MENDAK , Magdalena, HANSLIK, Anna, BIAŁEK, Agata, WALCZAK, Agnieszka, OLSZANECKA, Monika, OLSZANECKI , Tomasz and HOVAGIMYAN, Adrian. The Impact of Migraine and Therapeutic Intervention Methods on Subjective Quality of Life Assessment. Information overview. Quality in Sport. 2025;38:58161. eISSN 2450-3118.
https://doi.org/10.12775/QS.2025.38.58161
https://apcz.umk.pl/QS/article/view/58161

The journal has been 20 points in the Ministry of Higher Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Higher Education and Science of 05.01.2024. No. 32553.
Has a Journal's Unique Identifier: 201398. Scientific disciplines assigned: Economics and finance (Field of social sciences); Management and Quality Sciences (Field of social sciences).
Punkty Ministerialne z 2019 - aktualny rok 20 punktów. Załącznik do komunikatu Ministra Szkolnictwa Wyższego i Nauki z dnia 05.01.2024 r. Lp. 32553. Posiada Unikatowy Identyfikator Czasopisma: 201398.
Przypisane dyscypliny naukowe: Ekonomia i finanse (Dziedzina nauk społecznych); Nauki o zarządzaniu i jakości (Dziedzina nauk społecznych).

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 23.01.2025. Revised: 12.02.2025. Accepted: 14.02.2025 Published: 14.02.2025.

The Impact of Migraine and Therapeutic Intervention Methods on Subjective Quality of Life Assessment. Information overview

Authors:

Magdalena Mendak

University Clinical Hospital in Opole, al. Witosa 26, 45-401 Opole, Poland

https://orcid.org/0009-0005-7347-1393

magda.mendak@gmail.com

Anna Hanslik

University Clinical Hospital in Opole, al. Witosa 26, 45-401 Opole, Poland

https://orcid.org/0009-0001-5094-0012

ania.han99@gmail.com

Agata Białek

University Clinical Hospital in Opole, al. Witosa 26, 45-401 Opole, Poland

https://orcid.org/0009-0008-3478-4698

agataaa.bialek@gmail.com

Agnieszka Walczak
University Clinical Centre in Gdańsk, 80-952 Gdańsk, Poland
https://orcid.org/0009-0006-5608-1294
agnieszka.walczak998@gmail.com

Monika Olszanecka
Czerniakowski Hospital, Stępińska 19/25, 00-739 Warsaw, Poland
https://orcid.org/0009-0003-7135-2097
olszaneckamonika@gmail.com

Tomasz Olszanecki
University Clinical Hospital in Opole, al. Witosa 26, 45-401 Opole, Poland
https://orcid.org/0009-0002-8495-5316
tomolszan23@gmail.com

Adrian Hovagimyan
University Clinical Hospital in Opole, al. Witosa 26, 45-401 Opole, Poland
https://orcid.org/0009-0007-8091-2817
adrianhovagimyan8@gmail.com

ABSTRACT

Introduction and aim of the study: The main purpose of this article is to describe the role of the psychosomatic influence on our physical health. A large amount of daily stress, having psychiatric disorders, usually distress an internal balance and can initiate a chronic or episodic migraine.This article reviews issue about: pathophysiology of a chronic migraine, migraine disability, quality of life among the patients, predictors, influence on the economic status, self-esteem, relationships.

Materials and methods: This article was based on literature gathered from various databases, including Google Scholar, ResearchGate, PubMed, ClinicalTrails, Cochrane database. The keywords migraine, psychosomatics, therapeutic methods, headache, AMPP, IBMS, CaMEO, MIDAS scale were the basis of the review.

Results: A comprehensive analysis of the current literature on the pathomechanism of migraine development sheds new light on understanding the nature of the disease. Key factors influencing the development of the disease appear to be the level of stress, coping mechanisms, and the degree of neuroticism. By understanding the risk factors for the development of migraines, we can tailor appropriate therapy based on pharmacological methods and psychotherapy.

Keywords: migraine, psychosomatics, therapeutic methods, headache

Introduction

Psychosomatic disorders are a focal point of modern research into the relationship between mental states and somatic symptoms arising from endogenous factors. Psychosomatics is a term that has long been prominent in medical and psychological terminology. It was introduced by J.C. Heinroth in 1818 and, by definition, describes the phenomenon of mutual correlation between the psyche and the body, emphasizing the observable impact of emotional and mental factors on health. This underscores the unparalleled integration of human biology, behavior, and overall health. Today, psychosomatic phenomena must be considered independent predictive factors in the development of diseases that are not unequivocally classified as psychosocial disorders. This highlights the importance of theories suggesting that individuals may themselves contribute to their health disorders. The causes of psychosomatic conditions are varied. Key contributors include improper processing of negative emotions such as aggression, anxiety, aversion, or stress. This underlines the necessity of discharging mental components to maintain vegetative homeostasis, which is essential for a properly functioning organism. Moreover, not only the causes that trigger a disease—its etiology—but also the level of resilience, the course of the disease, and its treatment depend on the somatic and psychological characteristics of the individual. In a narrower sense, psychosomatic diseases are understood as disorders caused by the awareness of experiencing emotions and the feelings resulting from them. In this sense,

