



Resilience as a moderator in the relationship between burnout and subjective well-being among medical workers in Serbia during the COVID-19 pandemic

Rezilijentnost kao moderator povezanosti izgaranja na poslu i subjektivnog blagostanja kod medicinskih radnika u Srbiji u toku pandemije COVID-19

Teodora Safiye*, Branimir Vukčević†, Milanko Čabarkapa‡

*University of Kragujevac, Faculty of Medical Sciences, Kragujevac, Serbia; †High School of Culinary Arts and Tourism with Dormitory, Vrnjačka Banja, Serbia; ‡University of Belgrade, Faculty of Philosophy, Department of Psychology, Belgrade, Serbia

Abstract

Background/Aim. During the ongoing COVID-19 pandemic, exhaustion and difficulties at work can seriously endanger the mental health of medical workers. The aim of this study was to examine whether resilience is a moderator of the association between burnout and subjective well-being among medical workers at the time of the pandemic. **Methods.** The research was conducted on a sample of 521 medical workers (354 female), among whom were 245 physicians and 276 medical technicians. The average age of the respondents was 38.66 years. Data were collected using online questionnaires comprising the Brief Resilience Scale, the Work Burnout Scale, the Short Subjective Well-being Scale, and the Sociodemographic Data Questionnaire. Regression and interaction analysis (by SPSS macro "PROCESS 3.5") was used for data analysis and processing. **Results.** The results showed that burnout was a significant negative predictor of subjective well-being of medical workers ($\beta = -0.19$; $p < 0.01$) and a significant positive predictor of subjective well-being ($\beta = 0.40$; $p < 0.01$), as well as that the interaction of resilience and burnout was a significant positive predictor of subjective well-being ($\beta = 0.09$; $p < 0.01$). In subjects who had developed resilience at the level of +1 standard deviation (SD), the negative effect of burnout on subjective well-being was 2.8 times lower than in subjects who had resilience at the level of -1 SD. **Conclusion.** The study confirmed that resilience reduces the negative connection between burnout and subjective well-being, which is a significant argument that medical workers should be provided with resilience training programs to prevent burnout and preserve mental health during a pandemic.

Key words:

covid-19; resilience, psychological; burnout, professional; quality of life; medical staff; occupational exposure; surveys and questionnaires.

Apstrakt

Uvod/Cilj. U vreme pandemije COVID-19 iscrpljenost i teškoće na poslu mogu ozbiljno ugroziti mentalno zdravlje medicinskih radnika. Cilj ovog rada bio je ispitati da li je rezilijentnost moderator povezanosti izgaranja na poslu i subjektivnog blagostanja kod medicinskih radnika tokom pandemije. **Metode.** Istraživanje je sprovedeno na uzorku od 521 medicinskih radnika (354 ženskog pola), među kojima je bilo 245 lekara i 276 medicinskih tehničara. Prosečna starost ispitanika bila je 38,66 godina. Podaci su prikupljeni pomoću online upitnika koji su činili Kratka skala rezilijentnosti, Skala izgaranja na poslu, Kratka skala subjektivnog blagostanja i Upitnik sociodemografskih podataka. Za analizu i obradu podataka korišćena je analiza regresije i interakcije (SPSS macro "PROCESS 3.5"). **Rezultati.** Ustanovljeno je da je izgaranje na poslu značajan negativan prediktor subjektivnog blagostanja medicinskih radnika ($\beta = -0,19$; $p < 0,01$), da je rezilijentnost značajan pozitivan prediktor subjektivnog blagostanja ($\beta = 0,40$; $p < 0,01$) i da je interakcija rezilijentnosti i izgaranja na poslu značajan pozitivan prediktor subjektivnog blagostanja ($\beta = 0,09$; $p < 0,01$). Kod ispitanika koji su imali razvijenu rezilijentnost na nivou +1 standardna devijacija (SD), negativan efekat sagorevanja na poslu na subjektivno blagostanje bio je 2,8 puta manji nego kod ispitanika koji imaju rezilijentnost na nivou od -1 SD. **Zaključak.** Istraživanje je potvrdilo da rezilijentnost umanjuje povezanost izgaranja na poslu i subjektivnog blagostanja što predstavlja značajan argument da medicinskim radnicima treba omogućiti programe obuke rezilijentnosti u cilju prevencije sagorevanja na poslu i očuvanja mentalnog zdravlja u uslovima pandemije.

