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PSYCHOSOMATIC SYMPTOMS ASSOCIATED WITH TRAUMATIC EVENTS EXPERIENCED IN MEDICAL STUDENTS

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Abstract
Objectives: Many facts indicate the important role of psychosomatic symptoms that occur due to traumatic events. This study is an analysis of the coexistence of psychosomatic symptoms and traumatic events. Though not every person taking part in these events develops a fully symptomatic post-traumatic stress disorder (PTSD), psychosomatic symptoms with a strong psychological component are observed in many. This study focuses on a comparison of the intensity of somatization, anxiety, depression, and distress of medical university students, who encountered a traumatic event and those who have not experienced trauma. **Material and Methods:** The data was collected from 594 students of different academic majors at the Poznan University of Medical Sciences, Poland. The participants were asked if they had experienced situations that caused psychological trauma as well as about the intensity of their psychosomatic symptoms. The data was collected with 2 questionnaires: *Post-traumatic Stress Diagnostic Scale* and *Four-Dimensional Symptom Questionnaire*. **Results:** The study reveals that 78% of students experienced a traumatic event, in 15% moderate and severe symptoms of PTSD are observed, 45% presents average and high stress levels, 23% experiences symptoms of depression, whereas 30% has anxiety and 26% somatic symptoms. **Conclusions:** Studies show that experiencing traumatic events in life is linked to the higher intensity of an/the entire range of psychosomatic symptoms. Int J Occup Med Environ Health. 2023;36(5):606–17

Key words:
students, stress, PTSD, symptoms, traumatic, psychosomatic

INTRODUCTION

Many reports indicate the significant role of psychosomatic symptoms associated with traumatic events [1]. The main focus of this study was to analyze the relationship between participating in a traumatic event and psychosomatic symptoms. Not every person, who experienced trauma in the past develops a fully symptomatic post-traumatic stress disorder (PTSD). Studies show that many people experience psychosomatic symptoms of different intensity [2].

The mutual relationships between stress, health and coping have been the subject of clinical and health psychology studies for a long time. Health and disease models that take from psychological stress and coping theories in

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the studies of the role of traumatic events in the development and during somatic diseases are receiving more and more support in health sciences [3]. Experiencing stress can have a long term impact on one's health, which results from such characteristics as intensity, the process itself, localization, and controllability. This results partly from the fact that stress is an emergent process, which consists of interactions between individual and environmental factors, events happening in a specific historical and social context, allostatic states and various forms of psychological and physiological responses [4].

In his groundbreaking research work, Selye [5] pointed to the need to study the health effects of repeated and prolonged stress. In his studies, Selye argued that stress-causing factors can be life-threatening if adequate actions are not taken to eliminate their negative effects. He also pointed out the opposite effect, namely, anything that threatens life causes stress and adaptive reactions of the body. Adaptability and resistance to stress are basic living conditions for every important organ and function involved [5]. The concept of psychological stress is commonly used as an indicator of the mental health of the population in studies analyzing public health, in population and epidemiological studies, and others. A closer look at the scientific literature shows that the term "psychological stress" is often used to refer to a wide range of symptoms, from depression and anxiety to personality traits, functional disabilities, behavioral problems and a range of somatic ailments [6]. Psychological stress is largely defined as a state of emotional distress characterized by symptoms of depression (e.g., loss of interest, sadness, hopelessness) and anxiety (anxiety, feeling emotionally strained) [6]. These symptoms may be associated with unpleasant somatic experiences (e.g., insomnia, headaches, lack of energy), which may have a diverse clinical.

The relationship between stress and health have been documented in population studies, which measured the perception or exposure to stressors. University students are vulnerable to psychological problems due to various stressors and demands. This is especially true for students in the health care fields who face additional challenges compared to other students. Medical students have face to life threatening conditions in addition to demanding workload and intense medical education.

Studying medicine means embarking on a demanding path that takes several years and seems to put many medical students at risk of stress and burnout. Not to mention not always favorable previous life experiences. Although medical universities try to support students psychologically during their studies, research suggests that medical students experience a high rate of personal distress [7] with hidden adverse consequences for academic performance, [8] ability, [9] professionalism [10], and health [11]. Research clearly proves that stress and anxiety during medical studies are predictors of future difficulties in fulfilling the professional role of a doctor [12].

