

# THE RELATIONSHIP BETWEEN PSYCHOLOGICAL DISTRESS AND CHRONIC PAIN CONDITIONS AMONG PATIENTS AT PHYSIOTHERAPY CENTERS



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July 2023

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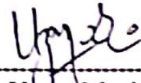
A Research Thesis submitted to the  
DEPARTMENT OF PSYCHOLOGY  
in partial fulfillment of the requirements for the degree of  
BACHELOR OF SCIENCE IN PSYCHOLOGY

Faculty of Management and Social Sciences  
Capital University of Science & Technology,  
Islamabad  
July 2023

## CERTIFICATE OF APPROVAL

It is certified that the Research Thesis titled "Relationship Between Psychological Distress and Chronic Pain Conditions among Patients at Physiotherapy Centers" carried out by Sana Tariq, Reg. No. BSP193062, under the supervision of Ms. Uzma Mushtaq, Capital University of Science & Technology, Islamabad, is fully adequate, in scope and in quality, as a Research Thesis for the degree of BS Psychology.

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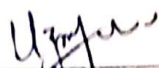
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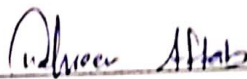
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Supervisor  
Ms. Uzma Mushtaq



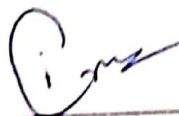
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## **DEDICATION**

### ***To my friends***

*I dedicate this thesis to my friends for their moral support and valuable insights through my journey. It is because of these great souls that I was able to accomplish my goal. The entire research journey had been a really hard one and demanding because of challenging circumstances and in such times the unwavering support I received from my friends helped me firmly*

## DECLARATION

It is declared that this is an original piece of my own work, except where otherwise acknowledged in text and references. This work has not been submitted in any form for another degree or diploma at any university or other institution for tertiary education and shall not be submitted by me in future for obtaining any degree from this or any other University or Institution.



**Sana Tariq**

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**July 2023**

## **ACKNOWLEDGMENT**

I praise and thank ALLAH SWT for His greatness, love and mercy and for blessing me strengths and virtues to pursue my purpose. I am really thankful to my supervisor Ms. Uzma Mushtaq for her dedication, guidance and help in writing this paper and for providing me the moral support, cooperation, and understanding in difficult times. I am also heartily thankful to my fellows Menahil Ashfaq, Hassan Abbas and Arooba Arshad for extending unmatched support in my research.



## ABSTRACT

Pain and stress are situations that compromise a person's homeostasis, and both share a lot of mental and physiological processes. Pain signifies a condition that combines psychological and biological elements. Chronic pain, however, is more complex and exhibits high rates of comorbidity with psychological disturbance and emotional distress. The affective component is highly underestimated and misunderstood that results in failure to resolve chronic pain conditions. The intricate connection between physiological pain with many forms of psychological stress is vital to study. This study aimed to examine the extent to which the psychological factors are associated with Chronic pain. Purposive sampling technique was used to gather data from participants who were referral for pain management at physiotherapy centers. DASS-21 and chronic pain assessment scales were administered. Data was analyzed using SPSS version 26.0. Significant Correlation coefficient was found between anxiety, depression stress and chronic pain ( $r=.42^*$  to  $.43^*$ ). As expected, psychological distress was found to be significantly associated with chronic pain. Increased distress level tends to increase or exacerbate chronic pain and vice versa. This study highlights the need for increased awareness about medical diagnosis and psychophysiology of pain chronification and illness among those working in mental health and the medical community.

**Keywords:** Chronic Pain, Depression, Anxiety, Stress

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## Chapter 1: Introduction

The term "chronic pain" refers to a type of pain that lasts for months to years after the initial memory of the pain and damage (Sufka, 2018). Chronic pain is no longer adaptive, unlike acute pain. WHO recognizes chronic pain as a disease, include specific code for it in ICD-11 and establishes seven subcategories of chronic pain conditions. (Anson, 2019). Numerous studies have shown the impact of chronic pain on the population's mental health and well-being. In both developed and developing nations, a significant proportion of people suffer from chronic pain disorders. According to statistics, 80% of the adults in U.S have high grade chronic pain (Dahlhamer, 2018). 20% to 30% of adults suffer from the common disease of chronic pain (Cohen, 2021).

In the United States, chronic pain conditions such as musculoskeletal top the list of chronic impairments, and 1 in 4 people in both developed and developing nations experience chronic musculoskeletal pain. (Tsang et al., 2008). After musculoskeletal pain, neuropathic pain is regarded as the second most common cause of chronic pain (Akram, 2019). In an organization, pain is the main factor in medically linked absenteeism, which results in a loss of more than 50 million workdays just in the United States.

Patients with chronic pain utilize medical services 15 times more frequently than non-chronic pain patients. Furthermore, despite the availability of therapeutic alternatives, chronic pain continues to negatively impact patients' quality of life, and pain in nearly half of the population is not managed effectively and leads to poor quality of life (Hadi, 2019)

Psychological Distress is defined as an emotionally distressing state characterized by symptoms of anxiety (e.g., restlessness and feeling tense), depression (loss of interest, sadness and hopelessness) and somatization in reaction to a particular stressor that causes permanent and temporary harm. It is widely used to reflect individuals' mental health and well-being (Price, 2000).

Chronic pain and associated impairment are life altering conditions with significant psychosocial consequences and psychiatric disorders are extremely prevalent in such patients. Pre-existing psychological issues may in some situations make the patient more vulnerable to developing chronic pain. In some instances, the psychological issues could be a direct result of the pain problem. Consequently, when pain arises along with anxiety, sadness, stress, or other psychological disorders, it can be a source of causality to a mental illness, as well as in other issues the pathway ranges from mental illness to pain (Bruns et al., 2005).

Depression and anxiety are two stress related psychiatric disorders that are extremely prevalent. They are highly disabling illnesses with poorly understood physiology and extremely common in acute and chronic pain conditions. Chronic pain can be made worse and more persistent by environmental and physical variables, which can then result in abnormal behaviors such as depression, anxiety and disability (Michaelides et al., 2019). 25,916 people were surveyed by the World Health Organization where psychological factors were discovered to have an influence in medical patients from throughout the world and a stronger factor for impairment than was as illness severity (Larman, 2015).

The biomedical model is ineffective in the management of chronic pain with physiotherapy being the first line of treatment for pain management for patients who are looking for some alleviation from their excruciating suffering and agony (Bendelow, 2013). Participants found it difficult to express their needs when their interactions with health care professionals. Exacerbated practical difficulties and unmet expectations, and has led to a loss of hope for recovery (Gjesdal et al., 2018)

The scholarly literature suggests in general that chronic pain sufferers visiting physiotherapy centers frequently experience psychological issues. Psychological aspects are difficult for physiotherapists to handle with confidence. Also, to properly address psychological problems, physiotherapists lack the necessary time. Although there is little evidence to support it, evidence-based guidelines propose that psychological problems be addressed.

