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Saif Ali Siddiqui

Department of Ilaj bit Tadbeer,
AMU, Aligarh, Uttar Pradesh,
India

Mohammad Shoab

Department of Ilaj bit Tadbeer,
AMU, Aligarh, Uttar Pradesh,
India

Asia Sultana

Department of Ilaj bit Tadbeer,
AMU, Aligarh, Uttar Pradesh,
India

Mohammad Anas

Department of Amraze
Niswanwa Atfal, AMU, Aligarh,
Uttar Pradesh, India

Rizwan Hasan Khan

Department of Interdisciplinary
Biotechnology, AMU, Aligarh,
Uttar Pradesh, India

Conceptual aspects of *Waja* (pain): A review

Saif Ali Siddiqui, Mohammad Shoab, Asia Sultana, Mohammad Anas and Rizwan Hasan Khan

Abstract

Pain is the fifth vital sign and it is the most common reason for physician consultation. Pain is highly subjective and an unpleasant sensory experience that interferes with the daily life activities of a person and the general functioning of the body. Most of the pain is due to tissues/ cell injury while psychological factors aggravate or decrease the intensity of pain. People respond to pain differently. Some people have high pain tolerance, while others have a low tolerance depending on their psychological status. Pain motivates the individual to withdraw from damaging situations, protect a damaged body part while it heals, and avoid similar experiences in the future. Mostly pain resolves once the noxious stimulus is removed and the body has healed, but it may persist despite the removal of the stimulus and apparent healing of the body. Sometimes pain arises in the absence of any detectable stimulus, damage, or disease. Unani scholars described that unpleasant sensation against physis (*tabiyat*) is called pain and the cause of pain is *sue-mizaj* (Impaired temperament) and *taffaruke-ittisal* (discontinuity). Pain occurs due to the accumulation of morbid humors (inflammatory mediators) which is responsible for *sue mizaj* and damage of cell or tissues (*Taffaruke-ittisal*) leads to the release of inflammatory mediators which irritate or sensitize the surrounding nerve and this painful impulse travel through the nerve and spinal cord to the brain. In the condition of severe neuropathy, the perception of pain may be stopped, and sometimes it may be life-threatening that as silent myocardial infarction in the case of Diabetic neuropathy. The characteristics and site of pain indicate the abnormal functioning of organs of the body. In the Unani system of medicine, pain is classified into fifteen types based on severity, quality, nature, and site of the pain. In this paper, Unani and modern aspects of pain are discussed here in detail.

Keywords: Pain, *waja*, *sue-mizaj*, *taffaruke-ittisal*, unpleasant sensation

Introduction

The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience which is associated with or resembling with, actual or potential tissue damage" [1]. In medical diagnosis, pain is regarded as a symptom of an underlying condition. Pain motivates the individual to withdraw from damaging situations, protect a damaged body part while it heals, and avoid similar experiences in the future [2]. Mostly pain resolves once the noxious stimulus is removed and the body has healed, but it may persist despite removal of the stimulus and apparent healing of the body.

Sometimes pain arises in the absence of any detectable stimulus, damage, or disease [3], Pain is the most common reason for physician consultation in most- of the developed or developing countries [4, 5].

It is a major symptom in many medical conditions, and can interfere with the daily life activities of a person and the general functioning of the body [6], Simple pain medications are useful in 20% to 70% of cases [7], Psychological factor such as social support, hypnotic suggestion, cognitive behaviour therapy, excitement, or distraction can affect pain's intensity or unpleasantness [8, 9]. In some debates regarding physician-assisted suicide or euthanasia, the pain has been used as an argument to permit people who are terminally ill to end their lives [10]. When we see the *Unani* classical text, we found that the expression "*Waja*" which is an Arabic word that suggests pain [11]. It is characterized by *Unani* researchers as a perspective on inconvenience in the body achieved by disabled behaviour. *Waja* is an unusual understanding felt by patients and means the discouraged condition of the body. *IbnSina* (980-1037 AD) expressed that "joy or bliss in the *Ahsase Musbat* (Pleasant insight) and *Waja* is the *Ahsase Manfi* (Unpleasant sensation). In short charming effect is known as *lazzat* (bliss) and terrible effect is *waja*" [4, 5]. He utilized "*Waja*" and "*Alam*" reciprocally for the view of torment in his book "*Al Qanoon Fit Tib*" with a nitty-gritty depiction and the executives [5]. Harrison's Internal Medicine characterized "Torment is a terrible sensation restricted to a piece of the body. It is often described in terms of penetration or tissue destruction process e.g., stabbing burning, twisting, tearing, squeezing" [11].