psychosomatics is a one-way street: from primary psychological suffering to secondary somatic disorders, which constitute a specific group of functional disturbances successfully treated through a combination of pharmacological methods and psychotherapy. The term "functional" implies that the disorder is based on a cause-and-effect principle: the dysfunction of an organ is caused by something other than organic damage. The individual and their health must be understood as a mechanism composed of several components that influence one another. The final therapeutic outcome depends on the symbiosis of all these elements. Each individual is characterized by personal differentiation, and therefore, not every factor induces identical psychosomatic effects. Due to the existence of similar psychological conditions within society, attempts are made to standardize the approach for individuals where a given factor causes similar somatic effects. One of the most common causes inducing psychosomatic disorders is stress, often referred to as the disease of the 21st century. Living in constant rush, striving for perfectionism, overstimulation, continuous haste, and the need to meet the challenges of the surrounding reality puts the body in a state of constant readiness and mobilization, which it is evolutionarily unadapted to. The greatest negative effects of stress occur when several stressors affect the organism simultaneously within a short time frame, and the possibilities for compensating and releasing internal tension are limited. Chronic feelings of tension lead to the development of somatic changes, which can manifest as chronic pain, inflammation, nausea, and gastroenterological disorders, significantly affecting the quality of life and daily functioning. One of the most common somatic conditions is chronic headaches, known as migraines. This condition occurs more frequently in women and among younger individuals, as it is estimated that 90% of people under the age of 40 experience their first migraine attack [45]. Headache pain is typically episodic and may be accompanied by additional symptoms, such as nausea, vomiting, and hypersensitivity to sound and light. During its course, migraine may transform into daily headaches or coexist with tension-type headaches [45]. A migraine attack lasting several hours hinders the performance of duties and disrupts daily routines. The pain typically progresses in three phases: the initial prodrome phase, which includes loss of appetite and concentration difficulties; the aura phase, characterized by visual disturbances and partial paralysis; and finally, the headache phase, which is expansive and pulsating in nature. A typical medical history usually confirms the diagnosis. Migraine attacks may be triggered by certain provoking factors, one example being an improper lifestyle. Treatment has two objectives: first, to interrupt the attack (relieve the pain), and second, to prevent the occurrence of future

attacks [45]. Pharmacology is of equal importance here, as is the elimination of triggering factors, including: chronic stress, tension, fatigue, exertion, insufficient sleep. This is part of so-called "anti-attack prophylaxis," which is gaining importance among those suffering from the condition. Preventive treatment in migraines includes both pharmacotherapy (often starting with a 20 mg dose of propranolol), psychotherapy, physiotherapy, and spa treatment [45]. Migraine attacks can be interrupted with non-steroidal anti-inflammatory drugs, acetylsalicylic acid, ergotamine, and ergot derivatives. To effectively interrupt a migraine attack, medication should be taken during the aura phase. Furthermore, in chronic migraine therapy combined with tension-type headaches, tricyclic antidepressants are used. Effective and appropriate treatment largely depends on the experience of the treating physician and the patient's attitude. Often, additional factors contributing to the exacerbation of pain symptoms must be identified through a thorough medical history, analysis of lifestyle, professional and social activity, as well as psychological issues.

The transformation of migraine pain into a chronic form.

By definition, chronic migraine headaches involve 15 or more episodes of attacks within a month. Extensive studies attempt to identify factors that have a clear impact on the transformation of the disease into a chronic form; however, it should be emphasized that not every individual suffering from migraines will experience chronic illness. Risk factors related to the described transformation are divided into modifiable and non-modifiable factors. The first group includes demographic factors: age, sex, race, socioeconomic status, and education level. According to the American Migraine Prevalence and Prevention (AMPP) and the International Burden of Migraine Study (IBMS), both chronic and persistent forms are more common among women and young adults. Currently, it is not possible to precisely answer why risk factors for the development of the disease have a greater impact on females, but it is worth mentioning that this correlation occurs in every age group. According to AMPP and IBMS, education level does not have a clear impact on the transformation of the pain, but most current studies indicate that less educated individuals significantly more often suffer from more frequent headache attacks. Regarding professional work, studies have shown that the chronic form is much more likely to develop in people with partial or total disability to work, or those not employed full-time [25]. Identifying modifiable risk factors is a strategic point of reference, allowing for the implementation of preventive measures to avoid the

transformation of headaches into a chronic form. According to M. Torres-Ferrus, the main factors include caffeine overuse, sleep disturbances, and weight gain. Observational studies have proven that the consumption of significantly increased amounts of caffeine promotes the development of the disease into a chronic form. [25] Additionally, meta-analyses from available population data have shown a relationship between the frequency of chronic migraines in individuals with overweight and obesity compared to those with normal body weight. The vast majority of individuals with a high BMI declared experiencing chronic migraines, but the pathogenesis of this phenomenon is still under research. An adequate amount and quality of sleep seems to be an obvious factor in reducing the risk of transformation, as confirmed by population studies among patients. Studies conducted by The Chronic Migraine Epidemiology and Outcomes (CaMEO) revealed that individuals suffering chronically were much more likely to experience sleep apnea, with their sleep often interrupted, of low quality, and with shortness of breath [25]. The pathophysiology of sleep apnea in conjunction with the chronic form of migraine is not fully explained; however, it is suspected that hypoxia, hypercapnia, increased muscular activity, and fluctuations in blood pressure and intracranial pressure underlie this phenomenon [25]. It has been observed that individuals suffering from chronic migraines often have co-occurring conditions, including: mental disorders, vascular diseases, metabolic syndrome, asthma, sleep apnea, and injuries around the head and neck. Mental health disorders play a central role here. It is notably common for women suffering from depression to also experience chronic headaches. Additionally, one should not forget the influence of an individual's personality traits and coping abilities in stressful situations requiring increased effort. Some studies suggest the likelihood of chronic migraines depending on the activity of genes potentially associated with migraine chronification, linked to susceptibility to addiction to painkillers, and other genes involved in the creation of neural hyperactivity and oxidative stress. It is believed that the polymorphism of Catechol-O-Methyltransferase (COMT) is responsible for the predisposition to the chronification of migraine headache.

The level of physical activity, body weight, well-being, stress, and self-esteem in individuals with migraine.

A study conducted among 148 individuals aged 18-65 by a research team led by Lotte Skytte Kroll, supported by the Medical Faculty of Lund University and the Danish Headache

Center in 2017, showed that over 67% reported coexisting neck pain and tension headaches as part of their migraine experience [15]. Additionally, the study examined the impact of chronic migraine on physical activity levels, subjective well-being, perceived stress, stress coping abilities, and self-esteem. The results, based on a questionnaire, clearly indicated a correlation between reduced physical activity in individuals with migraines compared to a healthy group, as over 65% of the healthy participants reported high daily physical activity, while only 38% of the migraine sufferers reported the same [15]. This discrepancy may be attributed to health-related barriers that effectively prevent physical activity. Interestingly, daily physical activity was found to be a prognostic factor, reducing the likelihood of increased migraine frequency, and it undoubtedly serves as a non-pharmacological therapeutic method for reducing subjective pain, its duration, and frequency [15]. Obesity, due to its increasing prevalence, has become an important social issue, especially in recent years. Excessive weight gain is a problem for both developed and developing countries. Medically, it is a state in which the amount of energy intake exceeds daily energy requirements and is characterized by increased body fat levels. Additionally, obesity is a complex condition with significant social and psychological consequences affecting all age groups and socio-economic area [45]. The increasing prevalence of obesity is mainly due to the modern lifestyle, though it is important not to overlook internal factors, including: genetic factors, environmental factors, social and cultural factors, hormonal status of the organism.

