

ORIGINAL ARTICLE

Gender-specific peculiarities in the manifestation of psychosomatic stress symptoms among law enforcement officers during professional training

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ABSTRACT

Aim: To investigate gender-specific peculiarities in the manifestation of psychosomatic stress symptoms and stress levels among cadets during their training and service activities under martial law.

Materials and Methods: The research involved 134 (71 men and 63 women) cadets. Psycho-emotional and somatic symptoms of stress, as well as the overall level of stress, were assessed using the test proposed by Yu. V. Shcherbatykh twice: before the 4-week field placement in practical police units and after its completion.

Results: It was found that female cadets exhibit more pronounced stress symptoms compared to male cadets, especially after completing their field placements in practical police units. The most pronounced psycho-emotional symptoms of stress in women included anxiety, worry, gloomy mood, difficulty in decision-making; somatic symptoms included pains of an unspecified nature, headaches, low performance, excessive fatigue, and sleep problems. The overall stress level among female cadets was also significantly ($p \leq 0.01$) higher after their field placement than among male cadets, by 3.3 points. During the field placement period, the stress level among male cadets increased by 2.5 points ($p \leq 0.05$), and among female cadets by 5.3 points ($p \leq 0.001$).

Conclusions: The research indicates an urgent need to develop stress resilience among cadets, particularly female cadets, during their professional training to ensure the effectiveness of their academic performance under martial law and their subsequent service activities in practical police units, as well as in developing skills to apply available methods for preventing stress-related phenomena during training and service activities.

KEY WORDS: law enforcement officers, cadets, gender-specific peculiarities, stress, symptoms, health

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INTRODUCTION

The war in Ukraine has led to a deterioration in the quality of life for Ukrainians suffering from Russian aggression: they are losing loved ones and relatives, their own homes, are forced to move to other regions of Ukraine or abroad, feel the pressure from the destruction of critical infrastructure, which disrupts everyone's comfortable living conditions, unemployment and competition in the labor market are rising, and material well-being is declining [1]. Psychological pressure on people is increasing, anxiety is rising, and this leads to a constant presence of fear, anxiety, nervous tension, uncertainty about the future, and aggression in their lives, while the mind's ability to adapt is diminishing [2]. The

forced migration of Ukrainians also leads to conflicts: differences and discrepancies in culture and customs, communication problems, and competition between the local population and internally displaced persons for jobs lead to increased social tension [3]. The issue of stress resilience, which affects an individual's physical and mental health and determines their well-being, is particularly significant in modern society [4-6].

Experts [7] note that law enforcement is one of the most stressful professions, especially under martial law. Given the requirements for gender equality, a significant number of women currently serve in or are training with Ukraine's law enforcement agencies [8]. Therefore, the issue of stress resilience among male

and female law enforcement officers is extremely relevant. At the same time, women and men do not react to stress in the same way. When faced with stressors, men are ready to fight or flee; women, on the other hand, are capable of negotiating in stressful situations [9, 10]. Physiologists note that due to the constant stress women experience, certain processes occur in their bodies related to changes in hormonal balance. Elevated levels of stress hormones weaken the immune system and disrupt hormone production, which in turn accelerates aging and reduces the body's ability to recover. Being in a state of constant psychological stress or experiencing stressful events can alter the endocrine and immune systems, which can exacerbate chronic diseases and/or lead to the development of new ones [11, 12]. This usually leads to additional nervous strain and the subsequent development of new stresses. Law enforcement officers are no exception, as when faced with extreme conditions and various stressful situations, every member of this high-risk profession (both men and women) experiences significant, and at times extreme, stress. A comparative analysis of stress symptoms and stress levels among male and female cadets during training and service activities will inform adjustments to approaches to building stress resilience in law enforcement officers of different genders.

AIM

The aim is to investigate gender-specific peculiarities in the manifestation of psychosomatic stress symptoms and stress levels among cadets during their training and service activities under martial law.