Corresponding Author:**Saif Ali Siddiqui**

Department of Ilaj bit Tadbeer,
AMU, Aligarh, Uttar Pradesh,
India

Which closely resembles the views of Avicenna [2]. Today, it is acknowledged that continual pain necessitates a pathologic reorganization of the neural system [12]. This process can be due to several factors, such as genetic predisposition, [13, 15], central sensitization mechanisms [16], and many other factors, which are at the core of the study of the etiology of pathologic pain conditions [17].

2. Etio-Pathogenesis (*Asbabwa Mahiyat-e-Marzi*):

As per Avicenna, any unexpected changes in the demeanor (*Sue MizajMukhtalif*) or a break in the coherence (*Tafarruqe Ittesal*) impact the state of being any organ administering to torment. Most ancient Unani scholars certified their view. It is qualified to raise that the progressions in undeviating disposition (*Sue-Mizaj Mastawi*) don't produce torment. According to the Galenic hypothesis, the primary driver of agony is a break incongruity in particular, which hinders the idea of organs [4, 5, 7, 18].

2.1 Impaired temperament (*Sue Mizaj Mukhtalif*)

An unusual behaviour happens unexpectedly and as opposed to the typical personality of organs which impacts the real disposition brings about (*Ahsasemanfi*) irritating insight (pain). The *Sue MizajMukhtalif* (sudden in personality) might be *sada* (straightforward) or *maddi* (humoral).

2.2 *Sue MizajSada/ GhairMaddi* (Simple temperament)

It is a weird attitude caused account of the craziness of two basic *kaifiyaat* which may be hot or cold.

2.3 *Sue MizajMaddi* (Abnormal Temperament with Humoural involvement)

An abnormal way of behaving is connected with the substance of the matter and it is also requested into two groups, which are as follows:

1. *Sue Mizajhar Maddi* (strange hot disposition with humoral association)
2. *Sue Mizajbarid Maddi* (strange cold disposition with humoral association)

2.4 *Tafarruqe Ittesal* (a breach in continuity)

Tafarruqe-ittesal is an aggravation or break in the coherence of the cell, tissues, and organs that produce *Waja/ahsasemanfi* (unpleasant sensation). Galen's speculation of *waja* is totally established on *tafarruqe-ittesal* (loss of coherence). He communicated that any *sue mizaj* whether hot or cold causes torment by breaking the congruity of a segment. The break in the congruity might be made by a few outer and inner variables. The outside factors are stretch, cut, consuming, squashing, pricking, and tearing which clearly makes *tafarruqe-ittesal* while the inward factors are *khilt laze* (aggravation humor), *khiltakkal* (disastrous humors), *ghaleezriyah* (thick pneuma), *ghaleezkhilt* (thick humors). *Khiltlaze* (aggravation humors) causes annoying and bothering at the site of contact or assembling. *Akkalkhilt* (disastrous humors) causes ulceration of the tissues due to their strong scorching and ulcerative properties.

2.5 *Rehimadda* (Gaseous substance) produces discontinuity in two ways:

1. Restricted gathering of *Rehimadda* (Gaseous substance) which produces distension in the organ pit, for instance; *Nafkhatulmaida* causes break or break in the internal surface of an organ.
2. Riddling of *Rehimadda* (Gaseous substance) in the

organ's layers that isolated them causes agony like *QoolanjRehi*.

The *Ghaleezmawad* (Vitiated matter) causes break either by their excess measure of unpleasant/vitiated matter. Quantitatively vitiated humors cause strain or stress while emotionally they produce irritating or ulceration in organs and now and again together cause torment [11].

