Mentalno zdravlje medicinskih sestara tijekom pandemije koronavirusa u Hrvatskoj

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SVEUČILIŠTE U SPLITU

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1. SADRŽAJ

2. POPIS OZNAKA I KRATICA

BFI	Upitnik ličnosti (engl. *Big Five Inventory*)
CISS	Inventar suočavanja sa stresnim situacijama (engl. *Coping Inventory for Stressful Situations*)
CoV	Medicinske sestre koje su radile u bolničkoj jedinici za COVID-19 bolesnike
COVID-19	Koronavirusna bolest izazvana koronavirusom SARS-CoV2 (engl. *The coronavirus disease caused by the SARS-CoV2 coronavirus*)
GCP	Dobra klinička praksa (engl. *Good Clinical Practice*)
H1N1	Virus gripe A (engl. *Influenza A virus*)
ICN	Međunarodno vijeće medicinskih sestara (engl. *International Council of Nurses*)
MERS-CoV	Respiratorni sindrom Bliskog istoka
nonCoV	Medicinske sestre koje nisu radile s COVID-19 pozitivnim bolesnicima
PCL-5	Upitnik za procjenu prisutnosti PTSP simptoma (engl. *PTSD Checklist for DSM-5*)
PTSP	Posttraumatski stresni sindrom (engl. *Posttraumatic stress disorder*)
SARS-CoV2	Teški akutni koronavirus 2 (engl. *Severe acute respiratory syndrome coronavirus 2*)
WHO	Svjetska zdravstvena organizacija (engl. *World Health Organization*)

3. PREGLED OBJEDINJENIH RADOVA

Ova disertacija temelji se na objedinjenju sljedećih znanstvenih radova:

1. Dolić M, Antičević V, Dolić K, Pogorelić Z. Questionnaire for Assessing Social Contacts of Nurses Who Worked with Coronavirus Patients during the First Wave of the COVID-19 Pandemic. *Healthcare*. 2021;9(8):930.
2. Dolić M, Antičević V, Dolić K, Pogorelić Z. Difference in Pandemic-Related Experiences and Factors Associated with Sickness Absence among Nurses Working in COVID-19 and Non-COVID-19 Departments. *International Journal of Environmental Research and Public Health*. 2022;19(3):1093.
3. Dolić M, Antičević V, Dolić K, Pogorelić Z. The Impact of Sociodemographic Characteristics on Coping Strategies Used by Nurses Working at COVID and Non-COVID Hospital Departments during COVID-19 Pandemic: A Cross-Sectional Study. *Healthcare*. 2022;10(6):1144.

3.1. Uvod

Nova COVID-19 bolest uzrokovana novim koronavirusom 2 (SARS-CoV2) izrazito je globalno opteretila zdravstveni sustav dovodeći do fizičke i psihičke iscrpljenosti zdravstvenih radnika (1). Pandemija je uzrokovala i promjene dosadašnjeg načina života i rada u svim društvenim segmentima te se kao takva smatra društvenim problemom, a ne samo zaraznom bolešću (2). COVID-19 pokazala se kao bolest koja ne samo da opterećuje zdravstveni sustav do neslućenih razmjera već i povećava napetost u svakom pojedincu izazivajući i stigme javnosti prema zaraženima, njihovim kontaktima, ali i zdravstvenom osoblju (3). Cijela javnost, uključujući zdravstvene djelatnike, svakodnevno se suočavala sa slikama i izvješćima o zdravstvenoj skrbi i kolapsu sustava, posebice u Italiji i Španjolskoj tijekom prvog vala pandemije COVID-19, ali i diljem svijeta (4). Postojao je opći strah od infekcije i mogućnosti njezina prijenosa od članova obitelji i prijatelja, ali i strah od nedostatka antivirusne zaštitne opreme za zdravstveno osoblje te lijekova i respiratora za liječenje bolesnika. Medicinske sestre diljem svijeta

pokazale su iznimnu hrabrost i profesionalnu moralnost u odgovoru na izazove pandemije upravo u 2020. godini koja je proglašena Međunarodnom godinom sestrinstva i primaljstva (3,5).

Medicinske sestre čine najveću skupinu zdravstvenih radnika u svijetu i kvaliteta usluga koje pružaju presudno utječe na učinkovitost zdravstvenog sustava i uvelike određuje razinu zadovoljstva pacijenata (6). U Republici Hrvatskoj (RH) registrirane su 41 332 medicinske sestre, no RH još nije dostigla europski standard po broju medicinskih sestara na 100 000 stanovnika, a na tržištu ih kontinuirano nedostaje (7).

