IZVORNI ČLANAK / ORIGINAL ARTICLE

Life satisfaction and quality of life among nurses of COVID-19 hospital of the University Clinical Hospital Mostar

Zadovoljstvo životom i kvaliteta života medicinskih sestara/tehničara COVID-19 bolnice Sveučilišne kliničke bolnice Mostar

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Abstract

Introduction: The outbreak of the coronavirus disease 2019 (COVID-19) pandemic inevitably affected the mental health of nurses who directly care for people suffering from COVID-19 disease. The work environment in which nurses find themselves during a pandemic, contributes significantly to the severity of psychiatric symptoms and the reduced quality of life.

Aim: Aim is to investigate the life satisfaction and quality of life among nurses working in a COVID-19 hospital. An additional goal of this research is to analyze relationship between life satisfaction and quality of life among nurses of COVID-19 hospital.

Methods: A cross-sectional study was conducted between February and May 2021 at COVID-19 hospital of the University Clinical Hospital Mostar, Bosnia and Herzegovina. Data were collected using the Socio-demographic questionnaire personally designed for this research, the General Life Satisfaction Scale, and the World Health Organization Quality of Life-BREF questionnaire.

Results: Of the total of respondents, 73 subjects completed and returned the questionnaires. There was a statistically significant correlation between life satisfaction and psychological well-being, social relations, and the environment domains ($p < 0.01$). The strongest positive correlation was observed between life satisfaction and the psychological well-being domain ($r = 0.747$). The psychological well-being ($p < 0.001$), social relations ($p < 0.01$), and the environment ($p < 0.05$) domains significantly predicted life satisfaction level.

Conclusion: The psychological, social, and environmental health domains of quality of life significantly affect the life satisfaction level among nurses working at COVID-19 hospital.

Keywords: Life satisfaction, quality of life, nurses, COVID-19, pandemic

Running head: Life among nurses of COVID-19 hospital

Sažetak

Uvod: Pojava pandemije koronavirusne bolesti 2019 (COVID-19) neizbježno je utjecala na mentalno zdravlje medicinskih sestara koji izravno njeguju COVID-19 bolesnike. Radno okruženje u kojem se medicinske sestre nalaze tijekom pandemije značajno doprinosi težim psihijatrijskim simptomima i smanjenoj kvaliteti života.

Cilj: Cilj je istražiti zadovoljstvo životom i kvalitetu života medicinskih sestara koji rade u COVID-19 bolnici. Dodatni je cilj ovog istraživanja analizirati vezu između zadovoljstva životom i kvalitete života medicinskih sestara COVID-19 bolnice.

Metode: Provedena je presječna studija u vremenskom razdoblju između veljače i svibnja 2021. godine u COVID-19 bolnici Sveučilišne kliničke bolnice Mostar, Bosna i Hercegovina. Za prikupljanje podataka korišteni su: sociodemografski upitnik namjenski izrađen za ovu studiju, Skala općenitog zadovoljstva životom i Upitnik kvalitete života Svjetske zdravstvene organizacije-skraćena verzija.

Rezultati: Od ukupnog broja ispitanika, 73 ih je ispunilo upitnik i vratilo ispitivačima. Pronađena je statistički značajna povezanost između zadovoljstva životom i domena psihološka dobrobit, socijalne veze i okolina ($p < 0,01$). Najsnažnija pozitivna korelacija uočena je između zadovoljstva životom i domene psihološka dobrobit ($r = 0,747$). Domene psihološka dobrobit ($p < 0,001$), socijalne veze ($p < 0,01$) i okolina ($p < 0,05$) predstavljale su statistički značajan prediktor razine zadovoljstva životom.

Zaključak: Domene kvalitete života psihološka dobrobit, socijalne veze i okolina značajno utječu na razinu zadovoljstva životom medicinskih sestara koje rade u COVID-19 bolnici.

Ključne riječi: Zadovoljstvo životom, kvaliteta života, medicinske sestre/COVID-19, pandemija

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Introduction

The outbreak of the coronavirus disease 2019 (COVID-19) pandemic inevitably affected the mental health of the general population and, in particular, the mental health of nurses who directly care for people suffering from COVID-19 disease [1]. Many studies suggest that health care

Uvod

Pojava pandemije bolesti koronavirusa (COVID-19) 2019. godine neizbježno je utjecala na mentalno zdravlje opće populacije, a posebno na mentalno zdravlje medicinskih sestara koje se izravno brinu o osobama oboljelima od bolesti COVID-19 [1]. Mnoga istraživanja upućuju na

professionals, and especially nurses, suffer from excessive stress and pay less attention to life satisfaction [2]. From the beginning of the COVID-19 pandemic until today, scientists around the world have been trying to investigate its impact on the mental health of individuals through various approaches. Studies to date suggest the presence of symptoms of anxiety, depression, and reduced quality of life in nurses during the COVID-19 pandemic [3-5]. Experts believe that life satisfaction is one of the key factors for psychological health and well-being [6]. Many authors point out that nurses' life satisfaction is affected by factors such as the quality of work, the stress of the ward, and the dynamic changes within the work environment. Furthermore, many authors point out that job satisfaction affects life satisfaction [7]. The work environment in which nurses find themselves during a pandemic contributes significantly to the severity of psychiatric symptoms and the reduced quality of life [8]. Zheng et al. state that identifying psychological problems as well as reduced psychological well-being among frontline healthcare workers is a very important domain of quality of life (9). Medical workers working in stressful departments made them more susceptible to psychological symptoms, leading to decreased quality of life [10]. The fact that more than 3,000 medical staff were infected with COVID-19, and that some died due to close contact with patients, speaks of the threat to the lives of health professionals during the COVID-19 pandemic. Furthermore, they face emotional problems which can make their duties even more difficult. Hospitals should focus on providing psychological support to nurses and training in coping strategies [11].

