Stressful headache already among young adults?

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Stress is defined as an organism's total response to environmental demands or pressures. The impact of stress on the body was explored by Hans Selye in 1936 (1). He first defined a “general adaptation syndrome,” which revolves around the concept of homeostasis. According to the concept of homeostasis, in response to stressors the body seeks to return to its equilibrium state, or a normal level of stress resistance. The general adaptation syndrome is composed of an initial alarm phase, followed by a period of sustained resistance, and ending with exhaustion. During the initial alarm phase, the body begins to build up resistance to the stressor beyond normal resistance levels and mobilizes the sympathetic nervous system to meet the immediate threat. In the resistance phase, the individual's body attempts to resist or cope with a persistent stressor that cannot be avoided. This phase also results in an increase in level of hormones like cortisol, which has been found to be elevated during stressful situations (2). Finally, the body enters the exhaustion phase which can threaten the person's well-being and lead to psychological or physical health consequences.

The causes of stress are a mix of personal, interpersonal, and social factors and can include any event or occurrence that a person considers a threat to his or her coping strategies or resources. For example, lack or loss of control over one's physical environment or social support network can cause stress. In addition, some vulnerability to stress could be caused by genetic markers (3). The symptoms of stress can be either physical or psychological. Stress-related physical illnesses, such as heart attacks, arthritis, and chronic pain conditions, result from long-term overstimulation of a part of the sympathetic nervous system that regulates the heart rate, blood pressure, and digestive system (4). Moreover, chronic stress increases the risk of developing depression and anxiety (5).

Stress and headache are intricately interrelated and there are several questions concerning the etiology of stress and headache. On one side, stress could act as a trigger for headache or migraine attacks and modify or exacerbate headache intensity and duration. This also includes the immediate time after reduction of stress (“let-down headache”) (6). Stress and stressful life events may also increase headache/migraine attack frequency, eventually resulting in chronic headache forms (7,8). On the other side, headache and migraine attacks themselves could act as factors leading to increased stress levels.

In this issue of Cephalalgia, Schramm and colleagues evaluate the association between headache and stress in a longitudinal population-based study (9). The data are from a large general population-based study from Germany that includes a broad age range (21–71 years old). This longitudinal study quantitatively shows that the frequency of stressful events is positively and significantly correlated with the frequency of headaches. Furthermore, this association is particularly pronounced in participants with tension-type headache and among younger headache sufferers. The results of the study strongly underscore the importance of the stress-headache association on the population level and highlight that this association starts early in life. All analyses between perceived stress and the headache forms are adjusted for sex, age, frequent intake of acute pain medications, alcohol consumption, smoking, body mass index, and education. These data highlight the importance of evaluating young adults for the presence of this association and call for the development of interventions specifically tailored to this population.

In their discussion, the authors suggest the use of mind/body treatments, such as meditation, yoga, or tai chi, and behavioral treatments such as stress management, coping skills, biofeedback, and relaxation training. However, there are little data regarding the effect of various interventions on the stress-headache

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association in young adults. Given the strong association between stress and headache in young adults, there is an urgent need to investigate the beneficial effects of these treatments in younger populations.

When considering how to best address stress in young adults, it is essential to consider the individual’s responses to stressors, rather than the stressors themselves. For example, skills of coping, personality, temperament and comorbid psychiatric disorders influence the appraisal of life stressors. Balaban and colleagues (10) showed that migraine was highly prevalent among medical students who had alexithymic personality trait (e.g: difficulty identifying and describing emotions) and post-traumatic stress disorder. Other psychological traits like anxiety and aggressiveness have been associated with stress and migraine in a small cross-sectional study (11). This suggests that intervention approaches may need to be tailored based on an individual’s comorbidities, personality, coping skills, and temperament.

Addressing risk factors for headache and migraine like stress is important because headaches and migraines have been associated with lower quality of life and poorer academic performance in school children and adolescents (12). Young adults with chronic headaches also have a poor social functioning, quality of life and school absenteeism (13). By reducing the frequency and intensity of headaches or migraine, the well-being and academic performance of students could be improved.

Other studies have evaluated the association between stress and headache or migraine in schoolchildren and adolescents. In a small cross-sectional study, Neut and colleagues found that stress was the most frequent event associated with migraine (14). Results of a German cohort study based on 8800 households with children between the ages of 7 and 14 years indicate that in a highly competitive academic atmosphere, there was a risk of developing headache, particularly migraine (15). Moreover, another study among the general population with 1260 adolescents highlighted specific differences between migraine and tension-type headache (16). Results from this study showed that migraine had a stronger association with stressful experiences than tension-type headache. The differences in the strength of the association might reflect different biological mechanisms involved in complex interaction between stress and headache and migraine.

Chronic stress at a young age can have lifelong effects on the biological, psychological, and behavioral responses later in life. Thus, it is particularly important to develop programs for stress management among the young. The literature shows that cognitive-behavioral therapy and the use of complementary and alternative medicine (e.g. mindfulness-based stress reduction relaxation, yoga, biofeedback training) could be beneficial to reduce headache frequency and pain intensity in some patients (17–19).

In conclusion, there is an increasing body of literature supporting a strong interplay between stress and migraine/headache. Some migraine and headache patients might, therefore, benefit from behavioral and psychological interventions designed to improve stress appraisal and coping strategies. Further interdisciplinary research strategies should be developed to unveil complex interrelationships of biological and psychosocial factors in patients with headache and migraine and to improve treatment options.

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References