3. Classical Terms for *Waja* (pain) based on Site involved -

There are several classical terms used by the *Unani* scholars for the painful conditions of the body, which are as follows:

Suda' (Headache); *Shaqiqa* (Migrain); *Usaba* (Supraorbital pain) [19,20,21,22]

Waja' ulHalaq (Throat pain); *Waja' us sadar* (Chest pain); *Waja' ulqalb* (Cardiac pain); *Waja' us saqain* (Calf Pain) [19]

SudaBaizaKhuza (Generalized headache) [19, 20, 21, 23]

Waja' ulAsnan (Dental pain) [20, 24]

Waja' uluzn (Otaglia) [20, 21]

Wabila (Cervicobrachial neuralgia/ wajaulunuqasabi) [19, 45]

Waja' ul Maida (Gastric pain) [19, 20, 24]

Waja' ulTehal (Splenic pain) [9]

Waja' ulKabid (Heptic pain) [9, 20, 21, 22]

Qulanj (Colic pain) [9, 20, 22, 23, 25]

Maghs (Tenesmus); *Waja' ulKuliya* (Renal pain); *Waja' ulMasana* (Cystodynia) [19, 20, 25]

Waja' ulUnsain (Testicular pain) [20, 25]

Wajaurrahm (Uterine pain) [19, 25]

Waja' urrakba (Knee joint pain) [19, 26]

Irqunnasa (Sciatic pain); *Niqris* (Gouty pain); *Waja' uzzahr* (Low Back Pain); *Waja' ulwarik* (Hip joint Pain) [19, 21, 25, 26]

Waja' ulkhasera (Buttock pain) [21, 25]

Waja' ulaqib (Heel pain) [19, 20]

4. AQSAM-E-WAJA (Etio-Pathological Classification of Pain)

Galen, *Avicenna*, and *Ibne Hubal Baghdadi* arranged torment into various types:

1. ***Waja'Hakkak* (Itching torment):** Pain with a troublesome sensation due to the presence of sharp, impactive, and salty humors.
2. ***Waja'Khashin* (Course/Rough Torment):** This is a coarse torment caused by viscid humor.
3. ***Waja'Zaghit* (Compression/Crushing Torment):** When a gathering of gloomy stuff forms in the surrounding space of any organ, the organ is strained or crushed.
4. ***Waja'Nakhis* (Pricking Torment):** Pain with a pricking feeling caused by the presence of those humors that cause the organs to extend and harden. It usually affects the films, such as the pleural layer.
5. ***Waja'Tamaddudi* (Distension Torment):** Irritation caused by a variety of vaporous substances or humors that cause distension in the aperture or layers of the organs. Torture with distension is caused by a gaseous substance or flatus, which is inextricably linked to humility. Exacerbation due to a variety of awful humors is associated with excellence.
6. ***Waja'Mufassikh* (Incisive Torment):** A type of muscular aggravation caused by the accumulation of humors in the muscle filaments, causing them to expand,

producing an acute agony sensation.

7. **Waja'Mukassir (Bony torment):** A bonny aggravation caused by the accumulation of flatus or humors between bone and its covering. Exposure to cold might also be a factor in some cases.
8. **Waja'Rikhu (Muscle Pain):** A low-power torment that occurs only in the muscles.
9. **Waja'Saqib (Perforating torment/Penetrating torment):** It is an instinctive/colicky torment felt when a site is penetrated by a borer and caused by the accumulation of vaporous stuff in the compartment or between the layers of an organ or colon.
10. **Waja' Misalli (Stabbing Torment):** It is a colicky nature of anguish caused by the accumulation of flatus or humor in the compartment of the internal organ as a result of cross-over extending in its layers causing coherence division.
11. **Waja'Khadari (Neuropathic Torment):** A neuropathic torment characterized by torment with paraesthesia caused by the obstruction of tactile sensitive regions as a result of extreme cold.
12. **Waja'Zarabani (Throbbing Torment):** A throbbing character of suffering is created by an extreme incendiary processor accumulation of aggravating and harsh humors such as headache.
13. **Waja' Saqeel (Heavy agony):** A type of weighty aggravation relating to less delicate/viscera, such as the lungs, kidneys, and spleen, or when the tangible loss of any delicate part, such as the cardiovascular end of the stomach, is exceptionally touchy when carcinoma influences it, it causes agony of heaviness(Waja Esaqil).
14. **Waja'Ayaei (Fatigue Torment):** A type of aggravation caused by exhaustion, which gives the body a fragmented appearance. Extreme development and abrasive humor put a load on muscles and nerves, resulting in slowed behavior and exhaustion agony.
15. **Waja'Lazayei (Irritation torment):** A kind of aggravation brought about by aggravation humors (Khilte laze) which creates disturbance and irritation at the site of contact or accumulation e.g., Wajaul Fawad [4, 5, 18, 27].