If not detected and treated, they may obstruct a patient's treatment progress and bring on persistent symptomatology. This psychological distress may worsen the patient's overall level of distress, and impede with functioning. It also supports the necessity to give troubled people additional time to investigate these subjects (Cowell et al., 2018).

Research on the prevalence and correlates of chronic pain conditions and their links to mental illnesses is expanding, but there are few national studies on adult population. The goal of the study is to raise awareness of the burden chronic pain pose on the mental health of the sufferers. The current study examines how chronic pain conditions relate to the spectrum of both depressive and anxiety disorders and additional potential mental health impacts, less well understood.

## **Literature Review**

### ***Chronic Pain and Stress***

Stress and chronic pain are both closely associated (Davis et al., 2017). Pain has long been known to be exacerbated and caused by psychological and emotional suffering. It has been discovered that people with chronic pain have dysregulated stress response systems. They have been shown to have altered stress reactions to both pain and ordinary everyday situations (Presseau, 2018).

A growing body of literature identifies the harmful impact of ACE's in bringing about chronic health conditions and psychological distress in adulthood. Psychosocial stress during childhood is indicative of increased mental and physical illness during adulthood. The extent to which adversity in childhood raises the likelihood of chronic pain and psychological distress in adults of all ages, but particularly in young people, is currently less well understood. The usual stress response mechanisms mediated by the brain are being taken over by toxic stress. Normal brain development, architecture, and function are disrupted by persistent overactivity of the stress response, which also alters immune and endocrine system.

It has even been shown to produce heritable changes in the epigenome. Childhood adversity and maltreatment have wide-ranging effects on adults' cognitive, physical, emotional, and social development (Sonu et al., 2019).

Moreover, the Central Nervous System is commonly mentioned when discussing chronic pain. Nervous system dysregulation is a hallmark of allostatic stress, also known as system wear and tear from excessive use, which is connected to disease, including the emergence of chronic pain. It is physically and mentally demanding to live with constant pain. Chronic stress has been shown to alter the amounts of neurochemicals and stress hormones in the brain and nervous system, which has impacts on mood, thinking, and behavior (Trimmers, 2019).

Correspondingly, pain is frequently regarded as a symptom of disorders connected to stress, including psychological ailments like anxiety and depression. According to a review of psychological risk factors, depression, worry, and other related emotions have been linked to spinal pain and impairment. A clear connection between psychological factors and neck and back pain was found in the literature that was available. Acute, subacute, and chronic pain were all linked to psychological factors, according to prospective research. It was discovered that key determinants included anxiety, stress, and mood as well as cognitive function and pain behavior. The effects of personality were inconsistent. Abuse was discovered to be another potential significant influence, despite the low degree of evidence. Both the etiology of acute pain and chronic pain, particularly during the shift from acute to chronic difficulties, are significantly influenced by psychological variables. Accordingly, assessment and intervention must take these variables into account. Particular psychological variable types emerge and may be significant at different developmental time points. Even still, the multidimensional view is highlighted because psychological components only explain a portion of the variance. (Linton, 2000).

Research also suggests that stress and unpleasant emotions associated with pain may have an impact on cognitive functioning. (Hart et al., 2003). A study linking stress, pain and cognitive impairment assessed the variables through self-reported measures of 20 female patients.

It was found that pain and stress related exhaustion leads to cognitive dysfunction (Sandstorm, 2011). Additionally, from the qualitative data, it has been reported by patients that chronic pain interferes with bodily functions, work, relationships and family life, social life, sleep, and mood. Threat learning, which also plays a role in the process, is a crucial mediator mediating the link between stress and chronic pain. Patients in qualitative interviews report that one of the key elements in the onset and maintenance of pain is learning to perceive it as a danger or emotionally charged stressor (Hadi MA, 2019).

### ***Chronic Pain and Depression***

Depression is described as "a common mental condition, characterized by persistent sorrow and loss of interest in typically enjoyable activities, accompanied by an incapacity to carry out everyday activities, lasting at least two weeks" on the DSM- V criteria. Additionally, individuals with depression frequently experience several of the following: losing energy, changing appetite, sleeping more or less, having trouble concentrating, being unable to make decisions, being restless, feeling worthless, guilty, or hopeless, and having suicidal or self-destructive thoughts. It was observed that anxiety and depression longitudinally predicted chronic pain symptoms and disability (Sheera et al., 2015).

Chronic pain is associated with nearly half of the people with diagnosis of Major Depressive Disorder. Depression is a major predictor of chronicity in all chronic pain syndromes (Allaz & Cedraschi, 2015). Because of its relationship with worsened subthreshold depressive symptoms, pain increases the chance of depression recurrence. A longitudinal study on 1122 individuals with remitted depression and anxiety disorder studied the impact of specific chronic diseases and pain. These results demonstrate the significance of shining light on neurobiological connections in order to optimize pain and depression care and support the hypothesis that there is a mutually reinforcing process between pain and depression (Gerrits, 2014).

Interestingly, a study found that musculoskeletal disorders and depression had a significant correlation.

A study conducted on patients visiting primary care center found that depression was strongly correlated with musculoskeletal disorders (Antonopoulou et al., 2009). Also, it is interesting to note that a lower hippocampus volume is found in those who are at risk for PTSD and depression, and it also predicts the likelihood that back pain will linger three years following the onset of a fresh episode of subacute back pain. The largest neuroimaging study on 1868 subjects found significantly smaller hippocampus volume in PTSD and depressive subjects (Abdullah et al., 2017). Similarly, a cross-sectional study of 149,611 participants with chronic multisite pain found strong and positive correlation with major depression and bipolar disorder. The link between mood disorders and pain is proven to be increasingly significant and both act as a risk factor for each other with prolonged pain leading to increased mood dysregulation. This highlights the complex biological and psychological overlap between pain and mood disorders (Michaelides, 2019).

### ***Chronic Pain and Anxiety***

The association between anxiety and chronic pain has been well documented in the literature. Anxiety is caused by cognitive variables such as perceived impact of suffering and loss, and the destruction of one's ability to control pain. The manifestation of anxiety can be seen in the bodily states as chronic muscular tensions, contractions and tightness. 50-80 military veterans and survivors of trauma report chronic pain. (Cedraschi et al., 2013).

A study conducted on neuropathic pain in Pakistan showed strong association of chronic pain with anxiety and stress and not with depression. At the National Institute of Rehabilitation Medicine (NIRM) Hospital in Islamabad, 306 volunteers were the subjects of a cross-sectional survey over the course of six months. (Akram & Malik, 2019).

Waheed et al., (2006) in their study on chronic rheumatology disorders in Pakistan highly recommend screening for psychological distress. The results of the study highlighted that two third of the patients had mood disorders with 65.8% suffering from depression and anxiety.