In this context, noted are the negative consequences of stress, which is perceived not only as a direct cause for disorders and diseases, but also as a mechanism mediating etiopathogenesis of diseases. Health is considered not as a process, but as a state which reflects the negative impacts of stress on humans. Therefore, universal stressors such as random events and traumatic situations as well as everyday events, can determine one's health [13]. Stress is inseparably linked with psychological wellbeing, and stressful events are the main factor in causing many common psychosomatic disorders [14]. Traumatic events are considered universal stressors. This means they challenge the most basic human values, like for example life, shelter, existential security etc. Moreover they have high demands, which humans cannot combat with their existing resources, using their existing coping mechanisms. They appear often very suddenly, with no warning. They leave a powerful mark, which is reactivated every time there is contact with stimuli associated with a specific event. Symptoms of PTSD are common in those exposed

to a stressful event or situation of extremely dangerous nature [15]. The American Psychiatric Association has revised the diagnostic criteria of PTSD in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) [16]. Post-traumatic stress disorder has been added to a new category in DSM-5, titled "Trauma and stress-related disorders".

Many studies indicate that the symptoms of mental disorders resulting from traumatic events have a strong relationship with somatization, especially pain with medically unexplainable reasons. Although there is extensive literature which analyzes the relationship between somatization and PTSD, it does not reflect literature about the relationship between somatization and depression and anxiety [17]. Especially in the light of new epidemiological studies, which suggest that the frequency of traumatic events and PTSD has been underestimated in previous studies. It seems that more often there is a need to focus on the possible role of trauma in parts of the population with medically unexplainable symptoms [18]. Post-traumatic stress disorder is an affective disorder that is characterized by anxiety, depressive symptoms, hyperactivity, and a limited range of experienced emotions [19].

The aim of this study is to analyze the relationship between the intensity measures of traumatic events and anxiety, depression, distress, and the intensification of somatic symptoms.

MATERIAL AND METHODS

Studied group

Studies included 594 students of the Poznan University of Medical Sciences, Poland. The majority, 498 (83.8%) of them were women, 96 (16.2%) of the participants were men. The subjects of the study represented an array of majors at the University, like nursing, dietetics, medicine, emergency medical services (EMS), and other. Most of the students were in their first 2 years of University (N = 384, 64.6%), the rest represented higher years. The group's age ranged 18–26 years. While 128 (21.5%) of the students stated that they had not experienced a traumatic event, 466 (78.5%) noted that they had experienced trauma. Among these 466, 206 (34.7%) noted that the traumatic experience was not caused intentionally by other people, while 96 (16.2%) of them took part in a traumatic event that was consciously and intentionally caused by other people.

The studies were voluntary and anonymous, the questionnaires did not include sensitive information. Participants were informed about the study's aim, as well as the subject of trauma and ways to treat it.

Research tools and statistics

Traumatic events, their intensity and impact on individuals were studied thanks to 2 research tools. Participants filled out 2 questionnaires.

- *Post-traumatic Stress Diagnostic Scale* (PDS) (risk of post-traumatic trauma) makes it possible to formulate a diagnosis of PTSD in accordance with DSM-IV criteria, as well as measure its symptoms. In the presented study, PDS was applied in the full version containing questions about exposure to various traumatic events, for example linked with interpersonal abuse. The original version of this tool has a very high internal reliability (r = 0.92) and a strong test-retest reliability (r = 0.74 for the diagnosis of PTSD and r = 0.83 for the intensity of symptoms) [20]. The Polish version of the PDS is also characterized by satisfactory psychometric properties [21].
- The *Four-Dimensional Symptom Questionnaire* (4DSQ) measures 4 aspects: distress (16 items, scale 0–32), depression (6 items, scale 0–12), anxiety (12 items, scale 0–24), and somatization (16 items, scale 0–32). The original version of the test was founded by the Institute for Health and Care Research EMGO in Amsterdam, the Netherlands [22,23]. The questionnaire consists of 50 items, which are divided into 4 scales. The patient answer categories are measured on the 5-point Likert's

scale. Statistical analysis show that the Polish adaptation of 4DSQ has satisfactory psychometric properties, reflecting the original Dutch questionnaire. Results acquired by Polish patients can be referred to the average individual 4DSQ scales, assuming that results higher by a standard deviation than the average result in the group of patients can attest to the experience of symptoms of depression (>4 pts), distress (18 pts), anxiety (>8 pts), or somatization (17 pts).