5. Modern Classification of Pain and Correlation with the Unani [4, 5, 28, 29, 30]

1. **Acute pain:** It is characterized as pain that occurs suddenly, is severe, and lasts for a short period of time.
2. **Chronic Pain:** Chronic pain is defined as pain that develops gradually, is less severe, and lasts a long time. According to *Unani* theory, *Safra* and *Dam* predominance/derangement- cause *Wajaehaad* (acute pain), whereas *Sauda* and *Balgham* cause *Wajaemuzmin* (chronic pain).
3. **Somatic pain:** Surface pain that is felt over the skin and deep pain that is caused by muscle, bone, ligament, and other structures. There are two types of somatic pain: *Waja' Hakak* (pruritic pain) is a type of superficial

somatic pain, whereas *waja' Mufassikh*(muscle pain) and *waja' Rakho* (dull pain) are both types of deep somatic pain.

4. **Muscular ache:** This includes Ligament pain.

6. Tashkhees 'Waja' (Diagnosis of Pain)

A thorough history and clinical examination, lifestyle, profession, aggravating and relieving factors of pain help in the diagnosis of pain and ought to be inspired for a proper conclusion like power, site, character, span, related side effects, irritating and soothing elements of pain^[8].

6.1 Based on Sue Mizaj (Altered temperament)

Sue mizaj, which can be *Sada* or *Maddi*, can be used to perform the analysis. *Sue mizajsada* may be considered if the onset of symptoms is continuous against a historical backdrop of exposure to cold or warmth, whereas *Sue mizajmaddi* may be considered if the humoral power side effects are summed up and restricted. *Sue mizajmaddi's* and *Rehi's* torture can be distinguished by their intensity and softness of suffering^[19].

6.2 Based on Tafarruqe Ittesal (breach of continuity)

Internal and external *tafarruqe-ittesal* can also be used to make a diagnosis. External *tafarruke-ittesal* is easy to identify since the reason is obvious, whereas internal *tafarruke-ittesal* has a concealed cause that is difficult to diagnose.

6.3 The following features are also useful in the diagnosis of pain

1. **Location of pain:** The location and kind of the pain, such as hepatic pain in the right hypochondrium or pleuritic pain in the chest, suggest the condition^[4, 5].
2. **Pain onset:** The onset of pain is determined by the humors involved; for example, pain caused by the preponderance of *Safra* and *Dam* is acute in onset, but the pain caused by *Balgham* and *Sauda* is chronic.
3. **Exacerbating/relieving factor:** *Qarhemeda* (gastric ulcer) pain is worsened by food intake and alleviated by vomiting; *Shaqeeqah* (migraine) discomfort is aggravated by sun exposure and relieved by avoidance^[19].
4. **Pain Characteristics:** Pain characteristics such as heavy pain (*Wajasaqeel*) indicate pain in a less sensitive organ, *wajaesaqib* in the abdomen indicates intestinal colic, similarly *waja- laze* (irritating pain) is a symptom of an irritant substance, throbbing pain in migraine, pricking pain in the pleura, and so on^[4, 5, 19]
5. **Radiating pain:** It is characterized by *Irqunna'sa* (sciatica) and *Waabila* (cervical pain).

7. Pain receptors that connect to two types of nerve fibers

A-delta Fiber: Large diameter, myelinated, NCV– 4-30m/sec, activated by mechanical & thermal stimulus, Pain characterized by Fast onset, Short duration, sharp, pricking & localized.

C Fiber: Small diameter, unmyelinated, NCV -0.5-2m/sec, activated by a chemical stimulus, Pain characterized by slow onset, diffuse, dull aching & throbbing in nature.

The noxious stimuli activate 10-20% of the A-delta fibers and 50-80% of the C-fibers. An internal organ like the intestine and brain is immune to pain due to the absence of pain

receptors but their covering membrane-like parietal peritoneum and meninges have pain- receptors and are extremely sensitive to stretching, distension, compression, inflammation, rupture, hypoxia, direct action of chemical stimuli, bleeding and spastic contraction.

