. Philadelphia: W.B Saunders Company; 1996;813-50.
56. Ketenci A. Differential diagnosis in low back pain patient. *TOTBİD Dergisi*. 2017; 16:118–125.
57. Yeşilyurt M, Faydalı S. Ağrı Değerlendirmesinde Tek Boyutlu Ölçeklerin Kullanımı. *Journal of Anatolia Nursing and Health Sciences*. 2020; 23(3): 444-451

58. Akmaz H.E, Uyar M, Yıldırım Y.K, Korhan E.A. Validity and Reliability of the Turkish Chronic Pain Acceptance Questionnaire. *Balkan Medical Journal*. 2018; 35(3):238-244.
59. Hergüner S. Basic Concepts of Using Measurement Tools. <https://www.researchgate.net/publication/281107511>. August 20, 2015
60. Gay L.R. Educational evaluation and measurement, 2nd ed. London, A Bell & Howell Company, 1985: 67-69.
61. Kline P. An Easy Guide To Factor Analysis. New York: Routledge.1994.
62. Kline RB. In: Kenny DA, editor. Principles and practice of structural equation modeling. Methodology in the social sciences. New York: The Guildford Press. 1998;354.
63. Büyüköztürk Y. Faktör Analizi: Temel Kavramlar ve Ölçek Geliştirmede Kullanımı. Kuram ve Uygulamada Eğitim Yönetimi. 2002; 32(32): 470-483.
64. Yağar F, Dökme S. Niteliksel Araştırmaların Planlanması: Araştırma Soruları, Örneklem Seçimi, Geçerlik Ve Güvenirlik. *Gazi Sağlık Bilimleri Dergisi*. 2018;3(3): 1-9.
65. Yakut E, Düger T, Öksüz C, Yörük S, Ureten K, Turan D et al. Validation of the Turkish version of the Oswestry disability index for patients with low back. *Spine*. 2004; 29: 581-585
66. Fairbank JCT, Pynsent PB. The Oswestry disability index. *Spine (Phila Pa 1976)*. 2000.
67. Tunç Süygün E, Toprak Celenay Ş. Turkish Translation of the Patterns of Activity Measure-Pain in Patients with Chronic Low Back and Neck Pain: Validity and Reliability. *Pain Management Nursing*. Published online:23 February 2021.
68. Cane D, Nielson WR, McCarthy M, Mazmanian D. Pain-related activity patterns: measurement, interrelationships, and associations with psychosocial functioning. *The Clinical Journal of Pain*. 2013;29(5): 435-442.
69. Roland MO, Morris RW. A study of the natural history of back pain. Part 1: Development of a reliable and sensitive measure of disability in low back pain. *Spine*. 1983; 8: 141-144.
70. Küçükdeveci AA, Tennant A, Elhan AH, Niyazoglu H. Validation of the Turkish version of the Roland-Morris Disability Questionnaire for use in low back pain. *Spine*. 2001;26(24):2738-43.

71. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983; 67(6): 361-370.
72. Gülseren L, Hekimsoy Z, Gülseren Ş, Bodur Z, Kültür S. Diabetes mellituslu hastalarda depresyon anksiyete, yaşam kalitesi ve yetiyitimi. *Türk Psikiyatri Dergisi*. 2001; 12(2): 89-98.
73. Aydemir Ö, Güvenir T, Küey L, Kültür S. Hastane anksiyete ve depresyon ölçeği Türkçe formunun geçerlilik ve güvenilirliği. *Türk Psikiyatri Dergisi*. 1997; 8(4): 280-287.
74. Ergin DY. Ölçeklerde Güvenirlilik ve Geçerlik. M.Ü. Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi. 1995;7: 125-48.
75. Ercan İ, Kan İ. Ölçeklerde Güvenirlilik ve Geçerlik. *Uludağ Üniversitesi Tıp Fakültesi Dergisi*. 2004;30 (3):211-216.
76. Ebrinç S. Psikiyatrik derecelendirme ölçekleri ve klinik çalışmalarda kullanımı. *Klinik Psikofarmakoloji Bülteni*. 2000;10(2):109-16.
77. Güngör D. Psikolojide Ölçme Araçlarının Geliştirilmesi ve Uyarlanması Kılavuzu. *Türk Psikoloji Yazıları*. 2016;19(38):104-112.
78. Karakoç FY, Dönmez L. Ölçek geliştirme çalışmalarında temel ilkeler. *TED*. 2014;40(40):39-49.
79. Çakmur H. Measurement-Reliability-Validity in Research. *TAF Prev Med Bull*. 2012; 11(3): 339-344
80. Özdamar K. Paket Programlar ile İstatistiksel Veri Analizi. 5. Baskı. Eskişehir. Kaan kitapevi. 2004;345-500, 379-412
81. Özdamar K. SPSS ile Biyoistatistik. 9.baskı, Nisan Yayınevi. Ankara. 2013.
82. Şenocak M. Biyoistatistik ve araştırma yöntembilimi. 1. Baskı. İstanbul tıp kitapevi. 2014.
83. Aker S, Dünder C, Pekşen Y. Ölçme Araçlarında iki Yaşamsal Kavram: Geçerlik ve Güvenirlilik: :Derleme. O.M.Ü. Tıp Dergisi. 2005; 22(1): 50–60.
84. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*. 2000;15;25(24):3186-91.
85. Çavuşgil S, Das A. Methodological Issues in Empirical Cross-Cultural Research: A Survey of the Management Literature and a Framework. *Management International Review*. 1997;37(1):71-96.

86. Akyüz HE. Confirmatory Factor Analysis for Construct Validity: An Applied Study. BEU Journal of Science. 2018;7(2): 186-198.
87. Sümer N. Yapısal Eşitlik Modelleri: Temel Kavramlar ve Örnek Uygulamalar. Türk Psikoloji Yazıları. 2000.
88. Schermelleh-Engel K. Moosbrugger H, Müller H. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. Methods of Psychological Research. Online,2003;8(2):23-74.
89. Kaplan D. Evaluating and Modifying Structural Equation Models. Structural Equation Modeling: Foundations and Extensions. 1st ed. Thousand Oaks, CA: Sage Publications. 2000;107.
90. Aksayan S, Gözüm S. Kültürlerarası ölçek uyarlaması için rehber II: psikometrik özellikler ve kültürlerarası karşılaştırma. Hemşirelikte Arastırma Gelistirme Dergisi. 2003; 5: 3-14.
91. Tavşancıl E. Tutumların Ölçülmesi ve SPSS ile Veri Analizi. 1.baskı. Nobel yayınevi. Ankara. 2002.
92. Aldrige VK, Dovey TM, Wade A. Assessing Test-Retest Reliability of Psychological Measures: Persistent Methodological Problems. European Psychologist. 2017;22(4):207-218
93. Kalaycı Ş. SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri. 7.baskı. Asil Yayınevi. Ankara. 2016.
94. Yurdağül H. Minimum sample size for Cronbach's coefficient alpha: a Monte-Carlo study. H. U. Journal of Education. 2008;35:397-405.
95. Bujanga MA, Baharum N. A simplified guide to determination of sample size requirements for estimating the value of intraclass correlation coefficient: a review. Arch Orofacc Sci. 2017;12(1): 1-11.
96. Smith, B. H., Penny, K. I., Purves, A. M., Munro, C., Wilson, B., Grimshaw, J., Chambers, A. W., & Smith, C. W. The Chronic Pain Grade questionnaire: Validation and reliability in postal research. Pain. 1997;71(2),141– 147.
97. Soleymani, A., Arani, A. M., Raeissadat, S. A., & Davazdahemamy, M. H. Validity and reliability of the Persian version of the Chronic Pain Grade questionnaire in patients with musculoskeletal pain. Advances in Nursing & Midwifery. 2019; 28(3), 35– 39.