The quantitative and categorical data is presented as mean (M) ± standard deviation (SD) and frequencies (percent). The relationship between ≥2 qualitative variables was measured with χ^2 test or Kruskal-Wallis H test, Kolmogorov-Smirnov test, or Mann-Whitney U test, depending on the case. A univariate and multivariate logistic regression analysis was conducted in order to identify and evaluate the prediction value of potential predictors and risk factors linked to the variables of perceived stress and reported traumatic events, which have been divided depending on the intention of inducing pain from another person and random events without the participation of another person. All of the reported p values were 2-sided, and $p < 0.05$ was considered statistically significant. All statistical analyses were conducted with the usage of SPSS.

RESULTS

Clinical traits characterized as PTSD criteria according to DSM-5 containing 4 groups of situations have been analyzed:

- Criteria A. Exposure to death or death threat, serious injury or sexual abuse. The group has been divided into those who had experienced the traumatic event and those who had not.
- Criteria B. Experiencing ≥1 of the following intrusive symptoms linked to and developing after a traumatic event:
  - intrusive, returning memories of the traumatic events,
  - repeated dreams about the experienced traumatic situations,
  - dissociative reactions (e.g., retrospections), in which one feels or acts like the traumatic event is being repeated,
  - intense or long term stress connected with the exposure to internal and external stimuli, which symbolize or remind one about the traumatic event(s),
  - physiological reactions to internal and external stimuli, which symbolize or remind one about the traumatic event(s).
- Criteria C. Persistent avoidance of stimuli connected to the traumatic event(s), which occur after the event(s).
- Criteria D. Negative changes in cognitive processes and mood in relation to the traumatic event(s), beginning or worsening after the traumatic event(s), which is manifested by ≥2 of the following:
  - inability to remember an important aspect of the event,
  - intrusive and over exaggerated negative beliefs about oneself, others, and the world,
  - permanent, distorted beliefs about the cause or consequences of traumatic events, which lead to blaming oneself or others,
  - persistent negative emotional state,
  - visibly lower interest or participation in essential activities,
  - feeling of alienation,
  - inability to experience positive emotions.

The participants were asked about the frequency of the experienced traumatic event and its character. Given answers provide information that the experience subjects encounter most often is the terminal illness of a close relative, followed by a serious accident, and later attacks and sexual and non-sexual abuse. The detailed data is presented in Table 1.

The number of traumatic events varied 0–7 of those experienced by 1 person. Students encountering trauma

usually mentioned a 1-time episode – 217 (36.5%), 135 (22.7%) participants experienced it twice, whereas 73 (12.3%) report experiencing trauma 3 times.

Table 2 presents detailed data illustrating the intensity of post-traumatic stress symptoms according to the appropriate clinical criteria of this disorder proposed by DSM-5.

The results of the Kolmogorov-Smirnov test for all total subjects, presented in Table 2, indicate a lack of conformity to the normal distribution of all variables. In addition, the normality of the distributions of the study variables was checked by gender, age, the occurrence of traumatic events, and type of traumatic events. Regardless of the distribution used, the distributions of all variables did not conform to the normal distribution.

Thus, non-parametric tests will be used to verify the hypotheses. All calculations were performed in SPSS Statistics 27 software, assuming a significance level of $\alpha = 0.05$.

Table 1. Traumatic events in a group of students of the Poznan University of Medical Sciences, Poznań, Poland

Traumatic event	Participants (N = 594)	
	n	%
Serious accident	198	33.3
Natural disaster	48	8.1
Abuse		
non-sexual		
from close ones	115	19.4
from strangers	126	21.2
sexual		
from close ones	31	5.2
from strangers	28	4.7
in childhood	46	7.7
War	0	0
Captivity	0	0
Torture	5	0.8
Terminal illness	212	35.7
Other	82	13.8

Role of gender in the intensity and number of PTSD symptoms

Intensity of PTSD symptoms was studied in reference to the participant's gender. Results are presented in Table 3.

Results of the Mann-Whitney U test presented in Table 3 provide information about the significant difference between males and females in regard to the intensity and number of PTSD symptoms in general as well as amongst the B, C, D criteria. Females have more intense PTSD symptoms in general and its B, C, D criteria, moreover females experience more PTSD symptoms than males. The strength of the effect tested by the epsilon-square coefficient (ε^2_R) was found to be weak for all significant differences.

Age (grouped) and the intensity and amount of PTSD symptoms

Further in the analysis, the PTSD symptoms were measured in reference to the participant's age. The detailed data is presented in Table 4.