Ključne reči:

covid-19; rezilijentnost; sagorevanje na radu; kvalitet života; kadar, medicinski; profesionalna izloženost; ankete i upitnici.

Introduction

By the nature of their work, medical workers experience unpleasant and stressful situations. During the time of the COVID-19 pandemic, exhaustion and difficulties at work can seriously endanger the mental health of medical workers¹⁻⁶. Even before the mentioned pandemic, high resilience was cited as a feature that enables medical workers to easily recover from various misfortunes at work which can be acquired through an appropriate training program⁷⁻⁹. Resilience is also cited as a trait that can reduce the association between burnout and mental health difficulties of health professionals¹⁰⁻¹³.

As a personality trait, resilience refers to an individual's ability to return to a state of normal mental functioning after stressful or threatening events without lasting negative consequences¹⁴. As an individual's capacity, resilience can be defined as the sum of all protective factors that act in such a way that an individual maintains or improves his or her mental health after circumstances that may cause severe distress or mental trauma. Protective factors can be: 1) individual factors, such as ways of coping with stress, cognitive capacity, and strength of character of the individual; 2) factors arising from the social network of the individual, such as emotional or material support provided by family or close friends; 3) support from the wider community, such as support provided by state institutions, companies, and social organizations. Resilience is closely related to subjective well-being. Generally speaking, people with a higher degree of resilience also have a higher degree of subjective well-being and a lower degree of depression, anxiety, and negative self-evaluation^{9,15}.

On the framework of the theory of subjective well-being, Diener¹⁶ and Deiner et al.¹⁷ emphasized the importance of happiness and life satisfaction for the mental health of an individual. The subjective well-being of an individual refers to his/her cognitive and affective evaluation of their own life. The concept of subjective well-being differs from the affective component, which includes a frequent experience of positive emotions and rare experience of negative emotions, and the cognitive component, which includes a positive evaluation of one's life, i.e., life satisfaction¹⁸. People's subjective well-being is positively correlated with their willingness to face different adjustment challenges. Resilience and subjective well-being can be treated as highly interdependent phenomena⁹.

Burnout is chronic stress at work that adversely affects mental health and reduces employees' job satisfaction. Maslach et al.¹⁹ defined the concept of burnout as a syndrome that encompasses the following dimensions: 1) emotional exhaustion related to the experience of lack of energy for work and loss of enthusiasm; 2) cynicism related to work (includes the experience of distancing from work and coworkers, as well as diminishing the importance of their work); 3) the experience of reduced professional efficiency¹⁹. Kristensen et al.²⁰ identify the following types of burnout: personal burnout, which refers to the experience of fatigue and exhaustion in general in life, work-related

burnout, and client-related burnout. Physical and mental fatigue and exhaustion are the basis of each of these types of burnouts. Berat et al.²¹ distinguish between two highly interrelated experiences within work-related burnout: work exhaustion and the experience of job frustration. Previous studies indicate that burnout of health workers increased during the COVID-19 pandemic compared to the time before that pandemic^{22,23}.

Studies suggest that in physicians, resilience and burnout are interrelated phenomena, with greater resilience implying less burnout, just as greater burnout implies weaker resilience^{11,12}. Resilience acts as a factor that reduces anxiety in doctors at work, as well as their exhaustion at work⁴. Moreover, the studies indicate that a negative correlation between burnout and resilience also exists among medical technicians^{13,24}. A higher degree of resilience in medical technicians implies better coping skills at work, a higher level of self-efficacy and better social support at work, a lower level of exhaustion at work, as well as a lower level of anxiety and depression^{25,26}.

Studies conducted by Yu et al.²⁵ and Wang et al.²⁷ indicate that burnout during the COVID-19 pandemic is negatively correlated with the subjective well-being and mental health of medical workers.