Undoubtedly, obesity and overweight are conditions that contribute to many health problems not only in the adult population but also among children and adolescents. A research team led by Samuel Tarantino attempted to find a correlation between the frequency of migraine attacks and body weight in children and adolescents [24]. The study included 110 children, 47 boys and 64 girls, with 49.6% having normal weight, while 50.4% were overweight or obese. Based on the BMI index, the participants were divided into the following groups: underweight, normal weight, overweight, and obesity. Participants reporting frequent migraine attacks within a month were significantly more likely to have problems with overweight or obesity—64.7% of the study group indicated that they experienced frequent headaches, compared to 35.3% of those with normal weight [24]. Additionally, a review study revealed a connection between certain psychological disorders among migraine patients, taking into account their body weight. Using the Self-Administered Scales for Children and Adolescents (SAFA), it was shown that children with overweight or obesity had higher scores for general anxiety and distress compared to the normal weight group [24]. The conducted studies undoubtedly

confirmed the impact of stress levels on the occurrence of cyclic migraine attacks and tension-type headaches. Over 58% of the participants in the migraine group reported their stress levels as high or moderate, compared to the healthy control group, where 66% indicated low levels of stress. Additionally, it was found that individuals with chronic migraines are more susceptible to stress-inducing situations, requiring greater psychological effort to cope with daily challenges. The clear influence of the disease on self-esteem is demonstrated by the results of the questionnaire, which clearly suggest a correlation: 61% of individuals with migraines and coexisting tension-type headaches reported low self-esteem, compared to only 4% in the healthy population [24]. However, it should be noted that reduced well-being, high perceived stress, and lowered self-esteem among individuals with chronic migraines and coexisting tension-type headaches make it significantly harder to motivate this group to engage in daily physical activity. The implementation of regular physical activity and the introduction of effective stress management techniques represent a promising avenue for non-pharmacological therapy of acute migraine attacks and may serve as a reference point for further research on the influence of mental states on somatic health and human behavior [24].

The Role of Anxiety and Depression in Relation to Migraine Pain

Depression is a condition that is increasingly prevalent in modern society, affecting both young and older individuals. According to estimates from the World Health Organization (WHO), approximately 350 million people worldwide are currently suffering from it. The lifetime prevalence of depression ranges from 14.4% to 18%, and it occurs twice as often in women as in men [18]. Depressive disorders and their consequences undoubtedly present a challenge to the modern world, both on a personal and socio-economic level. The times in which we currently live are among the most peaceful since the end of World War II; however, the percentage of people suffering from depression continues to rise. It is predicted that by 2030, depression will be the second most common cause of disability in high-income countries and the third most common in low-income countries. Depression is primarily a disease that, like most physical ailments, requires appropriate therapy, and if left untreated, it leads to severe health, social, and professional consequences. Depression and feelings of internal anxiety are among the most common psychological-psychiatric disorders in individuals suffering from migraines, while chronic headaches can also be a specific physical symptom of depression. This indicates the clinical inseparability of certain conditions and disorders, which must be viewed holistically. Untreated migraines, along with other

accompanying symptoms, may include: how mood, sadness, and depression, passivity and withdrawal from social roles, decreased self-esteem, lack of belief in one's abilities, avoidance of contact with loved ones, social indifference, unexplained feelings of anxiety or unease. Additionally, nonspecific somatic symptoms may appear, which can ambiguously affect the correct diagnosis of depression: headaches, stomach pain, increased muscle tension, gastrointestinal symptoms, drowsiness, slowing down, increased fatigue, restlessness. Research conducted by Samuel Tarantino's team between January 2015 and April 2017 (published in 2020) aimed to assess the levels of perceived anxiety and depressive states among children and adolescents. The respondents in the study were 111 individuals from the pediatric population (47 boys and 64 girls), with an average age of 11.7 years. The patients were classified based on the frequency of migraine headaches—those with a high frequency of attacks and those with a low frequency of fewer than 3 episodes per month [24]. To assess the levels of perceived anxiety and depressive states, the Self-Administered Psychiatric Scales for Children and Adolescents (SAFA) were used, with subscales describing areas related to anxiety (SAFA-A), depression (SAFA-D), psychosomatic symptoms (SAFA-S), obsessive-compulsive disorders (SAFA-O), psychogenic eating disorders (SAFA-E), and phobias (SAFA-P) [24]. The results of the study showed a correlation between the frequency of migraine attacks and the level of perceived anxiety and unease. Young respondents who reported frequent headaches exhibited significantly higher levels of internal anxiety compared to those whose attacks occurred less frequently. Furthermore, a difference between the two groups of respondents was observed regarding the subscales related to SAFA-A and SAFA-D. It was demonstrated that participants with more frequent migraine attacks struggled more with anxiety, particularly related to the school environment and psychosocial relationships [24]. The same correlation was found in the subcriteria of the SAFA-D scale in the first group of respondents, which included anhedonia, general irritability, feelings of danger, hopelessness, and guilt. The results of the conducted study suggest that individuals who experience frequent headache attacks significantly more often exhibit depressive disorders with a broad spectrum [24]. It is not conclusively stated that these individuals have previously undiagnosed depression, which may alter the interpretation of the results of the conducted review studies.