MATERIALS AND METHODS

PARTICIPANTS

The research, conducted in 2025-2026, involved 134 cadets (71 men, 63 women) who were in their fourth training year at Kharkiv National University of Internal Affairs (KhNUIA, Kharkiv, Ukraine), majoring in "Law Enforcement." The cadets' ages ranged from 20 to 22 years. Stress symptoms and overall stress levels among cadets were studied twice: before the start of their field placement in practical police units (Stage 1) and after returning to the HEI (Stage 2). The field placement lasted 4 weeks. No special selection was conducted for the study groups of men and women. Six training groups of KhNUIA cadets majoring in "Law Enforcement" were involved. The inclusion criterion for cadets was their enrollment in a 4th-year training group in the relevant major. The cadets who were on temporary duty leave

or receiving inpatient treatment during the research period were excluded. Training conditions, living conditions, food quality, and material and financial support were the same for all cadets. Marital status and the extent to which their parents and relatives were involved in combat missions in the war with Russia were not taken into account. The exclusion criterion was the cadet's voluntary desire to withdraw from the research at any time.

RESEARCH METHODS

theoretical analysis and generalization of literature sources, psycho-diagnostic methods, statistical methods. The method of theoretical analysis and generalization of literary sources was used to conduct an analytical review of scientific sources on the outlined range of issues (31 sources (2013-2026) from MedLine, Scopus, Web of Science databases were analyzed).

To identify the characteristics of psychological (intellectual, emotional) and somatic (behavioral, physiological) stress symptoms in cadets while performing training and service tasks under martial law, we used the Stress Level Test (by Yu. V. Shcherbatykh) [13]. The Stress Level Test assesses the degree of manifestation of intellectual, behavioral, emotional, and physiological stress symptoms in respondents, as well as the overall level of stress. The questionnaire form contains 4 sets of 12 symptoms each. If cadets experienced one of the intellectual or behavioral symptoms, they rated it as 1 point; emotional symptoms as 1.5 points; and physiological symptoms as 2 points. Stress levels were assessed as follows: 0-5 points – no stress; 6-12 points – moderate stress; 13-24 points – pronounced stress; 25-40 points – high stress; 41 points and above – excessive stress.

STATISTICAL METHODS

The statistical method was used to process the data obtained. The reliability of the difference was determined using the Student's t-test. The results were presented as Mean $\pm$ m, where Mean is the arithmetic mean, m is the standard error. The reliability of the difference was set at $p < 0.05$. All statistical analyses were performed using STATISTICA 13.3.1 software package (2018), adapted for medical and biological research.

ETHICS

The procedure for organizing the study and the topic of the article were previously agreed with the Committee on compliance with Academic Integrity and Ethics of

Table 1. Comparative analysis of psycho-emotional stress symptoms among cadets (n = 134) of different genders before and after their field placement in practical police units, %

Psycho-emotional stress symptoms	Stages of the research					
	Before the field placement			After the field placement		
	Male cadets (n = 71)	Female cadets (n = 63)	Δ	Male cadets (n = 71)	Female cadets (n = 63)	Δ
Predominance of negative thoughts	28.2	30.1	1.9	32.4	39.7	7.3
Difficulty concentrating	14.1	15.9	1.8	16.9	20.6	3.7
Difficulties in decision-making	21.1	23.8	2.7	25.4	31.7	6.3
Impulsiveness, ill-considered decisions	12.7	14.3	1.6	18.3	22.2	3.9
Tendency to shift responsibility	18.3	11.1	7.2	22.5	28.6	6.1
Worry, anxiety	38.1	47.6	9.5	50.7	68.3	17.6
Gloomy mood	25.4	28.6	3.2	30.9	36.5	5.6
Irritability, outbursts of anger	15.5	17.5	2.0	21.1	25.4	4.3

Legend: Δ – the difference between the indicators under study

Source: compiled by the authors of this study

Table 2. Comparative analysis of somatic stress symptoms among cadets (n = 134) of different genders before and after their field placement in practical police units, %

Somatic symptoms	Stages of the research					
	Before the field placement			After the field placement		
	Male cadets (n = 71)	Female cadets (n = 63)	Δ	Male cadets (n = 71)	Female cadets (n = 63)	Δ
Excessive fatigue	12.7	15.9	3.2	18.3	25.4	7.1
A feeling of muscle tension	7.0	7.9	0.9	11.3	14.3	3.0
Digestive disorders	4.2	6.3	2.1	12.7	19.1	6.4
Pain of an unspecified nature, headache	16.9	23.8	6.9	21.1	31.7	10.6
Weakened immune system	8.5	9.5	1.0	11.3	14.3	3.0
Low operational efficiency	15.4	19.1	3.7	19.7	28.6	8.9
Sleep disturbances, insomnia	11.3	15.9	4.6	16.9	25.4	8.5
Heavier smoking and alcohol consumption	9.8	7.9	1.9	12.7	14.3	1.6

Legend: Δ – the difference between the indicators under study

Source: compiled by the authors of this study

the KhNUiA. Also this study followed the regulations of the World Medical Association Declaration of Helsinki. Informed consent was received from all participants who took part in this study.

