

# Medical-psychological aspects of professional deformation of personality development among emergency medical staff

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**The aim of the work.** To study the specifics of professional burnout formation considering the relationship between its levels and typological personality traits of emergency medical staff.

**Materials and methods.** A medical and psychological survey was conducted among 120 medical professionals of the “Regional Clinical Hospital – Center for Emergency Medical Care and Disaster Medicine” in Kharkiv, Ukraine. A representative sample included 85 respondents – emergency medical staff (paramedics and doctors), 28 men and 57 women, aged 20 to 78 years, with a mean age of  $40.78 \pm 13.43$  years. The levels of professional burnout were determined according to the Maslach Burnout Inventory – General Survey (MBI-GS), the classification of professional burnout risk – according to R. Kalimo, stress triggers and causes provoking it were determined according to the Differential Stress Inventory (DSI) questionnaire. Statistical processing of the factual material was carried out using the IBM SPSS 26.0 computer program and the Vienna Tests System.

**Results.** Emergency medical services staff showed pronounced professional burnout phenomena across all age groups. The high level of emotional exhaustion was most pronounced in 57.1 % of respondents aged 30–40 years and in 42.0 % of those over 40 years, along with this, the moderate level of emotional exhaustion was most pronounced in 1/3 of respondents under the age of 29 years. A high level of depersonalization phenomena prevailed in 40.9 % and 42.9 % of respondents under the age of 29 and 30–40 years, respectively, and a moderate level of depersonalization was almost equally represented in 33.3 % of respondents aged 30–40 years and over 40 years. A high level of diminished sense of personal accomplishment due to a lack of work-related activity value was almost equally represented across all age groups of emergency medical services staff, however, its highest manifestation was in 85.7 % of respondents over 40 years, and the moderate level of this burnout characteristic prevailed in 28.6 % of respondents aged 30–40 years. According to the classification of professional burnout by R. Kalimo et al., only 9.1 % of emergency medical services staff under 29 years and 3.0 % of those over 40 years were at risk of burnout. Nevertheless, some symptoms of burnout were almost equally presented in all age groups, but 71.4 % of respondents aged 30–40 years had the most evident manifestations. According to the DSI questionnaire, 13.6 % and 11.9 % of respondents under the age of 29 and over 40 years, respectively, were of a very tense type of response to stressors in conditions of high professional load with unsuccessful attempts to overcome problem situations. A low level of resilience with successful coping strategies under low-load conditions was more pronounced in 14.3 % of emergency medical services staff over 40 years old and in 9.1 % of those under 29 years of age.

**Conclusions.** The highest levels of professional burnout on the “emotional exhaustion” scale of the MBI-GS questionnaire had more than half of the respondents among emergency medical staff aged 30–40 years, depersonalization phenomena were most pronounced in emergency medical staff under the age of 29 and 30–40 years, and the high level of “reduced personal accomplishment” was equally prevailed among emergency professionals of all age groups, but individuals over the age of 40 years experienced a lack of work-related activity value to a greater extent.

One-quarter of the emergency medical staff respondents of all age groups were of the very stressed type with low resilience, being characterized by moderate workload and low coping ability and of the type with low resilience and low professional expectations and demands, but with successful coping strategies, providing the conditions for further decrease in the personal resources of specialists and the progression of the professional burnout phenomena.

## Key words:

emergency medical services, professional burnout, MBI-GS, DSI.

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## Медико-психологічні аспекти розвитку професійної деформації особистості працівників екстреної медичної допомоги

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**Мета роботи** – вивчення специфіки формування професійного вигорання, враховуючи взаємозв'язки між рівнями професійного вигорання та індивідуально-типологічними особливостями особистості працівників екстреної медичної допомоги.

**Матеріали та методи.** Здійснили медико-психологічне опитування 120 працівників КНП «Центр екстреної медичної допомоги та медицини катастроф», м. Харків (Україна). Репрезентативна вибірка включала 85 респондентів – працівників екстреної медичної допомоги: 28 чоловіків і 57 жінок віком від 20 до 78 років, середній вік –  $40,78 \pm 13,43$  року. Рівні професійного вигорання визначили за опитувальником Maslach Burnout Inventory – General Survey (MBI-GS), застосували класифікацію ризику професійного вигорання за R. Kalimo, з'ясували тригери стресу та причини, що його провокують, за опитувальником Differential Stress Inventar (DSI). Статистичне опрацювання даних здійснили за допомогою програми IBM SPSS 26.0 та Віденської системи тестування (Vienna Tests System).

## Ключові слова:

швидка допомога, професійне вигорання, MBI-GS, DSI.

