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THE RELATIONSHIP BETWEEN BURNOUT SYNDROME,
QUALITY OF LIFE AND CARDIOVASCULAR RISK FACTORS
IN FAMILY DOCTORS

Abstract. This article is devoted to the study of the relationship between
burnout syndrome, quality of life and cardiovascular risk factors in family doctors,
which is extremely important not only for clinical medicine, but also for foreign and
domestic psychology.

The purpose of the article is to determine the relationship between burnout
syndrome, quality of life and cardiovascular risk factors in family doctors.

Based on the results of the conducted research, the relationship between
burnout syndrome, quality of life, and cardiovascular risk factors in family doctors
was determined, namely:

1. A positive correlation of medium strength between emotional exhaustion
and depersonalization (r = 0.659; p = 0.000) was identified, a positive correlation
of weak strength between emotional exhaustion and the result on the AUDIT scale
(r = 0.141; p = 0.022), heart rate (pulse) (r = 0.127; p = 0.040), as well as a negative
correlation of medium strength between emotional exhaustion and quality of life
(r = -0.406; p = 0.000) and a negative correlation of weak strength between emotional
exhaustion and personal achievements (r = -0.214; p = 0.000) were determined.

2. A direct correlation of medium strength between depersonalization and
emotional exhaustion (r = 0.659; p = 0.000), a positive correlation of weak strength
between depersonalization and the result on the AUDIT scale (r = 0.228; p = 0.000),
hours of work per week (r = 0.140; p = 0.024), VLDL cholesterol (r = 0.137;
p = 0.027), as well as a weak, inverse correlation between depersonalization and
personal achievements (r = -0.241; p = 0.000), quality of life (r = -0.284; p = 0.000)
were identified.

3. A weak positive correlation between personal achievements and quality of
life (r = 0.200; p = 0.001), and a weak, negative correlation between personal
achievements and emotional exhaustion (r = -0.214; p = 0.000), depersonalization (r = -0.241; p = 0.000) were found.

4. A positive correlation of weak strength was present among the quality of life and personal achievements (r = 0.200; p = 0.001), physical activity (r = 0.164; p = 0.008), as well as a negative correlation of medium strength among the quality of life and emotional exhaustion (r = -0.406; p = 0.000), weak, negative correlation between quality of life and depersonalization (r = -0.284; p = 0.000), BMI (r = -0.182; p = 0.003), hip circumference (r = -0.182; p = 0.003), total chol (r = -0.185; p = 0.003), heart rate (pulse) (r = -0.152; p = 0.014), LDL-C (r = -0.129; p = 0.036), VLDL-C (r = -0.150; p = 0.015), IA (r = -0.126; p = 0.040), non-HDL-C (r = -0.164; p = 0.008).

5. To identify protective factors and develop preventive programs that will help to reduce the risk of the development of burnout syndrome, cardiovascular diseases and quality of life of medical workers (family doctors in particular) more scientific research is indispensable worldwide.

**Keywords:** burnout syndrome, quality of life, risk factors for cardiovascular diseases, hypertension (high blood pressure), obesity

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ВЗАЄМОЗВ’ЯЗОК СИНДРОМУ ПРОФЕСІЙНОГО ВИГОРАННЯ, ЯКОСТІ ЖИТТЯ ТА ФАКТОРІВ СЕРЦЕВО-СУДИННОГО РИЗИКУ У ЛІКАРІВ ЗАГАЛЬНОЇ ПРАКТИКИ - СІМЕЙНИХ ЛІКАРІВ

**Анотація.** Стаття присвячена дослідженню взаємозв’язку синдрому професійного вигорання, якості життя та факторів серцево-судинного ризику у лікарів загальної практики - сімейних лікарів, що має надзвичайно важливе значення не тільки для вітчизняної й зарубіжної психології, але й також для клінічної медицини відповідно.

Мета статті полягає у виявленні взаємозв’язку синдрому професійного вигорання, якості життя та факторів серцево-судинного ризику у ліkarів загальної практики - сімейних лікарів.