98. Pena RF et al. Adaptation and Validation of the Spanish Version of the Graded Chronic Pain Scale. *Reumatol Clin.* 2016;12(3):130–138.
99. Bracher, E.S.B, Eluf-Neto, J, Pietrobon, R. Cross-cultural adaptation and validation of a Brazilian Portuguese version of the chronic pain grade. *Quality of Life Research.* 2010; 19(6):847-852.
100. Tanti I et al. Validation of the Indonesian version of the graded chronic pain scale 2.0 in pain related temporomandibular disorders. *Med J Indones.* 2020;29(1).
101. Papaioannou M et al. The Chronic Pain Grade Questionnaire: validity, reliability and responsiveness in Greek chronic hip pain sufferers. *Hippokratia.* 2018; 22 (1): 37-42.
102. Salaffi F, Stancati A, Grassi W. Reliability and validity of the Italian version of the Chronic Pain Grade questionnaire in patients with musculoskeletal disorders. *Clin Rheumatol.* 2006;25: 619–631.
103. Chung JW et al. Chronic orofacial pain among Korean elders: prevalence and impact using the graded chronic pain scale. *Pain.* 2004;112:164-170.
104. Alhalal E, Jackson KT. Evaluation of the Arabic Version of the Chronic Pain Grade Scale: Psychometric properties. *Research in Nursing & Health.* 2021;44(2):403-412.
105. Kuruma E et al. Validity of the grading of severity of chronic pain in Japanese patients with temporomandibular disorders. *Journal of the Japanese Society for the Temporomandibular Joint.* 2006; 18(3):187.
106. Klasen BW, Hallner D, Schaub C, Willburger R, Hasenbring M. Validation and reliability of the German version of the Chronic Pain Grade questionnaire in primary care back pain patients. *Psycho-Social-Medicine.* 2004;1:Doc07.
107. Özgen M. Evaluation of Patients With Low Back Pain. *Osmangazi Journal of Medicine* 2020;42(6):659-664.
108. Erdine S, Hamzaoglu O, Özkan Ö, Balta E, Domaç M. Türkiye’de erişkinlerin ağrı prevalansı. *Ağrı.* 2001; 13(2): 22-3.
109. Karkucak M, Tuncer İ, Güler M, Çapkın E, Tosun M, Çakırbay H. Kronik Bel Ağrılı Hastalarda Demografik Özellikler ve Bel Okulunun Etkinliği. *Romatizma.* 2006; 21: 87-90.

110. Ketenci A, Özcan E, Müslümanoğlu L, Arıkan E, Durmuş B, Filiz M, Berker E. Kronik Mekanik bel ağrılı 1120 hastanın özellikleri. Türkiye Fiziksel Tıp Rehabilitasyon.1998;1:60-4.
111. Giladi H, Scott W, Shir Y, Sullivan MJL. Rates and Correlates of Unemployment Across Four Common Chronic Pain Diagnostic Categories. Journal of Occupational Rehabilitation. 2015;25:648–657.
112. Ayvat PU, Aydın ON, Oğurlu M. Sociodemographic properties and pain prevalence of patients applying to the Algology Department polyclinic of Adnan Menderes University Medical Faculty. Ağrı. 23(1);28-39, 2011.
113. Campbell P, Foster NE, Thomas E, Dunn KM. Prognostic indicators of low back pain in primary care: five-year prospective study. The Journal of Pain. 2013;14(8);873-883.
114. Haythornthwaite JA, Sieber WJ, Kerns RD. Depression and the chronic pain experience. Pain. 1991;46(2):177-84.
115. Waxman SE, Tripp DA, Flamenbaum R. The mediating role of depression and negative partner responses in chronic low back pain and relationship satisfaction. J Pain. 2008;9 (5):434-42.
116. Özdemir F, Karaoğlu L, Özfırat Ö. Malatya il merkezinde yaşayan bireylerde boyun, sırt ve bel ağrısı prevalansları ve etkileyen faktörler. Ağrı Dergisi. 2013;25(1):27-35.
117. Deniz Z. Psikometrik Ölçüm Aracı Uyarlama. Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi. 2007; 40(1):1-16.
118. Erkuş A. Ölçek Geliştirme ve Uyarlama Çalışmalarında Karşılaşılan Sorunlar. Türk Psikoloji Bülteni. 2007;13(40):17.
119. World Health Organization (WHO). Process of translation and adaptation of instruments. Accessed 9 May 2021. Retrieved from http://www.who.int/substance_abuse/research_tools/translation/en/.
120. Coster, W. J., & Mancini, M. C. Recommendations for translation and cross-cultural adaptation of instruments for occupational therapy research and practice. Revista de Terapia Ocupacional da Universidade de São Paulo. 2015. 26(1), 50–57.
121. International Test Commission (ITC). Guidelines for translating and adapting tests. International Journal of Testing. 2018; 18(2): 101–134.

122. Scholz, D. B. U. E. Questionnaire translation in crossnational survey research. On the types and value of annotations. *Methoden Daten Analysen*. 2011;5(2): 157–179.
123. Yaşlıoğlu M.M. Sosyal Bilimlerde Faktör Analizi ve Geçerlilik: Keşfedici ve Doğrulayıcı Faktör Analizlerinin Kullanılması. *IUJSB*. 2017;46:74-85.
124. Çapık C. Geçerlik ve Güvenirlik Çalışmalarında Doğrulayıcı Faktör Analizinin Kullanımı. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*. 2014;17:3.
125. Erkorkmaz Ü, et al. Confirmatory Factor Analysis and Fit Indices: Review. *Türkiye Klinikleri J Med Sci*. 2013;33(1):210-23.
126. Polit DF. Getting serious about test–retest reliability: a critique of retest research and some recommendations. *Qual Life Res*. 2014; 23:1713–1720.
127. Deyo, RA, Diehr P, Patrick DL. Reproducibility and responsiveness of health status measures: Statistics and strategies for evaluation. *Controlled Clinical Trials*. 1991; 12(4): 142–158.