The aim of this study was to examine whether resilience is a moderator of the relationship between burnout and the subjective well-being of medical workers. The following hypotheses were set: 1) burnout is a negative and significant predictor of subjective well-being; 2) resilience is a positive and significant predictor of subjective well-being; 3) the interaction of resilience and burnout is a significant positive predictor of subjective well-being. A theoretical model was assumed in which the negative correlation between burnout and subjective well-being decreases with a higher degree of resilience.

Methods

Sample and procedures

We adopted a cross-sectional study design for this research. Inclusion criterion for the study sample was residents of Serbia aged 18 years or older being in a medical profession (medical doctors, medical technicians/nurses). Exclusion criteria were minors, residents of other countries, and members of any profession outside the medical field.

Since the research was conducted during the COVID-19 pandemic, the data were collected online using the Google Forms platform in the period from April 16, 2020, to May 2, 2020, in Serbia. The objectives of the research were explained to potential participants at the very beginning of the anonymous online questionnaire in Serbian. Participation in the research was voluntary and with informed consent, and respondents were guaranteed confidentiality and anonymity of the obtained data. All data was protected, only the research team had access. Duplicate and inappropriate survey responses were excluded with a manual review of gathered data.

The research was approved by the Institutional Review Board of the Department of Psychology, Faculty of Philosophy, University of Belgrade (Approval number: 2020-30). The procedures of this study were in accordance with the provisions of the Declaration of Helsinki on medical research involving human subjects²⁸.

Measures

Resilience. A version of the Brief Resilience Scale validated by Slišković and Burić²⁹ was used to test resilience, and the original version of this scale was created by Smith et al.¹⁴. According to the mentioned authors, the Brief Resilience Scale has very good reliability, the Cronbach's alpha coefficient was above 0.8 in previous research. The Brief Resilience Scale is one-dimensional and consists of 6 items. Items refer to resilience which is defined as the ability to recover from stressful or threatening events. Three items speak in favor of resilience (eg. Item 3: It does not take me long to recover from a stressful event), while three items speak against resilience and have the opposite scoring (eg. Item 4: It is hard for me to snap back when something bad happens). Respondents had an option to choose one answer on a five-point Likert-type scale, from 1 – strongly disagree to 5 – strongly agree. The total score on this scale is the arithmetic mean of all six items. Resilience was treated as a moderator variable.

Burnout. Burnout was examined by the version of the Work Burnout Scale given by Berat et al.²¹ and based on the original scale constructed by Kristensen et al.²⁰. The scale examines fatigue and exhaustion at work and has a total of 7 items. The items of the scale are divided into two dimensions: a) work exhaustion (eg. Item 1: Is your work emotionally exhausting?, and Item 7: Do you have enough energy for family and friends during leisure time?); b) work frustration (eg. Item 3: Does your work frustrate you?, and Item 5: Are you exhausted in the morning at the thought of another day at work?). Respondents had an option to choose one answer on a five-point Likert-type scale (from 1 – Almost never or To a very low degree, to 5 – Always or To a very high degree). Respondent's score on the Work Burnout Scale can range from 0 to 100, because after reverse scoring item 7 (Do you have enough energy for family and friends during leisure time?), all answers are recoded as follows: 1 into 0, 2 into 25, 3 into 50, 4 into 75, 5 into 100, and then calculate the arithmetic mean of all 7 items. The reliability of the Work Burnout Scale in previous research was over 0.8^{20, 21}. Burnout was assumed to be the main predictor variable (focal predictor).

Subjective Well-Being. The Short Subjective Well-Being Scale presented by Jovanović¹⁸ was used to examine subjective well-being. The scale consists of 8 items divided into two dimensions: the positive affectivity and the positive attitude towards life. The positive affectivity includes 4 items that refer to the frequent experience of happiness and other positive emotions (eg. Item 4: I feel lively, and Item 7: I often feel happy and elated.). A positive attitude towards life includes 4 items that relate to the experience of life

satisfaction (eg. Item 1: I feel that life is full of nice surprises, and Item 6: Life is full of good opportunities and possibilities). Respondents had an option to choose their answers on a Likert-type scale from 1 – I completely disagree to 5 – I completely agree. The score on the Short Subjective Well-Being Scale is the sum of all the answers. Subjective well-being was treated as a dependent variable.

Demographics. To collect data on gender, education, and age, a questionnaire of sociodemographic data was developed by the authors of this research. Gender, age, and occupation were selected as covariates, as has been done in previous research^{1, 9, 10}.