Most of the research in the area of life satisfaction and quality of life has been conducted among nurses in developed, Western, and Asian countries. There is a lack of data from Southeast Europe countries. This study aims to investigate the life satisfaction and quality of life among nurses working in a COVID-19 hospital. An additional goal of this research is to analyze the relationship between life satisfaction and quality of life among nurses of COVID-19 hospital.

Methods

A cross-sectional study design was conducted between February and May 2021 at COVID-19 Hospital of the University Clinical Hospital (UCH) Mostar, Bosnia and Herzegovina. The initial sample was composed of nurses over the age of 18 working at a COVID-19 Hospital of the UCH Mostar. A total of 80 nurses' were recruited for this survey. Exclusion criteria were: a family history of mental illness, serious health problems, death of a family member, divorce or separation, or participation in a legal dispute. Nurses who did not work at the time of the study were also excluded from the study. Incomplete questionnaires were excluded from the study.

Sample size calculation

The sample size was determined using the G*power, version 3.1.9.4, software program (Heinrich Heine University, Dusseldorf, Germany). According to the calculation, the minimum required sample size was 36. Due to the higher strength of the study, we included all available nurses in

to da zdravstveni djelatnici, a posebno medicinske sestre, pate od pretjeranog stresa i pridaju manje pažnje zadovoljstvu životom [2]. Od početka pandemije COVID-19 do danas, znanstvenici diljem svijeta različitim pristupima pokušavaju istražiti njezin utjecaj na mentalno zdravlje pojedinca. Dosadašnja istraživanja upućuju na prisutnost simptoma anksioznosti, depresije i smanjene kvalitete života u medicinskih sestara tijekom pandemije COVID-19 [3 – 5]. Stručnjaci smatraju da je zadovoljstvo životom jedan od ključnih čimbenika za psihičko zdravlje i dobrobit [6]. Mnogi autori ističu da na zadovoljstvo životom medicinskih sestara utječu čimbenici kao što su kvaliteta rada, stresnost posla i dinamične promjene u radnom okruženju. Nadalje, mnogi autori ističu da zadovoljstvo poslom utječe na zadovoljstvo životom [7]. Radno okruženje u kojem se medicinske sestre nalaze tijekom pandemije značajno pridonosi velikom broju psihičkih simptoma i smanjenoj kvaliteti života [8]. Zheng i sur. navode da prepoznavanje psiholoških problema i smanjene psihičke dobrobiti među zdravstvenim radnicima na prvoj liniji predstavlja važan čimbenik za njihovu kvalitetu života [9]. Stresni odjeli učinili su medicinske radnike osjetljivijima na psihičke simptome, što dovodi do smanjenja kvalitete života [10]. O ugroženosti života zdravstvenih djelatnika tijekom pandemije COVID-19 govori i podatak da je više od 3 000 medicinskog osoblja zaraženo COVID-19 bolesti, a neki su i umrli zbog bliskog kontakta s pacijentima. Nadalje, suočavaju se s emocionalnim problemima koji im mogu dodatno otežati obavljanje dužnosti. Bolnice bi se trebale usredotočiti na pružanje psihološke podrške medicinskim sestrama i njihovo educiranje s ciljem razvijanja strategija suočavanja [11]. Većina istraživanja u području zadovoljstva životom i kvalitete života provedena je među medicinskim sestrama u razvijenim, zapadnim i azijskim zemljama. Nedostaju podaci iz zemalja jugoistočne Europe.

Cilj je ovog istraživanja istražiti zadovoljstvo životom i kvalitetu života medicinskih sestara koje rade u COVID-19 bolnici. Dodatni je cilj ovog istraživanja analizirati povezanost između zadovoljstva životom i kvalitete života medicinskih sestara COVID-19 bolnice.

Metode

Provedena je presječna studija u vremenskom razdoblju između veljače i svibnja 2021. godine u COVID-19 bolnici Sveučilišne kliničke bolnice (SKB) Mostar, Bosna i Hercegovina. Uzorak ispitanika ovog istraživanja činile su medicinske sestre starije od 18 godina koje rade u COVID-19 bolnici SKB Mostar. U ovom istraživanju sudjelovalo je ukupno 80 medicinskih sestara. Kriteriji isključenja bili su: obiteljska povijest mentalnih bolesti, ozbiljni zdravstveni problemi, smrt člana obitelji, razvod ili sudjelovanje u upravnom sporu. Medicinske sestre koje nisu radile u vrijeme istraživanja također su bile isključene iz istraživanja. Nepotpuno ispunjeni upitnici isključeni su iz studije.

Izračun veličine uzorka

Veličina uzorka određena je pomoću G*power, verzija 3.1.9.4, softverskog programa (Heinrich Heine University, Dusseldorf, Germany). Prema izračunu, minimalna potreb-

the study (n = 80). In the formula for calculating the sample size in multiple regression analysis, the significance level was 0.05, the medium effect size was 0.42857, and the power of the study was 80.0% with five predictors. According to data from a study conducted by Wong et al. [12], a value of 0.30 was taken for *R* when calculating the medium effect size.

Ethics

We received permission to conduct research from the Clinical Hospital Mostar Ethics Committee. All procedures in the research were performed according to the regulations of the latest revision of the Declaration of Helsinki. In all cases, participants' consent was obtained.

Data collection

Data were collected using the Socio-demographic questionnaire personally designed for this research, the General Life Satisfaction Scale, and the World Health Organization Quality of Life-BREF questionnaire.