7. APPENDICES

APPENDIX 7.1. Permission to use for the scale

Hüsnîye YOL <husniyeyol@gmail.com>

(IMPORTANT!) About Permission request for CPGS for my Thesis
7 ileti

Hüsnîye YOL <husniyeyol@gmail.com> 2 Ağustos 2020 20:55
Alıcı: Vonkorff.m@gmail.com, Vonkorff.M@ghc.org

Dear Mr. Von Korff,
My name is Hüsnîye Yol. I am studying for a master's degree in Physiotherapy and Rehabilitation at Faculty of Health Sciences, Yeditepe University Istanbul. Currently I am preparing my thesis. I would like to ask your permission to translate your "Chronic Pain Grade Scale (CPGS)" into Turkish and use it in my thesis. If that is possible I also kindly ask for the original scale and scoring from you. That will be a great help while I am preparing my thesis.

I wish you a great day,

Kind Regards
Hüsnîye Yol Ağıl
--
[HüsnîyeYol](#)

Michael VonKorff <vonkorff.m@gmail.com> 2 Ağustos 2020 21:32
Alıcı: Hüsnîye YOL <husniyeyol@gmail.com>
Cc: Vonkorff.M@ghc.org

We just published a revised version of the Graded Chronic Pain Scale in PAIN. I strongly recommend doing your research on the revised scale. You would be the first to translate it into Turkish. It is much simpler to administer and score. The graded chronic pain scale (original and revised) was placed in the creative commons, so you do not need my permission to use it in your research. I will send your papers with the revised and original versions when I get to my computer. Best wishes, Michael VonKorff

[Alıntılanan metin gizlendi]

Hüsnîye YOL <husniyeyol@gmail.com> 2 Ağustos 2020 21:49
Alıcı: Michael VonKorff <Vonkorff.m@gmail.com>

APPENDIX 7.2. Ethics Committee Decision



T.C. YEDİTEPE ÜNİVERSİTESİ

Sayı : 37068608-6100-15- 1965

24/09/2020

Konu: Klinik Araştırmalar
Etik Kurul Başvurusu hk.

İlgili Makama (Hüsnüye Yol Ağıd)

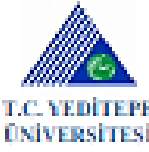
Yeditepe Üniversitesi Sağlık Bilimleri Fakültesi Fizyoterapi ve Rehabilitasyon Bölümü Prof. Dr. Rasmi Muammer'in sorumlu araştırmacı olduğu **"Dereceli Kronik Ağrı Ölçeğinin 2.0 Sürümünün Türkçe Versiyonunun Güvenilirlik ve Geçerliliği"** isimli araştırma projesine ait Klinik Araştırmalar Etik Kurulu (KA EK) Başvuru Dosyası (1956) kayıtlı Numaralı KA EK Başvuru Dosyası, Yeditepe Üniversitesi Klinik Araştırmalar Etik Kurulu tarafından **23.09.2020** tarihli toplantıda incelenmiştir.

Kurul tarafından yapılan inceleme sonucu, yukarıdaki isim belirtilen çalışmanın yapılmasının etik ve bilimsel açıdan uygun olduğuna karar verilmiştir. (KA EK Karar No:1291)

Prof. Dr. Turgay Çelik

Yeditepe Üniversitesi
Klinik Araştırmalar Etik Kurul Başkanı

APPENDIX 7.3. Informed Volunteer Consent Form

 T.C. YEDİTEPE ÜNİVERSİTESİ	KLİNİK ARAŞTIRMALAR ETİK KURULU BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	TARİH: VERSİYON:
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Sayın Katılımcı,

Yüksek lisans tezi kapsamında yürüttüğüm bu araştırmada 'Dereceli Kronik Ağrı Ölçeğinin 2. Sürümünün' 18-70 yaş arası, kronik (3 aydan uzun süren) ve sık görülen mekanik bel ağrısına sahip hastalarda Türkçe güvenilirlik ve geçerliliğinin yapılması planlanmıştır. Ölçek kronik ağrılı hastaların ağrı yoğunluklarını ve uzun dönem hissettikleri ağrının günlük yaşam aktiviteleri üzerine oluşturduğu etkileri de belirleyip var oldukları durumu derecelendirmek üzere hazırlanmıştır.

Çalışmada ilk önce gönüllü olur formunu ve klinik ve demografik bilgi formunu dolduracaksınız. Çalışmaya katılmak için katılım kriterlerine uygun olan hastalar bu formlardan sonra belirlenecek ve daha sonra mail aracılığıyla doldurulması gereken formlar hastalara e-mailleri üzerinden tekrardan gönderilecektir. Gönderilecek formlar Dereceli Kronik Ağrı Ölçeğinin 2. Sürümü ve bu ölçeğin güvenilirliğini belirlemek amacıyla Ağrı Aktivite Patemi, Hastane Anksiyete ve Depresyon Skalası, Revize Oswestry Bel Ağrısı Engelilik Anketi, Roland Morris Engelilik Anketi'dir.

Seçilmiş katılımcılar telefon aracılığıyla aranıp katılımcıya çalışma ve anketler hakkında gerekli bilgiler verilecektir. Ayrıca katılımcılar 1 hafta sonra tekrar aranabilecek ve e-mail üzerinden gönderilen Dereceli Kronik Ağrı Ölçeğinin 2. Sürümünün güvenilirliğini ve zamana göre değişmezliğini belirlemek amacıyla sadece Dereceli Kronik Ağrı Ölçeğinin tekrardan doldurulmasının gerekliliği konusunda hatırlatma yapılacaktır.

Ankete katılmanız gönüllülük esasına dayanmaktadır. Bu araştırmada sizin için herhangi bir risk veya rahatsızlık söz konusu değildir. Bu işlem size ek bir maliyet veya sağlığınıza olumsuz yönde etkileyecek bir zarar getirmeyecektir. Bu çalışmayı reddetme veya bağladıktan sonra devam etmeme hakkına sahipsiniz. Ankete vermiş olduğunuz bilgiler gizli kalacak ve sadece araştırma amacıyla kullanılacaktır.

Çalışmayla ilgili vermiş olduğum tüm bu bilgiler ışığında çalışmayı kabul etme veya etmeme hakkına sahipsiniz. Değerli zamanınızı ayırdığınız için teşekkür ederiz. Anketi yanıtlamayı kabul ettiğiniz için ve bilime olan katkılarınızdan dolayı minnettarız.