Brojne psihološke i biomedicinske studije pokazale su da je sestrinstvo iznimno stresna profesija te da je zastupljenost izgaranja zbog profesionalnog stresa među medicinskim sestrama prilično velika, a osobito raste u izvanrednim okolnostima rada poput ratova, prirodnih katastrofa i epidemija zaraznih bolesti (3,4,8,9). Pretpostavlja se da hrvatskom zdravstvenom sustavu nedostaje više tisuća medicinskih sestara, stoga je zaštita njihova mentalnog zdravlja imperativ za očuvanje funkcionalnosti zdravstvenog sustava (5,7,8). Presudna uloga medicinskih sestara uočena je i tijekom prethodnih pandemija uzrokovanih koronavirusom koji je uzrokovao teški respiratorni sindrom (SARS-CoV), zatim respiratorni sindrom Bliskog istoka uzrokovan koronavirusom te virusom gripe A (H1N1) (1,5).

Duge radne smjene, visok rizik od infekcije, nedostatak specifičnih vještina i zaštitne opreme, frustracije, stigmatizacija i zabrinutost zbog širenja virusa svojim bližnjima, definitivno su ugrozili zdravlje medicinskih sestara s visokom prevalencijom sindroma izgaranja (10–13). To je također naglašeno i u izvješću Međunarodnog vijeća medicinskih sestara (ICN) koje navodi da medicinske sestre diljem svijeta trenutno proživljavaju psihičku traumu koja uzrokuje izravnu prijetnju sestrinskoj profesiji i sustavima zdravstvene skrbi. ICN priznaje da je stres doživljen tijekom pandemije COVID-19 utjecao na više od 50 % američkih medicinskih sestara; 49 % brazilskih medicinskih sestara prijavilo je anksioznost, a 25 % depresiju; 60 % kineskih medicinskih sestra prijavilo je osjećaj iscrpljenosti, 90 % španjolskih medicinskih sestara pati od tjeskobe i izgaranja, a 40 % izraelskih medicinskih sestara bojalo se pružanja skrbi pacijentima s COVID-19 (14).

Sindrom izgaranja među medicinskim sestrama ozbiljan je i čest zdravstveni problem koji ima ozbiljne negativne implikacije ne samo za medicinske sestre već i za

pacijente, kolege, zdravstvene organizacije, ali i cijeli zdravstveni sustav (15–19). Medicinske sestre prepoznate su kao ključni zdravstveni radnici u odgovoru zdravstvenih sustava na pandemiju COVID-19 jer su izravno uključene u skrb i liječenje najteže oboljelih pacijenata (20,21). Upravo je pandemija COVID-19 stvorila još veće opterećenje i psihički pritisak medicinskim sestrama. Medicinske sestre pod ekstremnim su i neprekidnim psihičkim pritiskom jer su posebno izložene prijetnji infekcije SARS-CoV-2 te su zabrinute za sigurnost vlastitog zdravlja, ali i zdravlja članova obitelji, pacijenata i kolega (22). Upravo ove okolnosti, povećavaju rizik razvoja sindroma izgaranja kod medicinskih sestara. Rezultati brojnih istraživanja pokazali su da su medicinske sestre doživjele visoku razinu izgaranja tijekom pandemije COVID-19 (meta-analiza šesnaest studija na 18 935 medicinskih sestara pokazala je da je ukupna prevalencija emocionalne iscrpljenosti bila zastupljena kod 34,1 % medicinskih sestara, depersonalizacije kod 12,6 %, a nedostatka osobnog postignuća kod 15,2 % medicinskih sestara) (17). Istraživanja su identificirala predisponirajuće čimbenike sindroma izgaranja, a to su: mlađa dob, smanjena socijalna podrška, niska spremnost obitelji i kolega da se nose s izbijanjem COVID-19, povećana percepcija prijetnja od COVID-19, dulje radno vrijeme, rad u okruženju visokog rizika, rad u bolnicama s neadekvatnim i nedostatnim materijalnim i ljudskim resursima, povećani obujam posla i niža razina specijalizirane obuke u vezi s COVID-19 (17). Izgaranje medicinskih sestra ključni je problem tijekom pandemije COVID-19.

