

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Psychosomatic Pain

Ertuğrul Allahverdi

Abstract

Disorders that are not clearly attributable to an organic disease are called somatoform disorders. Their symptoms are called psychosomatic symptoms and include insomnia, fatigue, and weakness. These disorders can also be associated with heartburn, depression, irregular heartbeat, dizziness, pain, cardiovascular problems, gastrointestinal discomfort, erectile dysfunction, a sensation of pressure in the throat, chest problems, hallucinations, and double vision. Somatoform disorders can be an expression of untreated mental pain and life experiences, resulting from serious loss, profound personal injury, or disrespect. Such symptoms occur in almost all humans, but these disorders can have a serious effect in 4–20% of the population.

Keywords: psychosomatic, pain, chronic pain, stress

1. Introduction

Psychosomatic pain: “A combination of symptoms of physical pain in various body areas that occur during any life period, where treatment is sought for the pain by going to many health clinics, and resulting in disruption of social and/or occupational activities” [1–3].

“Soma” means the body. “Psychosomatic” diseases in psychiatry are mainly due to psychological causes that are not based on an organic etiology or physical disorders.

It is currently believed that conscious or unconscious emotions, thoughts, and behaviors are also effective in psychosomatic disease in biological organisms and should be evaluated together with the dual thoughts related to the body and mind status. The patient may use more atypical and exaggerated expressive words from time to time when defining psychogenic pain. The localization and periodicity of the patient’s pain can also be persistently atypical. The pain of the patient usually begins after some important life events and stresses. The emotional burden of the factors stimulating and triggering pain is reflected in the patient’s voluntary posture and the relevant muscle groups. A psychological dimension, depression and anxiety are usually noted among the accompanying symptoms. It is noteworthy that the characteristics of the pain do not conform to anatomical facts and physiological functioning. Besides, the response to analgesics is also often atypical. Accompanying symptoms such as anger, impatience, helplessness, boredom, and restlessness must be considered in patients with psychological pain.

Both psychosocial and biological factors always play a role in the development and pathophysiological mechanism of psychogenic pain [1–4].

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) reference book of diagnostic criteria in psychiatry explains psychosomatic diseases as follows [1–3]:

“A combination of multiple physical symptoms that occur within a period of time, with continuing search for treatment, and resulting in deterioration of social or professional life.”

The following criteria must be present to make a diagnosis of a psychosomatic disorder according to the DSM-IV:

- *Having at least four separate pains* (headache, abdominal pain, pain in the arms and legs, back pain, etc.)
- *Two gastrointestinal tract symptoms* (nausea, bloating, vomiting without pregnancy, diarrhea, gastric irritation)
- *One sexual function or genital system symptom* (menstrual irregularity, impotence in men, sexual aversion to women and men, etc.)
- *One neurological symptom* (impaired balance, regional paralysis or decreased strength, difficulty swallowing, double vision, deafness, loss of consciousness, etc.)
- *Lack of an organic disorder to explain these symptoms as a result of medical examination, laboratory investigations, and imaging methods*
- *No addiction to alcohol, drugs, or other substances*
- *Insecure and skeptical approach to psychiatric examination*
- Stress is one of the major causes of psychosomatic diseases. Stress causes many bodily functions to deteriorate or not work properly.
- The most common trigger of psychosomatic diseases is loss and separation.

The American Board of Medical Specialties and the American Psychiatry and Neurology Board have approved specialization in psychosomatic medicine in 2003. This decision has emphasized the importance of this field and also reintroduced the widespread use of the “psychosomatic” term [1–3].

The Diagnostic Criteria for Psychosomatic Research (DCPR) are considered to be more explanatory than the DSM-IV [1–3].

2. DCPR definition criteria

Persistent somatization subjects with a psychosomatic disorder are believed to have a higher incidence of other nonfunctional system (chronic fatigue) syndromes in the future with this approach, and these are called “multisomatoform disorder,” “pure somatization,” or “chronic somatization.” The functional somatic symptoms secondary to a psychiatric disorder are as follows:

a. Conversion symptoms

b. Anniversary reaction: the anniversary reaction defines the somatic, emotional, and behavioral responses at the anniversary of the period where a loss has been suffered.

2.1 Abnormal behavior

- a. **Health anxiety:** the health anxiety concept includes many different types of beliefs and fears related to illness and pain.
- b. **Fear of illness:** fear of illness is the unsupported and persistent fear that a specific illness (such as AIDS or cancer) is present despite examination results and assurances to be contrary, as defined in the DCPR.
- c. **Denial of illness:** the denial concept as specified in psychoanalytic theory is an ego defense mechanism against unpleasant thoughts. Denial has later been included in the emotion-focused coping strategies when faced with stressful conditions.
- d. **Fear of death (thanatophobia):** this is a sudden feeling or belief that the subject is about to die despite the lack of a medical reason. It must not be confused with the fear of unavoidable death.

3. The psychological aspect of disease: psychological factors influencing medical conditions

Demoralization (lack of resistance): hopelessness is the most important aspect. There is a loss of the feeling of usefulness/effectiveness. Mood reactivity is usually preserved.

Alexithymia: alexithymia is a personality type that is characterized by difficulty in recognizing emotions, difficulty communicating, and a cognitive structure and operative thought that focuses on external focus and external center adaptation.

Type A behavior: Type A behavior leads to taking care of more work in continually shorter times. Coronary disorders are more common in these subjects. They have irritable mood and are impatient and agitated.

Irritable mood: irritable mood is characterized by decreased anger control and usually results in verbal or behavioral bursts of anger.

It is important to have knowledge about the pain and its variety before psychosomatic pain, because pain can cause psychosomatic problems as well as result.

Pain is thought to be an important clinical and socioeconomic problem all around the world. We investigated the incidence, prevalence, and economic burden of pain conditions in children, adolescents, and adults based on the electronic scanning of databases for articles published between 2000 and 2014 in this review. Differences in methodology and the epidemiological studies make it difficult to give precise predictions of prevalence and incidence; however, the economic burden of psychosomatic pain is clearly high. There is a need to develop concepts and methods to examine pain from a population perspective and to advance the development of pain prevention and management strategies. Family physicians and clinicians have great responsibilities in the diagnosis and treatment of pain and especially psychosomatic pain within this context. The participation of physicians in multidisciplinary training and studies is also a fundamental principle [3, 5].

It is appropriate to explain psychosomatic pain primarily in accordance with general principles. Pain is a defining characteristic in the diagnosis of many diseases. It can serve as an index of the symptoms and activity of the disease or diseases and as a prognostic indicator and a predictor of the use of health care for the underlying etiology [1, 2]. The International Association for the Study of Pain (IASP) and the World Health Organization (WHO) describe pain as “an unpleasant

sensory and emotional experience associated with or described in relation to real or potential tissue damage or associated with such damage,” “an unpleasant sensory and emotional experience associated with existing or possible tissue damage or associated with such damage,” and “a protection mechanism” [2].

