

PREVALENCE OF POST-TRAUMATIC STRESS SYMPTOMS RELATED TO THE COVID-19 PANDEMIC AND THEIR IMPACT ON WORKPLACE FUNCTIONING

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Abstract: The COVID-19 pandemic, with its real threat to health and life, can be considered a traumatic stressor posing a risk of developing post-traumatic stress disorder (PTSD) symptoms. **Aim:** The purpose of this article was to investigate the prevalence of post-traumatic stress symptoms related to the COVID-19 in a group of employees and to assess their significance for functioning in the workplace. **Method:** The study included 46 employees (26 men and 20 women) from IT industry. The study used a self-designed survey and the *Impact of Event Scale - Revised version* (IES-R). **Results:** The results indicate the presence of clinical severity of symptoms in terms of the total PTSD index in 15.2% of the subjects, while taking into account the more rigorous diagnostic approach (where all three dimensions of PTSD must simultaneously reach a value above the cutoff point) - in 8.6% of the subjects. The highest rates were obtained by the subjects on the dimension of post-traumatic stress hyperarousal. **Conclusions:** The identified symptoms of post-traumatic stress in the studied group of employees may have implications for functioning in the workplace adversely affecting the employee's work performance, and thus organizational performance.

Key words: COVID-19 pandemic, employee, post-traumatic stress disorder (PTSD), workplace functioning

Introduction

The COVID-19 pandemic appeared unexpectedly, spreading at a surprisingly fast pace around the world. The epidemic situation in the world aroused widespread fear and forced significant changes in functioning. Over time, the consequences of the experienced sense of threat began to manifest themselves in various areas of life, including mental health (Nilamadhab, Kar, Karc, 2021; Talevi et al., 2020). There has been an increase in the presence of anxiety, depression, post-traumatic stress disorders, or problems related to functioning in interpersonal relationships (Heitzman, 2020). As a result of the COVID-19 pandemic, in 2020-2021, the global prevalence of anxiety disorders increased by 25.6% with an overall incidence of 4,802.4 cases per 100,000 people (Santomauro et al., 2021). Importantly, although the overall number of infections has decreased compared to the state at the peak of the pandemic, the consequences of the epidemic situation may be felt just as intensely until now. Experiences related to e.g. with: fear of infecting oneself or one's relatives and thus the fear of losing one's health and/or life, as well as the fear of losing a job, reducing the working time or changing its organization may be severe enough to persist over time. In addition, a reduced but still persistent actual state of epidemic threat may constantly reinforce and sustain previously experienced distress. The article attempts to identify the symptoms of post-traumatic stress related to the COVID-19 pandemic in a group of working people. The assessment of the occurrence of these symptoms, and then also the planning of intervention methods for professionally active people, is an important element in improving job satisfaction and productivity and is also conducive to organizational performance.

Literature review and research background

Research confirms the increased prevalence of post-traumatic stress disorder (PTSD) symptoms as a result of the COVID-19 pandemic (Qiu et al., 2021; Salehi et al., 2021; Yunitri et al., 2022). The pooled prevalence of PTSD (*post-traumatic stress disorder*) in the COVID-19 pandemic is estimated to be between 12 and 27.13% in the general population, between 15.45 and 36.3% among COVID-19 survivors and

