

Post-traumatic stress disorder

**Marta Sarnowska¹, Anna Leśków², Małgorzata Tarnowska²,
Andrzej Wysocki³, Marek Pieńkowski³, Joanna Rosińczuk²**

¹Division of Economics and Health Care Quality, Faculty of Health Sciences, Wrocław Medical University, Wrocław, Poland; um.marta.sarnowska@gmail.com

²Department of Nervous System Diseases, Faculty of Health Sciences, Wrocław Medical University, Wrocław, Poland; anna.leskow@umed.wroc.pl; malgorzatatarnowskaa@gmail.com; joanna.rosinczuk@umed.wroc.pl

³Preventive Medicine Military Centre in Wrocław, Wrocław, Poland; andwysocki@wp.pl; m.p@wp.eu

Abstract

Post-traumatic stress is observed in people who have been directly exposed to traumatic mental and physical stimuli in the form of post-traumatic stress disorder of systemic reactions. Not only soldiers returning from military missions are affected by it, but also victims of all kinds of disasters, rescuers, providing the former with assistance, people pursuing the stress-related professions, including firefighters, paramedics, as well as fans of extreme sports and people, who have experienced unusual situations, such as death of a beloved person, divorce or a traffic accident. The stress symptoms follow the triggering factor. Reaction of the limbic system, associated with the circulation of emotional state, which takes place in the Papez area, causing a variety of vegetative symptoms, especially the

circulatory ones, has a vital role to play. The consequences of post-traumatic stress affect both mental and emotional changes, as well as the changes in dynamic stereotype, and they also manifest indirect effects in the family life of an entity and its immediate surrounding. It is important to provide the people affected by post-traumatic stress syndrome with psychological and psychiatric care. The purpose of this article is to review the available literature data on both the post-traumatic stress disorder and its consequences as well as to focus on the key issues related to the prevention and assistance provided for people affected by the syndrome.

Keywords: stress, post-traumatic stress disorder, moral injury

INTRODUCTION

PTSD (Post-traumatic Stress Disorder) is one of the most serious emotional disorders, which initially was regarded to have mainly affected the participants of war operations. Soldiers, living in the moderately safe reality, are suddenly forced to exist in the space overwhelmed by war, frequently having to endure dramatic conditions, which are related to traumatic experiences relevant to the battlefield. These factors lead to severe stress induced by insecurity, constant fear, concern for the life and health of one's own and of one's companions, as well as by the reduced possibility to respond to the stress factor with an attack or escape. [1–4] The increasing incidence of combat stress in military operations, where there is often no direct contact with the enemy, unlike the military actions run from ancient times to the Second World War, is associated with the inability to perform the physiological stress response either in fight or escape. There are many reports on the delayed stress response related to the participation in traumatic event either as a victim or a witness, which, very frequently, makes it impossible to restore the original mental condition, associated with the emotional state circulation in the Papez area of the limbic system. [5] This causes a change in the dynamic stereotype, which has been reported earlier, and the disturbance in social relations and family bonds. The observations made among the veterans of the Vietnam War, the Gulf War or the Iraq War may serve as an example. In 2011-2013, in United States, 650 soldiers, who had returned from military missions, committed suicide, which outnumbered the victims killed in direct combat. [5] The latency phase, which directly follows a traumatic

experience, possible to last up to several months, when the victim displaces traumatic events, does not only involve soldiers returning from military missions, but also traffic accident participants, victims of attacks, as well as victims of sexual assault and of both physical and psychological abuse. The subsequent phase, referred to as the transitional - self-destructive one, may result in permanent changes in personality, classified under ICD-10 code F 62.0 in the International Statistical Classification of Diseases and Related Health Problems as "Permanent personality change after catastrophic experience (after enduring an extreme situation)".