An overview of the epidemiology and economic burden of pain conditions in children, adolescents, and adults is summarized below under the relevant headings. The incidence and prevalence of pain conditions as well as the risk factors and the effect of pain on individuals have also been described. The wide range of pain conditions in clinical and research areas include pain in children and adolescents, spinal pain, neuropathic pain, musculoskeletal pain, and fibromyalgia/chronic diffuse pain. In addition to the factors associated with the prevalence of pain, the individual, economic, and social burden of pain conditions should also be considered.

4. Classification of pain

1. According to neurophysiological mechanisms

- a. Nociceptive
- b. Somatic
- c. Visceral
- d. Neuropathic (non-nociceptive) central or peripheral
- e. Psychogenic

2. According to the duration

- a. Acute
- b. Chronic

3. According to the etiologic factors

- a. Cancer pain
- b. Postherpetic neuralgia
- c. Pain due to sickle cell anemia
- d. Arthritis pain

4. According to the pain region

- a. Headache
- b. Facial pain
- c. Low back pain
- d. Pelvic pain

Before making a diagnosis of **psychogenic pain**, somatic pathology must be definitely eliminated. A diagnostic nerve block can be used for the diagnosis, and psychological or psychiatric conditions should be evaluated as a factor in pain etiology using the criteria in the DSM-IV and DCPR classifications. One must know the general pain definitions, classifications, and criteria well to be able act objectively when dealing with the diagnosis and criteria of psychosomatic pain. Psychosomatic pain is often found in the etiology together with the definitions provided below [1–3, 5].

5. Pain incidence and definition

Describing the epidemiology of pain is difficult because of the subjective nature of symptoms and the lack of consensus on the definitions of specific diagnoses and conditions. It is problematic to identify pain areas, especially with musculoskeletal pain. Many pain conditions are episodic, and the majority of patients express recurrent symptoms at varying intervals and durations during periods with and without pain. The actual incidence of most pain conditions may therefore remain unknown.

Similarly, study results vary due to differences in the identification of diffuse pain cases and the specific diagnosis. While case definitions may also vary depending on the duration, intensity, or psychological burden of pain in the patient, the diagnoses are based on subjective patient experience, clinical tests, or results of imaging and pathological studies. It may be difficult to compare studies reporting different periods of prevalence (e.g., timepoint, weekly, monthly, lifetime) [5].

6. The incidence and distribution of pain

6.1 Pain in children and adolescents

Pain conditions in children and adolescents have gradually become the focus of the scientific literature in recent years. The occurrence of pain in children evidence as indicates childhood or adolescence pain can predict adulthood pain. Children with pain discontinue their education or become withdrawn. Physical inactivity is a possible result. Low back pain, headache, and abdominal pain are the most common types of childhood and adolescence pain.

The reported 1-year incidence of low back pain in children and adolescents varies from 11.8 to 33.0% (median, 22.4%), while the 1-month prevalence varies from 9.8 to 36.0% (median, 22.9%). Since there are a lower number of studies on the prevalence of neck pain (49.0%) and upper back pain (30.0%), some doubt remains about the accuracy of these predictions. A systematic review of chronic pain epidemiology in children and adolescents (pain continuing for more than 3 months) has reported that the 1-month prevalence of chronic back pain was between 18.0 and 24.0% (median, 21.0%) [6–9]. In addition to these predictions obtained from systematic reviews, the 1-month prevalence of low back pain was reported to be 37.0% in more than 400,000 children and adolescents aged 11–15 years [10–14].

The predicted 1-month headache prevalence in children and adolescents is 26.0–69.0% (median, 47.5%) in systematic investigations. Swain et al. have reported this figure to be 54.1% in a survey based on 312 schools [15]. Recurrent abdominal pain (at least three episodes that limit the child's functions for at least 3 months) is the focus of most childhood and adolescence pain studies [16]. Recurrent abdominal pain prevalence has been reported as 0.3–19.0% (median, 8.4%) [17] and 3.8–41.2%

(median, 12.0%) [7]. Childhood and adolescence monthly multiple pain prevalence was 12.1–35.7% (median, 23.9%).

Further studies on pain epidemiology in children and adolescents are still required to evaluate the effect of age on the pain prevalence. The effects of the increased pain rates in childhood and adolescence and of the transition to adolescence on the incidence and prevalence of pain conditions are not clear at present [17].

6.2 Spinal pain

Spinal pain, and especially low back pain, is a common problem that most people experience at a certain point in their lives. The lifetime prevalence of low back pain is reported to be between 51.0 and 84.0%. There are many studies on the epidemiology of low back pain compared to other pain conditions.

Predictions for the 1-year first low back pain events varied between 6.3 and 15.4% (median, 10.9%) in one review [18] and between 13.5 and 26.2% (median, 19.9%) in others [11, 16, 18–22]. Predictions of the 1-year incidence of low back pain events (including patients with previous episodes) vary between 1.5 and 38.9% (median, 20.2%). Many people who experience activity-limiting low back pain recover quickly [23], but some have recurrent pains [24]. Predictions for the 1-year recurrence vary between 24.0 and 80.0% (median, 52.0%) [18].

Important information is present on the prevalence of low back pain. The 1-month prevalence is predicted to be between 24.0 and 49.5% (median, 36.8%) [25]. The prevalence of thoracic spine pain varies between 1.4 and 34.8% (median, 18.1%) [26], while the 1-month prevalence of neck pain varies between 15.4 and 45.3% (median, 30.4%) [27].

Chronic low back pain (CLBP) is usually defined as low back pain continuing for more than 12 weeks [28]. The prevalence of CLBP in the general European population has been predicted as 5.9–18.1% (median, 12%).

6.3 Neuropathic pain and sciatica

Neuropathic pain has been defined by the International Association for the Study of Pain as “pain caused by a lesion or disease of the somatosensory nervous system” [29]. It is differentiated from other inflammatory conditions by characteristic signs and symptoms such as “burning” or “freezing,” numbness, tingling, or “pins and needles” sensations [29]. There are only a few studies on the incidence and prevalence of neuropathic pain in the population.

Chronic pain with neuropathic features has a prevalence of 0.9–17.9% (median, 9.4%) [13]. Prevalence in cancer is 19.0–39.1% (median, 29.1%) [14]. The incidence is 3.9–42.0 per postherpetic neuralgia, 12.6–28.9 for trigeminal neuralgia, 0.2–0.4 for glossopharyngeal neuralgia, and 15.3–72.3 for painful diabetic peripheral neuropathy, respectively, all per 100.000 person years [13].