AI STATEMENT

The author states that no AI tools were used in writing this article.

FRAMEWORK

This scientific article was carried out according to the plan of the research work of the Kharkiv National University of Internal Affairs for 2020-2026 "Psychological, pedagogical and sociological support of law enforce-

ment officers" (state registration number 0113U008196).

RESULTS

During the research of psycho-emotional symptoms of stress, it was found that even before the start of their field placement in practical police units, both male and female cadets exhibited symptoms indicating the presence of stress even under the usual conditions of the educational process (Table 1): worry and anxiety was found in 38.1 % of male cadets and 47.6 % of female cadets; the predominance of negative thoughts – in 28.2 % of male cadets and 30.1 % of female cadets; a gloomy mood – in 25.4 % of male cadets and 28.6 % of female cadets; and other symptoms. However, female cadets exhibited a higher level of the vast majority

Table 3. Comparative analysis of stress levels among cadets (n = 134) of different genders before and after their field placement in practical police units, Mean $\pm$ SD, points

Research stages	Cadets of different genders		Difference	
	Male cadets (n=71)	Female cadets (n=63)	Δ	t / p
Before the field placement	7.6 $\pm$ 0.65	8.1 $\pm$ 0.71	0.5	0.52/>0.05
After the field placement	10.1 $\pm$ 0.69	13.4 $\pm$ 0.75	3.3	3.24/ $\leq$ 0.01
t / p	2.64/ $\leq$ 0.05	5.13/ $\leq$ 0.001		

Legend: Δ – difference between the studied indicators; t – value of Student's t-test; p – level of statistical significance of differences

Source: compiled by the authors of this study

of psycho-emotional stress symptoms (by 1.6-9.5 %) compared to males.

Following the completion of the field placement, there was an increase in the number of cadets of both genders exhibiting psycho-emotional symptoms of stress; however, more pronounced changes were observed specifically among female cadets. Thus, when comparing the increase in the number of male and female cadets with various stress symptoms, it should be noted that among men, the percentage of cadets with the predominance of negative thoughts increased by 4.2 %, and among women – by 9.6 %; with difficulty concentrating – by 2.8 % and 4.7 %, respectively; with difficulty in decision-making – by 4.3 % and 7.9 %; with manifestations of impulsivity and irrational decisions – by 5.6 % and 7.9 %; with the tendency to shift responsibility – by 4.2 % and 17.5 %; with manifestations of anxiety – by 12.6 % and 20.7 %; with a gloomy mood – by 5.5 % and 7.9 %; with manifestations of irritability – by 5.6 % and 7.9 %, respectively. It is worth noting that after completing their field placement in practical police units, female cadets, compared to male cadets, exhibited all psycho-emotional symptoms even more pronounced than before the field placement: the difference ranges from 3.7 % to 17.6 %. All of this indicates that women are more prone to stress and emotional burnout compared to men, and this is particularly acute in the more challenging conditions of law enforcement activities.

When examining somatic symptoms of stress in cadets of different genders, we identified a trend similar to that of psycho-emotional symptoms. In women, both before and after the field placement, symptoms occur more frequently than in men. Moreover, the more stressors are present in training and service conditions, the more frequently and more pronouncedly symptoms manifest in female cadets compared to male cadets (Table 2).

Noteworthy is the high percentage of cadets – both men and women – who, even under normal training conditions, exhibit symptoms such as: pain of an unspecified nature, headaches – 16.9 % of men and 23.8 %

of women; low operational efficiency – 15.4 % of men and 19.1 % of women; excessive fatigue – 12.7 % of men and 15.9 % of women; sleep problems (difficulty falling asleep, shallow sleep, insomnia, etc.) – 11.3 % of men and 15.9 % of women. At the same time, for all symptoms (except for smoking intensity and alcohol consumption), the number of female cadets who exhibited them before the field placement was higher compared to men (by 0.9-6.9 %).