The PTSD sufferers rarely get the specialist care of a psychologist or a psychiatrist. The syndrome often involves a feeling of shame, associated with mental defeat, a sense of weakness and of surrender. What is particularly important, post-traumatic stress disorder may appear in the secondary form and is indirectly associated with negative feelings and emotions of family members. Therefore, it is significant to continually gather knowledge concerning the issue of stress and to disseminate the information in the form of scientific studies, which will increase the awareness of PTSD sufferers and their families. [6]

There is great similarity between the stress induced by traumatic experiences, which accompany human being functioning in the contemporary world and the one, which results from the participation in military missions. They both deprive an individual of sense of security, even if they do not affect them personally. They cause anxiety, which frequently takes the chronic form. The basis for any therapeutic and protective measures is to make people affected by stress response aware of its destructive impact on any of their life spheres as well as of time-delayed health consequences, manifested by changes in hormone levels and in bones. [7,8]

The awareness of life and health threatening consequences of stress should incline the person at risk to understand their own emotional reactions and to attempt eliminating them by undertaking psychological or pharmacological therapy.

The aim of this study is to present the issue of post-traumatic stress incidence as well as its consequences, by means of the available literature sources concerning the problem. A comprehensive study on the subject will expose and make the public, including the families of the PTSD sufferers, aware, that this is a complex issue, and in order to overcome it, the cooperation of many entities is required.

It is extremely important to address the subject, because similar stress response occurs not only in soldiers participating in warfare operations, but also in victims of various catastrophes, such as train or natural disasters (floods, fires, avalanches).

STRESS – BASIC CONCEPT

Stress as an expression of body reaction to a sudden change of environmental and emotional factors is associated with adaptation of the organism to a specific situation, which enables it to survive. This is a response, which has accompanied human kind since the beginning of mankind. Nowadays, it is differently implemented - there is no typical response to a stress factor, which causes a change in the autonomic nervous system adjusting the body to making an effort in form of an attack or escape. Inability to respond to stress by attacking or escaping contributes to significant physiological changes, such as hypertension, hyperglycaemia, increase in glucocorticoids, decrease in immunity and hypercoagulability. These changes were to guarantee survival by securing basic life processes in the stress-induced situation. If they cannot be implemented, they entail the incidence of civilization diseases. The latter include: hypertension, increased incidence of cancer, tendency for psychosis, depression and schizophrenia. [3,9]

Stress, as defined in the dictionary of psychology, "is any force which, when applied to the body, results in a significant modification of its forms, usually with an implication that it is a form of distortion or degeneracy; this term is used with regard to the forces and pressures, both physical, mental and social; it must be noted that stress understood in such manner means *the cause*— in this sense stress precedes an effect". [10] This definition concurrently indicates that stress is "a state of mental tension, induced by the forces or pressures, as referred to in definition 1; it must also be recognized, that stress, when meant in this manner, is considered as *an effect*, which is the result of the presence of other pressures; the term *stressor* is used to determine the causing factor". [10]

Nowadays, the word "stress" is also used in everyday speech and is applied to name own emotions and experiences. It is often pointed out that certain behaviors are motivated by stress, and this is the manner they are explained. The studies on stress were initiated by the physiologist Hans Selye. The concept of stress defined by him presented it as a nonspecific response of the body, which results from the occurrence of harmful stimuli, ergo stressors. Such response was referred to as the General Adaptation Syndrome (GAS). The aforementioned syndrome proceeds through three phases. The first phase is the alarm reaction

stage, at which the defensive forces of the organism are mobilized. Subsequently, there is the resistance stage, when the full adaptation to the stressor takes place. The final phase is the exhaustion stage. It results from the depletion of energy adaptation. Specificity of the stressor lies at the basis of its existence. The stressor must affect with adequate intensity and for a sufficiently long period of time. [11] Another important factor is the type of stressors, which are subdivided into both positive and negative information-related stresses which may affect the primary or secondary signal system, triggering a stress-related response dependent on the intellectual level of a person. The second group of stressors includes external factors - physical and chemical ones, which contribute to pain reactions. On the other hand, there are endogenous factors, comprising another group, which cause a stress response, in the form of pains associated with incidence of a disease, which may be manifested by e.g. colic, degenerative disc disease, rheumatoid pains. [12]

In 1936, the concept of stress was introduced by the researcher in question to the fields of psychology and medicine. The endocrine studies, performed by H. Selye, were regarded to be the starting point. They showed that the nonspecific alarm reaction is manifested by human's organism only when a strong stimulus takes place in its immediate surrounding. Over the years, thanks to the conducted research, the scientist proved that such reactions may occur as a result of various stimuli. It should be emphasized that in this case what matters is the natural understanding of stress, namely, the natural response of an organism to the stimuli, it is being affected by. Such reactions can cause negative and positive experiences. Positive stress is referred to as the eustress, while the negative one – the distress. [13]