Sciatica is also called radiculopathy, nerve root compression-irritation, nerve root pain, or lumbosacral radicular syndrome [30]. The pain is believed to arise in the lumbar spine but is felt in the leg pain by the patline. The 1-year sciatica incidence is reported as 9.3% [30]. The 1-month sciatica prevalence varies between 0.4 and 16.4% (median, 8.4%) [31].

6.4 Musculoskeletal pain

Musculoskeletal system disorders are among the most common causes of disability and incapacity, especially in the elderly [32]. Upper extremity pain is also

common; monthly shoulder pain symptoms are present in 18.6–31.0% (median, 24.8%) of adults [33]. Monthly knee pain prevalence in adults is 13.0–28.0% (median, 20.5%) [34]. The prevalence was 28.0, 15.0, and 14.0% for foot ankle and toe pain in a review combining the reported figures [35].

6.5 Fibromyalgia and chronic diffuse pain

Chronic diffuse pain is defined as the presence of chronic pain with diffuse localization [36]. The American College of Rheumatology defines chronic diffuse pain as bilateral axial skeleton pain continuing for 3 months or more in its 1990 guidelines [37]. Fibromyalgia diagnostic criteria have been defined using the same definition [38]. Some fibromyalgia prevalence figures are 2.0–5.0% in the USA, 0.7% in Denmark, and 10.5% in Norwegian women. Fibromyalgia is a clinical diagnosis similar to other chronic pain conditions, and the lack of a clear definition therefore limits the comparison of prevalence predictions. The diagnostic criteria for fibromyalgia in the American College of Rheumatology's 2010 Criteria include the evaluation of diffuse pain together with the other symptoms (such as fatigue and cognitive symptoms) to develop a more specific case definition [38]. Future studies on the epidemiology of fibromyalgia are likely to increase the accuracy of current prevalence predictions by using this definition [39].

7. Prevalence tendencies over time

Only a few studies have evaluated the prevalence of pain conditions, and most have focused on the prevalence of low back pain. Palmer et al. [40] reported that the 1-year prevalence of low back pain increased by 12.7% over a 10-year period from 1987 to 1997, and this increase was associated with gender, age group, social class, and residence area. A contrasting decrease in the 1-month prevalence from 26.1 to 22.6% has been reported over a 7-year period in another study [41]. The chronic low back pain frequency in the USA has increased from 3.9 in 1992 to 10.2% in 2006 [42].

8. The effects of pain on health

Pain, and especially chronic pain, creates a significant burden for patients and their families. It adversely affects the general health perception, significantly inhibits daily activities, is associated with depressive symptoms, and significantly and negatively affects the relationships and interactions with others. The World Health Organization Global Burden of Disease uses the term “disability” to assess the potential for non-mortality-related disease. They define disability as any short- or long-term loss of health [43]. Disability-adjusted life years (DALYs) and years lived with disability (YLDs) are needed to measure and compare the limitations of a wide range of disorders associated with pain. Pain-related disorders that are characterized or defined by the presence of pain (low back pain, neck pain, other musculoskeletal disorders, migraine, and falls) constitute 5 of the top 10 conditions responsible for YLDs in the world. Acute low back pain has caused 83 million DALYs, and according to the effects of the chronic types of back pain, this constitutes 10.7% of all YLDs [43]. Neck pain and migraine/headache each account for about 24 million DALYs. Other musculoskeletal disorders are responsible for 28 million DALYs and traumas due to falls for 19 million DALYs. Other important contributions include osteoarthritis (17 million DALYs) and accident-related injuries

(13 million DALYs) [44]. These results for 1990 and 2010 supersede all previously published Global Burden of Disease results.

9. Risk factors for pain

It is difficult to determine the factors initiating pain episodes in the population as studies only specify an estimate due to the differences in the methodology and reporting. It is necessary to focus on the main risk categories such as age, gender, social group, and individual factors. Generally, there is no evidence for the risk factors of pain. Future studies that evaluate all aspects of the pain experience from both the individual and the population point of view are needed. These studies must employ multidimensional methods in the case of psychosomatic pain.

10. Age and gender

Studies on pain in children and adolescents have shown that females generally suffer more pain than males. The relationship between pain and gender is clear in adults. Females report more severe pain, more frequent pain, and longer-lasting pain than males in most studies. However, it is not known whether this gender difference is due to underlying biological pain mechanisms or the effects of psychological and social factors.

As regards age, the prevalence of some pain disorders such as back pain increases from childhood to adolescence. The effect of age is not relevant on the pain prevalence in the elderly as some studies report that it increases, while others report it decreases with age. The effect also varies by gender and the pain location [41]. It is believed that musculoskeletal pain is most common in adults in the employment age and the prevalence therefore decreases from the middle of the sixth decade [41]. However, recent studies have shown that pain continues to be a widespread and serious problem in the elderly. The prevalence of chronic pain in the active elderly (>65 years) varies between 25.0 and 76.0%, while it is much higher in the sedentary elderly at between 83.0 and 93.0% [41].

11. Social factors

The role of social factors continuously increases throughout life [45]. The socioeconomic status is usually measured by the complex created by education, income, and occupation. Many studies in children and adolescents have evaluated the relationship between pain and socioeconomic status, but there is some evidence of a conflict between these studies [7]. An inverse relationship is present between the socioeconomic status and pain prevalence in adults. The data show that lower educational status, low income, and being unemployed are related to increased pain prevalence [5].

More recently, pain prevalence studies have been conducted in populations of various cultural, ethnic, and socioeconomic statuses. Native Americans, Alaska Natives, and Aboriginal Canadians have been found to have a higher prevalence of pain than the general population of the United States [45]. Studies in Africa have found the 1-year prevalence of pain to be 33.0% in adolescents and 50.0% in adults [46]. This value is higher than reported in studies conducted in most Western countries (mean prevalence of 38.1%) [25]. However, it is difficult to make a definite comparison due to the differences in methodology. Another study based

on the World Bank Human Development Index has reported the prevalence of chronic pain to be 24.8% in less developed countries and 28.1% in more developed countries [47].

12. Individual factors

Various individual risk factors have been associated with the development of pain disorders. The demands of employment, lack of job security, an immobile job position, dissatisfaction with work, low levels of social support at work, and vibrating bodily work conditions have been associated with various occupational factors that lead to musculoskeletal pain. Individual lifestyle factors that create health problems such as smoking and obesity can also play a role in the development of pain disorders [34]. The psychosocial variables believed to influence the pain prevalence include stress, anxiety, lack of sleep, depression, low self-confidence, and the presence of chronic health problems (irregular heartbeat, dizziness, pain, cardiovascular problems, gastrointestinal discomfort, erectile dysfunction, feeling of lump or pressure in the throat, chest problems, hallucinations, and double vision).