Results of the Kruskal-Wallis H test presented in Table 4 provide information about the significant difference between students of different ages in regard to the number of PTSD symptoms in general as well as in terms of criteria B and C. Students of the maximum age of 19 years experience less PTSD symptoms in general and in criteria B than students aged ≥22 years, moreover they experience less symptoms in criterium C than students aged ≥24 years. The strength of the effect tested by the ε^2_R was found to be weak for all significant differences.

Severity and number of PTSD symptoms and the intensity of psychosomatic symptoms in the studied group

Frequency and the severity of PTSD symptoms according to DSM-5 criteria was studied. Detailed data is presented in Table 5.

Table 2. The intensity of post-traumatic stress disorder (PTSD) symptoms according to clinical criteria of this disorder by *Diagnostic and Statistical Manual of Mental Disorders* in students (N = 594) of the Poznan University of Medical Sciences, Poznań, Poland

Variable	Min.	Max	M	Me	SD	Skewness	Kurtosis	Kolmogorov-Smirnov	
								Z	p
Symptoms									
intensity									
PTSD total	0	43	8.81	6	9.72	1.14	0.51	0.18**	<0.001
criteria B	0	11	2.11	1	2.50	1.33	1.16	0.20**	<0.001
criteria C	0	20	3.23	1	4.17	1.41	1.18	0.22**	<0.001
criteria D	0	17	3.49	2	4.11	1.18	0.55	0.20**	<0.001
number [n]									
PTSD total	0	17	5.56	5	5.21	0.52	–0.95	0.16**	<0.001
criteria B	0	4	1.44	1	1.43	0.49	–1.15	0.23**	<0.001
criteria C	0	7	1.96	1	2.17	0.84	–0.54	0.22**	<0.001
criteria D	0	6	2.16	2	2.17	0.48	–1.19	0.23**	<0.001
Intensity									
stress	0	32	10.48	8	8.24	0.85	–0.06	0.13**	<0.001
depression	0	12	1.87	0	3.11	1.99	3.13	0.30**	<0.001
anxiety	0	23	3.29	1	4.80	2.08	4.19	0.25**	<0.001
somatization	0	32	7.78	6	6.12	1.15	1.23	0.13**	<0.001

For an explanation of the criteria, see the Results section of the article.
** $p < 0.01$.

Table 3. Role of gender in the intensity and number of post-traumatic stress disorder (PTSD) symptoms (Mann-Whitney U test) in students (N = 594) of the Poznan University of Medical Sciences, Poznań, Poland

Symptoms	Gender				Z	p	r_G
	female (N = 498)		male (N = 96)				
	M	SD	M	SD			
Intensity							
PTSD total	9.4	9.96	5.73	7.69	–3.26**	0.001	0.21
criteria B	2.2	2.54	1.24	2.07	–4.16**	<0.001	0.31
criteria C	3.4	4.34	1.90	2.77	–2.99**	0.003	0.19
criteria D	3.6	4.16	2.59	3.76	–2.53*	0.011	0.16
Number [n]							
PTSD total	5.8	5.27	3.92	4.56	–3.18**	0.001	0.21
criteria B	1.5	1.44	0.92	1.26	–3.94**	<0.001	0.29
criteria C	2.2	2.28	1.34	1.78	–2.83**	0.005	0.18
criteria D	2.2	2.18	1.66	2.02	–2.38*	0.017	0.16

For an explanation of the criteria, see the Results section of the article.
* $p < 0.05$; ** $p < 0.01$.

Table 4. Age and the intensity and amount of post-traumatic stress disorder (PTSD) symptoms (Kruskal-Wallis H test) in students (N = 594) of the Poznan University of Medical Sciences, Poznań, Poland

Symptoms	Age								*Post hoc* Dunn	H	p	ε^2_R
	≤19 years (N = 122)		20–21 years (N = 200)		22–23 years (N = 131)		≥24 years (N = 151)					
	M	SD	M	SD	M	SD	M	SD				
Intensity												
PTSD total	7.56	8.93	8.85	9.55	8.32	8.95	10.23	11.07	–	5.42	0.143	–
criteria B	1.83	2.46	2.20	2.58	1.88	2.25	2.43	2.61	–	6.99	0.072	–
criteria C – avoidance/numbness	2.54	3.53	3.07	3.99	3.24	4.01	3.99	4.90	–	6.47	0.091	–
criteria D – stimulation	3.25	3.98	3.58	4.02	3.22	4.00	3.82	4.45	–	2.47	0.481	–
Number [n]												
PTSD total	4.65	5.16	5.63	4.98	5.41	5.13	6.37	5.56	1 < 2.4	8.86*	0.031	0.10
criteria B	1.18	1.43	1.50	1.39	1.36	1.43	1.65	1.46	1 < 2.4	9.49*	0.023	0.20
criteria C – avoidance/numbness	1.56	2.01	1.90	2.11	1.98	2.20	2.37	2.32	1 < 4	9.36*	0.025	0.20
criteria D	1.91	2.21	2.23	2.10	2.07	2.12	2.35	2.26	–	4.22	0.239	–

For an explanation of the criteria, see the Results section of the article.
* $p < 0.05$.