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**Результати.** У працівників швидкої допомоги спостерігали суттєві явища професійного вигорання. Високий рівень емоційного виснаження найбільш виражений у 57,1 % респондентів віком 30–40 років і 42,0 % осіб віком понад 40 років; середній рівень цього показника мали 1/3 респондентів віком до 29 років. Явища деперсоналізації на високому рівні найбільше виражені у 40,9 % та 42,9 % респондентів віком до 29 років та 30–40 років відповідно; середній рівень деперсоналізації мали 33,3 % опитаних віком 30–40 і більше ніж 40 років. Найвищий рівень редукції особистих досягнень виявили у 85,7 % осіб віком понад 40 років, середній рівень мали 28,6 % працівників віком 30–40 років.

За класифікацією R. Kalimo et al., ризик вигорання мали 9,1 % працівників швидкої допомоги віком до 29 років і 3,0 % осіб віком більше ніж 40 років. Окремі симптоми вигорання майже з однаковою частотою виявляли в усіх вікових групах, але найбільші прояви мали 71,4 % респондентів віком 30–40 років. Згідно з опитувальником DSI, 13,6 % і 11,9 % респондентів віком до 29 років і понад 40 років відповідно мали дуже напружений тип реагування на стресові фактори в умовах високого професійного навантаження з невдалими спробами подолання проблемних ситуацій. Низький рівень стійкості до стресу з вдалим копінг-стратегіями в умовах низького навантаження більше виражений у 14,3 % працівників швидкої допомоги віком понад 40 років і у 9,1 % опитаних віком до 29 років.

**Висновки.** Високі рівні вигорання за шкалою «емоційне виснаження» за MBI-GS мали більше ніж 50 % працівників швидкої допомоги віком 30–40 років, явища деперсоналізації найбільше виражені в осіб віком до 29 і 30–40 років, а високий рівень «редукції особистих досягнень» однаково сильно виражений у всіх вікових групах, але більшою мірою в респондентів віком понад 40 років.

З-поміж працівників екстреної медичної допомоги в усіх вікових групах 1/4 респондентів належали до дуже напруженого типу та типу з низькою стійкістю до стресу, що характеризуються помірним професійним навантаженням і низькою здатністю до подолання проблемних ситуацій, а також типу з низькою стійкістю до стресу із низькими професійними вимогами, але вдалим копінг-стратегіями, що формує підґрунтя для зниження особистісного потенціалу фахівців і прогресування явищ професійного вигорання.

**Ключевые слова:**  
скорая помощь,  
профессиональное  
выгорание, MBI-GS,  
DSI.

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## Медико-психологические аспекты развития профессиональной деформации личности работников экстренной медицинской помощи

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**Цель работы** – изучить специфику формирования профессионального выгорания, учитывая взаимосвязи между уровнями профессионального выгорания и индивидуально-типологическими особенностями личности работников экстренной медицинской помощи.

**Материалы и методы.** Проведён медико-психологический опрос 120 работников КПОЗ «Областная клиническая больница – центр экстренной медицинской помощи и медицины катастроф», г. Харьков (Украина). Репрезентативная выборка включала 85 респондентов – работников экстренной медицинской помощи (фельдшеров и врачей): 28 мужчин и 57 женщин в возрасте от 20 до 78 лет, средний возраст –  $40,78 \pm 13,43$  года. Уровни профессионального выгорания определены согласно опроснику Maslach Burnout Inventory – General Survey (MBI-GS), использовали классификацию риска профессионального выгорания по R. Kalimo, триггеры стресса и причин, его провоцирующих, определяли согласно опроснику Differential Stress Inventar (DSI). Статистическая обработка данных проведена с помощью программы IBM SPSS 26.0 и Венской системы тестирования (Vienna Tests System).

**Результаты.** У работников скорой помощи во всех возрастных группах отмечены выраженные явления профессионального выгорания. Высокий уровень эмоционального истощения наиболее выраженный у 57,1 % респондентов в возрасте 30–40 лет и у 42,0 % опрошенных старше 40 лет; средний уровень этого показателя отмечен у 1/3 респондентов в возрасте до 29 лет. Явления деперсонализации на высоком уровне наиболее выражены у 40,9 % и 42,9 % респондентов в возрасте до 29 лет и 30–40 лет соответственно; средний уровень деперсонализации отмечен у 33,3 % опрошенных в возрасте 30–40 и более 40 лет. Наиболее высокий уровень редукции личностных достижений отмечен у 85,7 % опрошенных в возрасте более 40 лет, средний уровень выявили у 28,6 % респондентов в возрасте 30–40 лет.