Pain and disorders that are not clearly attributable to an organic disease are called somatoform disorders. These disorders can be an expression of untreated mental pain and life experiences resulting from serious loss, profound personal injury, and disrespect. These symptoms occur in almost all humans, but they can become a serious problem in 4–20% of the population [1–3, 5–9, 48].

Genetic research on pain is increasing, and chronic pain is being seen as a classic example of the gene–environment interaction [49]. It is generally believed that the first trigger of chronic pain syndromes are inflammatory processes or nerve trauma. Once chronic pain develops, the pain intensity and response to analgesics are also quite variable. However, evidence is lacking regarding the influence of genetic effects and the interaction with psychosocial environmental factors as regards the development of chronic pain. Patients with chronic pain feel that the cause is life challenges, but the disease also makes life more difficult. This contradictory approach is related to the importance attributed to the pain. A person with intrapsychic conflict may not have to express the problem verbally and may have to use the organs to do so (alexithymia).

The presence of enhancers in the environment: one example is caring for one's wife when she has pain but not caring when she does not. Other examples are as follows: finding comfort by suffering pain for a bad action; excessive interest in pain and then relaxing when the test results are normal (somatization); and feeling sure an illness is present and changing physicians frequently (hypochondriasis).

Type A persons (hasty, impatient, hyperactive) perceive pain more easily than type B persons (calm, cool), probably due to autonomic hyperactivity. The risk of hypertension and coronary heart disease is 3–5 times higher in type A persons [50, 51].

13. The financial effects of pain

13.1 Total cost

The cumulative cost of chronic pain to the patient, the health-care system, and the economy is huge. In Australia, with a population of 22.7 million, the total annual cost of chronic pain was estimated as 34.3 billion dollars in 2007 or 10.847 dollars

per person [52]. The total cost in Europe is estimated as 1.5–3.0% of the European GDP [53]. In the USA, approximately 100 million adults have been affected by chronic pain in 2008, including joint pain and arthritis [54]. The total cost in 2010 was 560–635 billion dollars. The annual cost of pain is higher than that of heart disease (309 billion dollars), cancer (243 billion dollars), and diabetes (188 billion dollars) [53, 55–60].

The term psychosomatic means the person. It combines two basic components, including the mind and the body. The reason is that physical complaints are at the forefront. However the research will investigate if there are any physical symptoms to explain such bodily complaints.

There is no medical illness, and this is a definable psychiatric disorder.

14. Examples of psychological problems seen with psychosomatic pain disorders

1. **Somatoform disorders:** (a) somatization disorder, (b) conversion disorder, (c) pain disorder, (d) hypochondriasis, and (e) body dysmorphic disorder
2. **Mood disorders:** (a) generalized anxiety disorder (objective anxiety, neurotic anxiety, or traumatic anxiety and moral anxiety), b) panic disorder, (c) agoraphobia, (d) dysthymic disorder, and (e) major depressive disorder

Pain experts still do not know whether pain is one of the senses or an experience. The fact that pain can be learned and that it can be affected by beliefs, expectations, and emotional states is quite important in its diagnosis and treatment. It is known that psychological disorders increase pain, while extreme fear, stress, and shock decrease pain. Many studies have reported that cultural norms and expectations play a major role in feeling pain and the related behavior.

The gate control system that monitors pain is especially influenced by neurotransmitter modulation that is associated with cortical stimulants in anxious subjects. The lack of an adequate 5-hydroxyl tryptamine (5HT) level in the synapse disturbs pain perception and decreases the pain threshold and pain tolerance [50, 51].

The physical and psychological problems of the person described under the following titles also play a role in psychosomatic pain.

Emotional crises. Emotional crises and chronic distress can lead to various psychosomatic complaints. The whole organism can be affected and the effects are therefore not listed here.

Somatoform pain disorder. Somatoform pain disorder is characterized by intense and agonizing pain that is subjectively felt in a part of the body for at least 6 months and that cannot be reasonably explained by a physical disorder or physiological event. The onset of the pain is related to a significant problem that has created serious emotional and/or psychosocial stress, conflict, or trauma. The increased interest in the person and the medical care received are the possible gains from the disorder. When compared with somatization disorders, these pains are long-lasting, and the patient focuses on them. The differential diagnosis of pain syndromes requires differentiation of organic physical pain from histrionic processing.

Dissociative disorder. The absence or modification of physical functions without a physical cause is usually the result of an intrapsychic conflict and can lead to psychogenic paralysis, coordination disorders, tremors, and myoclonus (muscle twitching).

Major depression. Major depression affects the entire body including the metabolism and the musculoskeletal system. Inactivity or pain syndromes may be present. The pain, lack of exercise, social withdrawal, smoking habits, and malnutrition lead to significant difficulties in the patient's life.

The patient comes to the doctor because of the somatic complaints as he/she has usually not noticed the depression: it is therefore not an independent disease. It is possible to determine the real psychic etiology during the examination if retrospective evaluations are also performed. Neurobiological studies have demonstrated that somatic symptoms are associated with brain dysfunction that is also responsible for depression. Psychological pain and emotional pain have been shown to cause activation of the same sites as physical pain stimuli on MR investigations.

Evaluation of the stress axis. The documentation of neuroendocrine abnormalities in cases of depression and pain have revealed the parallel course of the functional changes in depression and pain and the hypothalamus-hypophysis-adrenal axis with excess production of corticotropin-releasing hormone (CRH). It is also known that a deficiency in the serotonin and norepinephrine monoamines can play an important role in the decreased inhibition of pain pathways and the development of somatic symptoms in depression [50, 51].

Comorbid symptoms. Masked depression can have various symptoms. Urogenital system symptoms include dysuria, painful urination and defecation, signs of urinary and fecal incontinence, functional prostate problems (prostatitis), and bladder dysfunction in women without additional genital muscle weakness. There may also be upper abdominal discomfort, bloating, colic-like abdominal discomfort, stomach pain, and constipation [51].

Weakened immune system. Negative emotions such as fear and anger permanently weaken our immune system and defense. The risk of catching infections such as influenza increases many times, and wounds heal slower and in a worse manner.

Sleep disorders. Sleep problems are common when pain is present. Lack of sleep affects both the social life and performance of the patient. Fatigue can lead to depression and accidents. Sleep disorders have various signs such as difficulty falling asleep, waking up frequently and quickly, long period of staying awake during the night, being irritable, superficial sleep, loud and irregular snoring, leg restlessness, waking up early in the morning, and disturbing thoughts. Anger and hopelessness can also have a strong effect on sleep disorders.