between 17.23 and 29.22% among health care workers. These arguments suggest that despite some ambiguity regarding the diagnostic criteria, the COVID-19 pandemic and the stressors associated with it can be considered in terms of traumatic stressors, as a result of which PTSD may develop (Bridgland, Moeck, Green, 2021). According to the diagnostic criteria proposed by the DSM-5 (*Diagnostic and Statistical Manual of Mental Disorders*) (American Psychiatric Association, 2013), a traumatic stressor usually involves a direct reaction to the event (indirect if the stressor affects relatives), however, as it has been proven, the symptoms of traumatic stress may appear also as a result of the indirect impact of pandemic stressors, such as information about virus transmission presented in the media (Chao et al., 2020; Mertens et al., 2020). In China, nurses who were not involved in the care of COVID-19 patients and the general public had higher PTSD-like symptoms, depression, anxiety, stress symptoms, and physiological reactions, than front-line nurses (Li et al., 2020). The authors suggest that it is possible that front-line nurses referred to media information about COVID-19 to a lesser extent. In addition, the symptoms of post-traumatic stress may also appear as a result of an anticipated event that has not yet occurred, and may appear in the future, e.g. the risk of illness and death of a loved one. One of the criteria of a traumatic stressor in both DSM-5 and ICD 10 (*International Statistical Classification of Diseases and Related Health Problems*) also indicates its catastrophic nature (American Psychiatric Association, 2013; World Health Organization, 1998) which would eliminate many stressors related to the COVID-19 pandemic from this category (Norrholm et al., 2021). However, a number of stressful events related to the pandemic are confirmed to trigger symptoms from the traumatic stress spectrum (Bridgland, Moeck, Green; 2021). Trauma here may result from confrontation with several less intense experiences, such as, among others: fear of infection, exposure to quarantine and isolation, fear of losing a job, being closed, loneliness and losing social life (Łaskawiec et al., 2022). Moreover, due to the fact that new cases of COVID-19 are still appearing, experiences of peri-traumatic reactions (responses at the time of a stressful event or immediately after) are possible, which intensify the symptoms experienced (Bridgland, Moeck, Green; 2021).

The diagnosis of PTSD, in addition to the criterion related to exposure to a traumatic stressor (criterion A), also requires the presence of other characteristic symptoms. The table below presents a summary of other PTSD diagnostic criteria based on two commonly used classifications: DSM-5 and ICD-10.

Table 1. List of other (except criterion A) diagnostic symptom criteria for PTSD according to ICD-10 and DSM-5

Diagnostic criteria according to ICD-10	Diagnostic criteria according to DSM-5
<p>B. There is persistent recall or “reliving” of the stressor in the form of disturbing “flashbacks”, vivid memories, or recurring dreams, or feeling worse when faced with circumstances resembling or related to the stressor.</p>	<p>B: Presence of at least one symptom of intrusion related to the traumatic event that occurred after the traumatic event: B1. Recurring unwanted, intrusive and stressful memories of a traumatic event. B2. Recurrent, distressing dreams whose content and/or emotional content is related to the traumatic event(s). B3. Dissociative reactions (e.g. flashbacks) in which the person feels or behaves as if the traumatic event(s) have happened again. (These reactions can be considered on a continuum with the most extreme intensity consisting in the loss of awareness in the surrounding reality). B4. Severe or prolonged psychological distress when exposed to internal or external cues that symbolize or resemble some aspect of the traumatic event. B5. Strong physiological responses to internal or external stimuli that symbolize or resemble some aspect of the traumatic event.</p>
<p>C. Patient currently avoids or prefers to avoid circumstances that resemble or are related to the stressor that were not present prior to exposure to the stressor.</p>	<p>C. Persistent avoidance of trauma-related stimuli after the traumatic event, as manifested by one or both of the following: C1. Avoiding or trying to avoid distressing memories, thoughts or feelings about or closely related to the traumatic event(s). C2. Avoiding or attempting to avoid external stimuli reminiscent of the event (people, places, conversations, activities, objects, situations) that evoke distressing memories, thoughts or feelings about or closely related to the traumatic event(s).</p>