Çalışmayla ilgili herhangi bir sorunuz olursa aşağıda ismi ve iletişim bilgileri verilen araştırmacı ile iletişime geçebilirsiniz.

Prof. Dr. Rasmi MUAMMER, Yeditepe Üniversitesi, Sağlık Bilimleri Fakültesi, Fizyoterapi ve Rehabilitasyon Bölümü

Fzt. Hüsnüye YOL AĞIL, Yeditepe Üniversitesi, Sağlık Bilimleri Fakültesi, Fizyoterapi ve Rehabilitasyon Bölümü
(Telefon: 0555 386 47 90)

Bilgilendirilmiş onam formunu okuyup araştırmaya katılmayı onaylıyorsanız sizinle iletişime geçmemiz için aşağıdaki tüm alanları doldurduktan sonra ilgili kutucuğu işaretleyiniz. Bu işaretleme katılımcının onam imzası yerine geçecektir.

Çalışmaya katılmayı kendi irademle kabul ediyorum.

☐

Katılımcının;
İsim – Soyisim:
İmza:
Telefon:
E-Mail:

Araştırmacı;
Fizyoterapist Hüsnüye YOL AĞIL
İmza:
Telefon: 0555 386 47 90
E-Mail: husniyeyol@gmail.com

APPENDIX 7.4. Clinic and Demographic Evaluation Form

İSİM-SOYİSİM:

TARİH:

KLİNİK VE DEMOGRAFİK DEĞERLENDİRME FORMU

*Aşağıdaki formu eksiksiz doldurmanız çalışma bilgileri açısından çok önemlidir. Lütfen soruları boş bırakmayınız.

KLİNİK DEĞERLENDİRME

1. Bel ve/veya bacağa yayılan ağrınız var mı?

☐ Evet

*Cevabınız hayır ise lütfen forma devam etmeyiniz. Göstermiş olduğunuz ilgi için teşekkür ederiz.

2. Ne kadar süredir ağrınız var?

☐ 3-6 ay

☐ 6-12 ay

☐ 1-2 yıl

☐ 2 yıldan daha fazla

*Cevabınız bunlardan biri değil ve 3 aydan daha kısa süredir ağrınız var ise lütfen forma devam etmeyiniz. Göstermiş olduğunuz ilgi için teşekkür ederiz.

3. Mevcut şikâyetiniz için hekim tarafından konulmuş bir tanınız var mı?

☐ Evet

*Cevabınız hayır ise bel ağrısının kaynağını bilmiyorsanız, bir hekim tarafından tanı konulmamışsa lütfen forma devam etmeyiniz. Göstermiş olduğunuz ilgi için teşekkür ederiz.

4. Cevabınız evet ise tanınız aşağıdakilerden hangisidir?

☐ Disk herniasyonları (fitik, fitik başlangıcı...)

☐ Lomber strain (Miyofasyal ağrı sendromu, kas ağrısı...)

☐ Dejeneratif disk hastalığı

☐ Faset eklem sendromu,

☐ Spondilolistezis (omur kayması, bel kayması)

☐ Spinal stenoz (omurga kanalının daralması)

☐ Mekanik bel ağrısı

☐ Bel kaslarında tetik nokta

☐ Kas dengesizliği

☐ Lumbalگو

☐ Diğer _____

5. Ağrınız için ağrı kesici bir ilaç kullanıyor musunuz?

☐ Evet

Ağrı kesicinin ismi ve ne kadar dozda kullandığınızı yazınız.

☐ Hayır

6. Ağrının lokalizasyonu:
- ☐ Belde ağrı var.
 - ☐ Sağ/Sol bacağa yayılıyor.
 - ☐ Hem belde var hem de bacağa yayılıyor.
7. Aşağıdaki hastalıklardan birine sahip misiniz?
- ☐ Alzheimer
 - ☐ Demans
 - ☐ Tanısı konmuş psikiyatrik bozukluk (Şizofreni, Obsesif - Kompulsif Bozukluk, Depresyon, Travma Sonrası Stres Bozukluğu, Bipolar Bozukluk...vb.)

DEMOGRAFİK DEĞERLENDİRME

8. İsim-Soyisim: _____
9. Cinsiyet
- ☐ Kadın
 - ☐ Erkek
10. Telefon: _____
11. E-Mail: _____
12. Yaş: _____
13. Kilo: _____
14. Boy: _____
15. Medeni Durum:
- ☐ Bekâr
 - ☐ Evli
 - ☐ Dul/Boşanmış
16. Eğitim Durumu:
- ☐ İlkokul ()
 - ☐ Ortaokul ()
 - ☐ Lise ()
 - ☐ Üniversite ()
 - ☐ Yüksek Lisans ()
 - ☐ Doktora ()
 - ☐ Diğer _____
17. Meslek: _____
18. Çalışma Durumu:
- ☐ Çalışıyor
 - ☐ Çalışmıyor
 - ☐ Emekli

APPENDIX 7.5. Oswestry Low Back Pain Disability Index (ODI)
OSWESTRY BEL AĞRISI ENGELLİLİK ANKETİ

Hastanın Adı- Soyadı:

Tarih:...../...../.....

Bu test bel (veya bacak) yakınmanızın günlük hayatınızı ne kadar etkilediği hakkında bilgi edinmek için tasarlanmıştır. Lütfen tüm bölümleri cevaplayınız. Her bir bölümde sizi en iyi ifade eden şıkkı işaretleyiniz.

1.Ağrı yoğunluğu:

- ☐ 0 Ağrı gelip geçici ve çok hafif
- ☐ 1 Ağrı hafif ve pek değişmiyor (artıp azalma olmuyor).
- ☐ 2 Ağrı gelip geçici ve orta şiddette.
- ☐ 3 Ağrı orta şiddette ve pek değişmiyor (artıp azalma olmuyor).
- ☐ 4 Ağrı gelip geçici ve şiddetli.
- ☐ 5 Ağrı şiddetli ve pek değişmiyor (azalma olmuyor).

2.Kişisel bakım:

- ☐ 0 Ağrıdan kaçınmak için yıkanma veya giyinme şeklinde değişiklik yapmadım
- ☐ 1 Biraz ağrıya neden olsa da yıkanma ve giyinme şeklinde değişiklik yapmadım.
- ☐ 2 Yıkanma ve giyinmem ağrımı arttırıyor, fakat bunları değiştirmeden idare ediyorum.
- ☐ 3 Yıkanma ve giyinmem ağrımı arttırıyor, bu yüzden bunları yapma şeklimde değişiklik yaptım.
- ☐ 4 Ağrı nedeniyle bazı yıkanma ve giyinme işlerini yardım almadan yapamıyorum.
- ☐ 5 Ağrı nedeniyle yıkanma ve giyinmeyi yardımsız yapamıyorum.