В результаті поведеного дослідження був виявлений взаємозв’язок між синдромом професійного вигорання, якістю життя, факторами серцево-судинного ризику у лікарів загальної практики – сімейних лікарів, а саме: 1. Було зафіксовано позитивний кореляційний зв’язок середньої сили між емоційним виснаженням та деперсоналізацією (r = 0,659; p = 0,000), слабкої сили між емоційним виснаженням та результататом за шкалою AUDIT (r = 0,141; p = 0,022), ЧСС (r = 0,127; p = 0,040), а також негативний кореляційний зв’язок
середньої сили між емоційним виснаженням і якістю життя \( (r = -0.406; p = 0.000) \) та слабкої сили між емоційним виснаженням і особистими досягненнями \( (r = -0.214; p = 0.000) \). 2. Виявлено прямий кореляційний зв’язок середньої сили між деперсоналізацією й емоційним виснаженням \( (r = 0.659; p = 0.000) \), слабкої сили між деперсоналізацією та результатом за шкалою AUDIT \( (r = 0.228; p = 0.000) \), годинами роботи на тиждень \( (r = 0.140; p = 0.024) \), ХС ЛПДНЩ \( (r = 0.137; p = 0.027) \), а також зворотній кореляційний зв’язок слабкої сили між деперсоналізацією й особистими досягненнями \( (r = -0.241; p = 0.000) \), якістю життя \( (r = -0.284; p = 0.000) \). 3. Позитивний кореляційний зв’язок слабкої сили був наявний між особистими досягненнями та якістю життя \( (r = 0.200; p = 0.001) \), а також негативний кореляційний зв’язок слабкої сили між особистими досягненнями й емоційним виснаженням \( (r = -0.214; p = 0.000) \), слабкої сили між якістю життя та деперсоналізацією \( (r = -0.241; p = 0.000) \), а також негативний кореляційний зв’язок середньої сили між якістю життя та емоційним виснаженням \( (r = -0.406; p = 0.000) \), слабкої сили між якістю життя та деперсоналізацією \( (r = -0.284; p = 0.000) \), IMT \( (r = -0.182; p = 0.003) \), обхватом стегон \( (r = -0.182; p = 0.003) \), ЗХС \( (r = -0.185; p = 0.003) \), ЧСС \( (r = -0.152; p = 0.014) \), ХС ЛПДНЩ \( (r = -0.150; p = 0.015) \), IA \( (r = -0.126; p = 0.040) \), ХС не-ЛПВІЩ \( (r = -0.164; p = 0.008) \). 5. Наявна потреба щодо проведення більшої кількості наукових досліджень у світі задля виявлення протективних факторів та розробки програм профілактики, які допоможуть знизити ризик розвитку синдрому професійного вигорання й серцево-судинних захворювань, а також покращити якість життя медичних працівників загалом і лікарів загальної практики – сімейних лікарів зокрема.

Ключові слова: синдром професійного вигорання, якість життя, фактори ризику серцево-судинних захворювань, артеріальна гіпертензія, ожиріння

Formulation of the problem. Issues related to the study of the relationship between burnout syndrome, quality of life and cardiovascular risk factors family doctors are extremely important not only for clinical medicine, but also for foreign and domestic psychology, because they will bring the possibility to improve the quality of life of medical workers (family doctors in particular), which will cause the proper performance of professional duties by medical workers (family doctors in particular) in the form of providing timely, high-quality medical assistance to the patient with complete moral independence, compassion and respect for human dignity [1; 2].

Analysis of recent research and publications. Noncommunicable diseases (hereinafter - NCDs) cause the death of 41 million people every year, which is equivalent to 74% of all worldwide deaths, in particular, 17 million people die from
NCDs every year under the age of 70 [3]. Of all NCD deaths, near 77% occur in middle- and low-income countries [3]. Mortality from cardiovascular diseases is the largest among NCDs, or is 17.9 million people each year, followed by cancers (that is 9.3 million people), chronic respiratory diseases (that is 4.1 million people) and diabetes (that is 2.0 million people, including mortality from kidney diseases caused by diabetes) [3]. More than 80% of all premature deaths are from these 4 groups of NCDs [3]. According to WHO data, tobacco smoking is the cause of more than 8 million deaths annually (including the effects of passive smoking), while 830,000 deaths every year related to insufficient physical activity [3].