<p>D. Any of the following is present: 1) Partial or complete inability to reconstruct certain important circumstances of the encounter with the stressor.</p>	<p>D. Negative cognitive and emotional changes that occurred or worsened after the traumatic event(s), as manifested by at least two of the following symptoms: D1. Inability to recall important aspects of the traumatic event(s) (usually related to dissociative amnesia rather than head injury, alcohol or drug use). D2. Perpetuated and exaggerated negative beliefs about self, other people, or the world (e.g., "I am a bad person," "no one can be trusted," "the world is absolutely dangerous," or "my nervous system is completely ruined"). D3. A fixed and distorted way of thinking about the causes or consequences of the traumatic event(s) that leads to blaming yourself or others. D4. Persistent negative emotional state (e.g. fear, horror, anger, guilt or shame). D5. Markedly limited interest or participation in important activities. D6. Feeling distant from other people or alienated. D7. Persistent inability to experience positive feelings (e.g. inability to feel happy, content, or loved).</p>
<p>2) Persistent symptoms of heightened psychological sensitivity and arousal state (not present prior to exposure to the stressor) as any two of the following: a) difficulty falling asleep or staying asleep, b) irritability or outbursts of anger, c) difficulty concentrating, d) excessive vigilance, e) enhanced startle reaction.</p>	<p>E. Marked changes in arousal and reactivity related to the traumatic event(s) that started or worsened after the event(s), such as at least two of the following: E1. Irritability or outbursts of anger. E2. Risk-taking or self-destructive behavior. E3. Increased vigilance. E4. Excessively strong reaction to unexpected stimuli. E5. Difficulty concentrating. E6. Difficulty falling or staying asleep.</p>

Source: 3rd American Psychiatric Association (2013), *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. 5th ed., Washington, D.C.; World Health Organization (WHO) (1998), *ICD-10 Classification of Mental and Behavioral Disorders. Research Diagnostic Criteria*, Kraków: Vesalius University Medical Publishing House, Institute of Psychiatry and Neurology.

Assuming that the experience of the COVID-19 pandemic may result in the development of PTSD symptoms of varying intensity, which may persist over time and intensify especially in the face of confrontation with the consequences of the constant activity of the COVID-19 virus, this article attempts to assess the occurrence of post-traumatic stress symptoms in the examined group of employees.

Methodology of the research

The survey was conducted in a group of polish employees working in the IT industry in March-April 2023. The survey was conducted online. The criterion for selecting employees for the study was minimum 3 years of work experience and holding a position requiring a stationary form of work. Among the employees who consented to the study, 46 people (26 men and 20 women) aged 28 to 49 (M=33.98; SD=5.45) returned the completed forms. Detailed characteristics of the study group are presented in Table 2.

Table 2. Characteristics of the study group

		n	%
Employees	female	20	43.5
	males	26	56.5
Education	university	27	58.7
	higher	19	41.3
		M	SD
Age (years)		33.98	5.45

Source: Own study

The *Impact of Event Scale - Reviser* (IES-R) was used in the study. This scale, adapted to Polish conditions by Juczyński and Ogińska-Bulik, consists of 22 items and is intended mainly to measure PTSD symptoms, enabling the indication of the overall severity of PTSD symptoms and the severity of symptoms of individual dimensions of PTSD (intrusion, avoidance and arousal) (Juczyński, Ogińska-Bulik, 2009). The examined person evaluates the frequency of symptoms on a five-point scale (0-not at all, 1-slightly, 2-moderately, 3-to a considerable extent, 4-definitely yes) by referring them to a specific traumatic event.

The overall score is calculated by summing up all the points, and the scores for each subscale - by adding up the points from the questions assigned to each subscale. It is also possible to calculate averages for the total score and subscales. The threshold value for the clinical severity of symptoms is the average score of 1.5 points, referring to both the individual dimensions and the general index of severity of post-traumatic stress symptoms. Scores exceeding 1.5 points in each of the three dimensions of the scale make the diagnosis credible. The internal consistency coefficient for the entire scale of the Polish version of IES-R is 0.92, while for the subscale of intrusion it is 0.89, arousal - 0.85, and avoidance - 0.78. In turn, the values of internal stability coefficients for the entire scale and for the subscales: intrusion, arousal and avoidance are: 0.75, 0.79, 0.76, 0.68, respectively. For the purposes of this study, the manual was modified so that the subjects assessed the occurrence of post-traumatic stress symptoms in relation to the COVID-19 pandemic.