It has recently been found that our brain is active in a very special manner during sleep. The brain sends impulses, produces active substances, and is involved in coding and storing data 24 h a day with its 100 billion nerve cells, and it is the organ that benefits most from a good night's sleep. This has been demonstrated with decreased brain capacity when we get little sleep. The first sign of cerebral fatigue is difficulty with concentrating and performing coordinated tasks such as driving or tasks that require a great deal of attention. We then become irritated and feel pain because of the related fatigue.

Sleep apnea. Snoring during sleep is present in 10–30% of adults and it is usually not dangerous. However, pauses in respiration during sleep are an indicator of sleep apnea syndrome, which affects approximately 3 million people in Germany alone. The most common type of the disorder is "obstructive sleep apnea." The pharyngeal muscles relax excessively and do not let air pass, leading to a pause in the respiration during sleep. This breathing problem goes on for about 2 min, usually with explosive snoring, and the subject then starts to breathe normally again. In severe cases, these periods of paused respiration can recur hundreds of times every night. These patients are usually prone to falling asleep during the day, and the muscles can be weak and painful.

The most important diagnostic step in the diagnosis of sleep apnea syndrome is talking to the patient and family. In case of increased sleep apnea suspicion, the next step is a sleep laboratory investigation. Electrodes record the ECG, blood pressure, and brain waves; observe movements of the eyes and legs; measure the oxygen content of the blood; and record each snoring and breathing sound during this test.

Lungs: shortness of breath. Our breathing becomes quite shallow in case of stress, depression, or sadness. The lungs receive less oxygen and can provide less oxygen to the blood, increasing the risk of infection. Pneumonia is five times more common in the elderly than in healthy subjects.

Coronary heart disease and somatization disorder. Somatization disorder and pain syndromes develop after a heart attack in approximately 30% of all patients. A heart attack is experienced as a “spontaneous infarction.” Physician appointments are frequently avoided and the recommended medication is not used. This increases the risk of new infarction development two to four times when added to the biological changes in the metabolism.

The infarction risk is increased several times (deaths due to a heart attack are four to five times more common in depression patients). The more severe the somatization disorders, the worse the prognosis of a heart disorder. Factors such as emotional stress, dissatisfaction with work and the partner, anxiety, and long-term stress increase the heart attack risk more than classical risk factors such as smoking and high blood pressure.

Hair problems. The reason for white hair is mineral deficiency in the hair and scalp, and there can be several causes: decreased nutrition due to age, acidity or nutritional disorder, and psychological reasons. Mineral intake is decreased with fear or stress, resulting in hair loss or white hair.

Skin disorders and skin structure problems. The metabolism slows down and the body functions deteriorate during stress. Free radicals that attack the skin cells and slow down the regeneration of the natural protective layer are created. The skin ages faster and spots develop. The face appears stressed.

Gastric disorders. Gastric absorption becomes difficult in patients with repressed emotions, anger, or anxiety. The stomach becomes tense with stress and anger, leading to increased gastric acid secretion. This in turn causes heartburn and can result in gastric ulcer, bloating, nausea, and cramps. Many subjects suffer from irritable stomach or irritable colon. Psychological components also play a role. Excitement and anxiety increase irritable stomach or irritable colon symptoms.

15. Examples of psychosomatic comorbidity in orthopedics

It is very important to investigate the relationship of psychosomatic pain in many patients admitted between orthopedics and traumatology clinics. In this context;

Osteoarthritis (arthrosis). Depression leads to a long period of internal stress and increased muscle tension, causing a predisposition to motility disorders, immobility, and arthritis. The patient usually sees an orthopedist before going to a neurologist.

Fractures and depression. Patients suffering from depression for a long time can be exposed to fractures more commonly as the mineral content of bone is decreased. Heavy psychological burdens can significantly decrease the blood oxygen content in the elderly as the breathing becomes superficial. The cells cannot receive adequate nutrition and renewal deteriorates. Inflammation and arthritis can develop in the joints.

Orthopedic pain syndromes. Orthopedic surgeons believe that back pain is the result of emotional problems, not organic ones, in most cases. If job dissatisfaction is high, the person feels overwhelmed and does not seek solutions to change the circumstances, leading to a high risk of pain as the spinal system reacts very strongly to mental stress.

Neuropathic pain. Approximately 6% of Germans are affected by neuropathic pain. At least 20% of the patients at pain centers suffer from neuropathic pain syndromes. Peripheral neuropathies can commonly develop after postherpetic neuralgia or trauma. Generalized neuropathies include those due to chemotherapy and diabetic neuropathies.

Nociceptor pain. Nociception is the perception of pain. The responsible receptors are called nociceptors. Nociceptors are present in all the pain-sensitive tissues of the body as the free nerve ends of sensitive neurons of the spinal cord. Nociceptors trigger various types of pain according to their localizations:

- **Surface pain** is perceived superficially by the skin nociceptors. The pain can be clearly localized to the damaged region.
- **Severe pain** can be **muscle pain** or **bone pain** (localized in the periosteum) according to the localization of the nociceptors. It is poorly localized as deep pain due to the different fiber characteristics and the various projection areas of pain fibers.
- **Internal organ pain** develops following stimulation of nociceptive receptors in the internal organs. Classic examples are renal or biliary colic due to smooth muscle stretching.

Myofascial pain. Myofascial pain has local causes. Individual muscles are affected more intensely by chronic pain than muscle groups. Individual muscles contain trigger points that signify very sensitive areas. Overloading of the muscle can prevent excess calcium intake and the related muscle relaxation and therefore create localized oxygen deprivation.

Long-term contraction treatment becomes difficult in the case of myofascial pain. The sensitivity leads to the corresponding areas creating a perception of pain even with mild contact, and these areas are therefore called trigger points.

Excessive stress on such muscles can be the result of muscle damage, inadequate nutrition, hormonal imbalances, immobility, muscle weakness, hypothermia, contractions, and neurological damage.

Myofascial pain mainly develops in the **facial muscles, the neck muscles, the shoulder, and the pelvis region**. The trigger points can be activated spontaneously or with light pressure to make the diagnosis [61].

Psychotherapy in the treatment of pain can be explained as follows:

Patients with psychosomatic pain may have had a very disturbing experience in the past. This event can create links with the memory and senses, and the traumatic disorder may occur at any time when the present experience is once again dominant. Psychological stress may also cause physical illnesses. Within the soul-soma-soul sequence, an ever-growing chain of causes can be present. Life-threatening diseases such as cancer or myocardial infarction and the relevant medical interventions can also lead to mental trauma.