Assessment of Quality of Life Among Patients Suffering from Migraine

The research issue of quality of life has remained relevant for decades, and the number

of publications containing the term "Quality of life" in the title has been steadily increasing year after year [16]. According to the World Health Organization (WHO), quality of life (QOL) is the subjective assessment by an individual of their life situation in relation to the culture in which they live, their system of values, goals, expectations, and interests. Quality of life is most often treated as a dependent variable, which in the vast majority of cases is conditioned by the disease process but also by therapeutic methods. Additionally, psychological and social factors are significantly important, as they undoubtedly affect the overall assessment of quality of life. A patient is capable of independently suggesting satisfaction with their lifestyle, considering factors that are important to them. However, recent meta-analyses attempting to define and standardize the quality of life assessment scale show that objective clinical assessment may differ significantly from subjective assessment. The possibility of comparing subjective and clinical assessments—also called objective—provides a much richer interpretation of the patient's health status and the impact of their chronic illness on overall quality of life. This allows for an in-depth analysis of the resources improving the patient's quality of life or serves as a starting point for identifying factors negatively influencing this state. However, to ensure the reliability of quality of life research, standardized tools for measurement should be used. Furthermore, the questionnaires employed should meet the required psychometric criteria. The issue of assessing quality of life has remained relevant for several decades, and the number of publications containing the term "Quality of Life" in the title has been steadily increasing year after year [16]. According to the WHO (World Health Organization) definition, quality of life (QOL) is the subjective evaluation by an individual of their life situation in relation to the culture in which they live, their system of values, goals, expectations, and interests [26]. Quality of life is most often treated as a dependent variable, which in the majority of cases is conditioned by the disease process but also by therapeutic methods. Additionally, psychological and social factors are significantly important, as they undoubtedly affect the overall assessment of quality of life. A patient is capable of independently suggesting satisfaction with their lifestyle, considering factors that are important to them. However, recent meta-analyses attempting to define and standardize the quality of life assessment scale show that objective clinical assessment may differ significantly from subjective assessment. The possibility of comparing subjective and clinical assessments—also known as objective—provides a much richer interpretation of the patient's health status and the impact of their chronic illness on overall quality of life. This allows for an in-depth analysis of the resources improving the patient's quality of life or

serves as a starting point for identifying factors negatively influencing this state. However, for quality of life research to be reliable, standardized tools for measurement should be used. Furthermore, the questionnaires employed should meet the required psychometric criteria. These include reliability and validity [16]. The attempt to assess and improve the quality of life among chronically ill patients presents a challenge not only for modern medicine and clinical psychology but also for the patients themselves. Chronic illness brings about consequences that negatively affect various dimensions of the patient's life, which may be temporary or permanent [26]. The necessity of long-term treatment, continuous care, and changes in lifestyle are factors that undoubtedly negatively influence the final assessment of quality of life. The patient's perception of the illness plays a significant role, which includes: the perception and assessment of disease symptoms, the recognition of coping methods with physical, mental, and social consequences, the assessment of the ability to function normally, and the identification of methods that allow taking control of the disease [26]. The structure of quality of life assessment consists of several interdependent domains- Physical health domain - defines limitations in performing daily activities, mobility restrictions, the need for additional help. Mental and emotional health domain is the type and frequency of positive and negative emotions, control over one's behavior, emotions, thoughts, and concentration. Social functioning domain defines the number of close friends, the frequency of social meetings, and the absence of limitations in social life [26].. The assessment of quality of life among individuals suffering from migraines across different age groups remains the subject of research and meta-analyses. A cross-sectional study conducted in 2019 by Lydia Stella Koller and her team at the Viennese pediatric outpatient clinic among the pediatric population serves as proof of the thesis that migraines undeniably negatively affect both subjective and objective assessments of quality of life [14]. The study involved 76 children and adolescents aged 8 to 17 years, with 37 suffering from chronic migraine attacks and 39 enjoying good health. The gender distribution in the study was as follows: 43.4% male and 56.6% female. The participants completed a questionnaire that assessed socio-economic, psychological, and school-related functioning areas [14]. The study showed that children and adolescents with migraines had lower academic performance, with lower grades and a diminished quality of social functioning in the school environment. The questionnaire was created by the author of the study and included the following criteria that were assessed: features of migraine pain, migraine triggers based on previous studies, the impact of migraines on the patients' lives. Additionally, patients with chronic migraines reported other symptoms such as nausea (78%),

photophobia (76%), phonophobia (70%), and vomiting (32%) [14]. In terms of physical functioning, physical weakness among those with migraines was found to reach 29.7%. A difference was also noted in daily smartphone usage, with migraine sufferers reaching for their phones significantly more often. Regarding school functioning, 32% of those suffering from migraines stated that they would achieve better academic results if it weren't for the illness, which is confirmed by the evaluative data, showing that these patients obtained lower grades than their healthy peers [14]. Among the adult population, certain relationships also allow drawing conclusions about the impact of chronic headaches on the assessment of quality of life. In 2020, Pradeep R. and his team conducted research among 108 migraine patients, of which 89 were women and 19 were men. The participants were in the age group of 20 to 40 years [19].

The HIT-6 (The Headache Impact Test-6) questionnaire was used to quantify disruptions in daily life among individuals with migraines. The designed questionnaire aims to compare six components, including aspects of impaired intellectual functioning and disruption of social functioning [19]. The results showed that patients who scored higher on the HIT-6 scale significantly more often experienced migraine attacks within a month, had longer-lasting headaches, and frequently experienced depressive and anxiety disorders. The MIDAS (Migraine Disability Assessment Scale) was also used in the study to assess the level of migraine disability [19]. It consists of 5 questions that examine the impact of migraines on three areas of activity over a 3-month period, including measuring work efficiency and quality, absenteeism due to headaches, and areas related to family, social, and emotional activities. Another scale used in the study was MSQOL (Migraine-Specific Quality of Life), a questionnaire assessing quality of life specific to migraines, examining areas related to limitations in performing social roles, the inability to perform certain social roles, or limitations in the ability to perform specific roles due to emotional factors [19].. The study results suggest significantly reduced quality of life indicators among the examined population, which could serve as a key point of reference in the clinical approach to patients and allow for setting a specific treatment goal, namely improving the quality of life among patients suffering from migraines. The study also revealed that some respondents experienced coexisting anxiety disorders (30.6% of participants) and depressive disorders (27.8% of participants). In patients suffering from both anxiety and depression, an increased frequency of migraine attacks and longer duration was observed. This serves as a point of reference to approach the patient holistically in clinical and therapeutic practice, considering other

coexisting conditions with varied backgrounds that significantly impact the clinical picture of migraines [19]..