The Socio-demographic questionnaire personally was used to obtain data on gender, age, education, marital status, length of service, smoking, preparation, and confidence. The General Life Satisfaction scale consists of 20 particles; 17 particles refer to the assessment of global life satisfaction, and 3 to assess situational life satisfaction. The answers were scaled according to the Likert scale from 1 to 5 [13]. The World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire was used to assess the quality of life. Psychometric studies have shown that this questionnaire is a reliable and standardized instrument and correlates highly with World Health Organization Quality Of Life-100, around 0.89. Due to the smaller number of questions and faster resolution, it is given preference over the full version. The questionnaire consists of 26 particles, and each question is scored on a Likert scale from 1 to 5. It is possible to derive four domain scores (physical, psychological, social relationship, and environmental). Two items are examined separately: question 1 asks about an individual's overall perception of quality of life, and question 2 asks about an individual's overall perception of their health. The four domain scores denote an individual's perception of quality of life in each particular domain. We used the transformation method to convert scores to a range between 4 and 20 [14]. Cronbach's alpha coefficient for General Life Satisfaction Scale in our research was 0.92, while for WHOQOL-BREF was 0.84.

Statistical analysis

The Statistical Package for the Social Sciences (SPSS) Statistics for Windows, Version 26.0, was used. The normality of data distribution was determined using the Shapiro-Wilk Test. Descriptive statistics methods were used for data analysis. Continuous numerical variables are expressed by arithmetic mean and standard deviation. Categorical variables were expressed in numbers and percentages. The student's t-test was used to compare the mean scale scores of two independent groups. One-way Analysis of Variance (ANOVA) was used to compare three or more grou-

na veličina uzorka bila je 36 ispitanika. U svrhu podizanja snage studije u istraživanje smo uključili sve raspoložive medicinske sestre (N = 80). Za višestruku regresijsku analizu s pet prediktora u formuli za izračun veličine uzorka razina značajnosti bila je 0,05, srednja veličina učinka bila je 0,42857, snaga studije bila je 80,0 %. Prema podacima iz studije koju su proveli Wong i sur. [12], vrijednost od 0,30 uzeta je za R pri izračunu srednje veličine učinka.

Etika

Dobili smo dopuštenje za provođenje istraživanja od Etičkog povjerenstva SKB-a Mostar. Svi postupci u istraživanju provedeni su prema propisima posljednje revizije Helsinške deklaracije. Svi ispitanici potpisali su suglasnost za sudjelovanje u istraživanju.

Prikupljanje podataka

Podaci su prikupljeni korištenjem sociodemografskog upitnika osobno dizajniranog za ovo istraživanje, ljestvice općeg zadovoljstva životom i upitnika Svjetske zdravstvene organizacije Quality of Life-BREF upitnika.

Sociodemografskim upitnikom dobiveni su podaci o spolu, dobi, obrazovanju, bračnom statusu, stažu, pušenju, pripremljenosti i samopouzdanju. Ljestvica općeg zadovoljstva životom sastoji se od 20 čestica; 17 čestica odnosi se na procjenu globalnog zadovoljstva životom, a 3 na procjenu situacijskog zadovoljstva životom. Odgovori su skalirani prema Likertovoj skali od 1 do 5 [13]. Za procjenu kvalitete života korišten je upitnik Svjetske zdravstvene organizacije Quality of Life-BREF (WHOQOL-BREF). Psihometrijske studije pokazale su da je ovaj upitnik pouzdan i standardiziran instrument te da je u velikoj korelaciji s kvalitetom života Svjetske zdravstvene organizacije – 100, oko 0,89. Zbog manjeg broja pitanja i bržeg rješavanja, ima prednost u odnosu na punu verziju. Upitnik se sastoji od 26 čestica, a svako se pitanje boduje na Likertovoj skali od 1 do 5. Moguće je izračunati bodove za četiri domene (tjelesno zdravlje, psihološko zdravlje, društveni odnosi i okoliš). Također su prisutne dvije čestice koje se ispituju odvojeno: čestica br. 1 postavlja pitanje o cjelokupnoj percepciji pojedinca o kvaliteti života i čestica br. 2 o cjelokupnoj percepciji pojedinca o svom zdravlju. Bodovi četiriju domena označavaju individualnu percepciju kvalitete života u svakoj pojedinoj domeni. Upotrebljavali smo metodu transformacije dobivenih rezultata u rasponu između 4 – 20 [14]. Cronbachov alfa koeficijent za Opću ljestvicu zadovoljstva životom u ovom istraživanju bio je 0,92, dok je za WHOQOL-BREF bio 0,84.

Statistička analiza

Za analizu dobivenih rezultata korišten je Statistički program za društvene znanosti (SPSS) namijenjen za Windows, verzija 26.0. Normalnost raspodjele podataka određena je primjenom Shapiro-Wilk testa. Podaci su analizirani metodama deskriptivne statistike. Kontinuirane numeričke varijable izražene su aritmetičkom sredinom i standardnom devijacijom. Kategoričke varijable izražene su brojevima i postotcima. Za usporedbu središnjih vrijednosti dviju nezavisnih skupina korišten je Studentov t-test. Za usporedbu

ps. The Tukey HSD (Honestly Significant Difference) test is used after a significant *F* ratio is found via the ANOVA test. Pearson correlation was used to investigate the correlation between life satisfaction and quality of life domains. Multiple regression analysis was used to investigate the dependence of life satisfaction on the quality of life domains. The level of statistical significance for all tests was *p* < 0.05.

Results

Of the study population, 73 subjects completed and returned the questionnaires. The response rate was 92%. The mean age of the respondents was 29.26 (± 7.227). The minimum age was 20 and the maximum was 58 years. Statistically significantly more respondents were females (71.2%), under the age of 25 (34.2%), high school educated (57.5%), with a length of service fewer than five years (52.1%). There are a slightly larger number of nurses (52.1%) who did not feel adequately prepared to work at the COVID-19 Hospital, but the difference between groups was not statistically significant. The majority of respondents (94.5%) who responded felt confident in performing tasks at COVID-19 Hospital. Very few participants (5.5%) indicated that they did not feel confident.