It is difficult to clearly identify what exactly the stress is. The literature provides us with numerous, frequently very distinct characteristics of the stress concept. Stress has recognized as an abstract relationship which occurs between the subject and its environment at a particular time. Two approaches to stress have been distinguished out of its numerous characteristics – the subjective and the systemic ones. According to the former one, stress is regarded as a state or a process of an organism, manifested in an entity. In its essence it resembles an emotion or a mood. The aspects indicated in the systemic approach, also referred to as a relational one, are the entity and its surrounding, as well as a certain kind of relationship that occurs between them. The nature of this relationship is determined by processes of entity's cognitive assessment as well as by the lack of balance between the capacity to act and their requirements. [13]

The stimuli inducing stress have different impact intensity, and the consequences of their occurrence depend on what response is aimed by a given stimulus. The reactivity aimed by a stimulus is determined and conditioned by various factors. Thus, each of the stimuli will trigger a different response in a specific individual. The type of reaction depends on different elements, which determine how the organism will react to specific situations. Therefore, there are no two identical individuals, who would react in the same way, when being affected by a given stimulus triggering in them a specific response. [6,11,14,15]

SOURCES OF STRESS

Intensity and the scope of their impact are the main criteria concerning the classification of stressors. This makes it possible to separate the dramatic events, which by their extent may resemble disasters, concurrently including the whole groups of stimuli; serious threats and challenges that relate to individuals or groups of people; minor ones, known from a daily life distresses. By way of example, the first group includes the ones which take larger scales, such as wars, transport and natural disasters. This kind of stress is associated with the traumatic or extreme stress. What is characteristic about this type of stressors is the fact they cannot be ignored and left unnoticed. For that reason, they are regarded as universal stressors. To provide an exact characteristic of this group of stimuli it must be noted that they affect the most basic values of man, mainly, their life and place of residence. They place very high demands, which when applying well-known and reliable practices, are usually unreachable for a person. They are the stressors, which affect an individual in an unexpected way. They frequently leave a deep mark in man, which usually reappears when an individual is exposed to a stimulus similar to the primary one, which caused the traumatic situation. The second group includes the medium intensity stressors, which have been rated by the SRSS (Social Readjustment Rating Scale) scale and which relate to the life changing situations, associated with death of a close relative, divorce, separation, imprisonment or the loss of a job. The group comprises the events which commonly are considered to be desirable and positive, such as entering into marriage, organizing a family celebration or obtaining heavy achievements. The group of the lowest intensity stressors includes minor distresses and concerns. By way of example, inability to find a required item or the continuous anxiety about being constantly late may be this type of stimulus. According to some researchers, these stimuli are particularly dangerous due to their persistent and widespread occurrence. [16,17]

The stressors, namely the stress inducing stimuli, include physical stressors, such as noise, cold, heat, considerable temperature fluctuations, changes in atmospheric pressure, as well as all kinds of infections and physiological conditions, such as starvation, physical trauma, excessive work overload, longer duration of car driving, as well as excess of multiple stimuli reaching an individual at the same time. The second group is represented by psychological stressors. These include, for example, concern of an individual about not being able to meet the self-required tasks. They also include - task overload and under load, lack of awareness, loss of control, lack of time, or haste. The last group of stressors comprises social stressors, such as conflicts, unwanted visits, isolation, loss of a close person or e.g., mobbing. [12] State of depression, social isolation, changing the dynamic stereotype, as well a state of disease-related immobility, which causes stress response, may all be understood as stressors.