3.Yük kaldırma:

- ☐ 0 Ağır yükleri ağrım olmadan kaldırabiliyorum.
- ☐ 1 Ağır yükleri kaldırabiliyorum ama bu bir miktar ağrıya yol açıyor.
- ☐ 2 Ağrı yerden ağır yükleri kaldırmama engel oluyor.
- ☐ 3 Ağrı ağır yükleri kaldırmama engel oluyor ama masa üstünde gibi uygun bir pozisyondaysalar kaldırabiliyorum.
- ☐ 4 Ağrı ağır yükleri kaldırmama engel oluyor ama masa üstünde gibi uygun bir pozisyondaysalar hafif veya orta ağırlıktaki nesneleri kaldırabiliyorum.
- ☐ 5 Sadece çok hafif yükleri kaldırabiliyorum.

4.Yürüme:

- ☐ 0 Yürürken ağrım yok.
- ☐ 1 Yürümeyle biraz ağrım var, fakat yürüme mesafesi arttıkça ağrı da artmıyor.
- ☐ 2 Ağrıda belirgin artma olmaksızın 1,6 km'den (1 mil) fazla yürüyemiyorum.
- ☐ 3 Ağrıda belirgin artma olmaksızın 800 metreden fazla yürüyemiyorum.
- ☐ 4 Ağrıda belirgin artma olmaksızın 400 metreden fazla yürüyemiyorum.
- ☐ 5 Ağrıda artma olmadan yürüyebildiğim bir mesafe yok (Yürüyünce ağrım artıyor).

5.Oturma:

- ☐ 0 Herhangi bir sandalyede istediğim kadar uzun oturabilirim
- ☐ 1 Sadece uygun bir sandalyede istediğim kadar uzun oturabilirim.
- ☐ 2 Ağrı bir saatten uzun oturmama engel oluyor.
- ☐ 3 Ağrı yarım saatten uzun oturmama engel oluyor.
- ☐ 4 Ağrı 10 dakikadan uzun oturmama engel oluyor.
- ☐ 5 Ağrımı direkt olarak artırdığı için oturmaktan kaçınıyorum

6. Ayakta durma

- ☐ 0 Ağrısız olarak istediğim süre ayakta kalabilirim.
- ☐ 1 Ayakta durmakla biraz ağrım oluyor, fakat bu zamanla artmıyor.
- ☐ 2 Ağrıda artış olmadan bir saatten uzun süre ayakta kalamam.
- ☐ 3 Ağrıda artış olmadan yarım saatten uzun süre ayakta kalamam.
- ☐ 4 Ağrıda artış olmadan 10 dakikadan uzun süre ayakta kalamam.
- ☐ 5 Ağrımı direkt olarak artırdığı için ayakta durmaktan kaçınıyorum.

7. Uyku

- ☐ 0 Yataktayken ağrısızım.
- ☐ 1 Yataktayken ağrım olur ama bu durum iyi bir uyku çekmeme engel olmaz.
- ☐ 2 Ağrı yüzünden uyuduğum süre normalde uyuduğum sürenin (1/4'ünden) 4'te 1'inden daha az azaldı.
- ☐ 3 Ağrı yüzünden uyuduğum süre normalde uyuduğum sürenin yarısından daha az azaldı.
- ☐ 4 Ağrı yüzünden uyuduğum süre normalde uyuduğum sürenin (3/4'ünden) 4'te 3'ünden daha az azaldı.
- ☐ 5 Ağrılar hiç uyutmuyor.

8. Cinsel Hayat (eğer uygulanabiliyorsa)

- ☐ 0 Cinsel hayatım normaldir ve fazladan ağrıya neden olmaz.
- ☐ 1 Cinsel hayatım normaldir ve fazladan biraz ağrıya neden olur.
- ☐ 2 Cinsel hayatım neredeyse normaldir ve oldukça fazla ağrıya neden olur.
- ☐ 3 Cinsel hayatım ağrı nedeniyle oldukça kısıtlıdır.
- ☐ 4 Cinsel hayatım ağrı nedeniyle neredeyse yok gibidir.
- ☐ 5 Ağrılar cinsel hayatıma tamamen engel oluyor.

9. Seyahat

- ☐ 0 Seyahat sırasında ağrım olmaz.
- ☐ 1 Seyahat sırasında biraz ağrım olur ama her zamanki seyahat yöntemlerim ağrımı kötüleştirmez.
- ☐ 2 Seyahat sırasında ağrım artıyor ama her zamanki seyahat yöntemlerini değiştirmeye zorlamıyor.
- ☐ 3 Seyahat sırasında ağrım artıyor ve her zamanki seyahat yöntemimi değiştirmeye zorluyor.
- ☐ 4 Ağrı tüm seyahat yöntemlerini kullanmama engel oluyor.
- ☐ 5 Yatarak seyahat dışında, ağrı tüm seyahat yöntemlerini kullanmama engel oluyor.

10. Sosyal hayat

- ☐ 0 Sosyal hayatım normaldir ve fazladan ağrıya neden olmaz.
- ☐ 1 Sosyal hayatım normaldir ancak ağrımın miktarını artırır.
- ☐ 2 Ağrı dans etmek gibi daha fazla hareket gerektiren aktivitelerimi kısıtlamak dışında sosyal yaşamımda belirgin etki yaratmıyor.
- ☐ 3 Ağrı sosyal yaşamımı kısıtlıyor, bu nedenle çok sık dışarıya çıkamıyorum.
- ☐ 4 Ağrı aile içi yaşamımı da kısıtlıyor.
- ☐ 5 Ağrı nedeniyle çok kısıtlı bir sosyal hayatım kaldı.

Skorlama Yönergesi: İşaretlenen kutucuğun yanındaki rakamlar toplanır. Aynı soru içinde 1'den fazla işaretli seçenek var ise en yüksek değer hesaba katılır. Maksimum skor 50'dir.

$$\text{Toplam skor} = \{[\text{toplam puan}] / [(\text{işaretli soru sayısı}) \times 5]\} \times 100$$

Hastanın ODI Skoru (%): _____

APPENDIX 7.6. Patterns of Activity Measure Pain (POAM-P)

AĞRI - AKTİVİTE PATERNLERİ ÖLÇEĞİ (AAPÖ)

Kronik ağrılı bireyler, günlük aktivitelerini yapmak için farklı yollar kullanırlar. Günlük aktivitelerinizi genellikle nasıl yaptığınızı düşünün. Aşağıdaki ifadelerin her biri için günlük aktivitelerinizi genellikle nasıl yaptığınızı en iyi açıklayan 0 ile 4 arasındaki sayıları daire içine alın