The average total score on the General Life Satisfaction Scale was 83.25 (± 11.204). It was not found statistically significant in the assessment of respondents' life satisfaction concerning their socio-demographic data. The mean value for satisfaction with the overall quality of life (first two questions on WHOQOL-BREF) was 8.37 ± 1.275. In response to Question 1, the majority of those surveyed indicated that their overall quality of life was good (50.7%). In response to Question 2, most respondents indicated that they were satisfied (41.1%) or very satisfied (42.5%) with their health. Regarding the domains of quality of life, the highest mean score was recorded for the social (16.42 ± 2.587) and the psychological domain (16.41 ± 1.950). The mean score for the physical activity domain was 15.58 ± 2.291, and for the environmental domain was the lowest (15.37 ± 2.282).

Females showed statistically significantly higher satisfaction with the overall quality of life compared to males. Nurses between the ages of 31 and 40, with a Bachelor's degree, and who are single, had the weakest physical health compared to other groups. Respondents with work experience between 6-10 years had statistically significant the lowest score in the psychological well-being domain (Table 1.).

There was a statistically significant correlation between life satisfaction and psychological well-being, social, and environmental health domains (Table 2.). The strongest positive correlation was observed between life satisfaction and the psychological well-being domain. The five predictors explained 65.8% of the variance (R^2 = 0.658, *F* (25.811) = 5.67, *p* < 0.001). It was found that the psychological (*p* < 0.001), social relations (*p* < 0.01), and environmental (*p* < 0.05) health domains significantly predicted life satisfaction level (Table 3.).

triju ili više skupina korištena je jednostrana analiza varijance (ANOVA). Nakon što je putem ANOVA testa pronađen značajan F omjer, koristio se Tukey HSD (Iskreno značajna razlika) test. Za istraživanje korelacije između zadovoljstva životom i domene kvalitete života korištena je Pearsonova korelacija. Višestruka regresijska analiza korištena je za istraživanje ovisnosti zadovoljstva životom o domenama kvalitete života. Razina statističke značajnosti za sve testove bila je p < 0,05.

Rezultati

Od ukupnog broja istraživane populacije, njih 73 ispunilo je i vratilo upitnike. Stopa odgovora iznosila je 92 %. Srednja dob ispitanika bila je 29,26 (± 7,727). Minimalna dob bila je 20, a maksimalna 58 godina. Statistički značajno veći broj ispitanika bile su žene (71,2 %), mlađi od 25 godina (34,2 %), sa završenom srednjom školom (57,5 %), s duljinom radnog staža kraćom od pet godina (52,1 %). Zabilježen je nešto veći broj medicinskih sestara koje se ne osjećaju adekvatno pripremljenima za rad u COVID-19 bolnici, ali razlika između skupina nije bila statistički značajna. Većina ispitanika (94,5 %) osjeća da ima samopouzdanja prilikom obavljanja zadataka u COVID-19 bolnici.

Prosječna vrijednost na Skali generalnog zadovoljstva životom bila je 83,25 (± 11,204). Nije utvrđena statistički značajna razlika u procjeni zadovoljstva životom ispitanika u odnosu na njihove sociodemografske podatke. Srednja vrijednost zadovoljstva ukupnom kvalitetom života (prva dva pitanja WHOQOL-BREF upitnika) bila je 8,37 (± 1,275). U odgovoru na prvo pitanje većina ispitanika označila je da je njihova ukupna kvaliteta života dobra (50,7 %). U odgovoru na drugo pitanje većina ispitanika označila je da su bili zadovoljni (41,1 %) ili vrlo zadovoljni (42,5 %) svojim zdravljem. U odnosu na domene kvalitete života, najveća srednja vrijednost zabilježena je za socijalnu (16,42 ± 2,587) i psihološku domenu (16,41 ± 1,950). Srednja vrijednost za fizičku aktivnost bila je 15,58 ± 2,291, dok je za okolišnu domenu bila najniža (15,37 ± 2,282). U usporedbi s muškarcima, žene su pokazale statistički značajno veće zadovoljstvo ukupnom kvalitetom života. Medicinske sestre u dobi između 31 – 40 godina, s diplomom prvostupnika, te koje su samci, pokazale su slabiju tjelesnu aktivnost u usporedbi s drugim skupinama. Ispitanici s radnim iskustvom između 6 – 10 godina imali su statistički značajno niže bodove u domeni psihološkog zdravlja (tablica 1.).

Zabilježena je statistički značajna povezanost između zadovoljstva životom i psihološke dobrobiti, društvene i okolišne domene (tablica 2.). Najsnažnija pozitivna povezanost opažena je između zadovoljstva životom i domene psihološke dobrobiti. Pet prediktora objasnilo je 65,8 % varijance (R2 = 0,658, F (25,811) = 5,67, p < 0,001). Pronađeno je da domene psihološko zdravlje (p < 0,001), društveni odnosi (p < 0,01) i okolišno zdravlje (p < 0,05) značajno predviđaju razinu zadovoljstva životom (tablica 3.).