Pandemija COVID-19 je kod velikog broja ljudi, pa tako i kod medicinskih sestara, predstavljala izazov za postojeće mehanizme suočavanja te su uvjeti života i rada tijekom pandemije zahtijevali promjene uobičajenog načina snalaženja u kriznim situacijama s posljedičnom promjenom strategija suočavanja u svrhu očuvanja mentalnog zdravlja (14, 23). Prema definiciji, strategije suočavanja predstavljaju bihevioralne i kognitivne taktike koje se koriste za upravljanje krizama, uvjetima i zahtjevima koji se ocjenjuju kao uznemirujući. Endler i Parker identificiraju tri stila suočavanja: usmjereno na problem, usmjereno na emocije i usmjereno na izbjegavanje (24).

Usmjerenost na probleme predstavlja aktivnu strategiju suočavanja kojoj je cilj riješiti probleme (25). Kako bi se strategija pravilno koristila, a osoba postupila zrelo i razborito, potrebni su: realna procjena situacije, samoprocjena svojih mogućnosti, traženje informacija, iznalaženje strategija za rješavanje problema, planiranje aktivnosti,

dogovaranje, pregovaranje i osiguravanje potpore. U pandemiji, usmjerenost na probleme odnosila se na poštivanje uputa nadležnih osoba o tjelesnom udaljavanju od ljudi i provođenju higijenskih mjera pridržavanjem uputa o korištenju zaštitnih pomagala (26). Rezultati istraživanja upućuju na dobrobiti za mentalno zdravlje medicinskih sestara koje koriste rješavanje problema kako bi se nosile s rješavanjem vanjskog izvora stresa (27–29).

Strategija suočavanja usmjerena na emocije predstavlja koncentraciju pojedinca na sebe i vlastita emocionalna iskustva. Osoba se pokušava riješiti stresa putem različitih ponašanja poput potiskivanja emocija, isticanja pozitivnog, smanjenja napetosti, okretanja religiji, mirenja sa sudbinom i/ili traženjem emocionalne potpore drugih ljudi (26). Istraživanja su pokazala da je dugotrajno korištenje strategija usmjerenih na emocije kod medicinskih sestara povezano sa smanjenim mentalnim zdravljem u odnosu na medicinske sestre koje koriste strategije suočavanja usmjerene na problem (27).

Strategija suočavanja izbjegavanjem odnosi se na kognitivne, emocionalne ili ponašajne pokušaje bijega od stresnih situacija ili od reakcija na stres. Izbjegavanje predstavlja izbjegavanje problema putem uključivanja u zamjenske zadatke ili traženja društvenih kontakata, negiranjem spoznaje da se događaj dogodio, povlačenjem u sebe, a nerijetko i konzumiranjem psihoaktivnih supstanci koje pomažu u bijegu, sanjarenju, maštanju i slično (26). Naime, pojedinac pokušava izbjeći situaciju koja u njemu izaziva stresnu reakciju (30). Kratkoročno, izbjegavanje može biti korisno za dobivanje vremena dok se ne osmisli bolje, produktivnije i trajnije rješenje, no samo ne dovodi do rješavanja problema (31). Osobe koje nemaju bogato životno iskustvo, a niskog su samopouzdanja, karakterizirane pesimizmom, tjeskobom i neodlučnosti, sklone su koristiti strategiju izbjegavanja što dovodi do kočenja njihova osobnog rasta i profesionalnog sazrijevanja, ali i do sindroma izgaranja te brojnih psihosomatskih oboljenja (32).

Strategije suočavanja najčešće su individualizirane i pod utjecajem čimbenika okruženja, konteksta radnog mjesta te osobnih čimbenika kao što su osobno iskustvo, razina obrazovanja i resursi koji su dostupni u društvenom kontekstu (4,26,33–36). Poželjnost uporabe pojedine strategije u određenoj situaciji ovisi o kontekstu krizne situacije i vještinama pojedinca. Svako ispravno korištenje strategije suočavanja trebalo bi rezultirati boljim osjećanjem pojedinca. Krizna situacija u kojoj su se 2020. godine našle medicinske sestre, a koja je podrazumijevala strah od infekcije te promjenu i