Table 5. Severity and number of post-traumatic stress disorder (PTSD) symptoms and the intensity of psychosomatic symptoms in the studied group (Spearman's rank correlation coefficients) in students (N = 594) of the Poznan University of Medical Sciences, Poznań, Poland

Symptoms	Intensity			
	stress	depression	anxiety	somatization
Intensity				
PTSD total	0.561**	0.476**	0.543**	0.430**
criteria B – reliving	0.484**	0.391**	0.489**	0.393**
criteria C – avoidance/numbness	0.497**	0.432**	0.493**	0.382**
criteria D – stimulation	0.576**	0.482**	0.540**	0.428**
Number [n]				
PTSD total	0.533**	0.445**	0.512**	0.406**
criteria B – reliving	0.452**	0.356**	0.445**	0.372**
criteria C – avoidance/numbness	0.477**	0.407**	0.467**	0.364**
criteria D – stimulation	0.542**	0.443**	0.500**	0.402**

For an explanation of the criteria, see the Results section of the article.
** $p < 0.01$; single materiality.

Results of the Spearman's ρ test presented in Table 5 provide information about the significant, moderate and positive relationship between the intensity and number of PTSD symptoms in general and in its B, C, D criteria and the intensity of stress, depression, anxiety and somatization. This indicates that among students, as the severity and number of PTSD symptoms in general and in all criteria increases, the intensity of psychosomatic symptoms: stress, depression, anxiety and somatization increases as well.

Table 6. Traumatic events vs absence of traumatic events in regard to psychosomatic symptom intensity (Mann-Whitney U test) in students (N = 594) of the Poznan University of Medical Sciences, Poznań, Poland

Variable	Traumatic event													
	no (N = 128)		yes (N = 466)		Z	p	r_G	unintentional (N = 206)		intentional (N = 96)		Z	p	r_G
	M	SD	M	SD				M	SD	M	SD			
Stress intensity	8.91	7.99	10.90	8.26	–2.85**	0.004	0.17	9.63	7.47	11.70	8.73	–1.79	0.073	–
Depression intensity	1.15	2.30	2.06	3.27	–3.13**	0.002	0.17	1.65	2.79	2.60	3.73	–2.29*	0.022	0.15
Anxiety intensity	2.62	4.06	3.47	4.97	–2.27*	0.023	0.13	2.74	4.22	4.00	5.58	–1.33	0.184	–
Somatization intensity	6.83	5.44	8.03	6.27	–1.92*	0.050	0.11	6.85	5.34	7.79	5.93	–1.29	0.198	–

* $p < 0.05$; ** $p < 0.01$.

Traumatic events vs absence of traumatic events in regard to psychosomatic symptom intensity

Answers to the 4DSQ items from participants who had experienced trauma and those who had not were compared. The results are presented in Table 6.

Results of the Mann-Whitney U test presented in Table 6 indicate that there are significant differences between students who had experienced traumatic events in the past and those who had not, in reference to the intensity of stress, depression, anxiety and somatization. Students who experienced trauma are characterized with a significantly higher intensity of all psychosomatic symptoms. The strength of the effect tested by the Glass biserial correlation (r_G) was found to be weak for all significant differences.

Types of traumatic events in relation to psychosomatic symptoms

Psychosomatic consequences of traumatic experiences caused intentionally vs. caused unintentionally are presented in Table 7.

Results of the Mann-Whitney U test presented in Table 7 indicate that there are significant differences between those students who had experienced trauma not related to intentional participation of others (e.g., accident, natural disaster, death) and those whose trauma was caused by other people (sexual and non-sexual abuse) in reference to the intensity of depression. Students, who had experienced traumatic events caused by the intentional participation of other people in their life, are characterized by a greater intensity of depression. The strength of the effect tested by the r_G was found to be weak for all significant differences.