After the field placement, the difference between the number of female and male cadets exhibiting somatic symptoms increased in favor of women: 1.6-10.6 %. It should be noted that during the field placement, service-related stressors hurt the manifestation of somatic stress symptoms in both genders; however, more pronounced negative changes were observed specifically among female cadets. Thus, the number of male cadets with excessive fatigue increased by 5.6 %, and among women by 9.5 %; with muscle tension – by 4.3 % and 6.4 %; with digestive disorders – by 8.5 % and 12.8 %; with pains of an unspecified nature – by 4.2 % and 7.9 %; with reduced immunity (manifested in an increase in the number of illnesses) – by 2.8 % and 4.8 %; with low operational efficiency – by 4.3 % and 9.5 %; with sleep disturbances – by 5.6 % and 9.5 %; with signs of increased smoking and alcohol consumption – by 2.9 % and 6.4 %, respectively. The analysis confirms our previous conclusions regarding women's greater susceptibility to stress symptoms, particularly under challenging service-related conditions.

The results of the comparative analysis of stress levels using the test proposed by Yu. V. Shcherbatykh among cadets of different genders before and after their field placement in practical police units is presented in Table 3. It was found that before performing training and service tasks under martial law, stress levels among cadets of both genders were moderate (range: 6-12 points) and did not differ significantly between groups ($p > 0.05$).

During their field placement in practical police units, cadets of both genders experienced a statistically significant increase in stress levels ($p \leq 0.05$ -0.001). However,

while the increase was 2.5 points for male cadets, it was 5.3 points for female cadets. It is important to note that after the field placement, female cadets' stress levels were significantly higher than those of male cadets by 3.3 points ($p \leq 0.01$). At the same time, stress levels among male cadets after the field placement were assessed as moderate, while those among female cadets were assessed as pronounced. Our previous findings have been confirmed: female cadets exhibit higher stress levels and more pronounced symptoms compared to male cadets, particularly after prolonged exposure to stressors associated with their service duties.

DISCUSSION

Among the many factors that determine work capacity and other health characteristics of modern individuals, psychological resilience to stressful situations (stress resilience) plays a significant role. A high level of stress resilience is key to maintaining and strengthening an individual's health and professional longevity [14, 15]. Stress resilience is based on the ability to respond appropriately and mobilize in difficult situations, maintain self-efficacy, tolerance, and tact, and filter out unnecessary information or situations [16, 17]. Stress resilience is defined as a complex, integrated personality trait, interrelated with a constellation of intellectual, cognitive, emotional, and personal qualities that enable an individual to endure significant mental, physical, volitional, and emotional stress while maintaining effective functioning in stressful situations [18, 19]. The type of professional activity plays a significant role in the manifestation of this trait – the more extreme the activity, the more pronounced the stress resilience becomes. In particular, the professional activities of law enforcement officers in wartime radically alter their usual way of life, significantly affecting their psycho-emotional state and necessitating adaptation to new working conditions.

Experts have determined that men's stress resilience is higher than women's. While men's stress resilience is more variable due to fluctuations in tension during stressful situations, women react more sharply to such situations [9, 10]. Our research confirms this, as it was found that among female cadets, stress levels and symptoms are more pronounced compared to men, especially after prolonged exposure to stressors associated with their service activities.

Researchers have identified statistically significant differences between men's and women's use of various coping strategies. Women are more emotional under the influence of stressful situations, while men are more likely to avoid stressful situations than women [20, 21]. This is also evident in their behavior. In partic-

ular, we found that after female cadets were exposed to extreme conditions during their field placement, their stress levels were significantly higher than those of men by 3.3 points ($p \leq 0.01$). It should also be noted that women exhibit signs of unmotivated anxiety more frequently than men [22]. Researchers [23, 24] have found that indicators of an external locus of control are significantly higher among the women studied: they are more likely to rely on external factors to guide their own behavior and emotional reactions. Internal locus of control is more prevalent among men, who tend to rely on internal resources to manage their behavioral and emotional reactions.