Data analysis

Mean values, standard deviations, minimum and maximum value, skewness, and kurtosis were used as measures of descriptive statistics. To check the reliability of the scales used, Cronbach's alpha coefficient was used as a measure of internal consistency. Regression analysis and a special moderation analysis procedure created by Hayes³⁰ were used to test the set hypotheses. Free SPSS macro PROCESS 3.5 was used, which performs regression analysis by examining the significance of the interaction of moderator and focal predictor, as a predictor of the dependent variable, with the assessment of the significance of statistics in the usual way (using the value of p) but also with a special procedure called bootstrapping. Bootstrapping includes regression analysis on a large number of random subsamples (resampling), and in this paper, the option is set to 5,000. This appendix allows the program to analyze the relationship between focal predictors and dependent variables at different levels of moderators (conditional effects of focal predictor at values of the moderator). Since macro PROCESS 3.5 produces a printout that gives non-standardized predictor regression coefficients before regression analysis, standardized variables that were used in the procedure to obtain standardized regression coefficients (β) in the printout were calculated because they are commonly used in the display of results and for easier comparison of predictors.

Results

Participant characteristics

The sample consisted of 521 medical workers, among them were 245 physicians and 276 medical technicians. There were 354 female respondents (153 physicians and 201 medical technicians) and 167 male respondents (92 physicians and 75 medical technicians). The average age of the sample was [mean (M) \pm standard deviation (SD)] 38.66 \pm 9.46 years. The age ranges of medical technicians and physicians ranged from 19 to 62 years and 25 to 62 years, respectively.

Table 1 shows measures of descriptive statistics and scale reliability. All instruments used in this study had high reliability, which was expressed as the α coefficient of internal consistency (Cronbach's alpha), as was expected.

Table 1

Descriptive statistics for resilience, burnout, and subjective well-being							
Scale	Min.	Max.	Mean	SD	Skew	Kurt	α
Resilience	1.00	5.00	3.19	0.87	-0.18	-0.17	0.82
Burnout	0.00	100.00	59.48	25.91	-0.38	-0.68	0.91
Subjective well-being	8.00	40.00	29.49	6.97	-0.68	0.15	0.92

SD – standard deviation.

Table 2

The predictors of subjective well-being						
Model summary	R ²	MSE	F	df1	df2	<i>p</i>
	0.31	33.81	39.14	6	514	0.01
Predictors	β	SE	T	<i>p</i>	LLCI	ULCI
burnout (FP)	-0.19	0.01	-4.28	0.01	-0.28	-0.10
resilience (M)	0.40	0.36	9.07	0.01	0.31	0.49
int. M*FP	0.09	0.01	2.53	0.01	0.02	0.16
age	-0.03	0.03	-1.02	0.31	-0.11	0.03
sex	0.06	0.56	1.84	0.07	-0.01	0.14
profession	0.04	0.53	1.20	0.23	-0.03	0.12
Test of Int. M*FP:	Change R ²	F	df1	df2	<i>p</i>	
	0.01	6.38	6	514	0.01	

Note: Int. M*FP – Interaction between Moderator (M) and Focal Predictor (FP); LLCI – Lower Limit of Confidence Interval (95%); ULCI – Upper Limit of Confidence Interval (95%).

Table 3

Effects of burnout on subjective well-being at different levels of resilience						
Resilience (SD)	Effect	SE	T	<i>p</i>	LLCI	ULCI
-1.00	-0.28	0.06	-4.62	0.01	-0.40	-0.16
0.00	-0.19	0.04	-4.28	0.01	-0.28	-0.10
1.00	-0.10	0.05	-1.94	0.06	-0.20	0.00

Note: Levels of resilience were set on -1, 0, 1 standard deviation (SD) in PROCCESS 3.5 procedure; LLCI – Lower Limit of Confidence Interval (95%); ULCI – Upper Limit of Confidence Interval (95%).

Tables 2 and 3 show the results of regression and interaction analyses. These predictors explain 31% of the variance in subjective well-being.

Covariates – age, gender, and occupation (physician or medical technician) were not significant predictors of subjective well-being.