TABLE/TABLICA 1. Socio-demographic variables and WHOQOL-BREF total score (N = 73) / Sociodemografske varijable i WHOQOL-BREF ukupan rezultat (N = 73)

Characteristics	Domain 1	Domain 2	Domain 3	Domain 4	Overall[a]
Gender					
Male	16.10 ± 1.998	15.90 ± 2.278	16.52 ± 2.562	15.29 ± 2.348	7.71 ± 1.554
Female	15.37 ± 2.385	16.62 ± 1.784	16.38 ± 2.621	15.40 ± 2.277	8.63 ± 1.048
p-value	0.220	0.160	0.837	0.843	0.004**
Age (years)					
<25	16.44 ± 2.219	16.68 ± 2.304	16.40 ± 2.723	15.68 ± 2.036	8.44 ± 1.530
26-30	15.85 ± 1.814	16.20 ± 1.542	16.50 ± 2.503	15.65 ± 2.621	8.75 ± 1.118
31-40	14.33 ± 2.394	16.19 ± 2.015	16.24 ± 2.965	14.57 ± 2.111	8.05 ± 1.117
41>	15.43 ± 2.225	16.71 ± 1.604	16.86 ± 1.069	15.86 ± 2.478	8.00 ± 1.000
p-value	0.015*	0.773	0.957	0.306	0.289
Education					
High school	16.05 ± 1.925	16.40 ± 2.049	16.36 ± 2.315	15.57 ± 2.038	8.19 ± 1.366
Bachelor	14.50 ± 2.721	16.18 ± 1.622	16.59 ± 2.315	14.59 ± 2.423	8.55 ± 1.057
Master	16.00 ± 2.062	17.00 ± 2.291	16.33 ± 2.693	16.33 ± 2.693	8.78 ± 1.302
p-value	0.029*	0.576	0.938	0.105	0.343
Marriage status					
Single	14.81 ± 2.257	16.58 ± 1.785	16.61 ± 2.539	15.23 ± 2.247	8.39 ± 1.022
Married	16.14 ± 2.170	16.29 ± 2.075	16.29 ± 2.644	15.48 ± 2.329	8.36 ± 1.445
p-value	0.013*	0.527	0.597	0.646	0.922
Smoking					
Yes	15.30 ± 2.174	16.18 ± 1.999	16.27 ± 2.592	14.93 ± 2.515	8.20 ± 1.400
No	15.91 ± 2.416	16.70 ± 1.879	16.61 ± 2.609	15.91 ± 1.860	8.58 ± 1.091
p-value	0.261	0.258	0.590	0.066	
Length of service					
<5	16.13 ± 2.292	16.89 ± 2.115	16.74 ± 2.627	15.79 ± 2.244	8.55 ± 1.465
6-10	15.22 ± 2.365	15.22 ± 1.309	16.00 ± 2.679	14.78 ± 2.315	8.06 ± 1.162
11-15	14.20 ± 1.932	16.30 ± 1.703	16.40 ± 3.062	14.50 ± 2.068	8.40 ± 1.075
16>	15.43 ± 1.902	17.00 ± 1.633	15.86 ± 1.345	15.86 ± 2.478	8.14 ± 0.378
p-value	0.095	0.018*	0.719	0.236	0.560
Preparation					
Yes	15.77 ± 2.289	16.60 ± 2.075	16.60 ± 2.523	15.51 ± 2.548	8.37 ± 1.303
No	15.39 ± 2.308	16.24 ± 1.837	16.26 ± 2.668	15.24 ± 2.033	8.37 ± 1.262
p-value	0.487	0.430	0.582	0.607	0.992
Self-confidence					
Yes	15.61 ± 2.309	16.51 ± 1.930	16.45 ± 2.604	15.35 ± 2.338	8.39 ± 1.274
No	15.00 ± 2.160	14.75 ± 1.708	16.00 ± 2.582	15.75 ± 0.957	8.00 ± 1.414
p-value	0.609	0.080	0.738	0.734	0.554

N – number of sample; Domain 1 – physical activity; Domain 2 – psychological health; Domain 3 – social relationhips; Domain 4 – environmental health; [a]overall satisfaction with quality of life and health;
*$p < 0.05$; **$p < 0.01$

TABLE/TABLICA 2. Correlations among life satisfaction and domains of quality of life / Korelacije između zadovoljstva životom i domena kvalitete života

	Life satisfaction	Domain 1	Domain 2	Domain 3	Domain 4	Overall QOL[a]
Life satisfaction	1					
Domain 1	0.128	1				
Domain 2	0.747**	0.267*	1			
Domain 3	0.651**	0.221	0.590**	1		
Domain 4	0.533**	0.490**	0.546**	0.491**	1	
Overall QOL	0.378**	0.283*	0.491**	0.503**	0.396**	1

Domain 1 – physical activity; Domain 2 – psychological health; Domain 3 – social relationhips; Domain 4 – environmental health; [a]Quality of life; *$p < 0.05$; **$p < 0.01$;

TABLE/TABLICA 3. Quality of life domains as predictors of life satisfaction / Kvaliteta domena života kao prediktor zadovoljstva životom

Predictors	Unstandardized Beta	Standard error	Standardized Beta	t	p-value
Domain 1	-0.772	0.404	-0.158	-1.908	0.061
Domain 2	3.076	0.560	0.535	5.489	0.001[***]
Domain 3	1.352	0.412	0.312	3.281	0.002[**]
Domain 4	0.956	0.477	0.195	2.005	0.049[*]
Overall QOL[a]	-0.659	0.767	-0.075	-0.859	0.394

$R^2 = 0.658$; $\Delta R^2 = 0.633$; [*]$p < 0.05$; [**]$p < 0.01$; [***]$p < 0.001$; Domain 1 – physical activity; Domain 2 – psychological health; Domain 3 – social relationships; Domain 4 – environmental health; [a]Quality of life

Discussion

Our results show that there was a significant correlation between life satisfaction and the quality of life of nurses. People who had a higher level of life satisfaction at the same time had a higher level of quality of life in all its domains. The results of our study show that quality of life domains such as psychological, social, and environmental health was a significant predictor of life satisfaction among nurses who directly care for COVID-19 patients. The results of our study show that nurses showed the highest results in the domains of social and psychological health. The lowest results were recorded in the physical health domain.

