



## Selected problems of the relation between pain-immunity and depression

### Authors' Contribution:

A - Study Design  
B - Data Collection  
C - Statistical Analysis  
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### Abstract

*The paper presents selected problems of the coexistence of chronic pain and depression. It has been assumed that chronic pain and depression make two separate ailments that often coexist. The phenomenon of the coexistence of physical symptoms (including pain) and depression have been widely popularised. Over 65% of patients with pain ailments suffer from depression that is often undiagnosed. The therapists specify this phenomenon as a "closed circle", as it is not known what the beginning of its appearance was. On one hand, pain often hides the symptoms of depression so effectively that its recognition by a physician seems impossible; on the other, it is known that chronic pain causes continual lowering of mood and depression that increases pain ailments. Moreover, the existence of common neurobiological mechanisms makes depression and pain escalate mutually.*

**Keywords:** chronic pain, depression, closed circle, interactions, immunity system

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## INTRODUCTION

There is also evidence that chronic pain is associated with mental affective disorders and (particularly depression) and immune system although the nature of the relation is rather unclear. Immunity system and nocieptive system interactions cover the changes in hormone economy and influence on lymphatic structures with the mediation of cortisol at persons who suffer from chronic pain [1]. The effects of chronic pain in a neurohormone pathway refer to, among others, cognitive area. For instance: as a result of chronic pain and accompanying stress, the locus coeruleus produces less noradrenaline and it lowers concentration abilities (attention focus). Moreover, chronic stress causes an increase of quantity cells loss within hippocampus. Extended activity of nocieptive impulses lowers dopamine level [2].

As a result of stress caused by the lack of effective analgesic therapy nuclei raphes that communicate with the locus coeruleus reveals less serotonin (the effect of which is depressed mood). The most serious effect belongs to suicidal thoughts and attempts. In light of literature, it must be stressed that there is a strong correlation between pain and depression, resulting, most probably, from similar biochemical mechanisms [1]. For many people who struggle with the ailments and rely only on unreliable sources of knowledge i.e. TV commercials, a comprehensive chronic pain therapy proceeded by a professional diagnosis along with IASP standards would be more beneficial. The International Association for the Study of Pain has been actively involved in furthering an understanding about pain and depression since its inception in 1975.

Chronic pain and depression, if approached ineffectively, hinder everyday life and functioning, and, as they reflect on the immune system, consequently cause inflammations. Though commonly there is a stronger anxiety against cancer pain than the one that does not have cancer origin, a long (and still growing) list of unfavourable consequences of chronic pain of a non-cancer character speaks for the energetic pain campaign. The costs caused by chronic pain are, besides worsening of the quality of life of the person who suffers from pain and his/her relatives, also financial problems, the expense of medical and nursing services, the costs of medicines, absence at work, increased risk of the appearance of arthritis, lowering incomes, the growth of the dependency on other people, and many other. Both stress and pain are accompanied with various observable biochemical changes, not only affective reactions. What is more, pain causes an increase of the level of anxiety that also has neurochemical contents- thus, these effects are of a circular character [3].

The results of a psychological research indicate that experiencing chronic pain connected with the loss of the feeling of control to a large degree causes an increase of depressive disorders. Depressive disorders, including a deep depression in the light of contemporary knowledge- it is a set of pathological changes that can be approached as a systemic disease.

One of the important keys leading towards the understanding of the relations between stress, tissues damage and pain is the fact that a considerable part of the autoimmune diseases such as, among others, rheumatoid arthritis or scleroderma, also involve pain disorders [4]. In this context the mechanisms of neural and hormone reaction to stress are placed at the same level as neuronal mechanisms of sensory impulses.

Due to the complexity and diverseness of pain syndrome and the complexity of a human psyche, the approach towards chronic pain therapy and depression, that is also often referred to as the pain of existence, should be integral.

There are substantially justified circumstances to see in an active approach towards the existing ailments the forms of prevention of the appearance of the future chronic pain syndrome. The results of the so-far research indicate a need to use the psychological knowledge in the pain therapy of the people suffering from chronic pain. Early psychological aid may be understood here as a vital element of mental health promotion and the method of minimizing the risk of the lowered ability of the immune system [5].