Similarly, it was found that individuals with chronic low back pain are at increased risk of anxiety and depression. It is concluded that there exists a significant association of chronic low back pain with psychological factors. The prevalence for abnormal levels of anxiety and depression was found to be 55% and 48.5% in chronic back pain conditions (Sagheer, 2013). Surprisingly, there are contrasting evidences. Tsang et al., (2008) drew the conclusion that the majority of people who report pain do not fit the diagnostic criteria for a depression or anxiety disorder, depression/anxiety spectrum illnesses linked to pain. Although there is less literature published about the relationship between anxiety and pain, studies consistently show that there is a connection between the two, with increasing anxiety causing a greater perception of pain severity and a lower pain tolerance.

The importance of chronic stress and its relationship with chronic pain conditions is evident though research. However, little research has been carried out to link chronic pain conditions such as musculoskeletal conditions with psychological markers in Pakistan. No known studies have been conducted to establish the association linking psychological distress and chronic pain condition.

The current study will concentrate on the role psychological distress plays in common chronic multisymptomatic pain diseases including fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, chronic back pain and mental health of individuals attending physiotherapy centers to elucidate the shared biology.

## **Theoretical Framework**

### ***Biopsychosocial model***

This study draws on biopsychosocial model given by (George Engel, 1977). The model proposes that chronic pain conditions cannot be understood without taking into account physiological, psychological and social dimensions. Stress and pain can be two poles in a vicious circle of negative responses to environmental challenges leading to compromised well-being.

In the light of this model pain is viewed as psychophysiological behavior pattern and is considered to be a complex of psychological and physiological processes that are continuously being influenced by the environmental factors. It has been found that psychological and social processes influence the brain pain mechanisms.

All somatic, cognitive, emotional and social are the factors that influence the patient's pain state. The model postulates that even mild chronic stressors can hasten disease progression, and offers a potential conceptual framework for understanding the interaction between biological and psychological components in chronic pain. (APA, 2016).

According to this model, the relationship between stressors, coping skills, and neuroendocrine function impacts the presence of pain and disease. Psychosocial mechanisms linking pain, depression and anxiety are addressed using biopsychosocial model. The bio-psycho-social model should be the foundation of treatment, and one of the clinician's skills is determining which components of this bio-psycho-social "equation" are responsible for the patient's discomfort (Semmons, 2016).

Research on mind body connection also studies the relationship between mental events (thoughts, memories, and emotions) and bodily changes (Gamsa, 1994). Numerous studies have looked into the potential role of physical responses like muscle activity, vascular changes, or autonomic arousal in relation to pain disorders like headaches, myofascial pain, and low back pain with mixed results (Flor et al., 1991). The evidence has suggested a clinical biopsychosocial assessment for the physiotherapeutic management of patients with chronic pain in order to understand the mechanisms behind pain and psychosocial factors that can help with the condition.

### **Rationale**

Chronic pain is accepted as inevitable, goes untreated, and receives little research attention (Brien & Breivik, 2012), Research on chronic conditions and persistent pain has been conducted on aging and older population.



Among older persons, poor sleep quality and low self-rated health were connected with psychological distress, chronic diseases, and ongoing pain. However, persistent pain as a significant risk factor for poor mental and physical health in young adults has not been well studied (Yang et al., 2021).

Earlier research findings suggest that a sizable part of emotional distress in chronic pain patients is linked to psychosocial factors that are either subsequent to or present at the same time as the pain. Healthcare practitioners are significantly underinformed about the psychophysiological and biopsychosocial elements that may contribute to and aggravate the symptoms of pain. Additionally, psychological distress in patients with chronic pain may be induced and is made worse by stressors that are ongoing or unresolved including childhood maltreatment, family conflict, life experiences, loss as well as family dysfunction (Keefe et al., 1992).

Psychosocial assistance provided earlier in time can help prevent chronic pain diseases in the long run (Walker et al., 2001). However, psychotherapy's positive effects on people who suffer from chronic pain have not been thoroughly researched. With the use of the screening method, practitioners can quickly and easily assess patients in clinical settings to find out what is causing their psychological discomfort and whether there are any prospects for therapeutic intervention. The assessments can provide essential clinical information about patient's mental health status and substantially impact the choice of treatment (Alishrir et al., 2008).

In the light of recent developments in chronic pain research, the present study assists in providing psychoeducation to the general public, caregivers, physiotherapists, and mental health experts for aiding and treating chronic pain disorders.

### **Research Objectives**

1. To assess the relationship between chronic pain and psychological distress among patients at physiotherapy centers.

2. To identify the differences in psychological distress of pain patients when grouped by adverse life events as children.

### **Hypothesis**

H1: There will be a significant positive relationship between psychological distress and chronic pain

H2: There will be a significant positive relationship between chronic pain and depression

H3: There will be a significant positive relationship between chronic pain and anxiety

H4: There will be a significant positive relationship between chronic pain and stress

H5: There is a significant difference in psychological distress when grouped by adverse life events as children.

## **Chapter 2: Methods**

### **Research Design**

This quantitative study intended to find out the relationship between the two variables: chronic pain and psychological distress among chronic pain patients. Cross sectional research design was used for this study.

### **Ethical Consideration**

The research required adherence to the principles of respect for people in pain, Nonmalifecence and justice in a way reciprocally valuable to the participant and the researcher. A permission letter from Psychology department of Capital University of Science and Technology was obtained to conduct the study. Permission was also taken from physiotherapy head of departments of the respective hospitals. The names of data collection settings are not mentioned for the purposes of anonymity and confidentiality and in order to avoid any possible ethical issues. Those participants that met the criteria were briefed about the purpose of the study and how their voluntary participation will benefit future sufferers of chronic pain. They were provided with an informed consent form with the right to withdraw. Data was not gathered from participants with more intense pain conditions. No identifying information was taken from the participants and confidentiality of responses was maintained by keeping all record of responses sealed and anonymous.

### **Population and Sample**

The sample size for this study was 80 and age range from 18-40 were included. According to Erik Erikson's theory of psychosocial development young adulthood is a time of maximum disorder, unpredictability and change. Marriage, relationships, parenthood and job changes are frequent and have consequences for physical and mental health. After approaching the sample in physiotherapy centers it was specified that all patients with chronic pain are eligible. Since, physiotherapy is an emerging field in Pakistan, only a few people try physiotherapy for their condition and painful conditions hinder research participation a sample size of 80 was selected.

It was only feasible to approach only a sample of 80 in the limited duration for the study. Since, participants also find it difficult and worrisome to talk about pain. The sample selection was made keeping all factors in context.

### **Inclusion criteria**

Participants having chronic pain conditions for more than three months potentially met our inclusion criteria. Participant had broad range of pain types such as neuropathic and arthritic. Participants meeting the below criteria, were recruited in the study.

1. Both Males & Females.
2. Chronic Pain >3 months.
3. Age  $\geq 18 \leq 40$  Years.
4. Subjects consenting to participate in the study.

The study focused on the pain experiences of adults male and female between an age range 18-40.

### **Exclusion criteria**

Exclusion criteria include accidental cases and medical conditions unrelated to primary pain. Participants receiving treatment for psychiatric disorders other than depression and anxiety.