8. Physical and Pathological components

When cells are damaged, injured, diseased, or extremely stimulated, they produce inflammatory mediators like prostaglandin, Bradykinin, Leukotrienes, interleukins, etc. that causes inflammation and sensitize the nerve ending, which manifest as a pain signal in the form of electrical impulse, traveling to the brain through synapse and gelatinous substances of the spinal cord (substantia gelatinosa) help in the transmission of pain. On receiving the pain impulses substantia gelatinosa can either facilitate or inhibit the pain impulse to the brain (Thalamus & Cerebral cortex).

Neurochemistry: Cell injury produces the release of endogenous chemicals like Prostaglandins, Bradykinin, Histamine, Serotonin, Substance P, Leukotrienes & Potassium ions.

8.1 Substances & Effects on Nociceptors (Pain Receptor):

Table 1: Substances & Effects on Nociceptors (Pain Receptor)

Substances	Effects
Prostaglandins	Sensitization
Bradykinin	Activation & Sensitization
Substance-P	Sensitization
Leukotrienes	Sensitization
Potassium	Activation
Serotonin	Activation
Histamine	Activation

Bradykinin is the most potent pain-produced agent, powerful vasodilator and causes increased capillary permeability. Prostaglandin presence is necessary for the activation of Bradykinin action.

9. Pain Gate Theory by Melzack and Wall (1965)

In 'Substantia gelatinosa' there is a gate through which impulses travel towards the brain, by closing this gate can modify or block the impulse to reach the brain or to the organ from the brain. In the spinal cord, two chemicals are produced Enkephalin (endogenous morphine) and Substance-P (neurotransmitter) which block and open the pain gate respectively. Thus we say that enkephalin (endorphin) produces an analgesic effect by increasing the pain threshold/- blocking the pain gate while Substance-P decreases the pain threshold by opening the pain gate in the spinal cord.

10. Pain Measurement: (VAS)

Visual Analogue Scales (VAS), Numerical rating score (intensity from 0 to 10), Verbal rating scale and Using words "severe", "moderate", "mild", "none". To rate the aggravation, specialists and- doctors use subjective aggravation evaluating measures. One of them is the visual basic scale [31, 32]

11. ILAJ (Management) -

Unani physicians treated pain in diverse ways such as; [4, 5, 27]

1. *Izala-e-sabab* (Removal of the cause)
2. *Imala-e-mawad* (Diversion of morbid matters)
3. *Tanjiya-e-mawad* (Evacuation of morbid matters)

4. Use of *Musakkin* (Analgesics), *Muhallil* (Resolvents), *Mukhaddir* (Anaesthetics), *Munawwim* (Hypnotics), etc
5. Adopting *Ilajbi 'lzi* (Heteropathic regimen)
6. *Ilaj-e-nafsani* (Psychotherapy) especially diversion of patient mind. *Ibn Rushd* (1126-1198 AD) in his book "Kitabul Kulliyat" and *Ibn Qaf al Maseehi* (13th century AD) in "Kitabul Umdafil Jarahat" *Masihi* [33] categorized the treatment of pain into two broad types [7, 33].

11.1 Regimens used for diversion of morbid matters with indications

1. *Laze advia* (irritant) (*sat kafoor*, *sat podina*)-*Suda'* (head ache)
2. *Qairooti* (poultice) – *Wajaussadar* (chest pain)
3. *Moattisat* (sneezer)-*Suda' eReh i* (pneumatic headache)
4. *Hijamat bilashart* (dry cupping)-*Wajaulunuq* (cervical pain), *wajauzzahr* (back pain), *wajaurrakba* (knee pain), *irqunnasa* (sciatica)
5. *Hijamat bin naar* (fire cupping)-*Wajaulmafasil*, *irqunnasa*
6. *Takmeedhaaryabis* (hot mist fomentation)-*Wajaulmafasil*
7. *Takmeedharratab* (hot dry fomentation)-*WajaeAahsha* (visceral pain) and *waja-e-rehi* (flatulent pain)
8. *Natool* (douching) - Arthritis
9. *Aabzan* (sitz bath) - Lower abdominal pain, uterine pain.
10. *Dalk* (massage) – *Wajaulunuq* (cervical pain), *wajauzzahr* (low back pain),
11. *Hammam* (medicated bath)-*WajayAayaei* (fatigue pain)