Table 3 shows the effects of burnout on subjective well-being at three different levels of resilience. At the low and medium level of resilience, burnout was a significant negative predictor of subjective well-being, while when resilience was expressed at a level of plus one standard deviation, the relationship between burnout and subjective well-being ceases to be statistically significant [$p < 0.05$ and confidence interval (CI) includes zero]. It can be clearly seen that with the increase in the resilience of the respondents, the connection between burnout and subjective well-being

decreased, as well as the magnitude of the negative effects of burnout on subjective well-being.

Discussion

The research findings confirmed the assumed model in which resilience is the moderator of the negative correlation between burnout and subjective well-being. Therefore, the negative effect of burnout on subjective well-being among medical workers decreases with greater resilience.

Our results showed that burnout is a significant negative predictor of the subjective well-being of medical workers ($\beta = -0.19$; $p < 0.01$), which is in line with the results of previous research that indicated that burnout has a negative effect on mental health and the subjective well-being of medical workers^{2, 22, 25, 27}. Some other studies also

showed that burnout is a significant negative predictor of subjective well-being^{3, 10, 23, 27}. With more burnout, subjective well-being is lower. However, based on the confidence interval obtained and on the bootstrap procedure, it can be seen that the sample included respondents who differed greatly in the degree of connection between burnout and subjective well-being because the lower limit of confidence interval (LLCI) was 2.8 times lower than the upper limit of confidence interval (ULCI) (LLCI = -0.28 and ULCI = -0.10).

Exhaustion and frustration related to work are aspects of burnout¹⁹⁻²¹, and these experiences are mutually conditioned with experiences of happiness and positive emotions in life, which are aspects of subjective well-being^{16, 17}. This finding indicates that burnout has a negative effect on subjective well-being but also includes the possibility that the degree of subjective well-being affects the experience of burnout. Medical workers who experience their lives as difficult and unhappy find it easier to perceive their work as frustrating and exhausting.

In our study, resilience was a significant positive predictor of subjective well-being ($\beta = 0.40$; $p < 0.01$), which is in line with previous research showing that resilience is a factor that has a positive effect on mental health and subjective well-being⁹⁻¹². Greater resilience implies greater subjective well-being, and *vice versa* - with less resilience, subjective well-being is lower. Resilience is the result of all protective factors that act to keep an individual healthy in difficult circumstances^{9, 14, 15} so that subjective well-being can be understood as a consequence of resilience but also as a factor of resilience. Developed resilience of medical workers implies personal skills and other opportunities to maintain a good mood, level-headedness, and correct judgment after stressful circumstances⁷⁻⁹, which according to the findings of this research, preserves both the degree of their positive affectivity (the frequency of experiencing happiness and other positive emotions in life) and a positive attitude towards life, as to dimensions of subjective well-being. Preserved positive affectivity and a positive attitude towards life also represent an individual's ability to more easily endure various stressors and adversities in life, even at work, which is a factor of resilience when it is understood as an individual's potential.

In our study, the interaction of resilience and burnout was a significant positive predictor of subjective well-being ($\beta = 0.09$; $p < 0.01$); with greater interaction, subjective well-being was better. The contribution of this interaction, although statistically significant, is not large - in the regression model, it contributes to the explanation of only 1% of the variance of subjective well-being. However, data on the confidence interval (CI), based on the bootstrap procedure, indicate that the sample includes very different respondents according to the degree of connection between this interaction and subjective well-being; the LLCI = 0.02 is as much as 8 times lower than the ULCI = 0.16.

Our study demonstrated that the negative association between burnout and subjective well-being among health care workers was significantly higher when they had low

resilience. The negative effect of burnout on subjective well-being in subjects with a level of resilience at minus one standard deviation was 2.8 times higher than in subjects with a level of resilience at plus one standard deviation (see effect size in Table 3). This finding indicates that resilience prevents frustrations and work exhaustion from worsening the degree of subjective well-being of medical workers.