When approaching sources of stress, regarded as certain life events, which are its cause, it is significant to focus on the disruption of homeostasis. There is evidence that long-lasting traumatic experiences may lead to the incidence of lesions. At this point, it is crucial to mention the latest developments of researchers, which oscillate around allostasis, understood as a process of achieving stability through change. The systems involved in the process of allostasis allow for adequate responses of the body, especially in situations, which significantly deviate from the norm. Allostasis has repeatedly been referred to as a process which maintains homeostasis. Therefore, it is possible to indicate that stress is a process of allostasis, which involves many changes that aim to restore the balance disturbed by the occurrence of certain life events. Researchers agree that each type of the life events may be some kind of adaptive load and may contribute to the incidence of many diseases. [6,7,9,11,18]

Stress is seen as a form of external stimuli compilation. The situational requirements and individual assessment of the skills possessed by an individual are of great importance. The factor decisive in this case is not only the intensity of the stressor but also the subjective evaluation of situational requirements. Therefore, the result of this evaluation is at the base of stress. If an event is not considered to be a threat, it will not cause stress. If, however, it starts to be seen as a threat, and an individual perceives it as important, then owing to the secondary evaluation, stress will be the response to such situation. However, the ability to cope with stress will fall within the normal, possible to manage range. Consequently, an individual belief in a lack of ability to deal with a particular event and the intensity of this conviction will trigger a stronger response. [12]

Stressors may be divided according to their duration. The first group includes the 'one-off' stressors, which take a specified period of time. Then the periodic or cyclic events are listed, which recur with some regularity. The third group comprises the chronic stressors, which affect in a permanent manner. The last group is represented by the stressors referred to as sequences. They are the sequences of stressful events, where the first stressor entails another. [2,3]

When approaching an issue related to specific cause of stress, it must be noted that it is of subjective nature. The inborn qualities, the attitude to oneself, to the world and to other people, as well as previous experiences, personality and personal ways of coping with critical situations determine both the manner it is experienced and the causes, which induce it. Controllability or a sense of controlling the events ongoing in the life of an individual become very significant. The ability to anticipate is also very important, because it will help to reduce the feeling of stress. The fact that a warning signal occurs earlier gives an individual time to get accustomed to the situation and to find ways to resolve it. Therefore, what may seem particularly unfavourable is the emergence of uncontrolled situations. Constant anticipation and attempts to cope with stress may also lead to the stress-causing overload. [12]

CONSEQUENCES OF LIVING UNDER STRESS

Stress, depending on its nature, carries several negative consequences. It may also be the driving force motivating to act and to find strength to perform tasks, that have previously seemed unachievable.

It has been shown that rats subjected to stress develop illnesses and infections more often and the tumors induced to them began to grow faster. This is related to the inhibitory effects of the adrenergic system and glucocorticoids on the immune system. It has been found that surviving the death of a partner contributes to a greater risk of developing cancer. To confirm this hypothesis, blood samples of fifteen men, whose wives had suffered from breast cancer and died, were examined. The blood samples were taken before the men became widowers and after the death of their spouses. It turned out that the risk of developing serious diseases was increased in their majority. Therefore, it must be stated that stress causes severe weakening of the human body. A similar situation also applies to women. Examination was conducted in patients who had their breast removed as a result of breast cancer. The ones, who calmly accepted their fate, lived longer than women, who when affected by such events,

experienced stress, confusion and a sense of helplessness. A decrease in organism immunity was also found in a group of students, who showed symptoms of depression. [19]

Other consequences associated with stress include lack of concentration, distraction, reduction of observation skills, impairment of perspective thinking ability, as well as impaired judgment and its consequences and decrease in objectivity and criticism. Creativity is also reduced. The long and short-term memory deteriorates. Furthermore, the decrease in reaction rate is observed, which increases the rate of errors made. Cognitive functions get reduced. What is reported is the increased return to the accepted and stereotypical patterns. Anxious people turn to cautious acting, while the aggressive ones manifest actions, which are uncontrolled and difficult to manage. [4,12]

It has been observed that the prolonged exposure to the stressor contributes to the reaction of aggression and fear, as well as dissatisfaction, insecurity, the incidence of depression, apathy, hypochondria. A typical cardiovascular response to a stress stimulus is an increase in heart rate, increase in vascular resistance in the visceral area as well as growth in blood circulation in contralateral limbs. There is increase in the coronary blood flow and the general blood pressure. This leads to the reduced gastrointestinal motility and a decrease in its secretion. Stress increases the secretion of sweat glands and the composition of sweat is different when the sympathetic nervous system dominates the parasympathetic one. The stressor effect contributes to the phase circulatory response, associated with local activation of the sympathetic nervous system, and consequently with the discharge of epinephrine and norepinephrine into the blood stream from the adrenal medulla and subsequently with a discharge of glucocorticoids from the adrenal cortex, which intensify the action of catecholamines. It also leads to an increase in blood clotting. Stress entails a reduced sensation of pain, which is associated with the secretion of endorphins in the central nervous system. [1,2,20]