Numerous studies have been conducted around the world to analyze the lives of nurses during the COVID-19 pandemic. Many of them point to the negative impact of the COVID-19 pandemic on the physical health of nurses [15, 16]. Dong and co-workers [17] state that psychological problems in nurses are related to caring for their physical health. Contrary to our results, Woon et al. [12] show a lower level in the social domain among frontline nurses during the COVID-19 pandemic. Shaukat et al. [18] reported that health professionals are exposed to physical consequences during their care for patients with COVID-19 disease. Consistent with their results, in our study, the nurses working in COVID-19 hospital had a lower level of physical health compared to other domains. Accordingly, it is important to note that the pandemic does not affect equally the physical and psychological health of nurses who directly care for COVID-19 patients. The psychological impact of the pandemic on nurses included the following conditions: overall anxiety, severe anxiety, moderate anxiety, mild anxiety, stress disorder, depression, and insomnia [19]. Prevention against the viral illness meant that nurses had to wear personal protective equipment for a prolonged period. A cross-sectional study demonstrated skin damage in 97% of the nurses, with the nasal bridge, being the most commonly affected site. The most common presenting symptom was dryness or tightness and desquamation, and these manifestations were associated with more than 6 hours of continuous personal protective equipment use and more than 10 times a day application of hand hygiene products [20].

We will compare our results with previous studies that have analyzed the satisfaction and quality of life of nurses who directly care for COVID-19 patients. In agreement with

Rasprava

Rezultati ovog istraživanja pokazali su da postoji značajna povezanost između zadovoljstva životom i kvalitete života medicinskih sestara. Osobe koje su imale višu razinu zadovoljstva životom, u isto vrijeme imale su višu razinu kvalitete života u svim njenim domenama. Rezultati ovog istraživanja pokazuju da su domene kvalitete života, kao što su psihičko, društveno i okolišno zdravlje, bile značajan prediktor zadovoljstva životom medicinskih sestara koje se izravno brinu o pacijentima oboljelima od COVID-19 bolesti. Rezultati istraživanja pokazuju da su medicinske sestre postigle najviše rezultate u domeni društvenog i psihičkog zdravlja. Najniži rezultati zabilježeni su u domeni tjelesnog zdravlja.

Širom svijeta provedene su brojne studije kako bi se analizirali životi medicinskih sestara tijekom pandemije COVID-19. Mnoge od njih ukazuju na negativan utjecaj pandemije COVID-19 na tjelesno zdravlje medicinskih sestara [15, 16]. Dong i suradnici [17] navode da su psihološki problemi medicinskih sestara povezani s brigom za njihovo tjelesno zdravlje. Suprotno našim rezultatima, Woon i sur. [12] prikazuju nižu razinu u društvenoj domeni među medicinskim sestrama koje su na prvoj liniji tijekom pandemije COVID-19. Shaukat i sur. [18] izvijestili su da su zdravstveni djelatnici izloženi tjelesnim posljedicama tijekom njihove skrbi za pacijente s bolešću COVID-19. U skladu s njihovim rezultatima, u našem istraživanju medicinske sestre koje su radile u COVID-19 bolnici imale su nižu razinu tjelesnog zdravlja u usporedbi s drugim domenama. Sukladno tomu, važno je napomenuti da pandemija ne utječe jednako na tjelesno i psihičko zdravlje medicinskih sestara koje izravno skrbe o pacijentima oboljelima od COVID-19 bolesti. Psihološki utjecaj pandemije na medicinske sestre uključuje sljedeća stanja: ukupnu anksioznost, tešku anksioznost, umjerenu anksioznost, blagu anksioznost, stresni poremećaj, depresiju i nesanicu [19]. Prevencija virusne bolesti podrazumijeva da su medicinske sestre dulje vrijeme morale nositi zaštitnu opremu. Presječna je studija pokazala da je u 97 % medicinskih sestara oštećenje kože najčešća posljedica. Najčešći simptom bila je suhoća ili zategnutost i deskvamacija, a te su manifestacije bile povezane s više od 6 sati kontinuiranog nošenja osobne zaštitne opreme i više od 10 puta dnevnog nanošenja sredstava za higijenu ruku [20].

Usporedit ćemo naše rezultate s rezultatima prijašnjih studija koje su analizirale zadovoljstvo životom i kvalitetu

our results, Sansó et al. [21] found a positive association between professional quality of life and life satisfaction among frontline nurses during the COVID-19 pandemic. Furthermore, Yildirim et al. [22] note that there is a positive correlation between life satisfaction and the four domains of quality of life among Turkish nurses. In comparison with their results, our findings show that there was no statistically significant positive association between life satisfaction and physical health. In relation to the connection between life satisfaction and the psychological, social, and environmental domains of quality of life, our results coincide with the results of Yildrim and co-workers. Tomczyszyn et al. [23] analyzed the life satisfaction of Polish nurses during the COVID-19 pandemic. They found that the majority of nurses reported a low to average level of life satisfaction. Unlike our study, they included all nurses. Only COVID-19 hospital nurses were included in our study. Interestingly, in our study, nurses showed a moderate level of life satisfaction. Therefore, workplace stress does not play an important role in nursing life satisfaction. However, the strength of the evidence for such a claim is not strong enough. It is important to note that different scales were used in the found studies that dealt with the life satisfaction of nurses in relation to our study. Some studies indicate that the presence of psychological symptoms negatively affects the life satisfaction of nurses during the COVID 19 pandemic [24]. This confirms the results of our study, which indicate that psychological health is significantly associated with the life satisfaction of nurses at COVID-19 Hospital. These results suggest that more research should be conducted to address the presence of psychological symptoms, such as anxiety and depression, in nurses who directly care for COVID-19 patients. Accordingly, Arpacıoğlu et al. [25] stated that, as nurses have higher psychological distress and decreased life satisfaction due to the social isolation caused by the prolonged confinements, nurses should be regularly informed on both preventive measures and mental health consequences of the pandemic, and should be trained for basic therapeutic interventions.