These scales have not been used so far for examinations of medical workers in Serbia. However, for the sake of insight into the bigger picture, these results will be compared with the results of previous research where the same instruments were used as in this research, without drawing solid conclusions. Smith et al.¹⁴ examined the characteristics of the Brief Resilience Scale in the United States and indicated that the M value of resilience obtained in student samples was 3.53 (SD = 0.68, n = 128) and 3.57 (SD = 0.76, n = 64), while in the sample of heart patients undergoing rehabilitation it was 3.98 (SD = 0.68, n = 112). Slišković and Burić²⁹ showed that the M of resiliences in the sample of 3,010 teachers in Croatia was 3.20 (SD = 0.78). Bozdağ and Ergün¹ conducted the research during the pandemic on a sample of 214 medical workers in Turkey, received the M value of resilience of 18.43 (SD = 3.3) on a scale of 5 to 30, which is M = 3.68 (SD = 0.66) on a scale from 1 to 5. Jovanović¹⁸, in the validation study of the short scale of subjective well-being, has reported that the M of subjective well-being is 33.43 (SD = 5.20; n = 226). The findings on the mean values of resilience and subjective well-being in this study do not deviate much from the findings of the mentioned studies, especially when standard deviations are taken into account. When it comes to burnout, things look much different. Berat et al.²¹, in the research on a sample of 352 workers of different professions in Serbia, get M burnout of 44.99 (SD = 22.39). Kristensen et al.²⁰ examined a sample of 1,910 Danish workers in the auxiliary occupations sector and found that the work burnout M was 33.00 (SD = 17.70). The COVID-19 pandemic appears to have acted as a factor that increased the rate of burnout but did not particularly alter the degree of resilience and subjective well-being among the medical workers who made up the sample of this study. More research suggests an increased rate of burnout in health workers during the COVID-19 pandemic^{3, 5, 6, 22, 23, 27}. The higher levels of burnout of nurses and doctors during the COVID-19 pandemic have also been reported in studies conducted in France, Italy, and Spain³¹.

The design of this research does not allow the consideration of cause-and-effect relationships. The findings of this research do not exclude the possibility that there is an opposite direction of action in which favorable subjective well-being acts so that burnout is weaker and *vice versa* - that less favorable subjective well-being implies the experience of greater burnout. It has already been pointed out that subjective well-being can be understood both as a consequence and as a factor of resilience⁹, as well as in those studies where it is suggested that burnout is negatively correlated with worker resilience^{4, 12, 24-26}. It is possible that there is a circle in which the weakening of subjective well-being leads to weaker resilience, which leads to more

difficulties and unpleasant experiences related to work, and this then adversely affects subjective well-being and resilience. The analytical moderation procedure applied in this study best corresponds to the experimental designs³⁰. Although the design of this study is not such, this procedure is used here in a creative and illustrative way only to show the correlation between the examined phenomena without concluding causation-consequential relationships.

The age of medical workers was not a significant predictor of subjective well-being. In addition to age, gender was chosen as a covariate variable because it was previously shown that gender could be a significant factor in the mental health of the health care workers¹⁰, as well as in their subjective well-being¹⁵. Compared to men, women as respondents in the research perceived more often their mental health as a little less favorable and subjective well-being as somewhat lower. In a sample of this study, gender was not a significant predictor of subjective well-being. Furthermore, in this study, a covariant variable called profession with two possible indicators – physician or medical technician, did not prove to be a significant predictor of subjective well-being, indicating that the difference in job type is not significantly related to subjective well-being in this sample.

The sample of this research does not allow generalization of the results so that they are valid for the entire population of medical workers. In addition, findings on burnout indicate that the COVID-19 pandemic most likely

contributed to a significant increase in burnout levels of health workers compared to the time before the pandemic, as indicated by other studies^{3, 6, 23, 27}.

Although the problem of this research arose on the basis of a very extensive scientific material on resilience, subjective well-being, and burnout, the assumed theoretical model is original in terms of variable positions, methods, and time of testing. This research, in addition to theoretical significance, could also have important practical significance when it comes to creating training that develops resilience among medical workers in order to prevent burnout and preserve subjective well-being during a pandemic.

Conclusion

The resilience of health workers is negatively associated with burnout, positively correlates with subjective well-being, and mitigates the negative correlation of burnout and subjective well-being. The findings of this study represent a significant argument that medical workers should be provided with resilience training programs in order to prevent burnout and maintain mental health in a pandemic.

Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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