Migraine Treatment Methods and Their Effectiveness

Migraine treatment, both in its episodic and chronic forms, remains unsatisfactory. For many years, migraine treatment has relied on medications that act as agonists of serotoninergic and dopaminergic receptors, with triptans, ergotamine, and metoclopramide being part of the arsenal used to combat migraine attacks. Recent guidelines on migraine therapy suggest that the primary goal of treatment should be to improve the subjective quality of life and restore the patient to normal functioning as quickly as possible. The objectives set by experts include achieving complete resolution or significant reduction in pain intensity within two hours of the onset of an attack and preventing recurrence within the following 24 hours [23]. Among the medications with documented effectiveness in the prophylactic treatment of migraines in controlled randomized studies, topiramate has been most frequently evaluated. It has proven to be effective in preventing both episodic and chronic migraine attacks. Its tolerance is generally better than that of valproic acid or sodium valproate [20]. In the context of improving quality of life, socio-economic and social well-being, detecting and effectively treating chronic migraine, classified as experiencing more than 15 days of headache per month for over 3 months, with more than 8 days fulfilling the criteria for a migraine, is of utmost importance. This form of the disease requires effective preventive treatment aimed at: significantly reducing the frequency of headache attacks, improving the effectiveness of acute treatment, avoiding medication overuse by patients, avoiding drugs with minimal or unproven clinical efficacy, monitoring for drug-related side effects, and avoiding unnecessary treatment costs for patients. Inadequate treatment effectiveness leads some patients to consciously abandon the proposed therapy. The most commonly used medications in the treatment of chronic migraine include antiepileptic drugs (topiramate and valproic acid), antidepressants (mainly amitriptyline), calcium channel blockers (flunarizine), beta-blockers (metoprolol, propranolol, timolol), and botulinum toxin [23]. Metoprolol and propranolol are considered highly effective and are recommended as first-line treatments for episodic migraines. Meta-analyses evaluating the effectiveness of these drugs have shown that they reduce the frequency of migraine attacks by 44% compared to a 14% reduction with placebo [20]. An innovative method of treating chronic migraine, classified as preventive

treatment, involves the use of specific monoclonal antibodies against the CGRP receptor (erenumab) and against the CGRP peptide itself (fremanezumab, galcanezumab, eptinezumab) [47]. Recent scientific reports confirm that the development of migraines may be linked to the synthesis of CGRP (calcitonin gene-related peptide) on the nerve endings innervating intracranial blood vessels [47].

Botulinum Toxin in Migraine Treatment

Increasingly, botulinum toxin (BoNT-A, botulinum neurotoxin type A) is being used in the treatment of chronic migraines, which acts locally by inhibiting the release of acetylcholine and other neurotransmitters from presynaptic parasympathetic and postganglionic sympathetic cholinergic endings, resulting in local chemical denervation [46]. The effectiveness of botulinum toxin therapy was discovered almost by accident. The first studies on the therapeutic effectiveness of BoNT-A were conducted by a multi-center team led by Lipton and colleagues, where 25 or 75 units of BoNT-A or placebo were administered to individuals experiencing 2 to 8 migraine attacks per month [46]. Patients demonstrated greater therapeutic efficacy after the application of botulinum toxin. Following certain scientific reports, further studies were conducted by teams such as Brin et al., Elkind et al., and Rejla et al. The breakthrough in migraine treatment with BoNT-A came with the publication of two studies, PREEMPT (PREEMPT I and PREEMPT II), which included combined results of studies involving 1384 patients with chronic migraines [20]. Based on the results of these groundbreaking studies, the U.S. Food and Drug Administration (FDA) approved BoNT-A as a treatment for chronic migraines [46]. In therapeutic management, non-pharmacological methods of migraine treatment are also considered, which have gained significant popularity among patients in recent years. Although they have not officially received international recommendations, experts increasingly emphasize their role as part of an effective therapy. The use of relaxation training, cognitive-behavioral therapy, and electromyographic biofeedback is justified. Key elements include regulating lifestyle, especially sleep, meals, and physical activity [46]. In recent years, herbal medicine and electrolyte supplementation, particularly magnesium and vitamins (especially pyridoxine and riboflavin), have also become more commonly used [20]. Additionally, the role of using neurostimulation techniques through various methods is emphasized—ranging from deep brain stimulation to non-invasive transcranial stimulation methods.

The Impact of the COVID-19 Pandemic on the Clinical Course of Migraine

Infectious diseases transmitted from person to person are not uncommon and have accompanied humanity for centuries. Their emergence has triggered specific psychological reactions within entire communities, altering behavior, customs, and introducing various, more or less effective methods of fighting epidemics [10]. The negative impact of the pandemic can be noted not only in terms of physical health but also mental health. Isolation, limited social contacts, and changes in the work environment due to the unexpected situation became sources of chronic stress and many psychosomatic disorders. It is worth noting that this situation required society to quickly adapt to the new reality. The subsequent months of the pandemic were marked by prolonged feelings of uncertainty, further changes related to the epidemiological situation, and evolving, at times conflicting, media messages [43]. The constant sense of tension about one's health and that of loved ones, financial situation, and restrictions on freedoms intensified feelings of psychological distress, including symptoms of depression and generalized anxiety, which are one of the factors increasing the frequency of migraines, as confirmed by scientific studies [29]. Elevated levels of anxiety, depression, and all psychosomatic symptoms closely related to them appear to be a natural response to the immense changes, challenges, threats, and uncertainty associated with the epidemic and its consequences [43]. However, for some individuals, the epidemic and its personal, social, and economic aftermath can lead to chronic stress, the intensity of which exceeds the individual's compensatory abilities, leading to the development and long-term persistence of clinically significant depressive and anxious symptoms, requiring specialized psychological and medical assistance [43]. Research also confirmed a significant intensification of psychosomatic symptoms with varying characteristics and origins, including migraines. A review study conducted by a research team led by Alicia Gonzalez-Martinez, which took place in late June and early July 2020, sought to answer the question of whether the pandemic and the global lockdown situation had any impact on the clinical course of migraines. The study was supported by the Ethics Review Board of Valladolid East Health Area, located at Hospital Universitario de Valladolid (Valladolid, Spain). The prepared questionnaire contained information about demographic data, clinical differentiation of headaches and migraine pain, including frequency, intensity, pain triggers, and post-traumatic stress symptoms [9]. The results of the questionnaire, administered to 222 individuals under