In Ukraine NCDs are the cause of not only more than 80% of lost years of potential life which is due to premature disability and/or mortality, but also NCDs cause almost «…90% of all deaths with a high level of premature mortality rate…» [4]. About 80% of the total number of deaths in Ukraine is related to diseases of the circulatory system, respiratory system and neoplasms [4]. This situation also negatively affects the level of average life expectancy, which is now 72 years (76.3 years for women, and 66.3 years for men) and is significantly lower compared to the average life expectancy of other European countries [4].

It should be mentioned that modification of cardiovascular risk factors makes it possible to significantly reduce cardiovascular morbidity and mortality among patients with diagnosed and/or undetected CVDs [5, p. 145]. Cardiovascular risk factors are divided into modified and unmodified factors [5, p. 146]. The latter include age (older people have greater risk of the development of CVDs), gender, heredity (premature death related to CVDs or presence of myocardial infarction, stroke, as well as a history of coronary artery bypass grafting or angioplasty in relatives: women under 65 years of age and men under the age of 55; the presence of family hypercholesterolemia) [5, p. 146].

The main modified cardiovascular risk factors are the following: hypertension (BP ≥140/90 mmHg), dyslipidemia, diabetes, impaired glucose tolerance, excess body weight/obesity, insufficient physical activity, tobacco smoking (in particular, passive smoking), alcohol use, psychosocial factors (for example, stress, anxiety, depression or their combination), unhealthy diet, etc. [5, p. 146; 6, p. 937; 3; 7, p. 154; 8; 4].

It should be mentioned that the presence of a relationship between psychosocial factors and a negative prognosis for cardiovascular diseases (for example, acute coronary syndrome (hereinafter – ACS) has been widely investigated and confirmed regardless of the presence of traditional CVD risk factors such as hypertension, smoking, dyslipidemia, additionally, the presence of depression and anxiety contribute to an increase in mortality and morbidity among patients with ACS [9]. Moreover, burnout syndrome is associated with worse cardiovascular outcomes [10]. Scientists also confirm the existence of a relationship among burnout syndrome and all health, namely «…metabolic syndrome, dysregulation of the hypothalamic-pituitary-adrenal axis together with activation of the sympathetic
nervous system…», systemic inflammation, sleep disorders, immune dysfunction, fibrinolysis, and blood coagulation, as well as poor health behaviours, which indicates a large-scale impact of the burnout syndrome on a person's health [10]. Worth emphasizing, that burnout syndrome is a predictor of poor quality of life, as well as of longer physical recovery after the first episodes of ACS [11].

However, nowadays, the problem of researching the relationship between burnout syndrome, quality of life, and cardiovascular risk factors in family doctors has not been sufficiently clarified.

The purpose of the article is to determine the relationship between burnout syndrome, quality of life and cardiovascular risk factors in family doctors.

Presentation of the main material.

Research materials and methods.

The respondents were familiarized with the purpose and tasks of the study, and voluntary consent to participate in the study by signing the informed consent. The research protocol was approved by the Commission of Bioethical Expertise and Research Ethics of Bogomolets National Medical University (Protocol No. 116 from November 29, 2018). Comprehensive examinations were carried out in accordance with the current legislation of Ukraine and according to the Declaration of Helsinki «Ethical Principals for Medical Research Involving Human Subjects» by World Medical Association [12].

The examination included: collection of anamnestic data (the following questions were also asked: "How often do you drink alcohol", "How often do you do sports/physical activity"), anthropometric measurements, detection of indicators of the blood lipid spectrum, blood pressure level was determined by the Korotkov method, Maslach Burnout Inventory Human Service Survey (hereinafter - MBI-HSS) (Ukrainian version), the AUDIT (Alcohol Use Disorders Identification Test), pack-years index, Chaban Quality of Life Scale (CQLS) and SCORE2 scale for assessment of the 10-year overall CVD risk.

Statistical analysis. Quantitative data were presented as mean and standard deviation [M±SD]. Instead, qualitative data were represented by %. Correlation analysis was performed using Spearman's test. Mathematical and statistical data processing was performed using the SPSS.22 package.

Anthropometric measurements included determination of height, body weight, body mass index, hip circumference, waist circumference, and waist-hip ratio. Height was measured using a height meter with an accuracy of up to 0.5 cm, body weight was determined with medical scales RP-150MG, without shoes. In accordance with WHO standards [13], the subject's waist circumference was measured during standing, in particular, the waist area was without clothes, and after a normal exhalation, the measurement was taken in the middle of the area between the iliac crest and the back of the lateral costal arch.