		Hiçbir zaman	Bazen	Her zaman	
1.	Ağrım daha kötü hale gelmeye başladığı zaman her ne yapıyorsam dururum.	0	1	2	3 4
2.	Bir aktivite yaparken bitene kadar durmam.	0	1	2	3 4
3.	Bir aktivite yaparken çalışmak ve mola vermek arasında gidip gelirim.	0	1	2	3 4
4.	Ağrımın iyi olduğu bir günde fazladan görevler üstlenirim.	0	1	2	3 4
5.	Bir aktiviteye başladığımda onu nasıl daha küçük kısımlara böleceğimi düşünürüm.	0	1	2	3 4
6.	Ağrımı arttırdığın için kaçındığım birçok aktivite var.	0	1	2	3 4
7.	Ağrımın azaldığı günlerimin çoğunda daha çok şey yaparım.	0	1	2	3 4
8.	Ağrım daha kötü olmaya başladığında her ne yapıyorsam bırakma zamanı geldiğini bilirim.	0	1	2	3 4
9.	Aktivitelerimi yavaş ve sabit hızda yaparım.	0	1	2	3 4
10.	Ağrım durmak zorunda kalacağım kadar kötüleşene dek her ne yapıyorsam yapmaya devam ederim.	0	1	2	3 4
11.	Ağrımı daha kötüleştireceğini bildiğim aktivitelerden kaçınırım.	0	1	2	3 4
12.	Bir aktivite yaparken bir süre dururum ve sonra daha fazlasını yapmak için geri dönerim.	0	1	2	3 4
13.	Çoğu gün ağrılarım beni birçok şeyi yapmaktan alıkoyar.	0	1	2	3 4
14.	Bir şeyler yaparken sabit hızla çalışır ve daha yavaş ilerlerim.	0	1	2	3 4
15.	Bir aktiviteye başladığımda, aktiviteyi yapana kadar devam ederim.	0	1	2	3 4
16.	Sadece ağrımı arttırmayacak aktiviteler yapıyorum.	0	1	2	3 4
17.	Bir aktivite yaparken onu küçük parçalara ayırır ve her defasında birini yaparım.	0	1	2	3 4

		Hiçbir zaman	Bazen	Her zaman	
18.	Ağrımı görmezden gelirim ve yapabildiğim sürece her ne yapıyorsam yapmaya devam ederim.	0	1	2	3 4
19.	Ağrımdan dolayı çoğu gün dinlenmeye aktivite yapmaktan daha çok zaman harcarım.	0	1	2	3 4
20.	Ağrıya daha fazla dayanamayacağım zamana kadar aktivite yapmaya devam ederim.	0	1	2	3 4
21.	Bir aktivitenin hepsini aynı anda yapmak yerine bölüm bölüm yaparım.	0	1	2	3 4
22.	Ağrımı daha kötü yapacağını biliyorsam bir aktiviteye başlamam.	0	1	2	3 4
23.	Ağrımın az olduğu günlerde fazladan işler yaparım.	0	1	2	3 4
24.	Bir aktivite yaparken durmayı ve ara vermem gerektiğini hatırlarım.	0	1	2	3 4
25.	Bir şeyin ağrımı daha kötü yapacağını biliyorsam onu daha fazla yapmam.	0	1	2	3 4
26.	Bir aktivite yaparken hepsini bir defada yaparım.	0	1	2	3 4
27.	Tüm aktiviteyi yapmak yerine onu küçük parçalara böler ve her defasında birini yaparım.	0	1	2	3 4
28.	Aktivitelerimi ağrımı daha kötü yapan işleri yapmayarak azaltırım.	0	1	2	3 4
29.	Bir aktivite yaparken bir süre çalışırım, mola veririm ve sonra tekrar çalışmaya geri dönerim.	0	1	2	3 4
30.	Bazı günler çok iş (aktivite) yaparım, diğer günler pek fazla iş (aktivite) yapmam.	0	1	2	3 4

Kaçınma: 1, 6, 8, 11, 13, 16, 19, 22, 25, ve 28.

Aşırıya kaçma: 2, 4, 7, 10, 15, 18, 20, 23, 26, ve 30.

Düzene sokma: 3, 5, 9, 12, 14, 17, 21, 24, 27, ve 29.

APPENDIX 7.7. Roland-Morris Disability Questionnaire (RMDQ)

ROLAND MORRIS ENGELLİLİK ANKETİ		
Hastanın Adı Soyadı:		Tarih:
Bel ağrınız olduğunda her zaman yapmakta olduğunuz bazı işleri yapmakta güçlük çekebilirsiniz. Aşağıdaki listede, bel ağrısı olan kişilerin ifade ettiği bazı yakınmalar bulunmaktadır. Bunlardan bazıları veya hepsi sizin de bel ağrınız yüzünden çekmekte olduğunuz bazı sıkıntıları tanımlıyor olabilir. Aşağıdaki ifadeleri okuyup, her ifade için, size uygun olan EVET veya HAYIR cevabını işaretleyiniz.		
		EvettHayır
1	Bel ağrım yüzünden zamanımın büyük çoğunluğunu evde geçiriyorum.	☐ 1 ☐ 0
2	Belimi rahatlatmak için sık sık ayakta duruş,oturuş,yatış şeklimi değiştirmek zorunda kalıyorum.	☐ 1 ☐ 0
3	Bel ağrım yüzünden eskisinden daha yavaş yürüyorum.	☐ 1 ☐ 0
4	Bel ağrım yüzünden evde yaptığım birçok işi artık yapmıyorum.	☐ 1 ☐ 0
5	Bel ağrım yüzünden merdivenleri çıkarken tırabzanlara tutunuyorum	☐ 1 ☐ 0
6	Bel ağrım yüzünden dinlenmek için sık sık uzanıyorum.	☐ 1 ☐ 0
7	Bel ağrım yüzünden sandalyeden kalkarken bir yere tutunmak ihtiyacı duyuyorum.	☐ 1 ☐ 0
8	Bel ağrım yüzünden bazı işlerimi başkalarına yaptırıyorum.	☐ 1 ☐ 0
9	Bel ağrım yüzünden eskisinden daha yavaş giyiniyorum.	☐ 1 ☐ 0
10	Bel ağrım yüzünden sadece kısa süre ayakta kalabiliyorum.	☐ 1 ☐ 0
11	Bel ağrım yüzünden eğilmekten ve çönmekten kaçınıyorum.	☐ 1 ☐ 0
12	Bel ağrım yüzünden sandalyeden kalkarken zorluk çekiyorum.	☐ 1 ☐ 0
13	Belim hemen hemen her zaman ağrıyor.	☐ 1 ☐ 0
14	Bel ağrım yüzünden yatakta dönmekte güçlük çekiyorum.	☐ 1 ☐ 0
15	Bel ağrım yüzünden iştahım azaldı.	☐ 1 ☐ 0
16	Bel ağrım yüzünden çoraplarımı giymekte zorluk çekiyorum.	☐ 1 ☐ 0
17	Bel ağrım yüzünden sadece kısa mesafeleri yürüyebiliyorum.	☐ 1 ☐ 0
18	Bel ağrım yüzünden rahat uyuyamıyorum.	☐ 1 ☐ 0
19	Bel ağrım yüzünden bir başkasının yardımıyla giyiniyorum.	☐ 1 ☐ 0
20	Bel ağrım yüzünden günün büyük bir kısmını oturarak geçiriyorum.	☐ 1 ☐ 0
21	Bel ağrım yüzünden evdeki ağır işleri yapmaktan kaçınıyorum.	☐ 1 ☐ 0
22	Bel ağrım yüzünden eskisine göre huzursuz ve sinirliyim.	☐ 1 ☐ 0
23	Bel ağrım yüzünden merdivenleri her zamankinden daha yavaş çıkıyorum.	☐ 1 ☐ 0
24	Bel ağrım yüzünden zamanın çoğunu yatakta geçiriyorum.	☐ 1 ☐ 0
Toplam Puan (0-24): _____		