ongoing specialist care, were analyzed. Of these participants, 90.5% were women, with an average age of 42.5 years. It is important to note that the participants had not contracted COVID-19 during the study, as this could have led to analytical inaccuracies [9]. 14% of respondents reported a reduction or alleviation of migraine symptoms, while 47.3% noted worsening, which was mainly linked to stress from leaving the house. 30.2% of the respondents observed an increase in the intensity of attacks during the lockdown, while 24.3% reported that migraine attacks occurred much less frequently. 47.3% of participants noted an increase in the frequency of headaches of various etiologies, which was associated with symptoms of stress [9]. Post-traumatic stress, older age, and living with 5 or more people in the household were also associated with the intensity of migraine symptoms. More than half of the respondents, 56.3%, reported experiencing moderate to severe post-traumatic stress syndrome [9]. According to the patients' responses, the main causes for the increased frequency and intensity of migraines were threatened socioeconomic status, risk of losing a job, and the need for professional reorientation, increased levels of stress, anxiety, and worry, insomnia and difficulty falling asleep, the need to wear a protective mask at work, a sense of restrictions. Additionally, 21.2% of respondents reported issues related to limited access to medications and the fact that the implementation of other treatments was often delayed due to limited access to specialists [9]. No significant difference was noted in the intensity of migraines before or during the lockdown; however, increased intensity was more commonly observed among women, individuals struggling with insomnia, and those who experienced anxiety related to leaving their place of residence. A reduction in the intensity of migraine pain during the lockdown was noted in respondents using BoNT-A therapy. In patients who had contracted COVID-19, an increase in the intensity of migraine attacks was observed during the month of infection (in nearly 52.9% of the respondents) [9]. In conclusion, the lockdown situation, the necessity of social isolation, and the sense of uncertainty regarding health undoubtedly acted as factors that intensified both the frequency and intensity of migraine attacks in the studied population. Researchers emphasize the role of new causative factors for migraine-related headaches that were previously unknown and not subjected to verification [9]. The new epidemiological situation proved that certain persistent feelings related to emotional responses and the experience of various difficulties emitted substantial amounts of stress and negative behaviors, which are compatible with the development of psychosomatic disorders.

Summary

In our lives, both as a society and as individual beings, we are constantly exposed to stress-inducing factors that can significantly disrupt our emotional balance, leading to deterioration in health and the development of psychosomatic disorders. Migraine is a condition with many facets, often hindering daily functioning and negatively impacting various aspects of life. This is evident in recent publications that have shown how chronic migraines affect quality of life, education opportunities, career development, interpersonal relationships, and the patient's environment. The COVID-19 pandemic has shed new light on the nature of migraine, introducing new stressors that were previously unknown to patients. The conducted studies lead to a conclusion that serves as the basis for initiating and modifying therapy. In the clinical context, it is crucial to approach migraine patients holistically. This includes appropriate pharmacotherapy tailored to the patient's needs, as well as psychotherapy that addresses pervasive stressors such as challenging life or economic situations. This approach helps prevent the chronicization of episodic migraines and significantly improves the patient's quality of life and overall health.

DISCLOUSERS

Author's contribution

Conceptualization- Magdalena Mendak, Anna Hanslik
Methodology- Agata Białek, Agnieszka Walczak,
Software- Tomasz Olszanecki, Monika Olszanecka
Analysis- Adrian Hovagimyan, Agata Białek
Investigation- Magdalena Mendak, Anna Hanslik
Resources-Agata Białek, Agnieszka Walczak
Data curation- Tomasz Olszanecki, Monika Olszanecka
Writing- Magdalena Mendak, Anna Hanslik
Preparation- Adrian Hovagimyan,, Magdalena Mendak
Visualization- Agata Białek, Agnieszka Walczak,
Supervison- Tomasz Olszanecki, Monika Olszanecka,
Project administration -Magdalena Mendak, Anna Hanslik

Receiving funding not applicable.

All authors have read and agreed with the published version of the manuscript.

Funding Statement:

This Research received no external funding.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Acknowledgments:

Not applicable.

Data Availability Statement:

The authors confirm that the data supporting the findings of this study are available within the article's bibliography.

Conflicts of Interests:

Authors declare no conflict of interests.

REFERENCES:

1. Androu A. P., Lars E, Mechanisms of migraine as a chronic evolutive condition. The Journal of Headache and Pain. 2019 Dec 23;20(1):117. doi: 10.1186/s10194-019-1066-0.
2. Bao J, Mengmeng M, Shuju D, Lijie G, Changling L, Chanohua C, Nijng C, Yang Z, Li H, 2020, Early Age of Migraine Onset is Independently Related to Cognitive Decline and Symptoms of Depression Affect Quality of Life, Current Neurovascular Research, 2020;17(2):177-187. doi: 10.2174/1567202617666200207130659. PMID: 32031072, PMCID: PMC7536790