### **Sampling procedures/ Technique**

Purposive sampling technique was used to bring in diverse cases of chronic pain individuals with respect to age, socioeconomic status and gender, pain duration and type. Purposive sampling technique was most suitable to use to recruit participants of chronic pain i.e., having a pain condition for more than three months.

### **Measures/ Instruments**

Participants completed two survey question instruments DASS-21 and CPGS-R. The demographic form comprised of ten items and was developed by the author to obtain information on gender, socioeconomic status, marital status, employment status, pain onset, diagnosis of pain, pain condition, cause of pain, adverse life events as children and treatment received.

The demographic sheet provided valuable insight in evaluating patient's pain history and treatment received. This information was also relevant in exploring the cause of patient's pain condition. The information also helped to categorize patients in terms of their pain duration and type. The demographic sheet is attached in Appendix D in the Appendices.

### ***DASS-21***

DASS-21 translated by Aslam, N and Kamal, A (2017) at NIP was administered to measure psychological distress in individuals older than 17 years. Permission was granted by the author to use DASS-21 on chronic pain population. It contains 21 items and responses are given on a 4- point Likert scale (0 to 3). The Cronbach alpha value for Pakistani sample is 0.89 (Bibi, A et al., 2020). DASS-21 contains 21 items divided into three subscales, indicating how much statement applies to the respondent over the past 1 week from "did not apply at all" to "applied very much." The computed score (sum of rating) for each domain will be multiplied by two to compute the final score and severity was categorized based on the cut-off scores values. Score ranges lie in five categories; normal, mild, moderate, severe and extremely severe.

### ***Chronic Pain Grade Scale-Revised***

Chronic Pain Grade Scale developed by Korff, M. V (2020) was administered to assess chronic pain grade. It is a brief, simple, easy to score scale used for chronic pain assessment in health research and in clinical practice. It was found that the scale shows significant differences across the four chronic pain grades for different indicators of detrimental health status and shows excellent concurrent validity (Korff et al., 2021).

The CPGS-R consists of 6 items that measure pain severity as mild, bothersome and high-grade chronic pain. Chronic pain sufferers are assigned to Grades 1 (Mild), 2 (Bothersome), or 3 (Chronic).

The three-item PEG (pain, enjoyment, general activity) scale, which measures the degree of pain during the previous seven days, is graded by participants on a range of 0 to 10.

A PEGsummary score of 12 or higher, or an average score of 4 or higher across the three items, was used to define bothersome chronic pain, whereas a PEG score of 11 or less was used to definemild chronic pain.

People with chronic pain are classified in Grade 3 if they say that pain impairs their living activities or work on most days or every day in the preceding three months. (Item 2 High impact chronic pain). The remaining chronic pain sufferers are graded at Grade 2 if their PEG total score is 12 or above (Bothersome chronic pain). Grade 1 is assigned to those with chronic pain that is not severe and whose PEG score is less than 12. (Mild chronic pain). The scale lies in the public domain and can be freely used without getting author's consent (Kroff, 2020). The scale was translated into Urdu language following the WHO's translation process.

### ***Forward Translation***

The CPGS-R was translated into Urdu language by two independent, bilingual translators. The two translators independently translated the CGPRS-R from English to their respective language, i.e., Urdu. They were instructed to use simple, clear, and concise language to convey the meaning of the original scale. The two translations were then synthesized into a single Urdu version of the CGPRS-R by a third party who was proficient in both English and Urdu. An expert committee, which comprised of professionals, researchers, and linguists, reviewed the synthesized Urdu version of the CGPRS-R. The committee checked for any discrepancies, errors, and cultural appropriateness. The final Urdu version of the CGPRS-R is then produced, incorporating any changes suggested by the expert committee and pre-testing phase.

### ***Backward translation***

Two independent, bilingual translators were selected. The two translators independently translated the final Urdu version of the CGPRS-R back into English. The two backward translations were then synthesized into a single English version of the CGPRS-R by a third party who was proficient in both English and Urdu.

The expert committee reviewed the synthesized English version of the CGPRS-R, checking for any discrepancies or errors in translation.

### ***Comparison of Original and Backward Translations***

The original English version of the CGPRS-R was then compared to the synthesized English version obtained through backward translation. Any differences were identified and resolved.

### ***Final Urdu Version***

The final Urdu version of the CGPRS-R was then produced, incorporating any changes suggested by the expert committee and comparison of original and backward translations.

### **Procedures**

Data collection support letter was taken from university department for the conduction of the study. The sample was recruited from physiotherapy centers in Rawalpindi and Islamabad, Pakistan. After the grant of permission from the respective departments, eligible participants were approached and informed about the purpose of the study. Those willing to participate were made to sign the informed consent form. Data was collected using two standardized instruments Depression, Anxiety and Stress Scale (DASS-21) and Chronic pain grade scale revised (CPGS-R) and was entered into SPSS. A pilot study phase was initially conducted to find out the psychometric properties of Chronic pain grade scale revised

### ***Pilot Study***

A pilot study was conducted to address the psychometric properties of the translated version of CPGS-R. The sample comprised of 20 participants with chronic pain. The internal consistency and alpha coefficient were computed which indicate good range of reliability  $\alpha = .75$  for the scale to be reliable for use in the main cross-sectional study. Hence, the translated version of the scale was effective and appropriate in the context of the pain population.

### **Chapter 3: Results**

The present study aimed to examine the relationship between psychological distress and chronic pain conditions. Data analysis was carried out by using SPSS- version 26. The chapter presents the results of the study along with descriptive statistics and alpha reliability coefficients of scales. Inferential statistics using spearman correlation was computed to examine the relationship between variables. Man-Whitney U test was applied to examine mean differences across demographic factors.

#### **Participants**

Patient participants were a purposive sample of 80 adults recruited from physiotherapy centers who were coming for evaluation and pain management. Participants were between 18-40 years old. Among them a vast majority were female participants (n=63, 78.8%) and few male participants (n=17, 21.3%) with chronic pain. Data was collected by individual administration of the instruments by the researcher for this study.

#### **Demographics**

Patients were diverse in terms of socioeconomic status, with (n = 10, 12.5%) classified as lower, majority (n = 64, 80%) as middle, and only few (n = 6, 7.5%) as upper class. Majority of the patients were unemployed (n= 62, 77.5%) and married (n=45, 56.3%).