The body mass index (hereinafter – BMI) detects general obesity and is calculated as the ratio of body weight (indicator in kg) to height (indicator in m²),
moreover, the waist circumference indicates the abdominal type of obesity, in particular, BMI classification was carried out in accordance with the provisions of WHO and NHLBI [13; 14].

Waist circumference in men > 102 cm and > 88 cm in women reflects the presence of abdominal obesity and is a risk factor for hypertension, diabetes, and cardiovascular diseases, in particular, for the purpose of calculating the waist-hip ratio, we took into account the circumference of the hips, respectively, the waist-hip ratio for men ≥0.90 and ≥0.85 for women indicates the presence of abdominal obesity [13; 14].

In order to assess blood lipid spectrum, the total cholesterol (hereinafter - Chol), high-density lipoprotein cholesterol (hereinafter - HDL-C), low-density lipoprotein cholesterol (hereinafter - LDL-C), very low-density lipoprotein cholesterol (hereinafter - VLDL-C), non-high-density lipoprotein cholesterol (hereinafter - non-HDL-C), triglycerides (hereinafter - TG) in blood serum according to standard biochemical methods were evaluated. For this purpose, blood samples in a volume of 5 ml were placed in a centrifuge tube. The levels of total cholesterol and TG were determined using the enzymatic colorimetric method, in particular, HDL-C was determined using the precipitation method, and moreover, LDL-C was calculated by Friedewald’s formula [15, p. 500]:

$$LDL-C = Chol - (HDL-C - TG)/2.2$$ (mmol/l),

whereas VLDL-C was calculated according to the following formula [16]:

$$VLDL-C = Chol - (LDL-C + HDL-C),$$

furthermore, the atherogenicity index was calculated according to the next formula [16]:

$$AI = (Chol – HDL-C)/HDL-C,$$

in particular, non-HDL cholesterol was calculated according to the following formula [8]:

$$Non-HDL-C = Chol - HDL-C.$$  

The levels of the specified indicators were evaluated according to the NCEP ATP III recommendation [17].

According to WHO recommendations on physical activity and sedentary behaviour, adults, older adults, and adults/older adults with chronic diseases and/or disabilities should do at least 150-300 minutes per week of aerobic physical activity of moderate-intensity or at least 75-150 minutes per week of aerobic physical activity of vigorous-intensity [18, p. 2-13].

We also calculated the indicator of smoking intensity, that defined in pack-years, which was calculated as the number of packs of cigarettes that smoked per day, multiplied by the number of years of smoking, moreover, 1 pack-year corresponds to smoking 20 cigarettes per day for 1 year [19, p. 108].

The AUDIT (Alcohol Use Disorders Identification Test) consists of 10 questions, which are evaluated from 0 to 4 points [20]. The maximum number of points is 40, in particular, a low level of health threat is from 0 to 7 points; hazardous
(or risky) drinking is from 8 to 15 points; harmful drinking is from 16 to 19 points; alcohol dependence is more than 20 points [20].

Burnout syndrome was detected using the MBI-HSS questionnaire, which contains of 22 questions rated from 0 (never) to 6 (daily), in particular, the scores (emotional exhaustion/EE, depersonalization/DP, personal accomplishment/PA) and the division into profiles (engaged, ineffective, overextended, disengaged, burnout) were carried out using the MBI Manual 4 edition (C.Maslach et al.) [21]. For the use of the Ukrainian version of the MBI-HSS questionnaire, we bought a license (www.mindgarden.com).

The Chaban Quality of Life Scale (CQLS) is a questionnaire that contains 10 questions about various aspects of the respondents' lives rated from 0 (not at all satisfied) to 10 (extremely satisfied) [22, p. 147-149]. Assessments of the quality of life are carried out by calculating a total score (from 0 to 100), in particular, an extremely low level of quality of life is from 0 to 56 points, a low level is from 57 to 66, an average level is from 67 to 75 points, a high level is from 76 to 82 points, a very high level is from 83 to 100 points [22, p. 147-149].

Research results and their discussion.