Согласно классификации профессионального выгорания по R. Kalimo et al., риск выгорания имели 9,1 % рабочих скорой помощи в возрасте до 29 лет и 3,0 % опрошенных старше 40 лет. Некоторые симптомы выгорания с практически одинаковой частотой выявляли во всех возрастных группах, но наибольшие проявления имели 71,4 % респондентов в возрасте 30–40 лет. Согласно опроснику DSI, 13,6 % и 11,9 % респондентов в возрасте до 29 лет и старше 40 лет соответственно относились к очень напряжённому типу реагирования на стрессовые факторы в условиях высокой профессиональной нагрузки с неудачными попытками преодоления проблемных ситуаций. Низкий уровень стрессоустойчивости с удачными копинг-стратегиями в условиях низкой нагрузки в большей степени выражен у 14,3 % рабочих скорой помощи старше 40 лет и 9,1 % опрошенных в возрасте до 29 лет.

**Выводы.** Высокие уровни профессионального выгорания по шкале «эмоциональное истощение» опросника MBI-GS имели более 50 % респондентов рабочих скорой помощи в возрасте 30–40 лет, явления деперсонализации наиболее выражены у медицинских работников скорой помощи в возрасте до 29 лет и 30–40 лет, а высокий уровень «редукции личных достижений» одинаково сильно выраженный во всех возрастных группах, но в большей степени у респондентов в возрасте более 40 лет.

Среди рабочих экстренной медицинской помощи во всех возрастных группах 1/4 респондентов относилась к очень напряжённому типу и типу с низкой устойчивостью к стрессу, характеризующимся умеренной профессиональной нагрузкой и низкой способностью к преодолению проблемных ситуаций, и типу с низкой устойчивостью к стрессу с низкими профессиональными требованиями, но удачными копинг-стратегиями, что создает предпосылки для снижения личностного потенциала специалистов и прогрессирования явлений профессионального выгорания.

Preventive activities to protect the health of workers in Ukraine is a priority of national policy aimed at optimizing health care measures in various sectors of the economy [1]. The health sector reform in Ukraine is accompanied by growing demands not only on the medical and clinical activities of physicians, but also on their personality and mental health [2].

Currently, both in the productive and non-productive sectors, the role of psychosocial factors responsible for the development of psycho-emotional stress, occupational stress and burnout is growing. Professional burnout is a consequence of current professional activity intensification, high information and emotional burdens in combination with decreased physical activities, violated relationship communication and disharmonious lifestyle [3].

Some authors emphasize the inevitable impact of the professional activity kind on the psycho-emotional state of a person exposed to prolonged stress at the workplace, the presence of harmful aspects of job responsibilities, poor organization of working conditions, reduced leisure time, overtime work, decreased life and job satisfaction [4], which in turn could result in coping mechanisms impairment and the development of pre-pathological syndromes of chronic fatigue, stress, signs of psychosomatic morbidity and burnout [5].

Workers whose professional activities are directly related to people, are particularly prone to such deformation. Occupational stress negatively affects the performance of employees, reducing their productivity and impairing interpersonal interactions [6].

The term "emotional burnout" was first coined in 1974 by American psychologist Herbert Freudenberger, who defined "a state of mental and physical exhaustion caused by a person's professional life". He also pointed out that a similar condition develops in compassionate people, those who are idealistic about work, and at the same time in the unbalanced, who are prone to daydreaming and who have obsessions. In this case, the emotional burnout syndrome may be a mechanism of psychological protection in the form of partial or complete emotional suppression in response to harmful effects on the psyche [7]. At the same time, Burisch identifies the leading symptoms of burnout in his works, dividing them into seven subgroups in chronological order of their occurrence: symptoms of the first subgroup – increased interest, euphoria from the performed work, the gradual increase in exhaustion; the second subgroup – a decrease of interest in customers, patients, work, the inability to solve problems and make decisions, high demands on other people; the third subgroup – the formation of emotional reactions, blame bearing (depression, aggression); the fourth subgroup – diminished efficiency, motivation, creativity; the fifth subgroup – cynical attitude towards professional activities and analyzing the psychosocial environment (refusal to discuss professional issues, avoidance of any contact with employees, relatives, etc.); the sixth subgroup – lack of emotions, social life, spiritual dimensions, loss of interest in new events; the seventh subgroup – the onset of psychosomatic reactions and frustration [8].

There is also a model presented by Perlman and Hartman [9], which proposes to consider occupational burnout as an aspect of occupational stress. In this model, there are four stages of stress development: the first stage

reflects the degree to which the work situation causes stress; the second stage – the stage of stress perception and experience; the third stage includes three main types of reactions to stress – physiological, affective-cognitive and behavioral; the fourth stage represents the effects of stress, especially the development of burnout.

In 1981, Christina Maslach and Susan Jackson developed the first questionnaire to determine the presence of this phenomenon – "Maslach Burnout Inventory – General Survey" (MBI-GS) [10], which were used to identify burnout levels on three scales: "emotional exhaustion", "cynicism" and "personal efficacy" and called the three-factor model.