DISCUSSION

Post-traumatic stress disorder is a common mental health problem that has a substantial impact on the individual and society. There is increasing evidence that PTSD is associated and comorbidity with mental and physical health conditions. Although there has been expansion of the authors' understanding of PTSD during the last 30 years, numerous questions remain about the epidemiology and risk factors for development of PTSD [24].

The study's results correspond with previous reports which reveal that women present more intense PTSD symptoms than men [25]. One of the possible explanations for this relationship is that women experience more PTSD symptoms because they had fallen victim to an intentional traumatic event, sometimes from close ones or acquaintances, which has a higher risk of severe PTSD symptoms [26].

Moreover, a significant relationship between reported anxiety symptoms and the post-traumatic stress symp-

tom level was observed. This result confirms assumptions about PTSD being a disorder with a strong anxiety component [27]. Furthermore, this relationship is confirmed because the 4DSQ scale consists of items specific to autonomic arousal and the subjective anxious experiencing of the affect encountered by those with PTSD. An array of publications reports high coexistence rate for PTSD and depression [28]. The presented study reveals an interesting relationship, which indicates the role of interpersonal factors in the development and intensification of depression symptoms. The reason for this is most likely a similar mechanism as that experienced by studied women in terms of a higher intensity of PTSD symptoms. A traumatic event caused by the intentional influence of other people has more devastating psychological consequences. This result prompts further subject of analysis, which is studying the consequences of destroying safe attachment relationships centered on the basic trust to younger people and the world [29]. The risk of post-traumatic injury increases with age, and other studies confirm that people aged 40–60 years are most at risk of PTSD [24]. This study partly confirms the relationship between depression and the intensity of PTSD symptoms, which means that depression symptoms were linked to PTSD symptoms. These results suggest that the relationship between depression and PTSD symptoms can be explained by the mediating role of psychosomatic symptoms [30].

This analysis was based on a non-clinical group of medical sciences students from the University, yet 3% presented PTSD symptoms, which is a similar number to the general population. A study conducted by the WHO revealed that the occurrence of PTSD in the course of life in countries with a moderately high living standard is 2.1–2.3% [31]. Many individual and social factors are influential in terms of the probability of PTSD development and its clinical picture [32]. This study reveals the importance of intentionality and whether the trauma was caused by other people's actions. What is more, it is observed that the frequency and intensity of PTSD depends on the type, size and severity of the experienced traumatic event. Collecting data from a large sample of people who report post-traumatic stress symptoms is important, because PTSD can be considered a multidimensional construct, and not as a construct focusing on just 1 category of factors [33]. One of the key limitations is that this study is cross-sectional, which makes it impossible to depict the causation of studied phenomena. Therefore it is impossible to establish whether psychosomatic symptoms are linked only with the experienced traumatic events, or if they are the consequences of other events as well.

CONCLUSIONS

Progressive development of symptoms after exposure to traumatic stress is a difficult concept, and delayed appearance of PTSD has long been a controversial subject. A growing amount of studies point out that a large number of trauma victims do not present a full reaction to stress directly following the traumatic event, but that it gradually rises with time and can be reflected in psychosomatic symptoms.

In some cases, seemingly negative consequences of exposure to stress remain dormant for a long time before certain coexisting adversities lead to its manifestation. Gaining knowledge about PTSD among medical staff is extremely important in terms of establishing an adequate psychosomatic disorder diagnosis for themselves and their patients. Medical students have a higher anxiety and depression level in comparison to the general population and peers of the same age [34,35]. Moreover, because of stigmatization and concerns about their future career, they can have a smaller chance of receiving psychiatric help [36]. The context of traumatic events in relation to the psychosomatic symptoms is greater in women and when the event was a result of intentional abuse.

This study shows that medical students and future doctors experience a number of problems with coping with stressful situations during their studies. Medical students feel stress, anxiety and negative emotions, some of them experience symptoms of depression and the effects of post-traumatic stress, which can make them function worse at the University. Medical students and practitioners do not have to stay helpless against stress. Moreover they have high demands, which humans cannot combat with their existing resources, using their existing coping mechanisms. This report points to areas that should be covered by prevention in order to strengthen the own health resources of future health service officers.

Ethics declaration

All procedures concerning this paper were compliant with the ethical standards of national and institutional human experiment committees and the Helsinki Declaration from 1975, which was changed in 2008. All procedures referring to the participation of people were confirmed by the Bioethical Committee of UMP.

Author contributions

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