11.2 Regimens used for evacuation of morbid matters to alleviate pain with indications:

1. *Qai* (emesis) -*WajaulMedaimtelayee* (gastralgia)
2. *Huqnalayyina* (laxative enema) -*Sarsam* (Meningitis)
3. *Fasd* (venesection)-*Suda'* (headache), *Wajaulmafasil* (arthritis)
4. *Hijamabilshart* (wet cupping)-*Irqunnasa* (sciatica), *wajauzzuhr* (low back pain) *wajaur-rakba* (knee pain)
5. *Irsalealaq* (hirudu therapy) –*Wajaulmafasil* (arthralgia) [19, 34, 35, 36, 37, 38, 39, 40, 41, 42]

11.3 Therapeutic use of *Musakkinwa Mukhadderat-alam-advia* (Analgesics and-Anaesthetic drugs)

Avicenna supported the use of pain killers as a form of treatment because of the etiology of pain. They use *Moaddelat* (Personality modulator), *Mohalillat* (Matter Resolvent medicines), or *Mukhadderat* to carry out their activities (anesthetics). To begin with, two types of analgesics are- beneficial for *Sue mizaj* and *Tafarruq-ittesal*, while *mukhadderat* is beneficial for desensitizing the neighbouring nerve that transmits pain motivation. *Mukhadderat* works by reducing the sensation in the affected area. In reality, *mukhadderat* (sedatives) are useful for desensitizing the local nerve that transmits pain impulses [4, 5, 18]. *Afiyun* (*Papaver somniferum*) was used as a *mukhaddir* (sedative)- by *Al-Razi* (*Rhazes* 835-925 A.D.), while *Avicenna* used various opium derivatives as pain relievers and sedatives before medical procedures. He mentioned physical activity as a pain-relieving, relaxing, and mesmerizing one [43, 44].

11.4 *Moaddelat* (Modulator or Moderate Analgesics) *wa Muhallilat* (Resolvent)

Moaddelat in *Sue mizajsada* uses *Shibt* (Anthem graveolance) and *katan* (*Linum usitatissimum*) to modify the temperamental state of an organ from hot to cold or the other

way around. *Muhallilat* works by scattering the materials that cause pain, hence resolving analgesics are indicated in the treatment of *Sue Mizajmaddi* or *Tafarruqeittesal*. *Baboona* (*Anthimnobilis*), *Dill* (*Anethum graveolens*), linseed (*Linum usitatissimum*), melilot- (*Melilotus* sp.), celery seed (*Apium graveolens*), Almond (*Prunus amygdalus*) *Nakhoona* (*Trigonella uncatata*)^[4, 5, 18, 25].

12. Important Principles for the usage of Analgesics:^[4, 5]

1. According to *Avicenna*, a clinician should always seek the etiology of pain by appropriate diagnosis and then treat it as needed.
2. Mild analgesics, such as *Tukhme kahu* (*Lactuca sativa*), *Tukhmekaddu* (*Cucurbita maxima*), should be preferred in the treatment of agonizing conditions (Seeds of *Papaver somniferum*)
3. Avoid using *Qawimusakkinat* and *Mukhadderat* (potent analgesics/anesthetics) unless absolutely necessary. Opium (*Papaver somniferum*), *Ajwain Khurasani* (*Hyocymusalbus*), and other *mukhaddir* medicines are common.
4. Because unadulterated sedatives are not considered appropriate, the use of *tiryaqiadvia* (cure drug) to ensure organ disposition and potentiate the *rooh* is beneficial.
5. The effects of sedatives should be protected by expanding *Musleh* (correctives) because it reduces essential capacities, for example, saffron (*Crocus sativus*) might be managed alongside opium (*Papaverso mniferum*).
6. If the cause of the pain is not obvious or does not exist, the doctor should not attempt to treat it.

13. Conclusions

The Pathogenesis of pain in Unani, as well as in modern medicine, is almost the same. The structural discontinuity (*Tafarrukheittesal*) is responsible for cell injury which leads to the production of inflammatory mediators that results in the disturbance of homeostasis which ultimately leads to the impaired temperament (*Sue Mizaj*). Therefore the management of pain is achieved by removing the causative factors which are responsible for *Tafarrukhe Ittesal* and *Sue Mizaj*, rather than suppressing the pain stimulus at both i.e, the cellular as well as the mental level (Pain Perception).

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