Traumas, undesirable social experiences, accidents, or stressful experiences have been scientifically proven to be the most common triggers and the causes of many physical disorders, pain, and other illnesses without a physical cause.

Changes related to psychological trauma in the brain can now be scientifically demonstrated by imaging (such as fMRI, a magnetic resonance method) and other diagnostic methods. Brain structure and brain metabolism are altered by the corresponding changes in the autonomic nervous system during the stress process. The entire spectrum of mental trauma should be considered. Psychotherapy for psychosomatic pain due to trauma is performed in three stages and with multiple sessions.

There are some fundamental differences between type I and type II trauma.

Type I trauma is a one-time event such as a traffic accident. The result is a short-term mental balance disorder such as adaptation disorder or posttraumatic stress disorder (PTSD). The patient will not forget the accident and will, for example, be afraid of driving. However, the disorder is also accompanied by physical symptoms (sweating, palpitation, sleep disorders, etc.).

Recurrent trauma (type II trauma) can lead to complicated disorders from all types of neurosis to emotional disorders, anxiety disorders, and phobias, in addition to personality disorders and changes or dependence on psychotropic drugs. Type II trauma can develop after life-threatening disorders such as cancer or myocardial infarction or as a result of chronic diseases. Intensive or long-term medical treatment can lead to helplessness in patients with psychosomatic pain.

The results of type II trauma include the consequences of childhood and long-term adult violence. This violence can also be mental as seen with coldness, extreme violence and indifference, emotional wounds, and frequently repeated trauma, especially in childhood. Type II traumas can lead to complex symptoms as in borderline disorder with comorbidities.

A three-stage model is used for the treatment of disorders that are psychosomatic or accompanied by pain. These stages consist of **stabilization, confrontation, and integration**.

It is not mandatory to include each stage in every treatment process. Stabilization is the foundation of all treatment steps. It can be integrated into other therapeutic methods such as specific interventions for trauma, behavioral therapy, systemic treatment, or deep psychology-associated therapies.

Stabilization stage. Sufficient time is allocated to get to know the patient and to create the basis of trauma therapy while building a mutually trusting relationship.

The stabilization stage creates a foundation for a common understanding of the clinical picture. An objective viewpoint is obtained about the emotions as much as possible. Anxiety and depression are responses to psychologically disturbing experiences and the emotional dissociations within the patient or those around him/her. An emergency state plan is developed together with the patient at this stage. Relaxation techniques such as meditation or Jacobson's progressive muscle relaxation are then used as guides for self-passivation techniques, and the patient thus learns the relevant methods to use the powers of healing within.

Confrontation stage. Behavioral therapy for the confrontation state has been specifically designed to treat phobias and anxiety. Cognitive behavioral therapy and especially systematic desensitization techniques are used. The aim is to re-evaluate the traumatizing event.

Special therapeutic procedures for trauma are also used such as eye movement desensitization and reprocessing (EMDR), imagery rescripting and reprocessing therapy (IRRT), and psychodynamic imaginative trauma therapy (PITT).

Eye movement desensitization and reprocessing has been developed by the American psychologist Francine Shapiro (* 1948). The literary translation indicates "eye movement, desensitization and reprocessing." This method is not hypnosis. When the patient focuses on an especially stressful stage of the emotionally

traumatic experience, the therapist slowly asks the patient to perform rhythmic eye movements by slowly moving his fingers and gives the patient confidence. This stimulates cerebral processes. The aim is to decrease and even eliminate the fears produced by the memories. More than 20 controlled studies have shown the long-term effect of EMDR. EMDR is also included in guidelines as a preferred procedure.

Imagery rescripting and reprocessing therapy has been developed by the American clinical psychologist Mervin Smucker (* 1949). A traumatizing experience is created together with the therapies as though it had happened today. The patient imagines how he dealt with it in the past and how he is dealing with it now. The patients no longer view themselves as helpless victims and feel they are the designers of the condition who can act and maintain control even in the most difficult situations. We can think about it as deleting an old text and then writing over it.

Psychodynamic imaginative trauma therapy has been developed by psychoanalyst Luise Reddemann (* 1943). PITT is based on the idea that people have self-regulating powers to cope with disturbing events even after terrible experiences. Establishing a supportive therapeutic relationship is very important for such self-understanding, and it is also important for helping oneself. At the heart of PITT's therapeutic approach is the "internal phase" that the person is currently acting on.

In this mental "imaginary" game, the patient confronts the previous ego states with the therapist's support. Understanding the multiple egos in the consciousness comes from a scientific and philosophical tradition that has been present in all cultures for a thousand years, and the treatment relies on a systemic approach to therapy. With PITT, you can experience the injustice you have experienced and the area where you feel helpless from a safe distance. The patient learns to accept this part of his personality and to relax and make others relax at the same time. The patient also learns to heal his/her emotional wounds and therefore regains his/her confidence.

Symbol work: the study of symbols has been developed by psychotherapist Maria-Elisabeth Wollschläger and theologian Gerhard Wollschläger in the 1970s. If you associate a certain feeling with an object such as a chair, a doll, or something else, that item becomes the symbol of your senses. Symbol work is used in places where the traumatizing event can leave you speechless and where you cannot find the words to describe your mental wounds, what happened to you, and your anger, grief, or helplessness. By transferring your emotions to objects or using the object to present them, you can activate the brain areas responsible for mental processing. Conditions of loss, for example, can increase a person's confidence in his/her abilities. You regain your ability to move and to understand that what you are doing has a meaning, enabling further progress (self-efficacy).

Integration stage. This is the moment the joy of living and the relevant control are regained and understood.

The aim of this stage is to gradually integrate the traumatic experiences of the patient into his/her consciousness. These events are parts of the person's life, and control over life and social integration can be achieved once again by confronting these events [4, 61–64].

16. Conclusion

Our understanding of the epidemiology of psychosomatic pain is limited to a small number of studies that provide estimates of the prevalence in the general population. These studies are usually difficult and costly to conduct and require very large samples. The way data is collected and reported may also have an impact on the estimates with various results obtained from studies that depend on surveys,

interviews, or clinical investigations. Large-scale population-based studies can provide richer data related to the age and gender distribution of pain, and assessments over extended periods of time can provide comprehensive information about the incidence and risk factors. Epidemiological studies in various cultural, social, and ethnic groups can clarify the effects and also the interactions between the individual and population-based risk factors. Physicians should be able to understand the information related to psychosomatic pain, search the relevant information available, and perform research on the subject themselves.