**Table 1.***Sociodemographic characteristics of sample (N=80)*

<b>Variables</b>	<b>Categories</b>	<b>f</b>	<b>%</b>
<b>Age in years</b>	18-40	80	100
<b>Gender</b>	Male	17	21.3
	Female	63	78.8
<b>Socioeconomic status</b>	Lower	10	12.5
	Middle	64	80
	Upper	6	7.5
<b>Employment Status</b>	Employed	18	22.5
	Unemployed	62	77.5
<b>Marital Status</b>	Married	45	56.3
	Unmarried	35	43.8
<b>Pain Onset</b>	Below 1 year	9	11.3
	1 year	26	32.5
	2 years	2	2.5
	3 years	8	10
	4 years	13	16.3
	Above 5 years	22	27.5
<b>Diagnosis</b>	Yes	47	58.8
	No	23	28.8
	Unsure	10	12.5
<b>Name of Diagnosis</b>	Musculoskeletal Pain/Back and Neck pain	46	57.5
	Visceral	13	16.3
	Unknown	16	20
	Abdominal Pain	4	5
	Infections	1	1.3
<b>Cause of Pain</b>	Death of a Loved one	4	5
	Nerve Compression	8	10
	Overuse/Underuse	14	17.5
	Unknown	4	5
<b>Adverse Life Events as Children</b>	Yes	28	35
	No	52	65
<b>Treatment Received</b>	Pain Medications (Opioids)	35	41.95
	Physiotherapy	22	27.6

Muscle relaxants/antidepressants/Antianxiety/Sleep Aids	18	23.25
Therapy/ Emotional Support/Pain/Counselling	4	5

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*Note.* f = frequency of sample, %= percentage of sample, \*no missing values

Surprisingly, vast majority of study participants reported primarily musculoskeletal pain (n = 46, 57.5%), with depression/stress (n=50, 62.6%) as the most common cause; most managed pain with medication (n =45, 41.95%) and physiotherapy (n = 22, 27.6%) but few reported receiving psychotherapy and emotional support (n=4, 5%). Finally, participants were asked about adverse life events they may have experienced as children. Only a few participants(n=28, 35%) reported experiencing adverse life events and a significant proportion reported having no significant traumatic life event (n = 52, 65%) as children.

**Table 2***Descriptive Statistics of scales used in the study (N= 80)*

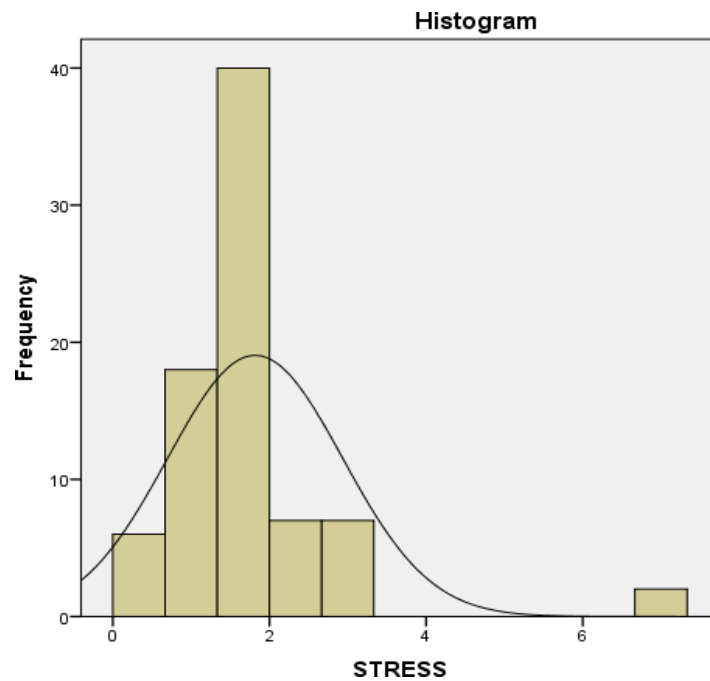
Scale	M	SD	$\alpha$	Range		Skewness	Kurtosis	K-S	p
				Potential	Actual				
<b>CPGS-R</b>	30	5.95	0.77	0-24	2-4	-0.89	0.36	0.36	0
<b>DASS-21</b>	4.69	2.34	0.91	0-63	0-4	0.25	–	–	–
<b>Stress</b>	1.82	1.11	0.67	0-21	0-7	2.86	0.23	0.23	0
<b>Anxiety</b>	1.39	0.65	0.82	0-21	0-2	-0.5	0.15	0.15	0
<b>Depression</b>	1.48	0.77	0.89	0-21	0-3	-0.02	0.11	0.11	0.01

*Note. CPGS-R = Chronic Pain Grade Scale, DASS= Depression, Anxiety and Stress Scale, M= Mean, S.D = Standard Deviation,  $\alpha$ = Cronbach Alpha, K-S = Kolmogorov Smirnov test, statistic ( $p < .05$ )*

Table 2 represents, CPGS-R having  $\alpha$  value of .770 and DASS-21 having a value of .91 respectively. Both scales showed excellent internal consistency reliability. Stress, anxiety and depression were calculated from DASS-21 and the subscales showed moderate to good reliabilities. The values of K- S, skewness and kurtosis and normality curves in histogram all parameters reflected non-normal distribution.

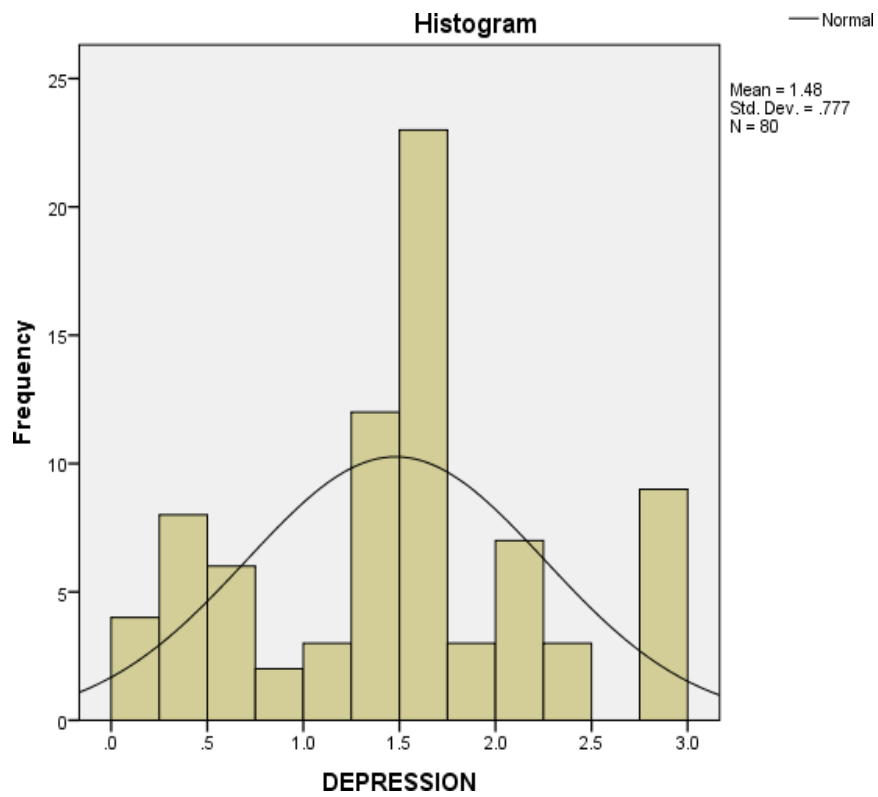
## Distribution Curve

Histograms showing the distribution curve for Urdu Depression, Anxiety and Stress Scale for (N = 80) are represented below.