In addition, the study used an original questionnaire taking into account the following data: gender and age of the respondent, education, position held in the company, form of work and the number of weekly working hours, length of service in the examined company.

Results

Table 3 presents the results of the study of the severity of post-traumatic stress symptoms measured with the IES-R scale (general score and results in three dimensions of post-traumatic stress) based on the obtained raw scores.

Table 3. The level of symptoms of post-traumatic stress disorder in the surveyed group of employees

PTSD scores on the IES-R scale	M	SD
intrusion	7.9	5.2
avoidance	6.1	5.3
arousal	9.3	5.3
overall score	23.5	14.3

M – mean, SD – standard deviation

Source: Own study

In order to check the percentage of clinical values (above the cut-off point) for PTSD symptoms in the surveyed group of employees, the average in individual post-traumatic stress dimensions and the average for the overall score were calculated, and then those results that reach a value above the adopted cut-off point (> 1.5) were compiled. The data obtained are presented in Table 4.

Table 4. Clinical values (above the cut-off point) of post-traumatic stress symptoms obtained in the study group of employees

intrusion		avoidance		arousal		overall score	
n	%	n	%	n	%	n	%
6	13	4	8.6	10	21.7	7	15.2

Source: Own study

15.2% of the surveyed employees obtained a clinical value for the general index of PTSD. On the other hand, more restrictive guidelines for diagnosis require obtaining a value above the cut-off point simultaneously in all three dimensions of PTSD (Juczyński, Ogińska-Bulik, 2009). In this study, such a result was obtained by 8.6% of the respondents (n=4). The highest scores of clinical intensity were obtained in the dimension of arousal symptoms (21.7%), and the lowest in the dimension of avoidance (8.6%).

Discussion

The results obtained based on the study of IT industry employees indicate the presence of clinical exacerbation of symptoms in terms of the general PTSD index in 15.2% of the respondents, while taking into account a more rigorous diagnostic approach (where all three PTSD dimensions must simultaneously reach a value above the cut-off point) - in 8.6% of respondents. These results are lower compared to the data reported in meta-analyses of studies on COVID-19-related PTSD in the general population (12-27.13%) (Qiu et al., 2021; Salehi et al., 2021; Yunitri et al., 2022). Similarly, compared to the results of studies taking into account employees of various industries; e.g. in a study with 181 social workers - 26.21% met the diagnostic criteria for PTSD (Holmes et al., 2021). In turn, in the study by Rosemberg- et al. (2021) with the participation of employees working in the food services, food retail, hospitality and industries, the probability of developing PTSD was estimated in 37% of respondents. Perhaps the spread of the PTSD indicator as a consequence of the COVID-19 pandemic is related to the time in which the measurement was made, because the further from the outbreak of the pandemic, this indicator may be lower (Shevlin et al., 2021). This study was conducted 3 years after the outbreak of the pandemic, which may explain the relatively lower rates of PTSD. It is worth emphasizing, however, that research in this area is carried out on various groups of employees, as well as with the use of various tools diagnosing PTSD symptoms, which may make reliable comparisons difficult - thus it is an incentive for further research. This does not change the fact that even a slight increase in PTSD symptoms in employees can affect functioning in the workplace. PTSD, Like other mental health problems, can increase absenteeism from work. Based on data from 24 countries, the average number of days out of role (when employees were totally unable to do their work or usual activities) due to PTSD was 42.7 annually (Alonso et al., 2013). Similarly, the negative impact of the discussed symptoms also applies to employee productivity, which translates further into organizational performance. A study conducted during the pandemic in a group of 169 employees revealed a weak but significant relationship between the overall PTSD index and PTSD dimensions and employee performance (Yilmaz & Karakuş, 2022). Post-traumatic stress symptoms may impair verbal memory (Johnsen, Asbjørnsen, 2008; Johnsen, Kanagaratnam, & Asbjørnsen, 2008), which may affect the learning process and impair the quality of tasks performed, especially where verbal material is used. Consequences may also manifest themselves in the area of interpersonal relations in the workplace. In conflict situations, employees with PTSD symptoms are more likely to experience anxiety and irritability (McFarlane & Bookless, 2001). This can result in distance and alienation in workplace relationships. Post-traumatic stress spectrum symptoms are also associated with employee burnout and its characteristic symptoms: emotional numbness, depersonalization, and a diminished sense of personal accomplishment (Whealin et al., 2007; Mather, Blom, Svedberg, 2014).