In the literature devoted to the victims of traumatic experiences (the source of which was e.g. accident, injury, disease, war experience) there are descriptions of pathomechanisms of chronic pain appearance initiated by injuries that appear as a result of feedback like a wave disperse and cover higher and higher levels of the nervous system. Psychological, environmental and behavioural factors are all interactive and all impact upon the physiological aspects of pain.

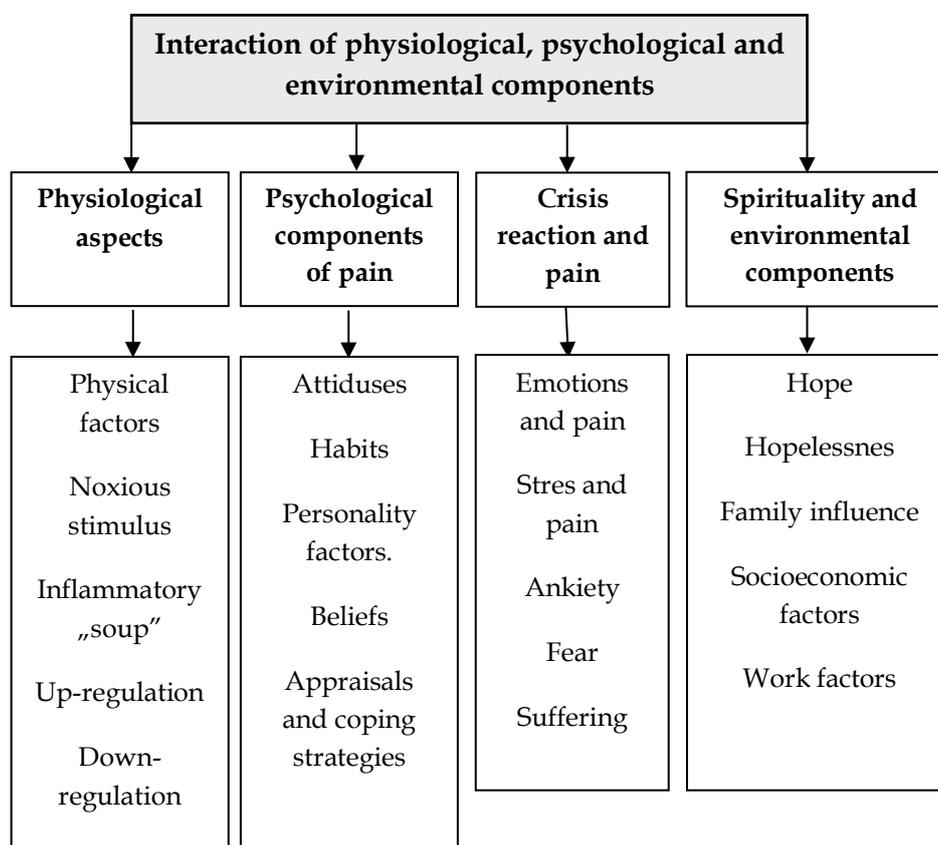


Figure 1. Interaction of physiological, psychological and environmental components –selected aspects.

We cannot ignore this, if we consider the problem of the relations between physical pain, mental pain, excessive stress, depression and immunity lowering. Due to the knowledge about nociceptive disorders, about the pain that autonomously lives its own life, we understand better and better the hidden but no less real tragedy of the victim of the behaviours the result of which is pain [6]. The events that made the source of trauma become the source of further reactions in the organism referred to as a type of “bad neurochemistry”. It is initiated by the outside impulses but still continues to exist as a result of backlash of certain neurophysiologic mechanisms [7,8]. Once started, the same pattern of neural agitation may be caused by the outside impulses of a lower and lower intensity [9-11].

## SUMMARY

To summarise, it must be stressed that there is a strong correlation between pain and depression, resulting, most probably, from similar biochemical mechanisms and from the fact that experiencing pain and depression are often connected with the same areas of central

nervous system [1,12]. Given the chronicity of many pain problems,, it is important that therapist broaden their focus beyond the elimination of the person's chronic pain. Loser and Melzack concluded: it is not duration of pain that distinguishes acute from chronic pain but, more importantly, the inability of the body to restore its physiological functions to normal homeostatic levels [13].

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