The occurrence of professional burnout has been well studied by a number of authors regarding the causes of professional personality deformation in teachers [11, 12]. Also, some authors have assessed the development of burnout in employees of hospitals [13] and banks [14]. There are works on the emotional state features of educators [15, 16], students [17], civil servants [18]. All these works are mainly based on only one V. Boiko questionnaire [19], which is not used by foreign experts in studying the burnout aspect.

According to the WHO, burnout is recognized as a result of chronic workplace stress and after the depletion of adaptive defense mechanisms, workers cope with stress by psychological detachment from work with the development of apathy and cynicism, characterized by signs of feeling motivational or physical exhaustion, an increased mental distancing from professional responsibilities or a sense of negativity / cynicism towards professional responsibilities, reduced ability to work and sense of personal accomplishment [20].

Occupational burnout syndrome is included in the 11th revision of the International Classification of Diseases (ICD-11) dated 28.05.2019. This syndrome is classified as "a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed" but is not classified as a medical condition. It is described in the chapter: "Factors influencing health status or contact with health services" – which includes reasons for which people contact health services. Factors affecting the health of the population and appeals to health care facilities [20].

Specialists of the Centers for Disease Control (CDC, Atlanta, USA) and the National Institute for Occupational Safety and Health (NIOSH) will annually review and augment the list of professional specialties to control the development of chronic fatigue syndrome ("burnout") and its prevention measures (CDC, NIOSH, 2019) [21].

It should be noted that emergency medical staff in general, especially primary care workers, are most exposed to occupational stressors given the specificities of their daily practice [22].

Medical staff of the emergency medical service are interdependent in the structure of the main health care tasks, under constant pressure of responsibility for the condition of patients, which is regulated by moral and legal norms [23].

Characteristic features of the professional activity of the emergency medical center workers are the intense rhythm of work due to a large number of patients, high intellectual and emotional burdens, inadequate management methods and continuous structural reorganizations, more paperwork with subsequent data duplication in electronic programs, lack of State support with adequate logistics

and medicines as well as an insufficient ability to influence working conditions [22].

Despite the existence of sufficient number of published works on the study of the structure, nature, frequency, and features of burnout in medical professionals, it is extremely limited to study on issues of early burnout diagnosis and detection of its predictors in emergency medical staff.

## Aim

Therefore, the aim of our work was to study the specifics of the occupational burnout formation considering the relationships between its levels and typological personality traits of emergency medical staff.

## Materials and methods

The work was performed on the basis of Kharkiv National Medical University. The study was conducted in the framework of scientific cooperation with the Department of Occupational Medicine, Otto von Guericke University (Magdeburg, Federal Republic of Germany).

A medical and psychological survey was conducted among 120 medical professionals of the "Regional Clinical Hospital – Center for Emergency Medical Care and Disaster Medicine" in Kharkiv, Ukraine. A representative sample included 85 respondents – emergency medical staff (paramedics and doctors), 28 men and 57 women, aged 20 to 78 years, with a mean age of  $40.78 \pm 13.43$  years. All respondents, regardless of sex, were divided into 4 groups based on the age (4 percentiles): up to 29 years (22 respondents), 30–40 years (21 respondents), 41–51 years (22 respondents) and over 51 years (20 respondents). Of the four groups, three were formed by merging the two older age groups ("over 40 years").

To identify the symptoms of professional burnout (PB), a medical and psychological survey using a standardized questionnaire Maslach Burnout Inventory – General Survey (MBI-GS) [9] was conducted. The risk of PB development was measured with three scales: "Emotional exhaustion" – feelings of helplessness, depletion, negative attitudes toward work and life; "Depersonalization" – described as dehumanization, detachment from work and people and emotional hardening (manifestation of callousness, apathy, cynicism); "Personal accomplishment" – feelings of competence and successful achievement in one's work. Following the classification by R. Kalimo et al., the latter was categorized as "reduced personal accomplishment" – a feeling of personal or professional inadequacy, reduced productivity and coping abilities.

The MBI-GS questionnaire consists of 16 questions in the form of statements with 7 possible offered answers: from "never" (0 points) to "everyday" (6 points). The questionnaire was evaluated by calculating the total number of points and determining the levels of burnout: low, moderate and high for each subscale of MBI-GS: "emotional exhaustion" (low degree  $\leq 2.00$  points; moderate degree 2.01–3.19 points; high degree  $\geq 3.20$  points), "depersonalization" (low degree  $\leq 1.00$  points; moderate degree 1.01–2.19 points; high degree  $\geq 2.20$  points) and "reduced personal accomplishment" (low degree  $\leq 4.00$  points, moderate degree 4.01–4.99 points, high degree  $\geq 5.00$  points).