APPENDIX 7.8. Hospital Anxiety and Depression Scale (HADS)

HASTANE ANKSİYETE VE DEPRESYON SKALASI (HADS)

Hasta Adı Soyadı:

Tarih:

Bu anket sizi daha iyi anlamamıza yardımcı olacak. Her maddeyi okuyun ve son birkaç gününüzü göz önünde bulundurarak nasıl hissettiğinizi en iyi ifade eden yanıtın yanındaki kutuyu işaretleyin. Yanıtınız için çok düşünmeyin, aklınıza ilk gelen yanıt en doğrusu olacaktır.

1) Kendimi gergin “patlayacak gibi” hissediyorum.

- ☐ Çoğu zaman
- ☐ Birçok zaman
- ☐ Zaman zaman, bazen
- ☐ Hiçbir zaman

2) Eskiden zevk aldığım şeylerden hala zevk alıyorum.

- ☐ Aynı eskisi kadar
- ☐ Pek eskisi kadar değil
- ☐ Yalnızca biraz eskisi kadar
- ☐ Neredeyse hiç eskisi kadar değil

3) Sanki kötü bir şey olacakmış gibi bir korkuya kapılıyorum.

- ☐ Kesinlikle öyle ve oldukça da şiddetli
- ☐ Evet, ama çok da şiddetli değil
- ☐ Biraz, ama beni endişelendiriyor
- ☐ Hayır, hiç de öyle değil

4) Gülebiliyorum ve olayların komik tarafını görebiliyorum.

- ☐ Her zaman olduğu kadar
- ☐ Şimdi pek o kadar değil
- ☐ Şimdi kesinlikle o kadar değil
- ☐ Artık hiç değil

5) Aklımdan endişe verici düşünceler geçiyor.

- ☐ Çoğu zaman
- ☐ Birçok zaman
- ☐ Zaman zaman, ama çok sık değil
- ☐ Yalnızca bazen

6) Kendimi neşeli hissediyorum.

- ☐ Hiçbir zaman
- ☐ Sık değil
- ☐ Bazen
- ☐ Çoğu zaman

7) Rahat rahat oturabiliyorum ve kendimi gevşek hissediyorum

- ☐ Kesinlikle
- ☐ Genellikle
- ☐ Sık değil
- ☐ Hiçbir zaman

8) Kendimi sanki durgunlaşmış gibi hissediyorum.

- ☐ Hemen hemen her zaman
- ☐ Çok sık
- ☐ Bazen
- ☐ Hiçbir zaman

9) Sanki içim pır pır ediyormuş gibi bir tedirginliğe kapılıyorum.

- ☐ Hiçbir zaman
- ☐ Bazen
- ☐ Oldukça sık
- ☐ Çok sık

10) Dış görünüşüme ilgimi kaybettim.

- ☐ Kesinlikle
- ☐ Gerekli kadar özen göstermiyorum
- ☐ Pek o kadar özen göstermeyebilirim
- ☐ Her zamanki kadar özen gösteriyorum

11) Kendimi sanki hep bir şey yapmak zorundaymışım gibi huzursuz hissediyorum.

- ☐ Gerçekten de çok fazla
- ☐ Oldukça fazla
- ☐ Çok fazla değil
- ☐ Hiç değil

12) Olacakları zevkle bekliyorum.

- ☐ Her zaman olduğu kadar
- ☐ Her zamankinden biraz daha az
- ☐ Her zamankinden kesinlikle daha az
- ☐ Hemen hemen hiç

13) Aniden panik duygusuna kapılıyorum.

- ☐ Gerçekten de çok sık
- ☐ Oldukça sık
- ☐ Çok sık değil
- ☐ Hiçbir zaman

14) İyi bir kitap, televizyon ya da radyo programından zevk alabiliyorum.

- ☐ Sıklıkla
- ☐ Bazen
- ☐ Pek sık değil
- ☐ Çok seyrek

APPENDIX 7.9. Graded Chronic Pain Scale Version 2.0 (GCPS 2.0)-Original Version

GRADED CHRONIC PAIN SCALE VERSION 2.0

The 3 item Graded Chronic Pain-Primary Care Scale items are denoted by ♣

Q1. On how many days in the **last six months** have you had [ANATOMICAL SITE] pain? _____ Days

Q2. How would you rate your [ANATOMICAL SITE] pain **RIGHT NOW**? Use a scale from 0 to 10, where 0 is "no pain" and 10 is "pain as bad as could be"?

NO PAIN											PAIN AS BAD AS COULD BE
0	1	2	3	4	5	6	7	8	9	10	

Q3. In the last three months, how would you rate your **WORST** [ANATOMICAL SITE] pain? Use the same scale, where 0 is "no pain" and 10 is "pain as bad as could be".

NO PAIN											PAIN AS BAD AS COULD BE
0	1	2	3	4	5	6	7	8	9	10	

♣ Q4. In the last three months, **ON AVERAGE**, how would you rate your [ANATOMICAL SITE] pain? Use the same scale, where 0 is "no pain" and 10 is "pain as bad as could be"? [That is, your usual pain at times you were in pain.]

NO PAIN											PAIN AS BAD AS COULD BE
0	1	2	3	4	5	6	7	8	9	10	

♣ Q5. In the last three months, how many days did your [ANATOMICAL SITE] pain keep you from doing your **USUAL ACTIVITIES** like work, school or housework?

	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Days	None	1	2	3-4	5-6	7-10	11-15	16-24	25-60	61-75	76-90
(Score)	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

♣ Q6. In the last three months, how much has [ANATOMICAL SITE] pain interfered with your **DAILY ACTIVITIES**? Use a 0 to 10 scale, where 0 is "no interference" and 10 is "unable to carry on any activities"?