3. Sarah MB, Matthew SR, COVID-19 and Headache: A Primer for Trainees, Headache, 2020 Sep;60(8):1806-1811. doi: 10.1111/head.13884.Epub 2020 Jun 19, PMID: 32521039, PMCID: PMC7300928
4. Buse D. C, Kristina MF, Michael LR, Sharron M, Paula KD, Aubrey MA, Richard BL, Life with Migraine: Effects on Relationships, Career and Finances From The Chronic Migraine Epidemiology and Outcomes (CaMEO) Study, Headache, 2019 Sep;59(8):1286-1299. doi: 10.1111/head.13613. Epub 2019 Aug 12. PMID: 31407321, PMCID: PMC6771487
5. Chang H.Y, Mark PJ, Chih-Chao Y, Yeur- Hur L, Migraine-Specific Quality of Life Questionnaire Chinese version 2.1 (MSQv2.1-C): psychometric evaluation in patients with migraine, Health Qual Life Outcomes, 2019 Jun 24;17(1):108. doi: 10.1186/s12955-019-1169-y., PMID: 31234894, PMCID: PMC6591995
6. D'Antona L., Manjit M, Identifying and managing refractory migraine: barriers and opportunities, Headache Pain Journal, 2019 Aug 23;20(1):89. doi: 10.1186/s10194-019-1040-x. PMID: 31443629, PMCID: PMC6734232
7. Genizi J, Ayelet H, Mitchell S, Khaled O, Nurit A, Idan S, Isaac S, Aharon K, Batya EY, Sensory Processing Difficulties Correlate With Disease Severity and Quality of Life Among Children with Migraine, Frontiers in Neurology, 2019 May 24;10:448. doi: 10.3389/fneur.2019.00448, PMCID: PMC6543047 PMID: 31178812
8. Goadsby P.J, Philip RH, Margarida MO, Jan H, Christoph S, Simon A, Pathophysiology of Migraine : A Disorder of Sensory Processing, Physiological Reviews, 2017 Apr;97(2):553-622. doi: 10.1152/physrev.00034.2015, PMID: 28179394, PMCID: PMC5539409
9. Gonzalez-Martinez A, Alvaro PG, Angel LG, David GA, Sonia SL, Maria Pilar NP, Paula OG, Maria I. Sonia Q, Rodrigo LG, Ana GV, Evaluation of the Impact of the COVID-19 lockdown in the Clinical Course of Migraine, Pain Medicine, 2021 Sep 8;22(9):2079-2091. doi: 10.1093/pm/pnaa449. PMID: 33659991, PMCID: PMC8108628
10. Heitzman J, Impact of COVID-19 pandemic on mental health, Psychiatry. Pol. 2020; 54(2): 187–198, PL ISSN 0033-2674 (PRINT), ISSN 2391-5854, DOI: https://doi.org/10.12740/PP/120373
11. Yang Y., Pang B, Hao Ch, Xiao-Yu Z, XIao-Yi T, He-Qing C, The Effect of Acupuncture on The Quality of Life in Patients With Migraine: A Systematic Review

and Meta-Analysis, Frontiers In Pharmacology, 2018 Oct 26:9:1190. doi: 10.3389/fphar.2018.01190. eCollection 2018, PMID: 30416444, PMCID: PMC6212461

12. Kim S, Dae-Woog B, Sang-Gue P, Jeong-Wook P, The impact of Pain-related emotions on Migraine, Scientific Reports, 2021 Jan 12;11(1):577. doi: 10.1038/s41598-020-80094-7.PMID: 33436778, PMCID: PMC7804193
13. Klausen SH, Gitte R, Birte T, Lene B, Non Pharmacological Interventions Addressing Pain, Sleep And Quality of Live with Children and Adolescents with Primary Headache: A Systematic Review, Pain Journal Researchgate, 2019 Dec 23:12:3437-3459. doi: 10.2147/JPR.S216807, PMID: 31920368 PMCID: PMC6939407
14. Koller LS, Susanne CD, Peter V, Quality of life in children and adolescents with migraine: an Austrian Monocentric, cross-sectional questionnaire study, BMC Pediatrics Journal, 2019 May 24;19(1):164. doi: 10.1186/s12887-019-1537-0, PMID: 31126268, PMCID: PMC6533686
15. Kroll LS , Catharina SJ, Maria W, Tirine N, Louise BS, Rigmor HJ, Gunvor G, Level of physical activity, well-being, stress and self-rated health in persons with migraine and co-existing tension-type headache and neck pain, Headache Pain Journal, 2017 Dec;18(1):46. doi: 10.1186/s10194-017-0753-y. Epub 2017 Apr 18, PMID: 28421374, PMCID: PMC5395520
16. Majkowicz M, Methodological bases of life quality assessment, Palliative medicine in practice 2017; 11, 2: 78-83, ISSN 1898-0678
17. Nazeri M, Hamid- Reza G, Amin P, Fatemeh A, Sahand SR, Mohammad S, Shokouh A, Ramin A, Role of anxiety and depression in association with migraine and myofascial pain temporomandibular disorder, Indian Journal of Dentist Research, 2018 Sep-Oct;29(5):583-587. doi: 10.4103/0970-9290.244932., PMID: 30409936
18. Pełka-Wysiecka J, Depression: Is Pharmacotherapy Truly Diversified?, Psychiatry 2014;11(3):141-147
19. Pradeep R, Nemichandra SC, Harsha S, Radhika K, Migraine Disability, Quality of Life and Its Predictors, Annals of Neurosciences 2020 Jan;27(1):18-23. doi: 10.1177/0972753120929563.Epub 2020 Jul 3, PMID: 32982095 PMCID: PMC7499825
20. Różniecki JJ, Adam S, Izabela D, Chronic Migraine Treatment: Recommendations Developed by the Expert Group of the Polish Headache Society and the Pain Research

Section of the Polish Neurological Society Based on International Guidelines and the Latest Literature, Pol. Przegl. Neuro.2018;14(2):60-66