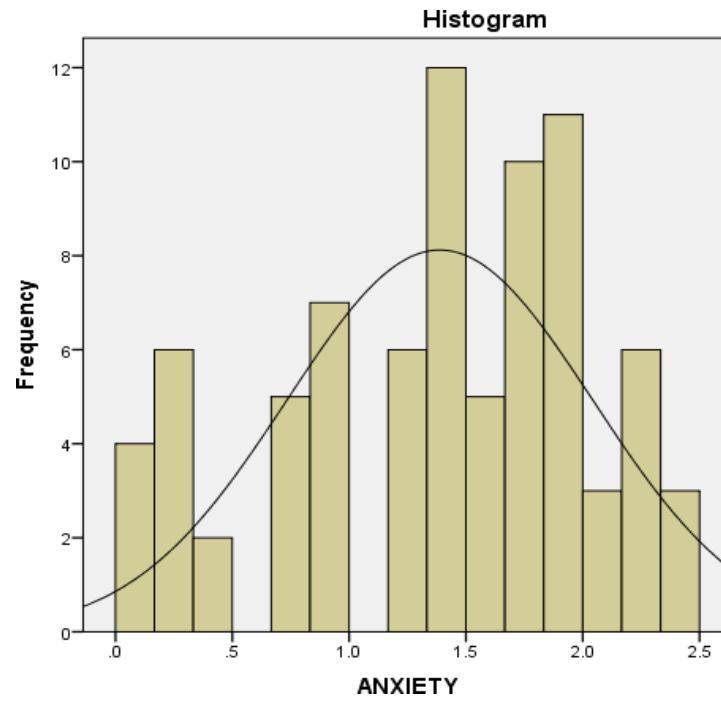
**Figure 1:** Histogram of stress measured by Depression, Anxiety and Stress Scale (DASS-21)

The figure of the normality curve shows that the curve was negatively skewed and non-normally distributed.



**Figure 2:** *Histogram of depression measured through Depression, Anxiety and Stress Scale (DASS-21)*

Figure 2 shows normality curve for depression in the sample. The curve indicates non-normal distribution.



**Figure 3:** *Distribution of anxiety measured through Depression, Anxiety and Stress scale (DASS-21)*

Figure 3 depicts non-normal distribution for anxiety in the sample.

**Table 3***Spearman Rank-Order Correlation Between Scales and Subscales*

<b>Variables</b>	<b>n</b>	<b>M</b>	<b>SD</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1.CPGS-R</b>	80	3.54	0.59	-				
<b>2.DASS-21</b>	80	-	-	.53**	-	-		
<b>3. Stress</b>	80	1.82	1.11	.42**	-	1	-	
<b>4. Anxiety</b>	80	1.39	0.65	.43**	-	.75**	1	-
<b>5. Depression</b>	80	1.48	0.77	.43**	-	.88**	.78**	1

Note. \*\* $p < 0.01$ , correlation is significant at 0.01 level (1- tailed)

Spearman's order correlation was run to examine the relationships between level of psychological distress and chronic pain. There was positive and significant correlation between psychological distress and chronic pain,  $r = .53$ ,  $n = 80$ ,  $p = < .001$ . There was positive and significant correlation between stress and chronic pain,  $r = .42^{**}$ ,  $n = 80$ ,  $p = < .001$ , anxiety and chronic pain  $r = .43^{**}$ ,  $n = 80$ ,  $p = < .001$  and depression and chronic pain  $r = .43^{**}$ ,  $n = 80$ ,  $p < .001$ .

**Table 4***Differences of Psychological distress and Adverse Life Events as Children (N=80)*

		<b>Mean Rank</b>		<i>M</i>	<i>U</i>	<i>r</i>	<i>p</i>
		Yes	No				
<b>ALE</b>	<b>as</b>	37.46	46.14	1.65	570.00	0.20	.06
<b>children</b>							

*Note. ALE =Adverse life events as children, U = Man Whitney U, r = effect size, p = significance value*

A Man-Whitney U test indicated, on average that the psychological distress levels of participants who did not experience significant adverse life events as children (Mean Rank= 37.46, n = 52) not significantly exceeded those who experienced such events (Mean Rank = 46.14, n=28), U = 570.00, z =. -1.84.



## **Chapter 4: Discussion**

A correlational study was conducted to find the association between psychological distress and chronic pain conditions among pain patients. The sample for the study comprised of 80 participants having a pain condition for more than three months. 80 participants successfully completed the study while those with intense pain conditions and accidental cases were excluded from the study. The sample was recruited from public and private physiotherapy centers in Rawalpindi and Islamabad. The findings bring valuable insights into our primary research objectives. Out of those who participated majority reported Grade 3 i.e., High impact Chronic Pain (n=47), with almost half a number reported Grade 2 i.e., Bothering chronic pain (n=29), while only a few participants reported Grade 1 i.e., Mild Chronic Pain (n=4). As expected, psychological variables accounted for significant associations with chronic pain states

### **Demographic Characteristics**

Most of the participants in the study were married females, unemployed, and belonged to middle socioeconomic class. The most reported pain condition by the participants were musculoskeletal pain (57.5%) amongst all the conditions. Depression and stress were regarded as the most common cause of their condition. While the majority of participants in the study reported using medication to manage their symptoms on daily basis, it is important that only a few considered the benefits of therapy and emotional support in managing chronic pain. Only a few participants receiving psychotherapy may be due to financial barriers, a lack of access to mental health services or a stigma associated with seeking help for mental health issues (Knaak, 2017).

### **Hypotheses of study**

It was hypothesized that there will be a positive association between psychological distress and chronic pain. In the present study, psychological distress, including anxiety, depression, and stress, has been found to be strongly associated with chronic pain.

The results from Table 4 and 5 revealed a significant positive relationship between psychological distress and chronic pain.

The findings suggest that people with chronic pain states tend to exhibit higher psychological distress levels. When distress levels increase patients felt more pain and increased pain was also found to be associated with increased distress levels. The three variables anxiety, depression and stress play a role in the pain experience in such a way that they partly produce and intensify it. The findings are consistent with the previous literature investigating the relationship between psychological distress and chronic pain, and the evidence that these factors are closely related. Hwang et al. (2020) found that individuals with chronic pain were more likely to have symptoms of anxiety and depression compared to those without chronic pain. The study also found that higher levels of anxiety and depression were associated with greater pain severity and interference with daily activities.

Similarly, a review by Karp et al. (2021) concluded that psychological factors such as anxiety, depression, and stress can contribute to the onset and maintenance of chronic pain. Our study findings are hence consistent with the literature and emphasize the importance of processing emotional problems contributing to pain condition. Following we will discuss the interplay between psychological variables and pain states.