Additionally, the risk classification of occupational burnout was suggested by R. Kalimo et al. (2003) to determine the symptoms or degree of burnout exposure risk: "no burnout syndrome" (several incidences per year), "some burnout" (several incidences per month) and burnout syndrome" (several incidences per week or daily). This required the conversion of the "personal accomplishment" scale into the "reduced personal accomplishment" scale and the calculation of the total result [24], based on which burnout syndrome was classified according to R. Kalimo et al. (2003) as follows: "no burnout syndrome" (0.00 to 1.49), "some symptoms of burnout" (1.50 to 3.49) and "risk of burnout syndrome" (3.50 to 6.00). This generally accepted approach allowed to assess the risks of occupational deformation in respondents more accurately, rather than just changes in their personality.

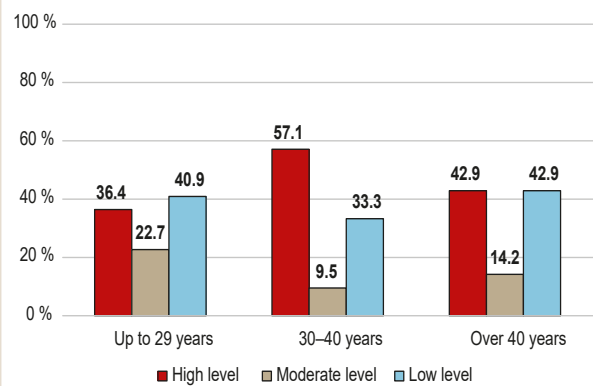
Stress triggers and causes provoking it were determined using the Differential Stress Inventory (DSI) questionnaire [25]. The questionnaire contains items about situations or events that burden employees at present (during the last 2–3 months) and how often this situation is stressful. The questionnaire provides a description of coping behavior depending on the type of stress. Successful coping with stressful situations and everyday stressors is crucial for personal well-being, success, and productivity at work as well as to develop career guidance measures for workers.

A special list of 147 items of the DSI questionnaire provides a differentiated assessment of stress triggers, stress manifestation, coping, and stress stabilization. The questionnaire records the following changes: stress due to everyday events, experiences when interacting with other people, stress due to existential fears. At the same time, there are physical and emotional-cognitive stress, stress coping mechanisms (palliative, instrumental), and stress stabilization which can occur internally or externally. Respondents answer the items according to the four-point Likert scale, which is used to measure the respondents' attitude to the item (statement, question) from "almost always" to "almost never".

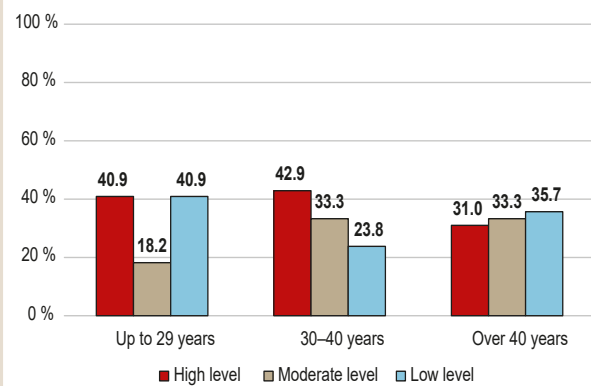
After analyzing the questionnaires, respondents were assigned a type/profile according to Lefèvre & Kubinger (2004): I – normal type; II – overstressed; III – stress resistant; IV – low resistance to stress (successful coping under low stress); V – high resistance to stress (successful coping at high stress levels); types IV and V included such a phenomenon as "coping" – a strategy to manage stress, but in type IV this management was possible at low stress levels, and in type V – at high stress levels [25].

Statistical processing of the factual material was carried out using the IBM SPSS Statistics Standard Campus Edition 26.0 (5725-A54) computer program and the Vienna Tests System allowing for the computerized psychological assessment of personality. To objectively assess the statistical significance of the study, we chose the chi-square ( $\chi^2$ ) test. Distribution data between three scales of the MBI-GS questionnaire and five types of the DSI questionnaire were used as comparative populations.

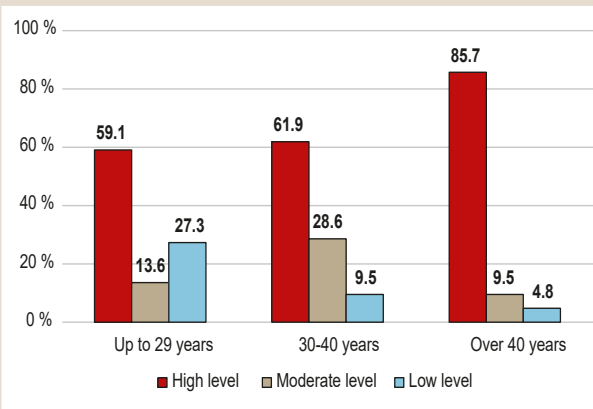
To determine the relationship between the variables, correlation analysis was performed by calculating the Pearson's rank correlation coefficient. The significance level of  $P < 0.05$  was considered for all used procedures of statistical analysis.