21. Ruscheweyh R, Diana P, Monika H,Andreas S, Pain-related avoidance and endurance behaviour in migraine: an observational study, Headache Pain Journal, 2019 Jan 18;20(1):9.doi: 10.1186/s10194-019-0962-7.PMID: 30658566, PMCID: PMC6734268
22. Speck R.M, Huda S, Kathleen W, Ren Y, David A, Janet F, Elizabeth B, Richard BL, Psychometric Validation of the Role Function Restictive Domain of The Migraine Specific Quality-Of-Life Questionnaire Version 2.1, Headache, 2019 May;59(5):756-774. doi: 10.1111/head.13497.Epub 2019 Mar 12.PMID: 30861580, PMCID: PMC6593730
23. Stępień A, Modern Migraine Treatment, Pain 2019, Tom 20, Nr 1, s.39-44, DOI: 10.5604/01.3001.0013.4581
24. Tarantino S., Laura P. Alessandra D.S. Valeria M. Anxiety, Depression and Body Weight in Children and Adolescents With Migraine. Frontiers in Psychology. October 2020 11:530911, DOI:10.3389/fpsyg.2020.530911
25. Torres-Freus M, F Ursitti, A Alpuente, F Brunello, D Chiappino, T de Vries, S Di Marco, S Ferlisi, L Guerritore,, From transformation to chronification of the Migraine: pathopsychological and clinical aspects, J Headache Pain, 2020 Apr 29;21(1):42. doi: 10.1186/s10194-020-01111-8., PMID: 32349653, PMCID: PMC7189559
26. Turska W. Skowron A. Methodics of quality of life assessment. Farm Pol, 2009, 65(8): 572-580
27. Amy B.W., Christopher D. M., Kenneth P. Effect of Different Meditation Types of Migraine Headache Medication Use, Behavioral Medicine, 2017 Jan-Mar;43(1):1-8.doi: 10.1080/08964289.2015.1024601. Epub 2015 Apr 11. PMID: 25864906, PMCID: PMC4600642
28. Michał W., Magdalena W., Ewa M.S. Obesity- definition, epidemiology, pathogenesis, Advances in medical science, t.XXVI, number 4, 2013
29. Yeh WZ, Leigh B, Bruce VT, What is the actual prevalence of migraine?, Brain and Behaviour, 2018 Jun;8(6):e00950. doi: 10.1002/brb3.950. Epub 2018 May 2. PMID: 30106228, PMCID: PMC5991594
30. Yildizhan S, Hakan SS, Abdulkadir T, Psychoform and somatoform dissociative experiences in migraine: relationship with pain perception and migraine related

disability, Ideggyogy Sz. 2018 Nov 30;71(11-12):385-392. doi: 10.18071/isz.71.0385. PMID: 30604937

31. Ulku FD, Oya B. Effects of Perceived Social Support, Depression and Anxiety Levels on Migraine, Noro Psikiyatr Ars. 2020 Aug 17;57(3):210-215. doi: 10.29399/npa.25000.eCollection 2020 Sep. PMID: 32952423, PMCID: PMC7481976
32. Sheena KA, Arun K, Patricia MB, Mechanism of chronic migraine, Curr Pain Headache Rep. 2011 Feb;15(1):57-63.doi: 10.1007/s11916-010-0165-z., PMID: 21197624
33. SK Aurora, Is chronic migraine one end of a spectrum of migraine or a separate entity?, Cephalagia. 2009 Jun;29(6):597-605.doi: 10.1111/j.1468-2982.2008.01811.x. Epub 2009 Feb 18., PMID: 19228150
34. Sheena KA, Mitchell FB. Chronic Migraine: An Update on Physiology, Imaging, and the Mechanism of Action of Two Available Pharmacologic Therapies, Headache. 2017 Jan;57(1):109-125. doi: 10.1111/head.12999.Epub 2016 Dec 2., PMID: 27910097, PMCID: PMC6681148
35. Stephanie WG, Stephen S, Targeting CGRP: A New Era for Migraine Treatment, CNS Drugs, 2015 Jun;29(6):443-52. doi: 10.1007/s40263-015-0253-z. PMID: 26138383
36. Christina SE, Alan MR, Update on the Pharmacological Treatment of Chronic Migraine, Curr Pain Headache Rep. 2016 Jan;20(1):6.doi: 10.1007/s11916-015-0533-9. PMID: 26728188
37. Roger KC, Chronic migraine in women, J Fam Pract. 2014 Feb;63(2 Suppl):S46-51.PMID: 24527485
38. Catarina F, Austeja D, Ellie W, Irakli K, Piotr Ch, Sara V, Stefano A, Veronica M, Antoinette M, CHristian L, Migraine and cognitive dysfunction: a narrative review, J Headache Pain 2024 Dec 19;25(1):221.doi: 10.1186/s10194-024-01923-y., PMID: 39701926, PMCID: PMC11657937
39. Ulku FD, Oya B, Evaluation of anxiety, depression and marital relationships in patients with migraine, Ideggyogy Sz, 2020 Mar 30;73(3-4):129-134. doi: 10.18071/isz.73.0129. PMID: 32364340
40. Defene E, Pinar Y, Elif A, Cem I, The relation of sexual function to migraine-related disability, depression and anxiety in patients with migraine, J Headache Pain, 2014 May 27;15(1):32. doi: 10.1186/1129-2377-15-32. PMID: 24884652, PMCID: PMC404639

41. Shakila M, Mahsa M, Abbas T, Amir S, Vajiheh A, Association of Depression with Migraine without Aura; A Cross-Sectional Study PMID: 34908954 PMCID: PMC8650174
42. Jes O, Peer TH, Methodology of drug trials im migraine: History and suggestions for the future, Cephalgia, 2024 Dec;44(12):3331024241298642.doi: 10.1177/03331024241298642.PMID: 39655416
43. Gambin, M., Sękowski, M., Woźniak-Prus, M., Wnuk, A., Oleksy, T., Cudo, A., i in. (2020a). Generalized anxiety and depressive symptoms in various age groups during the COVID-19 lockdown in Poland. Specific predictors and differences in symptoms severity. *Comprehensive Psychiatry, 105,* 152222.
44. Wąsowski M. Obesity- definition, epidemiology, pathogenesis. Borgis- Advances in medical Sciences, 4/2013 s. 301- 306
45. Wójcik- Drączkowska H, Bilińska M, Nyka W, Migraine- diagnosis and treatment, Family medicine forum, 2007, t. 1, n. 2, 109-114 ISSN 1897- 3590
46. RB Lipton, SF Varon, B Grosberg, PJ McAllister, F Freitag, SK Aurora, DW Dodick, SD Silbersterin, HC Diener, RE DeGryse, ME Nolan, CC Turkel, OnabotulinumtoxinA improves quality of life and reduces impact of chronic migraine, Neurology, 2011 Oct 11;77(15):1465-72.doi: 10.1212/WNL.0b013e318232ab65. Epub 2011 Sep 28.
47. Anne- Sophie W, Levi PS, Andrew FR, Calcitonin gene-related peptide (CGRP): role in migraine pathophysiology and therapeutic targeting, Expert Opin Ther Targets, 2020 Feb;24(2):91-100.doi: 10.1080/14728222.2020.1724285. Epub 2020 Feb 13. PMID: 32003253, PMCID: PMC7050542