Another hypothesis to be tested was the association between depression and chronic pain states. According to the results of the study, depression appears to be significantly and positively correlated with chronic pain. These findings suggest that the relationship between psychological factors and chronic pain is complex, and that depression may play a unique role the development and maintenance of chronic pain. It is possible that the negative affect associated with depression may increase the perception of pain, or that the physiological changes associated with depression may alter pain processing pathways. Similar findings have been demonstrated that depression is a strong predictor of chronic pain, and that individuals with depression are more likely to experience chronic pain than those without depression.

A meta-analysis of 41 studies found a significant association between depression and chronic pain, with a moderate effect size ( $r = 0.43$ ). In contrast, the association between anxiety and chronic pain was weaker ( $r = 0.32$ ), and the association between stress and chronic pain was not statistically significant ( $r = 0.11$ ). However, we found all three variables to be significant in the study. Further research is needed to better understand the mechanisms underlying the relationship between depression and chronic pain, and to develop effective interventions.

H3 tested the association between anxiety and chronic pain. The positive correlation observed between anxiety subscale and chronic pain grades indicate that higher levels of anxiety are associated with chronic pain conditions. The explanation for this finding lies in the pathway between anxiety and increased muscle tension in the body. A study conducted by Linton & Gotestam (2010) on relations between pain, anxiety, mood and muscle tension in chronic pain patients showed that correlation between muscle tension and pain was fairly high (.78). The mechanisms lying under this association are complex, but it is believed that anxiety can increase muscle tension and reduces pain coping strategies.

H4 was formulated to find out the relationship between stress and chronic pain states. The positive correlation observed between stress subscale and chronic pain grades indicate that higher levels of stress are associated with chronic pain conditions. Stress is thought to bring about chronic states of pain through similar mechanisms and physiological actions as anxiety e.g., muscle tension and increased arousal in the body. However, it's possible that the link is more intricate. The connection between the chronic pain may not be one-way, there may be mediating factors, and the "common link" between them may refer to several underlying structures, such as pain-related arousal.

H5 was formulated to identify differences in psychological distress levels of participants who had experienced significant adverse life events as children. The differences observed in Table 6 provide additional insights into the study variables.

While no significant differences were found in distress levels of participants with and without any adverse childhood experiences literature provides the contrary evidence. The findings are hence not consistent with the previous research that has reported the impact of ACE's suggesting that adverse life events experienced during childhood have been shown to have a significant impact on an individual's health and well-being later in life. Studies have shown that individuals who experienced adverse life events during childhood are at higher risk for developing mental health disorders, chronic pain, and physical health problems later in life.

A study conducted Ericsson, N et al., (2007) on childhood abuse and neglect found that compared to people without abuse histories, those who had experienced it reported increased health issues. Participants who had suffered abuse and neglect felt higher pain than participants without histories of abuse when they had a current health issue. Abuse and neglect in childhood was linked to more pain being reported. These elevated pain reports were not primarily caused by the higher rate of depression that was observed among adults who had been abused as children. Instead, reports of pain were independently influenced by childhood abuse and sadness. Taken together, the evidence available presents a novel conceptual framework, based on the biopsychosocial model of pain, for comprehending the consequences of Adverse childhood experiences on the emergence of juvenile chronic pain.

However, when it comes to the question of whether or not participants experienced adverse life events during childhood and differences in their distress and pain reports, the results are contrasting in the study. A vast majority of patients who reported high psychological distress did not experience adverse life events as children. The explanation of the finding has to do with the lack of understanding of what constitutes trauma or adverse life events. Participants may not have recognized or acknowledged experiences that could be considered traumatic, leading to underreporting of any traumatic events. However, the verbal reports of many participants indicated that significant life events in adulthood such as marriage, having children have impacted and brought about their pain condition.

Therefore, it is important for healthcare providers to be aware of and consider the impact of childhood and adolescence trauma when treating chronic pain.

### **Conclusion**

Addressing psychological distress in individuals with chronic pain may be important for improving both pain management and overall health outcomes. Current treatment options considered to treat chronic pain are medications, psychiatric medication and physiotherapy. Overall, the evidence suggests that there is a strong association between psychological distress and chronic pain. These findings highlight the importance of addressing psychological factors in the treatment of chronic pain and suggests that interventions targeting psychological distress may be effective in improving pain management and overall health outcomes.

## **Limitations**

Limitations do occur in the study, and because of the nature of bachelor's study data limits our study to correlational design that fails to draw the causal inference. It is recommended to conduct clinical interviews with participants to help draw the causal factors behind chronic pain syndrome.

## **Recommendations and Implications**

The research holds promising prospects towards understanding and treating chronic pain. Screening for mental health should be considered for effective resolution and preventing long term negative outcomes for sufferers. It is significant to the healthcare professionals in particular for psychotherapists to provide psychoeducation to clients on pain chronification and its associated affective dimensions. Professional should be educated to recognize, acknowledge and effectively treat chronic pain. Interdisciplinary cooperation is necessary for improved standardized care.

Further, support programs and therapy should be initiated and future research should study in depth the causal relationship between chronic pain and emotional disturbances so that measures can be taken to fix emotional problems associated with chronic pain conditions. It is probable that lowering high levels of anxiety and depressions can benefit chronic pain. Holistic and integrative approach should be taken involving psychologists. Future research should study the psychotherapeutic implications and protective factors central to the connection between psychological factors mediating pain.

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## Appendices

### Appendix A

#### Depression, Anxiety and Stress Scale (DASS-21)

نوٹ: متعلقہ این ایف ڈی ایف اسکالے سے جو گریڈز ملنے لگتے ہیں وہ ان آپ گریڈز سے ملنے ہوتے ہیں ان کے ساتھ 0، 1، 2، 3 میں سے کسی ایک عدد پر نشان لگائیں۔ واضح ہے کہ آپ کے جوابات کو گریڈز یا اعداد سے نہیں لگایا جائے گا۔ کسی بھی ایف ڈی ایف اسکالے پر زیادہ وقت خرچ نہ کریں۔