263 family doctors of Kyiv, 90% women and 10% men, aged from 24 to 69 years old (the average age of which was 46.51±12.58) took part in the study. 66% were married for the first time, 8% were not married, 8% were divorced, 8% were married 2 or more times, 7% were widower/widow, 3% were living together. Furthermore, 42.2% of family doctors had 1 child, 39.2% had 2 children, 15.2% had no children, 3% had 3 children, 0.4% had 4 and more children. Average years of working experience among family doctors were 22.42±13.30. Whereas, 45% of participants worked from 40 to 49 hours per week, 42% had up to 40 hours per week, 8% worked from 50 to 59 hours per week, 2% worked from 60 to 69 hours per week, and only 1% had more than 80 hours per week.

Considering that fact that we conducted the study among apparently healthy individuals aged ≤ 69 years, the assessment of the 10-year overall CVD risk was performed using the SCORE2 scale (https://u-prevent.com/calculators/score2) [8]. It should be mentioned in accordance with the «2021 ESC Guidelines on cardiovascular disease prevention in clinical practice» of the European Society of Cardiology of 2021, apparently healthy individuals are ones without identified atherosclerotic CVD (hereinafter - ASCVD), diabetes mellitus (hereinafter – DM), chronic kidney disease (hereinafter – CKD) and/or rare/genetic disorders of lipid exchange or blood pressure (hereinafter - BP) [8]. Considering the abovementioned, we studied such cardiovascular risk factors as: a) unmodified: gender, age, presence of hereditary diseases; b) modified: hypertension, dyslipidemia, overweight/obesity, insufficient physical activity, tobacco smoking, and alcohol consumption [8].

Such indicators as presence of hereditary diseases belong to the unmodified cardiovascular risk factors [8]: 47% of respondents had hereditary diseases of the circulatory system (53% had not), 23% had hereditary endocrine diseases,
nutritional disorders and metabolic disorders (77% had not), 18% had hereditary neoplasms (82% had not), 15% had hereditary diseases of the digestive organs (85% had not), 12% had hereditary diseases of the eye and accessory apparatus (88% had not), 11% had hereditary bone diseases of the muscular system and connective tissue (89% had not), 5% had hereditary diseases of the nervous system (95% had not), 2% had hereditary mental and behavioral disorders (98% had not) and 2% indicated "other" (98% - missing). Next, we consider it necessary to identify the modified cardiovascular risk factors [8]: 77% of respondents reported about the absence of arterial hypertension, whereas, 23% of participants had it. In particular, among those who had hypertension, the duration of arterial hypertension was 8.71±7.35. Furthermore, the average systolic blood pressure (hereinafter - SBP) was 118.77±12.8 mmHg, whereas diastolic blood pressure (hereinafter - DBP) was 75.43±9.08 mmHg, which corresponded to the normal SBP and DBP values.

Hypercholesterolemia was observed in 43% of the respondents (57% had normal scores), 12% of the respondents had hypertriglyceridemia (88% had normal scores), whereas, the average indicators of Chol, TG were 5.11±0.85 and 1.21±0.39, which corresponds to the normal scores of these indicators, due to the fact that the study was conducted among apparently healthy individuals. LDL-C, HDL-C, VLDL-C, IA, and non-HDL-C were also within normal scores.

According to the provisions of the «2021 ESC Guidelines on cardiovascular disease prevention in clinical practice», 10-year CVD risk evaluated among apparently healthy individuals aged 40 to 69 using the SCORE2 scale (Table 1) for countries with low, moderate, high, and very high risk (in particular, Ukraine belongs to countries with very high risk) [8; 23].

### CVD risk categories that based on SCORE2 among apparently healthy people divided according to age [8]

<table>
<thead>
<tr>
<th>Categories</th>
<th>&lt;50 years</th>
<th>50-69 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-to-moderate risk: treatment of the risk factor generally not recommended</td>
<td>&lt;2,5%</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>High risk: treatment of risk factor should be considered</td>
<td>2,5-7,5%</td>
<td>5-10%</td>
</tr>
<tr>
<td>Very high risk: treatment of risk factor generally recommended</td>
<td>≥7,5%</td>
<td>≥10%</td>
</tr>
</tbody>
</table>

According to the results of the assessment of the overall 10-year CVD risk using the SCORE2 scale [8], the respondents were divided into the following groups: 32.7% had a high risk, 31.56% were younger than 40 years and this indicator was not determined among them, 20.91% had a low-to-moderate risk, 14.83% had a very high risk (Fig. 1).
The next factor that should be investigated is overweight or obesity [8], according to our research it was found that the body weight of the respondents ranged from 43 to 112 kg, the average body weight was 71.39±13.78 kg, whereas, the height was in the range from 1.50 to 1.95 m, the average indicator of height was 1.66±0.07 m.