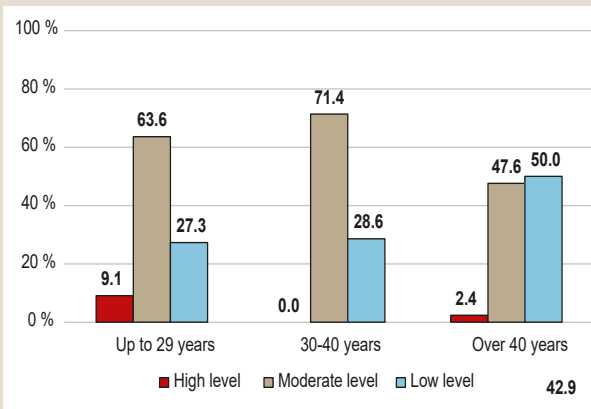
**Fig. 1.** Indicators of the emotional exhaustion level according to the MBI-GS questionnaire.



**Fig. 2.** Indicators of the depersonalization level according to the MBI-GS questionnaire.



**Fig. 3.** Indicators of the reduced personal accomplishment level according to the MBI-GS questionnaire.



**Fig. 4.** Burnout risk indicators according to the R. Kalimo et al. classification of occupational burnout.

## Results

According to the MBI-GS questionnaire, a statistically significant high level on the scale of emotional exhaustion ( $\geq 3.20$  points) was expressed in emergency care staff in all age groups (Fig. 1), in particular, in 12 (57.1 %) respondents aged 30–40 years ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ) against 18 (42.9 %) respondents older than 40 years ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ) and 8 (36.4%) of those under the age of 29 ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ).

At that time, the moderate level on the emotional exhaustion scale (2.01–3.19 points) was most pronounced among emergency medical staff under the age of 29 years, namely, in 5 (27.7 %) respondents ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ). In addition, in the group of emergency staff over the age of 40 years, the moderate level of emotional exhaustion was registered in 14.2 % (6 people) ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ) of respondents, and in the middle age group at the age of 30–40 years, these deviations were observed in 9.5 % (2 persons) ( $\chi^2 = 2.705$ ;  $df = 4$ ;  $P \leq 0.05$ ) of respondents (Fig. 1).

The analysis of the MBI-GS questionnaire revealed that 9 individuals (40.9 %) under 29 years of age ( $\chi^2 = 2.96$ ;  $df = 4$ ;  $P \leq 0.05$ ) and 9 people (42.9 %) aged 30–40 years ( $\chi^2 = 2.96$ ;  $df = 4$ ;  $P \leq 0.05$ ) statistically significantly scored high ( $\geq 2.20$  points) for depersonalization, however, a moderate severity of depersonalization (1.01–2.19 points) was

registered in 14 (33.3 %) respondents over the age of 40 years ( $\chi^2 = 2.96$ ;  $df = 4$ ;  $P \leq 0.05$ ) and in 7 (33.3 %) persons ( $\chi^2 = 2.96$ ;  $df = 4$ ;  $P \leq 0.05$ ) aged 30–40 years (Fig. 2).

The study found that a high level of reduced personal accomplishment ( $\geq 5.00$  points) was present in all groups of respondents, namely, almost 36 (85.7 %) respondents in the group over 40 years had the highest value ( $\chi^2 = 11.581$ ;  $df = 4$ ;  $P \leq 0.05$ ). A moderate level of reduced personal accomplishment (4.01–4.99 points) was most pronounced in 6 (28.6 %) respondents in the group of 30–40 years ( $\chi^2 = 11.581$ ;  $df = 4$ ;  $P \leq 0.05$ ) (Fig. 3).

According to the R. Kalimo et al. classification of occupational burnout (Fig. 4), the risk of burnout (3.50–6.00 points) was present only in 2 respondents in the group under 29 years and in one respondent in the group over 40 years (9.1 % and 2.4 %, respectively) ( $\chi^2 = 7.063$ ;  $df = 4$ ;  $P \leq 0.05$ ). However, some symptoms of burnout (1.50–3.49 points) were expressed in all groups, mostly in the group of 30–40 years (15 respondents, 71.4 %) ( $\chi^2 = 7.063$ ;  $df = 4$ ;  $P \leq 0.05$ ).

Based on the DSI questionnaire, low stress resistance was present in 6 (14.3 %) respondents in the group over 40 years ( $\chi^2 = 4.864$ ;  $df = 4$ ;  $P \leq 0.05$ ), 3 (13.6 %) of respondents under the age of 29 years ( $\chi^2 = 4.864$ ;  $df = 4$ ;  $P \leq 0.05$ ) (Fig. 5). High resistance to stress under conditions of work overload was present in 3 (14.3 %) respondents in the group of 30–40 years ( $\chi^2 = 4.864$ ;  $df = 4$ ;  $P \leq 0.05$ ).