نمبر سوال	بہت کم	بہت زیادہ	بہت کم	بہت زیادہ
	0	1	2	3
1- میرے دل پر سکون ہو رہا ہے اور مشکل ہو جاتا رہا ہے۔				
2- مجھے یہ احساس ہوتا رہا ہے جیسے میرا دل جھک رہا ہو۔				
3- مجھے کسی قسم کے مثبت جذبات محسوس نہیں ہوتے۔				
4- مجھے سانس لینے میں دشواری محسوس ہوتی رہی ہے (الٹریٹیو جسمانی مشقت دسلے کام کے)۔				
5- مجھے کسی کام کے کرنے کیلئے آواز کرنا مشکل محسوس ہوتا رہا ہے۔				
6- میں نے بعض حالات میں غیر ضروری ردعمل کا اظہار کیا۔				
7- مجھے کچھ بات محسوس ہوتی رہی ہے (مثلاً باتوں میں)۔				
8- میں نے جھوٹے کاموں یا کاموں میں بہت زیادہ دلچسپی ڈالی استعمال کر رہی / رہا ہوں۔				
9- میں ایسے حالات سے گھبراتی گھبراتا رہا جن میں میرے اپنی رائے اور میری رائے میں جتنی جتنی کا خدشہ ہوتا ہے۔				
10- میں اپنا مستقبل چار چوکے محسوس کرتی / کرتا رہا۔				
11- مجھے اپنے آپ میں چڑچڑاہٹ محسوس ہوتی رہی۔				
12- میں کافی بے سکونی محسوس کرتی / کرتا رہا ہوں۔				
13- میں اداسی محسوس کرتی / کرتا رہا۔				
14- میرے لیے اس چیز پر غصہ کرنا درست قرار دیا جاتا ہے جو میرے کام میں رکاوٹ پیدا کرے۔				
15- مجھے محسوس ہوتا رہا ہے کہ جیسے مجھے دور چلنے کا ہے۔				
16- مجھے کسی بھی کام میں دلچسپی نہیں رہی۔				
17- مجھے محسوس ہوتا رہا کہ میں کسی قابل نہیں ہوں۔				
18- مجھے محسوس ہوتا رہا کہ میں بہت تھکتا ہوں اور چلتا / چلتا ہوں۔				
19- مجھے باہر سے کسی جسمانی مشقت کے دل کی دھڑکن محسوس ہوتی رہی۔				
20- میں اکثر کسی چیز کے خوفزدہ ہوتا ہوں / چلتا رہا۔				
21- مجھے یہ احساس ہوتا رہا کہ زندگی بے عمل ہے۔				



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مکمل طور پر

داخلت نہیں کرتا

6. کیا آپ درد یا درد کی حالت کی وجہ سے کام نہیں کر رہے یا کام کرنے سے قاصر ہیں؟

نہیں

ہاں

## Appendix C

### Informed Consent Form

#### رضامندی فارم

میں، ثنا طارق کیپٹل یونیورسٹی آف سائنس اینڈ ٹیکنالوجی میں بی ایس سائیکالوجی کی طالبہ ہوں - میں آپ کو اپنی تحقیق میں حصہ لینے کی دعوت دیتی ہوں - تحقیق فزیوتھراپی مراکز میں مریضوں کے درمیان دائمی درد کے حالات میں نفسیاتی پریشانی کا پتہ لگانے کے لیے کی جا رہی ہے۔

اس تحقیق میں حصہ لینے کے لئے؛ آپ کو دینے گئے سوالنامے پر کرنے ہوں گے۔ سوالناموں پر آپ کے جوابات اور شناخت کو خفیہ رکھا جائے گا۔ آپ سوالناموں کا جواب دینے سے انکار کر سکتے ہیں اور آپ بغیر کسی سوال کے ایسا کر سکتے ہیں۔ آپ کے ڈیٹا کو خفیہ رکھا جائے گا اور صرف تحقیق کے مقصد کے لئے استعمال کیا جائے گا۔ آپ کو کسی بھی موقع پر تحقیق سے دستبردار ہونے کا حق ہے۔ مطالعہ سے حاصل ہونے والے نتائج آپ کے علاج اور معاشرے کے لیے فائدہ مند ہوں گے۔

براہ کرم رابطہ کریں اگر آپ کو مطالعہ کے بارے میں سوالات ہیں،

ای میل: tariqsana69@gmail.com

میں سمجھتا / سمجھتی ہوں کہ میری شرکت رضاکارانہ اور میرے علاج اور کمیونٹی کے لیے فائدہ مند ہے۔ میں رضاکارانہ طور پر اس تحقیق میں حصہ لینے پر راضی ہوں۔

دستخط

ثنا طارق

شکریہ

## Appendix D

## Demographic Information Form

معلومات کا فارم

درج ذیل اٹمنز کے لیے، براہ کرم پُر کریں اور وہ جواب منتخب کریں جو سب سے موزوں ہو۔

عمر

18-29 سال

30-40 سال

صنف

مرد

عورت

دوسرے

سماجی و اقتصادی حیثیت

نیچے

درمیانی

اوپری

ملازمت کی حیثیت

ملازم

بے روزگار

ازدواجی حیثیت

شادی شدہ

غیر شادی شدہ

درد کا آغاز/درد کا دورانیہ سالوں میں 10-15



یا آپ کے پاس اپنے درد کی تشخیص/پتہ (diagnosis) ہے؟

ہاں

نہیں

غیر یقینی

اگر ہاں تو آپ کے دائمی درد کی تشخیص کیا ہے؟

آپ کے خیال میں دائمی درد کی وجہ کیا ہے؟

کیا آپ نے بچپن میں زندگی کے کسی منفی واقعات کا تجربہ کیا ہے (مثلاً، بچپن میں بدسلوکی)؟

ہاں

نہیں

غیر یقینی

آپ کو اپنے درد کی حالت کے لیے کیا علاج تجویز کیا گیا؟

درد کی دوائیں (Opioids)


پٹھوں کو آرام دینے والے/اینتی ڈپریسنٹس/اینتی اینگریٹتی/موڈ اسٹیلائزرز/نیند کی امدادی دوا

فزیو تھراپی

درد سے متعلق مشاورت/جذباتی مدد/تھراپی

اگر آپ کو پچھلے 3 مہینوں میں کبھی درد نہیں ہوا تو سوالات کو چھوڑ دیں

1. پچھلے 3 مہینوں میں، آپ کو کتنی بار درد ہوا

**Appendix E****Approval Letter for Data Collection**


Capital University of Science and Technology  
Islamabad

Islamabad Expressway, Kahuta Road,  
Zone - V, Islamabad, Pakistan  
Telephone : +92-(51)-111-555-666  
              : +92-51-4486700  
Fax: : +92-(51)-4486705  
Email: : info@cust.edu.pk  
Website: : www.cust.edu.pk

Ref. CUST/IBD/PSY/Thesis-383  
February 21, 2023

**TO WHOM IT MAY CONCERN**

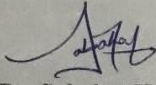
Capital University of Science and Technology (CUST) is a federally chartered university. The university is authorized by the Federal Government to award degrees at Bachelor's, Master's and Doctorate level for a wide variety of programs.

**Ms. Sana Tariq**, registration number **BSP193062** is a bona fide student in BS Psychology program at this University from Fall 2019 till date. In partial fulfillment of the degree, she is conducting research on "Burden of psychological distress in chronic pain conditions among patients at physiotherapy centers". In this continuation, the student is required to collect data from your institute.

Considering the forgoing, kindly allow the student to collect the requisite data from your institute. Your cooperation in this regard will be highly appreciated.

Please feel free to contact undersigned, if you have any query in this regard.

Best Wishes,



**Dr. Sabahat Haqqani**  
Head, Department of Psychology  
Ph No. 111-555-666 Ext: 178  
sabahat.haqqani@cust.edu.pk

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