Moreover, 44% of respondents had normal body weight, 33% were overweight, 17% had Class 1 obesity, 3% had Class 2 obesity, 3% were underweight, and 1% had Class 3 obesity. The average body mass index (BMI) was 25.93±4.79 kg/m², which indicates that more than a half of respondents were overweight.

Waist-hip ratio and waist circumference among respondents were the following: 61% and 66% had normal waist-hip ratio and waist circumference, as well as 39% and 34% had presence of abdominal obesity (waist-hip ratio and waist circumference), whereas, the average indicators of the waist-hip ratio and waist circumference were within the normal scores of 0.82±0.1 and 83.5±13.76 cm, which indicates about the absence of abdominal obesity in most respondents.

On the question "How often do you do sports/physical activity?" 30.8% of participants answered 1 time a week, 28.52% said that they do not exercise, 26.61% reported exercising 2-3 times a week, and 14.07% answered 4 or more times a week. 78% do aerobic physical activity of moderate-intensity of less than 150 minutes per week, whereas only 22% perform regular sufficient physical activity. The average indicator of physical activity of medium intensity was 93.69±131.52 minutes per week, which indicates to insufficient physical activity of respondents, i.e. most respondents lead a sedentary lifestyle. A sedentary lifestyle is associated with mortality from cardiovascular diseases, cancer mortality, in particular, it also increases incidence of type-2 diabetes, cardiovascular diseases, and cancer [18, p. 3].
The next modified CVD risk factor is smoking [8], in particular, 88.97% of respondents indicated that they do not smoke, whereas 11.03% reported that they are active smokers, moreover, the average number of cigarettes smoked per day, years of smoking, pack-years among those who smoke are 9.75±4.93 cigarettes/day, 15.43±10.21 years, and 8.39±8.52 pack-years.

Alcohol consumption was assessed by AUDIT [20]: 96.2% had a low level of health threat, 3.04% reported hazardous (or risky) drinking, 0.38% reported harmful drinking, and 0.38% reported alcohol dependence. Overall, the majority of respondents had a low level of threat to their health, and the probability of harming their health by consuming such a level of alcohol is insignificant.

On the question "How often do you drink alcohol?" 63.12% of participants reported that they drink less than 1 standard dose per day, 31.56% do not drink alcohol at all, 3.8% drink 1 standard dose per day, 1.52% indicated that they drink 2 or more standard doses per day. In accordance with the recommendations on healthy nutrition for adults by the Ministry of Health of Ukraine from December 8, 2017, 1 standard dose of alcohol corresponds to 30 ml of vodka, 300 ml of beer or 100 ml of wine [24].

The respondents had the following levels of burnout syndrome: 1) 30.42% had low EE, 21.29% hit a moderate EE, 48.29% faced a high EE; 2) 4.56% had low DP, 69.58% hit a moderate DP, 25.86% faced a high DP; 3) 51.71% had a low PA, 7.22% hit a moderate PA, 41.06% faced a high PA. Moreover, we classified MBI scores by using burnout-engaged workplace profile system: 24% engaged, 26% ineffective, 24% overextended, 3% disengaged, and 23% burnout (Fig. 2). Overall, we can say that most of the respondents had signs of burnout syndrome.

**Fig. 2. Burnout syndrome profiles among family doctors**
In order to study the quality of life, we used the Chaban Quality of Life Scale (CQLS) [22, p. 147-149], in particular, 42.59% had an extremely low level of quality of life, 20.91% hit a low level, 15.21% faced an average level, 11.03% reported a high level, and 10.27% had a very high level of quality of life (Fig. 3). Overall, 63.42% had a low and extremely low level of quality of life, which indicates dissatisfaction physicians’ lives, the presence of significant problems that cannot be solved, a feeling of emptiness, hopelessness, as well as a lack of joy in life [22, p. 149].

![Fig.3. Levels of quality of life among participants](image)

We used correlation analysis to identify relationship between the studied indicators.