It is also noteworthy that the relatively high rates (21.7%) obtained in this study in terms of post-traumatic stress arousal symptoms. This means that in the surveyed employees, symptoms such as: difficulties with sleeping, concentrating attention, irritability, excessive vigilance or exaggerated reactions to unexpected stimuli occur more often compared to symptoms of avoidance and intrusion.

Symptoms of arousal can make it difficult to perform tasks at work, reduce their quality and promote errors and accidents at work. In general, problems with focusing on work and the related preoccupation with anxiety may affect professional activity in all its aspects, leading to a marked decrease in its quality. It is worth emphasizing, however, that the symptoms of the arousal dimension of PTSD are the central symptom not only for post-traumatic stress, but also for other anxiety disorders, which may make it difficult to draw clear conclusions about their origin (Brown, McNiff, 2009). Therefore, further research is needed to verify the cause-and-effect relationships in this regard.

Conclusion

The emergence of the COVID-19 pandemic forced the implementation of many socio-economic changes. The consequences of these changes have often become the cause of serious difficulties, which are also visible in the sphere of mental functioning. As a result of the pandemic, the prevalence of various types of mental health disorders has increased, including anxiety, depression, or PTSD symptoms. The latter may have developed because events related to the pandemic may have been experienced as traumatic stressors.

The article presents the results of research on the occurrence of post-traumatic stress symptoms in a group of people working in the IT industry. The clinical value for the general level of post-traumatic stress was achieved by 15.2% of the respondents (8.6% taking into account a more rigorous diagnostic approach). In addition, the result in terms of the symptoms of the arousal dimension, which at the clinical level was achieved by the largest percentage of the respondents (compared to the other dimensions), turned out to be significant. The results of the overall PTSD level obtained in the study, although lower compared to the data from the beginning of the pandemic, suggest that, despite the passage of time, PTSD symptoms associated with the COVID-19 pandemic may still occur. For the work environment, this means the possibility of revealing the consequences of these problems in terms of the quality of the employee's functioning in the workplace. These consequences may concern various aspects, including: increased absenteeism at work, problems in performing tasks resulting from impaired concentration of attention and other cognitive functions, or difficulties in relations with colleagues and superiors. Deterioration of the quality of an employee's work and thus a decrease in his efficiency also means consequences for the entire organization, as it translates into organizational performance.

The presented research results emphasize the importance of raising awareness of the occurrence of PTSD symptoms, ways of manifesting these symptoms and, most importantly, methods of preventing the development of PTSD among working people and helping those who already experience this problem. In particular, the management staff should have appropriate theoretical knowledge and appropriate practical tools in this regard, which, if implemented early enough, will minimize risk factors, and in relation to employees already struggling with the problem, will effectively support the therapy process.

It is also worth mentioning the limitations of the study. One of the limitations of this study is the use of self-reported measurement tools, which are associated with the risk of measurement error resulting from consciously or unconsciously presenting themselves in a different light than in reality. In addition, the survey was conducted in a group of employees in one industry and on a relatively small sample size which creates some limitations in terms of generalization of the results. At the same time, this provides a reason to design similar studies in the future with the participation of employees from different sectors of the economy

Literature

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