“The biggest misconception of today is the separation of the mind and body by physicians.” - Socrates

“What influences us is not the events themselves but the meanings we assign to them.” - Epictetus

Author details

Ertuğrul Allahverdi
Department of Orthopedics and Traumatology, School of Medicine, Kafkas
University, Kars, Turkey

*Address all correspondence to: ertugrulallahverdi@hotmail.com

IntechOpen

© 2020 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

References

- [1] Güleç MY. Temperament and character in psychosomatic disorders. *Current Approaches in Psychiatry*. 2009;**1**:201-214
- [2] Porcelli P, Rafanelli C. Criteria for psychosomatic research (DCPR) in the medical setting. *Current Psychiatry Reports*. 2010;**12**(3):246-254
- [3] Aral G, Arslan FC. A new operational guide against to traditional classification systems in Consultation-Liaison psychiatry: Diagnostic criteria for psychosomatic research (DCPR). *Klinik Psikiyatri Dergisi*. 2019;**22**(2):228-242
- [4] Lazarus RS. From psychological stress to the emotions: A history of changing books. *Annual Review of Psychology*. 1993;**44**:1-22
- [5] Henschke N, Kamper SJ, Maher CG. The epidemiology and economic consequences of pain. *Mayo Clinic Proceedings*. 2015;**90**(1):139-147. DOI: 10.1016/j.mayocp.2014.09.010
- [6] McBeth J, Jones K. Epidemiology of chronic musculoskeletal pain. *Best Practice & Research. Clinical Rheumatology*. 2007;**21**:403-425
- [7] King S, Chambers CT, Huguet A, et al. The epidemiology of chronic pain in children and adolescents revisited: A systematic review. *Pain*. 2011;**152**:2729-2738
- [8] Jeffries LJ, Milanese SF, Grimmer-Somers KA. Epidemiology of adolescent spinal pain: A systematic overview of the research literature. *Spine (Phila Pa 1976)*. 2007;**32**:2630-2637
- [9] Palermo TM. Impact of recurrent and chronic pain on child and family daily functioning: A critical review of the literature. *Journal of Developmental and Behavioral Pediatrics*. 2000;**21**:58-69
- [10] Hestbaek L, Leboeuf-Yde C, Kyvik KO, Manniche C. The course of low back pain from adolescence to adulthood: Eight-year follow-up of 9600 twins. *Spine (Phila Pa 1976)*. 2006;**31**:468-472
- [11] Juniper M, Le TK, Mladsı D. The epidemiology, economic burden, and pharmacological treatment of chronic low back pain in France, Germany, Italy, Spain and the UK: A literature-based review. *Expert Opinion on Pharmacotherapy*. 2009;**10**:2581-2592
- [12] Reid KJ, Harker J, Bala MM, et al. Epidemiology of chronic non-cancer pain in Europe: Narrative review of prevalence, pain treatments and pain impact. *Current Medical Research and Opinion*. 2011;**27**:449-462
- [13] van Hecke O, Austin SK, Khan RA, Smith BH, Torrance N. Neuropathic pain in the general population: A systematic review of epidemiological studies. *Pain*. 2014;**155**:654-662
- [14] Bennett MI, Rayment C, Hjermstad M, Aass N, Caraceni A, Kaasa S. Prevalence and aetiology of neuropathic pain in cancer patients: A systematic review. *Pain*. 2012;**153**:359-365
- [15] Swain MS, Henschke N, Kamper SJ, Gobina I, Ottová-Jordan V, Maher CG. An international survey of pain in adolescents. *BMC Public Health*. 2014;**14**:447
- [16] Apley J, Naish N. Recurrent abdominal pains: A field survey of 1,000 school children. *Archives of Disease in Childhood*. 1958;**33**:165-170
- [17] Fearon P, Hotopf M. Relation between headache in childhood and physical and psychiatric symptoms in adulthood: National birth cohort study. *BMJ*. 2001;**322**:1145

- [18] Carragee EJ, Alamin TF, Miller JL, Carragee JM. Discographic, MRI and psychosocial determinants of low back pain disability and remission: A prospective study in subjects with benign persistent back pain. *The Spine Journal*. 2005 Jan-Feb;5(1):24-35
- [19] Calvo-Muñoz I, Gómez-Conesa A, Sánchez-Meca J. Prevalence of low back pain in children and adolescents: A meta-analysis. *BMC Pediatrics*. 2013;13:14
- [20] Taylor JB, Goode AP, George SZ, Cook CE. Incidence and risk factors for first-time incident low back pain: A systematic review and meta-analysis. *The Spine Journal*. 2014;14:2299-2319
- [21] Briggs AM, Smith AJ, Straker LM, Bragge P. Thoracic spine pain in the general population: Prevalence, incidence and associated factors in children, adolescents and adults; a systematic review. *BMC Musculoskeletal Disorders*. 2009;10:77
- [22] Hogg-Johnson S, van der Velde G, Carroll LJ, et al. The burden and determinants of neck pain in the general population. *Spine Journal*. 2008;17:39-51
- [23] Henschke N, Maher CG, Refshauge KM, et al. Prognosis in patients with recent onset low back pain in Australian primary care: Inception cohort study. *BMJ*. 2008;337:a171
- [24] Pengel LH, Herbert RD, Maher CG, Refshauge KM. Acute low back pain: Systematic review of its prognosis. *BMJ*. 2003;327:32
- [25] Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. *Best Practice & Research. Clinical Rheumatology*. 2010;24:769-781
- [26] Briggs AM, Smith AJ, Straker LM, Bragge P. Thoracic spine pain in the general population: Prevalence, incidence and associated factors in children, adolescents and adults; a systematic review. *BMC Musculoskeletal Disorders*. 2009;10:77
- [27] Hogg-Johnson S, van der Velde G, Carroll LJ, et al. The burden and determinants of neck pain in the general population. *European Spine Journal*. 2008;17:39-51
- [28] Furlan AD, Pennick V, Bombardier C, van Tulder M, Editorial Board, Cochrane Back Review Group. Updated method guidelines for systematic reviews in the Cochrane Back Review Group. *Spine (Phila Pa 1976)*. 2009;34:1929-1941
- [29] Berk HÖS. Kronik Ağrı Yaşantısı Ve Ağrı İnançları: Ağrı İnançları Ölçeğinin Türkçe Geçerlik Ve Güvenirlik Çalışması [PhD thesis]. Turkey: Istanbul University; 2006
- [30] Cook CE, Taylor J, Wright A, Milosavljevic S, Goode A, Whitford M. Risk factors for first time incidence sciatica: A systematic review. *Physiotherapy Research International*. 2014;19(2):65-78. DOI: 10.1002/pri.1572. Epub 2013 Dec 11
- [31] Konstantinou K, Dunn KM. Sciatica: Review of epidemiological studies and prevalence estimates. *Spine (Phila Pa 1976)*. 2008;33(22):2464-2472. DOI: 10.1097/BRS.0b013e318183a4a2
- [32] Coggon D, Ntani G, Palmer KT, et al. Disabling musculoskeletal pain in working populations: Is it the job, the person, or the culture? *Pain*. 2013;154:856-863
- [33] Luime JJ, Koes BW, Hendriksen IJ, et al. Prevalence and incidence of shoulder pain in the general population: A systematic review. *Scandinavian Journal of Rheumatology*. 2004;33:73-81
- [34] Peat G, McCarney R, Croft P. Knee pain and osteoarthritis in older adults:

A review of community burden and current use of primary health care. *Annals of the Rheumatic Diseases*. 2001;**60**:91-97

[35] Thomas MJ, Roddy E, Zhang W, Menz HB, Hannan MT, Peat GM. The population prevalence of foot and ankle pain in middle and old age: A systematic review. *Pain*. 2011;**152**:2870-2880

[36] Cimmino MA, Ferrone C, Cutolo M. Epidemiology of chronic musculoskeletal pain. *Best Practice & Research: Clinical Rheumatology*. 2011;**25**:173-183

[37] Arnold LM, Clauw DJ, McCarberg BH, Fibro Collaborative. Improving the recognition and diagnosis of fibromyalgia. *Mayo Clinic Proceedings*. 2011;**86**:457-464

[38] Freburger JK, Holmes GM, Agans RP, et al. The rising prevalence of chronic low back pain. *Archives of Internal Medicine*. 2009;**169**:251-258

[39] Froud R, Patterson S, Eldridge S, et al. A systematic review and meta-synthesis of the impact of low back pain on people's lives. *BMC Musculoskeletal Disorders*. 2014;**15**:50

[40] Palmer KT, Walsh K, Bendall H, Cooper C, Coggon D. Back pain in Britain: Comparison of two prevalence surveys at an interval of 10 years. *BMJ*. 2000;**320**:1577-1578

[41] Macfarlane GJ, McBeth J, Garrow A, Silman AJ. Life is as much a pain as it ever was. *BMJ*. 2000;**321**:897

[42] Froud R, Patterson S, Eldridge S, et al. A systematic review and meta-synthesis of the impact of low back pain on people's lives. *BMC Musculoskeletal Disorders*. 2014;**15**:50

[43] Murray CJ, Vos T, Lozano R, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: A systematic

analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012;**380**:2197-2223

[44] Macfarlane TV, Glenny AM, Worthington HV. Systematic review of population-based epidemiological studies of oro-facial pain. *Journal of Dentistry*. 2001;**29**:451-467

[45] Jimenez N, Garrouette E, Kundu A, Morales L, Buchwald D. A review of the experience, epidemiology, and management of pain among American Indian, Alaska Native, and Aboriginal Canadian peoples. *The Journal of Pain*. 2011;**12**:511-522

[46] Louw QA, Morris LD, Grimmer-Somers K. The prevalence of low back pain in Africa: A systematic review. *BMC Musculoskeletal Disorders*. 2007;**8**:105

[47] Elzahaf RA, Tashani OA, Unsworth BA, Johnson MI. The prevalence of chronic pain with an analysis of countries with a Human Development Index less than 0.9: A systematic review without meta-analysis. *Current Medical Research and Opinion*. 2012;**28**:1221-1229

[48] Hush JM, Nicholas M, Catherine M. Embedding the IASP pain curriculum into a 3-year pre-licensure physical therapy program: Redesigning pain education for future clinicians. *Pain Reports*. 2018;**3**(2):e645

[49] Côté P, van der Velde G, Cassidy JD, Carroll LJ, Hogg-Johnson S, Holm LW, et al. The burden and determinants of neck pain in workers: Results of the bone and joint decade 2000-2010 task force on neck pain and its associated disorders. *Spine (Phila Pa 1976)*. 2008;**33**(4 Suppl):S60-S74

[50] Morris CG. Psikolojiyi Anlamak/ Understanding Psychology. Third Edition. Türk Psikologlar Derneği Yay. No: 23 2002-Ankara

- [51] Lopez-Iber JJ. Masked depression. *British Journal of Psychiatry*. 1972;**120**:254-257
- [52] Limited AEP. *The High Price of Pain: The Economic Impact of Persistent Pain in Australia*. Sydney, Australia: Access Economics Pty Limited; 2007
- [53] Phillips CJ. Economic burden of chronic pain. *Expert Review of Pharmacoeconomics & Outcomes Research*. 2006;**6**:591-601
- [54] Gaskin DJ, Richard P. The economic costs of pain in the United States. *The Journal of Pain*. 2012;**13**:715-724
- [55] Reid KJ, Harker J, Bala MM, et al. Epidemiology of chronic non-cancer pain in Europe: Narrative review of prevalence, pain treatments and pain impact. *Current Medical Research and Opinion*. 2011;**27**:449-462
- [56] Mogil JS. Pain genetics: Past, present and future. *Trends in Genetics*. 2012;**28**:258-266
- [57] Engbers LH, Vollenbroek-Hutten MM, van Harten WH. A comparison of patient characteristics and rehabilitation treatment content of chronic low back pain (CLBP) and stroke patients across six European countries. *Health Policy*. 2005;**71**:359-373
- [58] Dagenais S, Caro J, Haldeman S. A systematic review of low back pain cost of illness studies in the United States and internationally. *The Spine Journal*. 2008;**8**:8-20
- [59] Schofield DJ, Shrestha RN, Passey ME, Earnest A, Fletcher SL. Chronic disease and labour force participation among older Australians. *The Medical Journal of Australia*. 2008;**189**:447-450
- [60] Vet HC, Heymans MW, Dunn KM, et al. Episodes of low back pain: A proposal for uniform definitions to be used in research. *Spine (Phila Pa 1976)*. 2002;**27**:2409-2416
- [61] Emre M, Mathies H, Radvila A. Psychogenic aspects of muscle spasms and pain. *Muscle spasms and pain*. The Parthenon Publishing Group, New Jersey. 1988;**5**:43-46
- [62] Ettlin T, Kischka U. Psychosomatic Rehabilitation: An Overview. *Therapeutische Umschau*. German. 2019;**76**(8):460-464. DOI: 10.1024/0040-5930/a001115
- [63] Gomez J. "Pain" Liaison Psychiatry, Mental Health Problems in the General Hospital. London: The Free Press; 1987. p. 53-61/180-189
- [64] Schmidt AJM. Cognitive factors in the performance level of chronic low back pain patients. *Journal of Psychosomatic Research*. 1985;**29**:183-189