A positive correlation of medium strength between emotional exhaustion and depersonalization (r = 0.659; p = 0.000) was identified, a positive correlation of weak strength between emotional exhaustion and the result on the AUDIT scale (r = 0.141; p = 0.022), heart rate (pulse) (r = 0.127; p = 0.040), as well as a negative correlation of medium strength between emotional exhaustion and quality of life (r = -0.406; p = 0.000) and a negative correlation of weak strength between emotional exhaustion and personal achievements (r = -0.214; p = 0.000) were determined.

Correlation analysis indicates that respondents with high levels of emotional exhaustion have higher levels of depersonalization, higher scores on the AUDIT scale, higher heart rate (pulse), they are more dissatisfied with their own quality of life, got lower levels of personal accomplishment and vice versa, which is caused by a significant feeling of emptiness of their own resources, depression, fatigue, irritability, impatience, emotional overwhelm, which are associated with professional activity [25, p. 99; 26, p. 3-5; 27, p. 103; 28, p. 91-92].
Similar results were found by A. Searby et al., that increased alcohol consumption (AUDIT test) was associated with professional burnout syndrome, intention to leave, and absenteeism [29]. H. Khatatbeh et al. established that burnout syndrome had an inverse relationship with poor quality of life [30].

A direct correlation of medium strength between depersonalization and emotional exhaustion (r = 0.659; p = 0.000), a positive correlation of weak strength between depersonalization and the result on the AUDIT scale (r = 0.228; p = 0.000), hours of work per week (r = 0.140; p = 0.024), VLDL cholesterol (r = 0.137; p = 0.027), as well as a weak, inverse correlation between depersonalization and personal achievements (r = -0.241; p = 0.000), quality of life (r = -0.284; p = 0.000) were identified.

Physicians with high levels of personalization had higher levels of emotional exhaustion, higher AUDIT scores, longer work hours per week, higher VLDL-C scores, poorer quality of life, lower personal achievement, and vice versa. That is caused by a negative, soulless, impersonal, formal and/or cynical attitude towards patients/colleagues, as well as conflicts with medical personnel [25, p. 99; 26, p. 3-5; 27, p. 103; 28, p. 91-92].

Similar results were obtained by A. Shirom et al. [31] according to which burnout syndrome and vigor were independently associated with the risk of hyperlipidemia. R. Tao et al. [32], investigated clinical therapists in China and found that burnout syndrome (depersonalization), smoking, and male gender were associated with an increased risk of alcohol misuse. Moreover, A. Nteveros et al. conducted a cross-sectional study on the identification of burnout syndrome among medical students in Cyprus and found that alcohol consumers had more symptoms of cynicism/depersonalization and less sense of efficacy/personal achievement in contrast to non-alcohol consumers [33]. J. Brooks et al. determined that working hours per week and results on the AUDIT scale were associated with burnout syndrome [34].

A weak positive correlation between personal achievements and quality of life (r = 0.200; p = 0.001), and a weak, negative correlation between personal achievements and emotional exhaustion (r = -0.214; p = 0.000), depersonalization (r = -0.241; p = 0.000) were found.

Family doctors with a low level of personal achievement had a poorer quality of life, higher emotional exhaustion and depersonalization, and vice versa. This fact caused by decreased productivity, low self-efficacy, low professional and personal motivation and is also manifested by a feeling of inability, incompetence, negativism to professional duties, dissatisfaction with oneself and one's own professional achievements [25, p. 99; 26, p. 3-5; 27, p. 103].

P.J. Quijada-Martinez et al. found that the level of professional quality of life was associated with a higher risk of severe burnout syndrome [35]. F.H. Abduljabbar et al. had similar results regarding the existence of a significant relationship between burnout syndrome and poor quality of life [36]. M.M.S. Borges et al. identified a
positive correlation between quality of life and personal achievements, as well as a negative correlation between quality of life, emotional exhaustion, and depersonalization [37].

A positive correlation of weak strength was present among the quality of life and personal achievements \((r = 0.200; p = 0.001)\), physical activity \((r = 0.164; p = 0.008)\), as well as a negative correlation of medium strength among the quality of life and emotional exhaustion \((r = -0.406; p = 0.000)\), weak, negative correlation between quality of life and depersonalization \((r = -0.284; p = 0.000)\), BMI \((r = -0.182; p = 0.003)\), hip circumference \((r = -0.182; p = 0.003)\), total chol \((r = -0.185; p = 0.003)\), heart rate (pulse) \((r = -0.152; p = 0.014)\), LDL-C \((r = -0.129; p = 0.036)\), VLDL-C \((r = -0.150; p = 0.015)\), IA \((r = -0.126; p = 0.040)\), non-HDL-C \((r = -0.164; p = 0.008)\).