It has been observed that people under the influence of prolonged stress lose the comfort of health and they become hypochondriacs. Their moral and emotional barriers are weakened. The conduct standards and the control of sexual impulses either become milder or on the contrary, they become unrealistically enhanced. The frequency of emotional explosions may also increase. It has been found that stress entails a decreasing self-esteem, which may result in a sense of helplessness, and even depression. A belief in the ability to influence one's life is weakened, and an individual is constantly awaiting failure. A change to the personality traits may also be observed. People, previously regarded as organized and meticulous, may become

careless and distracted. Anxiety may be the consequence of the long-term stress. It occurs particularly when the situation, an individual is confronted with, is considered to be a threat. Another, very undesirable kind of anxiety is the one referred to as social anxiety, which occurs in various situations requiring building relations and contacts with other people. In most cases, the person remaining under severe stress does not let the tension out on its cause, but on family members or people who are found in their immediate surrounding. [1,6]

Taking into account these observations, it is possible to state that chronic stress is responsible for the wreaking havoc both in person's body and their closest surrounding. The situation, which has exhausted all adaptation possibilities, entails the pathological adaptation to stress. It is manifested by symptoms of a disease, which may lead to death. First of all, the normal level of resistance collapses, which subsequently leads to the development of various diseases. Chronic stress entails disturbances in normal functioning of an individual and blocks the ability to counteract stress. Breakdown, which is observed, may relate to many spheres of human life, including the somatic and mental life and may lead to social deviations. It may cause the incidence of psychosomatic diseases, neurosis and psychosis, as well as various kinds of addictions, such as drug or alcohol addictions. People subjected to chronic stress often tend to commit crimes or suicides. [17,18]

Therefore, it is possible to state, that although stress is such common phenomenon, it is equally very dangerous, regardless of whether this is the low intensity stress, which occurs from time to time or the chronic and traumatic one. Even if initially the stress motivates and releases the energy deposits, which previously have not been realized, but when its duration is extended – it will never entail positive consequences. Situations where it is possible to use constructive stress must not be ignored. It is because, there are researchers who define stress as "the regulatory mechanism of a body (psychological, physiological) mobilizing for an increased activity (affected by external or internal stimuli, called stressors), which enables adaptation and effective functioning in the surrounding". [18]

Wojtach perceives stress as a mechanism which motivates to increase activity. Learning to cope with stress and using it to one's own purposes facilitates the release from its negative effects. Applying various strategies to cope with and fight stress undoubtedly helps to eliminate its destructive consequences. However, it does not appear that being subjected to constant stress and continuous defense against will always result in positives. People, who increased their economic activity when being under stress may serve as an example. On the

other hand, changing the lifestyle into the 'home-mode' contributes to the development of various addictions. [21]

FAMILY LIFE OF PEOPLE LIVING UNDER CONSTANT STRESS

Stress causes many negative consequences that affect not only the person exposed, but also their family members. For that reason it is very significant to spot the early and undesired symptoms of stress. Burdening the people from the immediate surrounding with one's negative emotions and frustrations is frequently observed.

Nervousness, which may turn into aggression is not unloaded to the source of stress, but to the people who are closest to the stress-exposed person. Nervousness, which can turn into aggression is not unloaded to the source of stress, but the people who are in the closest surrounding of an individual affected by it. The greatest extent of family life disorganization is observed when a person being under stress develops an addiction, turns to crime or commits suicide. [18]