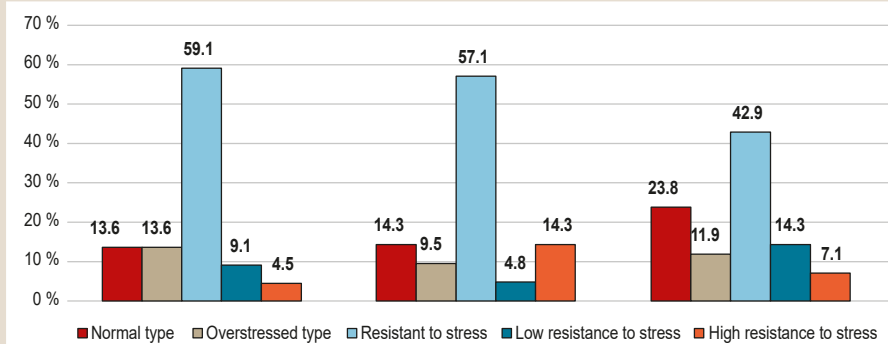


Fig. 5. Indicators of the stress resistance type according to the DSI.

## Discussion

In general, the structure of psycho-emotional factors of work overload, which leads to feelings of physical and mental exhaustion, chronic fatigue, characterized by psychological maladaptation and health deterioration, which, in turn interferes with professional performance and responsibilities.

High levels of emotional exhaustion were most pronounced in the middle-age group of respondents (30–40 years) and almost equally expressed in groups of emergency staff under 29 years, which could be explained by depletion of adaptive resources and relatively short time to develop new adaptation strategies, and over 40 years.

These changes were probably related to the impact of adverse working conditions due to intense emotional, informational, intellectual overload, manifested by various phenomena of maladaptation, increased frequency and burden of somatic pathology, high emotional stress, deteriorated quality of life [26]. High scores on the scale of “emotional exhaustion” were characterized by feelings of frustration and fatigue, helplessness caused by their own work, as a result, there was physical exhaustion, that induced various psychosomatic manifestations, such as headaches, insomnia and asthenovegetative and cardiac disorders. Prolonged exposure to stress depleted the adaptive psychophysiological mechanisms of the body, also leading to various psychosomatic manifestations in the form of increased blood pressure, heart attacks, gastric and duodenal ulcers, changes in the biochemical composition of blood, i. e. psychosomatic symptoms [27].

In addition, the work of emergency medical staff was likely to be influenced by various factors of the working environment and conditions, namely unsatisfactory organizational factors, such as conditions of departure and return to a station, inadequate microclimatic conditions in road transport, frequent tailpipe emissions as well as insufficient workplaces lighting, poor sanitary and hygienic conditions; professional activity of the staff often required constrained posture, the need to carry heavy loads and high strain of analyzers [28]. In addition, emergency medical staff had unsuitable work and rest conditions, namely, long work hours and shift work, when staff were required to work extra hours to resolve organizational issues, re-registration, etc., many of them were part-time workers [29]. Moreover, all the staff experienced psycho-emotional stress related to professional duties, which was associated with

the need for prompt decision-making, high responsibility for human life, the risks of infectious and non-infectious diseases [30].

High levels of depersonalization were the highest in the groups of under 29 and 30–40 years. This can also be explained by the stressful working conditions as emergency medical staff work on the road every day, communicate with lots of different people, they often face time constraints, which, in turn, “kills” their feelings and leads to the mechanical performance of their duties [31].

It is known that high scores on the “depersonalization” scale are objectively characterized by destabilization of interpersonal relationships among health professionals, risky behavior, gross negligence, impatience, a lack of a sense of proportion both in relation to patients and to colleagues in the presence of patients, which negatively affects the professional development of specialist [32]. The professional burnout syndrome is likely to result in a combination of psychopathological, psychosomatic, somatic symptoms and signs of social dysfunction. Related to this, there are phenomena of chronic fatigue, cognitive dysfunction (memory, attention disorders), sleep disorders, personality changes [33].

As mentioned earlier, the highest level of reduced personal accomplishment was found in the group after 40 years. Perhaps it was a strategy to adaptation that helped these respondents to continue working. Diminished sense of personal accomplishment allowed to ignore the negative factors of the work environment and just to do the necessary job.

Diminished sense of personal accomplishment could be manifested either in a tendency to negatively assess oneself, professional achievements and potential, or in self-deprecation, limiting abilities and responsibilities towards others. Also, this aspect of burnout was present as incompetence, dissatisfaction with oneself, reducing the value of own activities, a negative attitude towards oneself as an individual. There was an indifference to professional development, improvement of professional skills and future work [34]. In the extreme manifestations, a person hardly cared about professional activities, almost nothing, neither positive nor negative circumstances caused an emotional response. And at the last stage, the emergency medical staff lost feeling of self-efficacy, or presented with self-deprecation. A person did not see prospects in the professional activity, job satisfaction decreased, confidence in the professional opportunities was lost [35].