Many authors have addressed the association of various factors with the satisfaction and quality of life of nurses during the COVID-19 pandemic. Farhadi et al. [26] notes that self-confidence among nurses represents a very important factor for a higher level of their quality of life. They also point out that the work experience of nurses is extremely important for better coping with a pandemic, and that nurses with more experience have a higher level of satisfaction with their quality of life. Our results do not corroborate their observations; in fact, there is no correlation at all between the socio-demographic data of the respondents with the range of life satisfaction and quality of life. Huang and co-workers [27] in their study state that female nurses showed a lower level of quality of life compared to men. They state that middle-aged sisters had a poorer quality of life compared to younger ones. They also state that nurses with higher education had lower levels of physical health. Huang and co-workers state that people prepared to work with COVID-19 patients had a higher quality of life. Spoorthy et al. [28] highlight that socio-demographic factors such as gender, age, and education are associated

života medicinskih sestara koje se izravno brinu za COVID-19 pacijente. U skladu s našim rezultatima, Sansó i sur. [21] otkrili su pozitivnu povezanost između profesionalne kvalitete života i zadovoljstva životom medicinskih sestara koje su na prvoj liniji tijekom pandemije COVID-19. Nadalje, Yildirim i sur. [22] primjećuju da postoji pozitivna povezanost između zadovoljstva životom i četiri domene kvalitete života među turskim medicinskim sestrama. U usporedbi s njihovim rezultatima, naši rezultati pokazuju da nije bilo statistički značajne pozitivne povezanosti između zadovoljstva životom i tjelesnog zdravlja. U odnosu na povezanost zadovoljstva životom s psihološkim, društvenim i okolišnim domenama kvalitete života, naši se rezultati podudaraju s rezultatima Yildrima i suradnika. Tomczyszyn i sur. [23] analizirali su zadovoljstvo životom poljskih medicinskih sestara tijekom pandemije COVID-19. Otkrili su da je većina medicinskih sestara prijavila nisku do prosječnu razinu zadovoljstva životom. Za razliku od našeg istraživanja, oni su uključili sve medicinske sestre. U našu studiju uključene su samo bolničke sestre koje rad u COVID-19 bolnici. Zanimljivo je da su u našem istraživanju medicinske sestre pokazale umjerenu razinu zadovoljstva životom. Prema tome, stres na radnom mjestu ne igra važnu ulogu u zadovoljstvu životom medicinskih sestara. Međutim, snaga dokaza za takvu tvrdnju nije dovoljno jaka. Važno je napomenuti da su u pronađenim studijama korištene drugačije skale za mjerenje zadovoljstva životom medicinskih sestara u odnosu na ovo istraživanje. Neka istraživanja pokazuju da prisutnost psiholoških simptoma negativno utječe na zadovoljstvo životom medicinskih sestara tijekom pandemije COVID-19 [24]. To potvrđuju i rezultati našeg istraživanja koji pokazuju da je psihičko zdravlje značajno povezano sa zadovoljstvom života medicinskih sestara COVID-19 bolnice. Ovi rezultati nalažu da bi trebalo provesti više istraživanja kako bi se riješila prisutnost psiholoških simptoma kao što su anksioznost i depresija kod medicinskih sestara koje se izravno brinu o pacijentima s COVID-19 bolešću. U skladu s tim, Arpacıoğlu i sur. [25] naveli su da, budući da medicinske sestre doživljavaju veći psihički stres i smanjeno zadovoljstvo životom zbog socijalne izolacije uzrokovane produljenim zatvaranjem, medicinske sestre treba redovito informirati i o preventivnim mjerama i o posljedicama pandemije na psihičko zdravlje te ih osposobiti za osnovne terapijske intervencije.

Mnogi autori bavili su se povezanošću različitih čimbenika sa zadovoljstvom životom i kvalitetom života medicinskih sestara tijekom pandemije COVID-19. Farhadi i sur. [26] navode da je samopouzdanje medicinskih sestara vrlo važan čimbenik za višu razinu kvalitete njihova života. Također, ističu da je radno iskustvo medicinskih sestara iznimno važno za bolje suočavanje s pandemijom te da su sestre s većim iskustvom pokazale veće zadovoljstvo kvalitetom života. Naši rezultati ne potvrđuju njihova zapažanja, dapače, ne postoji nikakva povezanost između sociodemografskih podataka ispitanika s rasponom zadovoljstva životom i kvalitetom života. Huang i suradnici [27] u svojoj studiji navode da su medicinske sestre pokazale nižu razinu kvalitete života u usporedbi s muškarcima. Ističu da su medicinske sestre srednjih godina imale lošiju kvalitetu života u odnosu na mlađe. Također navode da su medicinske sestre

with lower quality of life and higher levels of stress among frontline healthcare workers during COVID-19 pandemic. Our results confirmed their findings. Accordingly, nurses between the ages of 31 and 40, with a Bachelor's degree, had the weakest physical health compared to other groups. Furthermore, our findings show that nurses with work experience between 6-10 years had statistically significant the lowest score in the psychological well-being domain. Our results are confirmed by previous research. Hence, the results of a study conducted by Roberts et al. [29] showed that younger nurses who had less experience had higher levels of anxiety and depression, and lower levels of resilience.

Some research show evidence of impaired work satisfaction among frontline nurses during the COVID-19 pandemic [30]. Others stated that satisfaction with life among nurses during the COVID-19 pandemic deteriorates because work satisfaction and life satisfaction are closely linked [31]. The first results during the COVID-19 pandemic show a decline in life satisfaction among nurses who directly care for COVID-19 patients [32]. Supporting our findings, Wu et al. [33] stated that caring for patients with COVID-19 may also influence on nurses' satisfaction with their level of well-being. In our study, a surprisingly high percentage of respondents said they were satisfied with their lives. However, a significant number of respondents are not satisfied with their life. Some researchers consider that nursing managers and policymakers should develop and implement successful strategies appropriately to improve the quality of life among nurses. That includes payments, organizational and managerial support, job security, fair promotion policies, and measures to reduce job stress [34]. Additional research is needed to investigate whether these strategies significantly improve the quality of life of nurses who directly care for COVID-19 patients. The nurses of the COVID-19 hospital are under extreme pressure, and their physical and mental health is endangered. The competent institutions must take care of the health of nurses for the health system to withstand this crisis caused by the COVID-19 pandemic, which has no end in sight.