NO INTERFERENCE											UNABLE TO CARRY ON ANY ACTIVITIES
0	1	2	3	4	5	6	7	8	9	10	

Q7. In the last three months, how much has [ANATOMICAL SITE] pain interfered with your **RECREATIONAL, SOCIAL AND FAMILY ACTIVITIES**? Use the same scale, where 0 is "no interference" and 10 is "unable to carry on any activities"?

NO INTERFERENCE											UNABLE TO CARRY ON ANY ACTIVITIES
0	1	2	3	4	5	6	7	8	9	10	

Q8. In the last three months, how much has [ANATOMICAL SITE] pain interfered with your **ABILITY TO WORK**, including housework? Use the same scale, where 0 is "no interference" and 10 is "unable to carry on any activities"?

NO INTERFERENCE											UNABLE TO CARRY ON ANY ACTIVITIES
0	1	2	3	4	5	6	7	8	9	10	

APPENDIX 7.10. Graded Chronic Pain Scale Version 2.0 (GCPS 2.0)-Turkish Version

DERECELİ KRONİK AĞRI ÖLÇEĞİ SÜRÜM 2.0

3 maddelik Dereceli Kronik Ağrı-Birinci Basamak Bakım Ölçeği maddeleri ♣

S1. Son altı ay içerisinde toplamda kaç gün (....)* ağrınız oldu? _____Gün

S2. ŞU ANDA yaşadığınız (....)* ağrınızı nasıl değerlendirirsiniz? 0 ile 10 arasında bir ölçek kullanın; burada 0 "ağrı yok" ve 10 "olabilecek en kötü ağrı" anlamına gelmektedir.

AĞRI YOK OLABİLECEK EN KÖTÜ AĞRI
0 1 2 3 4 5 6 7 8 9 10

S3. Son üç ayda yaşadığınız EN KÖTÜ (....)* ağrınızı nasıl değerlendirirsiniz? Aynı ölçeği kullanın; burada 0 "ağrı yok" ve 10 "olabilecek en kötü ağrı" anlamına gelmektedir.

AĞRI YOK OLABİLECEK EN KÖTÜ AĞRI
0 1 2 3 4 5 6 7 8 9 10

S4. ♣Son üç ayda yaşadığınız (....)* ağrınızı ORTALAMA olarak nasıl değerlendirirsiniz? Aynı ölçeği kullanın; burada 0 "ağrı yok" ve 10 "olabilecek en kötü ağrı" anlamına gelmektedir.

(Burada, hep ağrılı olduğunuz zamanlarda yaşadığınız ağrının derecesi belirtilmelidir.)

AĞRI YOK OLABİLECEK EN KÖTÜ AĞRI
0 1 2 3 4 5 6 7 8 9 10

S5. ♣Son üç ayda yaşadığınız (...ağrısı)* ağrı sizi iş, okul veya ev işi gibi HER ZAMANKİ AKTİVİTELERİ yapmaktan kaç gün alıyordu?

Gün	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
(Puan)	Hiç	1	2	3-4	5-6	7-10	11-15	16-24	25-60	61-75	76-90
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

S6. ♣Son üç ayda yaşadığınız (...ağrısı)* ağrı GÜNLÜK AKTİVİTELERİNİZİ (giyinmek, yemek yemek, banyo yapmak, alışverişe gitmek) ne kadar engelledi? 0 ile 10 arasında bir ölçek kullanın; burada 0 "hiç engel olmadı" ve 10 "hiçbir aktivite yapılamadı" anlamına gelmektedir.

HİÇ ENGEL OLMADI HİÇBİR AKTİVİTE YAPILAMADI
0 1 2 3 4 5 6 7 8 9 10

S7. Son üç ayda yaşadığınız (...ağrısı)* ağrı EĞLENCE, SOSYAL VE AİLE AKTİVİTELERİNİZİ ne kadar engelledi? Aynı ölçeği kullanın; burada 0 "hiç engel olmadı" ve 10 "hiçbir aktivite yapılamadı" anlamına gelmektedir.

HİÇ ENGEL OLMADI HİÇBİR AKTİVİTE YAPILAMADI
0 1 2 3 4 5 6 7 8 9 10

S8. Son üç ayda yaşadığınız (...ağrısı)* ağrı, ev işleri de dahil, ÇALIŞMA KABİLİYETİNİZİN ne kadarını engelledi? Aynı ölçeği kullanın; burada 0 "hiç engel olmadı" ve 10 "hiçbir aktivite yapılamadı" anlamına gelmektedir.

HİÇ ENGEL OLMADI HİÇBİR AKTİVİTE YAPILAMADI
0 1 2 3 4 5 6 7 8 9 10

* (....) İşaretli bölümlere sorgulamak istediğiniz anatomik alanı yerleştirerek alana spesifik bir şekilde değerlendirme yapabilirsiniz.

APPENDIX 7.11. Scoring rules for a chronic pain Prognostic Risk Score and classification criteria for possible and probable chronic pain based on Prognostic Risk Score and the GCPS

Item	Item Value			Risk Score Value*
Usual pain intensity (Q4)	0-3			0
	4-6			1
	7-10			2
Worst pain intensity (Q3)	0-4			0
	5-7			1
	8-10			2
Current pain intensity (Q2)	0-2			0
	3-4			1
	5-10			2
Interference with daily activities (Q6)	0-2			0
	3-4			1
	5-10			2
Interference with work/household activities (Q8)	0-2			0
	3-4			1
	5-10			2
Interference with family/social activities (Q7)	0-2			0
	3-4			1
	5-10			2
Days of activity limitation due to pain in the prior three months (Q5)	0-2			0
	3-6			1
	7-15			2
	16-24			3
	25-90			4
Number of (other) pain sites	0			0
	1			1
	2			2
	3			3
	4			4
Number of days with pain in the prior six months (Q1)	0-30			0
	31-89			1
	90-120			2
	121-160			3
	161-180			4
Depression symptom severity scale	PHQ-9 Depression	SCL-90-R Depression	Hospital Anxiety and Depression Scale	
	0-5	<0.50	0-3	0
	6-9	0.50 - <1.00	4-7	1
	10-13	1.00 - <1.50	8-10	2
	14-18	1.50 - <2.00	11-12	3
	19 +	2.00 +	13 +	4
Cut-points for classification of chronic pain based on Prognostic Risk Score for primary care pain patients and for general population samples.				
General population samples				
Low risk				0-4 points
Intermediate risk				5-11 points
Possible chronic pain (50%+ risk)				12-17 points
Probable chronic pain (80%+ risk)				18+ points
Primary care samples				
Low risk				0-7 points
Intermediate risk				8-15 points
Possible chronic pain (50%+ risk)				16-21 points
Probable chronic pain (80%+ risk)				22+ points