According to the R. Kalimo et al. classification of the burnout risk, only the staff over 40 years had the high risk of burnout, and some burnout symptoms were present in a half of the respondents. In addition, in the group of 30–40 years, none of the respondents was prone to the burnout risk according to the above classification, and in the group under the age of 29 years, there was the high risk of burnout – 3/4 of respondents.

The tendency to burnout among younger people was due to the emotional shock experienced when confronted with the reality, which frequently failed to meet their expectations. Of course, the age was correlated with the emotional factor score in burnout, although young people had more pronounced manifestations of emotional burnout. As a rule, the risk of emotional burnout was increased in the third or fourth year of work, when a newness feeling was lost, while the self-requirement and demands on others were increasing [36].

Since the occurrence of burnout was associated with individual personality traits, we studied the individual and personal characteristics of emergency medical staff, which showed the resilience in respondents. The most staff were found to have normal stress resistance. In most stressful situations, the emergency staff tried to assess a problem in terms of its positive aspects and perceived it as one of the episodes of their life experience, planned their actions in this situation, were seeking help and advice from colleagues and close ones and took active actions to eliminate the source of stress.

However, 1/4 of respondents in each age group had a very intense type of response to stressors. At that time, respondents under the age of 29 years and over the age of 40 years had a low level of resilience with successful coping strategies under conditions of low work intensity. These staff did not show activity in solving problems, but expected more favorable conditions for it, required compassion and understanding from others, had a low activity in relation to other matters and problems and focused entirely on stressors, or tried to distract from stressful situations due to entertainment (alcohol, gambling and gadgets), dreams, sleep, etc., or reacted emotionally (“break”) [37].

Dealing or “coping” behavior (from the English word “to cope” – to deal, co-ownership) is a behavior aimed at adapting to stressful circumstances, the willingness of an individual to solve difficulties in life [38]. According to A. Maslow, coping behavior recruits all the capacities of the organism to deal with emotional stress. The psychological purpose of coping is to adapt a person to situational requirements as well as possible, enabling a total control over a situation, to reduce or mitigate negative effects, avoid or get used to stress [Lazarus R. S., Kanner A. D., Folkman S., 1980].

The study, using correlation analysis, revealed a statistically significant direct strong correlation between the normal type of the DSI and high scores on reduced personal accomplishment by the MBI-GS ( $r = 0.623$ ;  $P = 0.04$ ). This indicated the presence of higher levels of diminished personal accomplishment in respondents classified as stress resistant. But the lowest levels of diminished personal accomplishment were present in overstressed and low resistant types with coping strategies. It means that in order to continue working in the ambulance, the staff had to either develop a coping strategy or sacrifice personal qualities. Similar

correlations were found in the work of other authors [39]. In addition, the study found that emergency care staff had statistically significant direct correlations between the levels of depersonalization and emotional exhaustion ( $r = 0.544$ ;  $P = 0.001$ ); depersonalization and the level of risk according to R. Kalimo ( $r = 0.36$ ;  $P = 0.0001$ ); emotional exhaustion and the R. Kalimo risk level ( $r = 0.82$ ;  $P = 0.0001$ ). That is, the staff detachment from patients, colleagues, relatives increased emotional exhaustion to extremely high levels, which, in its turn, was directly proportional to the high risks of burnout according to the R. Kalimo classification.

## Conclusions

1. The highest levels of professional burnout on the “emotional exhaustion” scale of the MBI-GS questionnaire had more than half of the respondents among emergency medical staff aged 30–40 years, depersonalization phenomena were most pronounced in emergency medical staff under the age of 29 and 30–40 years, and the high level of “reduced personal accomplishment” was equally prevailed among emergency professionals of all age groups, but individuals over the age of 40 years experienced a lack of work-related activity value to a greater extent.

2. One-quarter of the emergency medical staff respondents of all age groups were of the very stressed type with low resilience, being characterized by moderate workload and low coping ability and of the type with low resilience and low professional expectations and demands, but with successful coping strategies, providing the conditions for further decrease in the personal resources of specialists and the progression of the professional burnout phenomena.

**Prospects for further research.** There are a number of studies examining burnout among emergency medical staff [40,41], however, the data are presented from Western European countries. Taking into account the differences in the structure of health care, these findings can not be fully used to reflect mental health condition of national emergency medical staff. Therefore, the study on burnout among emergency medical staff in our country with the use of several questionnaires is a very promising area. Increasing the number of questionnaires will help to identify some factors that affect the development of burnout in the profession, to identify the cause-and-effect relationships between factors of professional activity and individual-typological characteristics. This would allow for the development of methods for prevention and early diagnosis of burnout, as well as to single out a decreed group with the prepathology of burnout.

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