Respondents who were satisfied with their own quality of life had higher personal achievements, were more physically active, had low emotional exhaustion, low depersonalization, were slimmer, as they had a lower BMI, smaller hip circumference, lower Chol, heart rate (pulse), LDL-C, VLDL-C, AI, non-HDL-C and vice versa. This is determined by the fact that family doctors are satisfied with their physical condition, work-life balance, personal relationships, mood, financial well-being, social activity, feeling of happiness, etc. [22, p. 147-149; 38, p.145; 39].

Similar results were obtained by M. Hoseini et al. according to which a significant inverse relationship was found between physical activity \((r = -0.726, p<0.001)\), quality of life \((r = -0.405, p<0.001)\) and body mass index, as well as a positive correlation between quality of life and physical activity \((r= 0.357, p<0.001)\) was identified [40]. Ch.E. Taylor et al. also claim that physical activity was negatively associated with burnout syndrome, whereas physical activity was positively associated with quality of life [41]. A significant relationship between EQ-5D, EQ-VAS and Chol, TG, LDL-C, and HDL-C was found by S. Wang et al. in order to identify the relationship between the parameters of the blood lipid spectrum and the quality of life (HRQoL: EQ-5D+EQ-VAS) among Chinese centenarians \((n=1002)\) [42], moreover, good quality of life among older adults usually a result of dynamic process on interaction of subjective and objective features of physical and mental health [43, p. 55].

**Conclusions.**

Based on the results of the conducted research, the relationship between burnout syndrome, quality of life, and cardiovascular risk factors in family doctors was determined, namely:

1. A positive correlation of medium strength between emotional exhaustion and depersonalization \(( r = 0.659; p = 0.000)\) was identified, a positive correlation of weak strength between emotional exhaustion and the result on the AUDIT scale \((r = 0.141; p = 0.022)\), heart rate (pulse) \((r = 0.127; p = 0.040)\), as well as a negative correlation of medium strength between emotional exhaustion and quality of life \((r = - 0.406; p = 0.000)\) and a negative correlation of weak strength between emotional exhaustion and personal achievements \((r = -0.214; p = 0.000)\) were determined.
2. A direct correlation of medium strength between depersonalization and emotional exhaustion ($r = 0.659; p = 0.000$), a positive correlation of weak strength between depersonalization and the result on the AUDIT scale ($r = 0.228; p = 0.000$), hours of work per week ($r = 0.140; p = 0.024$), VLDL cholesterol ($r = 0.137; p = 0.027$), as well as a weak, inverse correlation between depersonalization and personal achievements ($r = -0.241; p = 0.000$), quality of life ($r = -0.284; p = 0.000$) were identified.

3. A weak positive correlation between personal achievements and quality of life ($r = 0.200; p = 0.001$), and a weak, negative correlation between personal achievements and emotional exhaustion ($r = -0.214; p = 0.000$), depersonalization ($r = -0.241; p = 0.000$) were found.

4. A positive correlation of weak strength was present among the quality of life and personal achievements ($r = 0.200; p = 0.001$), physical activity ($r = 0.164; p = 0.008$), as well as a negative correlation of medium strength among the quality of life and emotional exhaustion ($r = -0.406; p = 0.000$), weak, negative correlation between quality of life and depersonalization ($r = -0.284; p = 0.000$), BMI ($r = -0.182; p = 0.003$), total chol ($r = -0.185; p = 0.003$), heart rate (pulse) ($r = -0.152; p = 0.014$), LDL-C ($r = -0.129; p = 0.036$), VLDL-C ($r = -0.150; p = 0.015$), IA ($r = -0.126; p = 0.040$), non-HDL-C ($r = -0.164; p = 0.008$).

5. To identify protective factors and develop preventive programs that will help to reduce the risk of the development of burnout syndrome, cardiovascular diseases and quality of life of medical workers (family doctors in particular) more scientific research is indispensable worldwide.

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