Researchers [25, 26] indicate that differences in stress resilience between men and women depend on individual psychological characteristics. Among respondents with high stress resilience, men differ from women in higher emotional stability, higher levels of self-esteem and self-acceptance, and lower levels of reactive anxiety and emotionality. As our results also show, after exposure to crisis conditions in training and service activities, all psycho-emotional symptoms in female cadets were even more pronounced than before, compared to men: the difference ranges from 3.7 % to 17.6 %. All of this indicates that women are more prone to stress and emotional burnout compared to men, and this is particularly acute in the more challenging conditions of law enforcement service. In turn, among the respondents with low stress resilience, men differ from women in having higher emotional resilience and lower levels of reactive anxiety, emotionality, and social emotionality.

Doctors and physiologists [27, 28] most often observe changes in a woman's body resulting from the negative effects of various stressors. These changes include menstrual cycle irregularities, which result from hormonal shifts triggered by nervous tension. Women are five times more likely to develop diffuse toxic goiter than men. Among the factors that trigger the development of the disease, doctors highlight psychological trauma and prolonged nervous tension. With constant, prolonged nervous stress and exhaustion of the nervous system, illnesses such as acute respiratory viral infections (ARVI), various forms of candidiasis, and cystitis in acute phases or exacerbations of chronic forms occur more frequently than normal. This, in turn, triggers immunodeficiency in women. Women suffer from eating disorders more often than men. Experiencing stress ten times more frequently than men, they tend to engage in emotional eating. Again, the causes of these phenomena are the effects of female hormones: specifically, during stress, estrogen production decreases, levels of the "happiness hormone" serotonin drop, and levels of the "stress hormone" cortisol rise sharply. These physiological processes trigger intense hunger, leading to uncontrolled

consumption of unhealthy foods high in fats and carbohydrates. In women experiencing constant emotional distress, symptoms of nervous reactions and anxiety become increasingly pronounced; somatic reactions appear, and hormonal balance shifts, which in turn trigger the development of diseases and systemic imbalances throughout the body [9, 24]. At the same time, the data we obtained highlight significant prevalence rates of certain symptoms among both male and female cadets: pains of an unspecified nature and headaches – 16.9 % of men and 23.8 % of women; excessive fatigue – 12.7 % of men and 15.9 % of women; sleep problems (difficulty falling asleep, shallow sleep, insomnia, etc.) – 11.3 % of men and 15.9 % of women. As we can see, for various symptoms, the number of female cadets exhibiting them is higher than that of male cadets. This once again underscores women's greater vulnerability compared to men when exposed to stressors.

Thus, our research complements the findings of many scholars [8, 14, 16, 29–31] and expands upon them specifically with results obtained during the assessment of symptoms and stress levels among male and female cadets during training and service activities under martial law.

The development of stress resilience in police cadets should be based on the comprehensive use of preventive and developmental exercises in the educational process, the cultivation of a positive attitude toward situations, the development of skills to reduce the intensity of stressors, and a successful combination of appropriate physical activity and relaxation.

CONCLUSIONS

The research examined gender-specific characteristics of the manifestation of psychosomatic stress symptoms and stress levels among police cadets during their

training and service activities under martial law. It was found that female cadets exhibit more pronounced stress symptoms compared to male cadets, particularly after field placements in practical police units. The most pronounced psycho-emotional symptoms of stress in women included anxiety, worry, the predominance of negative thoughts, a gloomy mood, difficulty in decision-making, and the tendency to shift responsibility; somatic symptoms included pains of an unspecified nature, headaches, low operational efficiency, excessive fatigue, and sleep problems. The overall stress level among female cadets was also significantly ($p \leq 0.01$) higher after the field placement than among male cadets, by 3.3 points. During the field placement period, the stress level among male cadets increased by 2.5 points ($p \leq 0.05$), and among female cadets by 5.3 points ($p \leq 0.001$). At the same time, the stress level among men after the field placement is assessed as moderate, and among women as pronounced.

The research indicates an urgent need to develop stress resilience among cadets, particularly female cadets, during their professional training at higher educational institutions to ensure the effectiveness of their academic performance under martial law and their subsequent service activities in practical police units, as well as in developing skills to apply available methods for preventing stress-related phenomena during training and service activities.

PROSPECTS FOR FURTHER RESEARCH

It is planned to investigate the influence of individual psychological characteristics of male and female cadets on the manifestation of stress symptoms and stress levels during training and service activities.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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