One of the most common consequence of stress, especially of the chronic one is an attempt to fight it with alcohol, which leads to strong alcohol dependence. The researchers studying the issue note that, instead of getting a specialist help, the stress-exposed individuals refer to chemicals, which are to ease the effects of stress and tension. These may include psychotropic drugs, alcohol or drugs. In Poland, the individuals being under stress mostly turn to alcohol. This entails the mechanism of psychological vicious circle, which may be illustrated by the stress-alcohol-stress formula. It is referred to as a neurasthenic manner of alcohol abuse. This suggests that alcohol is usually consumed in small doses, but only when fatigue or stress occurs. This may be observed when the symptoms of neurasthenic syndrome are encountered. However, the continuous abuse of alcohol, even in small doses, makes the symptoms get worse over time. One of the alcohol abuse styles is referred to as the 'contact' manner, which is applied only when a social stress is experienced. Alcohol consumption in such situations makes an individual feel more connected with the closest environment, more relaxed and self-confident. This stage dangerously approaches the alcohol addiction stage, which is understood as the pathological alcohol dependence, which includes all the negative consequences for the family of the addicted person. A similar mechanism is encountered by families struggling with the case of drug addiction. [7,11,18]

Alcoholism and other addictions lead to many severe changes in the family system. They are very frequently accompanied by aggression, which is difficult to control. The stress-exposed

person, though against their will, becomes violent and rude to the closest ones. Nervous situations may be triggered even by minor problems of everyday life. Passive response, manifested by a lack of interest in the immediate environment, apathy, helplessness, depression affect the family in a negative manner. This condition exacerbates greatly, when the individual subjected to stress has repeatedly undertaken unsuccessful attempts to cope with their problems. Such situation entails a doubt in one's own strength, as well as in other spheres of social functioning. Situation, which triggers an active response to stress, may result in a loss of contact with the immediate reality. A stress-exposed person attempts at all costs to lead to implement the tasks that have been assigned to them and does not become aware of the basic information which they receive. [12]

Recognition of the source of stress as well as fighting with it are of great significance. It is important for the closest family of the stress sufferer to guarantee help in problem solving and to realize that stress may lead to unintentional destructiveness. An individual subjected to chronic stress lives in constant emotional tension, which subsequently entails emotional imbalance. This in turn is characterized by aggressive behavior, annoyance, outbursts of aggression and a number of other reactions that are usually unintended and unpredictable. They are equally destructive to the sufferer themselves and to their immediate surrounding. Two types of such reactions may be distinguished. The first one is referred to as a socio-destructive one, associated for example with crime. The second type is represented by self-destructive reactions, which include suicide attempts. When discussing the issue concerning the impact of stress of one family member on the household, it is important to underline the socio-destructive responses, which include all of antisocial behaviors. These include the already mentioned dependences. Another cause of alcohol abuse may be the depressive moods, often associated with lack of livelihood and work, which destructively influences the sphere of family life. [2,18]

Help and interaction of family members to provide the sufferer with psychological needs, such as security, closeness, relaxation, and toning down negative memories, cannot be overestimated. The work-related stress should be leveled by supervisors or co-workers. It frequently happens that the closest ones ignore the problem, they do not search any solution or try to surround the stress sufferer with great number of positive emotions, when instead, they should seek constructive ways to eliminate stressful situations. The family situation may be of great help when stress occurs but it may also intensify it. The latter situation arises when a person from the immediate surrounding starts to impose a direct pressure on the stress-

affected person by criticizing, insulting and decreasing the psychological self-esteem of the sufferer. This is achieved by exerting pressure on the stress-exposed individual by creating dependency relationships, domination and competition. The indirect and unconscious ways of putting pressure, such as making continuous comments, which undervalue the competence of the sufferer, may be severely experienced by them. [12]

Supporting people affected by stress is associated with specific forms of material assistance and psychological support. This includes the broadly understood guidance. [12–14] It is important not to leave the individuals affected by stress on their own. What is mostly needed is someone close, a partner, immediate family or even just a friendly acquaintance.

SUMMARY

By way of conclusion, stress is integral part of man's life. It may be a factor, which motivates to act, only when it is the short-term one, while in the case of the long-term exposure to stress factors it entails dangerous consequences, including increased susceptibility to certain physiological and psychological diseases. Post-traumatic stress disorder, which follows traumatic experiences, is considered to be an extreme example of severe stress effect. The universality of the phenomenon entails the need for support to the people affected by it, as well as for development of specialist therapies, facilitating a return to normal physiological and psychological condition.

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Conflict of interest

All Authors declare that there is no conflict of interest.

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