We are aware that our research may have several limitations. The first is the environment in which the respondent was when completing the questionnaire. Because of that, there is a possibility of insincere answers. The second is that the data were collected through a self-report questionnaire, which may not reflect the real picture of life satisfaction and quality of life level among respondents. We recommend that future studies use a focus group to further analyze the factors that affect the life satisfaction and quality of life of COVID-19 hospital nurses.

Conclusion

The evidence from this study implies that the strongest positive correlation was observed between life satisfaction and the psychological well-being domain. These results suggest that the psychological, social, and environmental health domains of quality of life significantly affect life satisfaction levels among nurses working at COVID-19 hospital. Our work has led us to conclude that institutions should

s visokim obrazovanjem imale nižu razinu tjelesnog zdravlja. Huang i suradnici ističu da su osobe pripremljene za rad s pacijentima oboljelima od COVID-19 bolesti imale višu kvalitetu života. Spoorthy i sur. [28] ističu da su sociodemografski čimbenici poput spola, dobi i obrazovanja povezani s nižom kvalitetom života i većom razinom stresa među zdravstvenim radnicima na prvoj liniji tijekom pandemije COVID-19. Naši rezultati potvrdili su njihove nalaze. Sukladno tomu, medicinske sestre u dobi od 31 do 40 godina, s diplomom prvostupnika, imale su najslabije tjelesno zdravlje u odnosu na druge skupine. Nadalje, naši rezultati pokazuju da su medicinske sestre s radnim iskustvom između 6 – 10 godina imale statistički značajan najniži rezultat u domeni psihološke dobrobiti. Ove rezultate potvrđuju prijašnja istraživanja. Dakle, rezultati studije koju su proveli Roberts i sur. [29] pokazuju da su mlađe medicinske sestre koje su imale manje iskustva imale višu razinu anksioznosti i depresije te nižu razinu rezilijencije. Neka istraživanja navode dokaze o smanjenom zadovoljstvu radom među medicinskim sestrama na prvoj liniji tijekom pandemije COVID-19 [30]. Drugi su naveli da se zadovoljstvo životom među medicinskim sestrama tijekom pandemije COVID-19 pogoršava jer su zadovoljstvo radom i životnim zadovoljstvom usko povezani [31]. Prvi rezultati tijekom pandemije COVID-19 bilježe pad zadovoljstva životom medicinskih sestara koje se izravno brinu o pacijentima s COVID-19 bolešću [32]. Podržavajući naše nalaze, Wu i sur. [33] naveli su da briga o pacijentima s COVID-19 bolešću također može utjecati na zadovoljstvo medicinskih sestara njihovom razinom dobrobiti. U našem istraživanju iznenađujuće visok postotak ispitanika izjavio je da je zadovoljan svojim životom. Međutim, značajan broj ispitanika nije zadovoljan svojim životom. Neki istraživači smatraju da bi voditelji odjela i kreatori politike trebali razviti i implementirati uspješne strategije na odgovarajući način kako bi poboljšali kvalitetu života medicinskih sestara. To uključuje isplate plaća, organizacijsku i upravljačku podršku, sigurnost posla, politiku poštenog promicanja i mjere za smanjenje stresa na poslu [34]. Potrebna su dodatna istraživanja kako bi se utvrdilo poboljšavaju li ove strategije značajno kvalitetu života medicinskih sestara koje se izravno brinu o pacijentima s COVID-19 bolešću. Medicinske sestre COVID-19 bolnice pod velikim su pritiskom, a njihovo je fizičko i psihičko zdravlje ugroženo. Nadležne institucije moraju brinuti o zdravlju medicinskih sestara da bi zdravstveni sustav izdržao krizu uzrokovanu pandemijom COVID-19 kojoj se još ne nazire kraj.

Provedeno istraživanje može imati nekoliko ograničenja. Prvo je okruženje u kojem se ispitanik nalazio prilikom ispunjavanja upitnika. Zbog navedenog postoji mogućnost neiskrenih odgovora. Drugo je ograničenje činjenica da su podaci prikupljeni putem upitnika za samoizvještavanje koji možda ne odražava stvarnu sliku zadovoljstva životom i razine kvalitete života ispitanika. Preporučujemo da buduće studije upotrebljavaju fokus grupu za daljnju analizu čimbenika koji utječu na zadovoljstvo životom i kvalitetu života medicinskih sestara COVID-19 bolnice.

Zaključak

Dokazi iz ove studije naznačuju da je najjača pozitivna povezanost uočena između zadovoljstva životom i domene

pay attention to maintaining a high level of nurses' psychological, social and environmental health. We think that our findings might be useful for future research that will contribute to the broader picture of the pandemic impact on the lives of nurses who directly care for patients with COVID-19.

Authors declare no conflict of interest

psihološke dobrobiti. Prema rezultatima vidimo da domene kvalitete života – psihološko, društveno i okolišno zdravlje značajno utječu na razinu zadovoljstva životom među medicinskim sestrama koje rade u COVID-19 bolnici. Možemo zaključiti da institucije trebaju obratiti pozornost na održavanje visoke razine psihičkog, društvenog i okolišnog zdravlja medicinskih sestara. Rezultati ovog istraživanja mogu biti korisni za buduća istraživanja koja će doprinijeti široj slici utjecaja pandemije na živote medicinskih sestara koje izravno skrbe o pacijentima s COVID-19 bolešću.

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