privatnog i profesionalnog načina života, izazvala je kod medicinskih sestara visoku razinu osjećaja ugroze i stresa te su reagirale svojim osobnim mehanizmima suočavanja sa stresom. Međutim, ne smije se zanemariti činjenica da se medicinske sestre nisu suočavale samo sa svojim osobnim stresom vezanim uz pandemiju, već i sa stresom kolega i kolegica (37), bolesnika i njihovih obitelji kao i cjelokupne javnosti. Pokazano je da dugotrajni i kontinuirani stres i neučinkovite strategije suočavanja mogu dodatno ugroziti zdravlje medicinskih sestara što može imati implikacije na ishode liječenja pacijenata (14,38–40). S druge strane, stres kod medicinskih sestara može predstavljati pozitivan izazov za razvijanje sposobnosti nošenja sa zahtjevnim situacijama te im pomoći da koriste mehanizme za ovladavanje tjeskobom koje povećavaju otpornost na stres (29,40,41). Otpornost na stres uključuje sposobnost da osoba pozitivno reorganizira život usprkos ugrožavajućim čimbenicima te da uključi svoje vlastite potencijale i vanjske izvore podrške (28,42–45).

Korištenje bolovanja predstavlja veliki problem u zdravstvenom sustavu jer je narušena kvaliteta rada preostalog zdravstvenog osoblja (2,46–48), ali i ukupna funkcionalnost cijelog zdravstvenog sustava u kojem je sve manje zdravstvenih radnika, a posebno je zabrinjavajućim istaknut nedostatak medicinskih sestara i prije COVID-19 pandemije (49–55). Već preopterećene medicinske sestre doživjele su još veće opterećenje zbog povećanja broja bolesnika s teškom kliničkom slikom, korištenja zaštitne opreme pri radu, odsustava kolega zbog izolacije ili samoizolacije (2,34). Profesija sestrinstva povezana je s većim brojem dana bolovanja u usporedbi s drugim profesijama u zdravstvenom sustavu, ali i s drugim profesijama općenito (56). Ukupan broj dana bolovanja i razlika između medicinskog osoblja i ostalih profesija povećao se zbog pandemije COVID-19: prosjek od 7,0 % među medicinskim sestrama naspram 5,4 % u ostalim profesijama (30).

Godine 2020. među njemačkim medicinskim sestarama zabilježena su u prosjeku 22,4 dana izostanka s posla zbog bolesti, dok je među zaposlenicima u drugim profesionalnim područjima zabilježeno gotovo 8 dana manje (14,6 dana). Zdravstveni radnici bili su češće i dulje na bolovanju u odnosu na druge skupine zanimanja (57). Nesposobnost za rad može biti posljedica fizičkih, ali i mentalnih zdravstvenih problema. Glavni uzroci bolovanja među zaposlenicima u Njemačkoj 2020. bili su mišićno-koštani problemi (22,1 % izostanaka) i problemi s mentalnim zdravljem (17,6 %) (56). Sustav

zdravstvene zaštite u Engleskoj zabilježio je oko 73 200 (18 %) više dana odsustva s posla među medicinskim sestrama i patronažnim sestrama u svibnju 2021. nego u svibnju 2019. godine, a broj dana bolovanja povezanih s mentalnim zdravljem medicinskih sestara povećao se za 31 % (46–48).

U zdravstvenim sustavima diljem svijeta nedostaje zdravstvenih radnika. Najveći nedostatak je manjak medicinskih sestara koje su presudne u pružanju zdravstvene skrbi bolesnicima. Imperativ je identificirati čimbenike koje dovode do razvoja stresa, sindroma izgaranja i korištenja bolovanja kako bi se mogli poduzeti koraci za sprječavanje morbiditeta i mortaliteta među zdravstvenim radnicima. Čimbenici koji dovode do mentalnih oboljenja ili narušavanja mentalnog zdravlja medicinskih sestara i odsustva s posla izravni su uzrok i napuštanja sestrinske profesije što dovodi do dodatnog opterećenja i nezadovoljstva preostalih medicinskih sestara u zdravstvenom sustavu.

Cilj istraživanja znanstvenih istraživanja objedinjenih u ovoj disertaciji bio je:

1. Razviti upitnik za procjenu socijalnih kontakata medicinskih sestara koje su radile s oboljelima od koronavirusa tijekom prvog vala pandemije COVID-19 i provjeriti njegove psihometrijske karakteristike.
2. Utvrditi prediktore korištenja bolovanja medicinskih sestara na temelju kojih će se odrediti pripadnost skupini medicinskih sestara koje jesu odnosno nisu koristile bolovanje na početku pandemije.
3. Ispitati razlike između medicinskih sestara koje su radile s COVID-19 pozitivnim bolesnicima i medicinskih sestara koje nisu radile s COVID-19 pozitivnim bolesnicima u razinama simptoma posttraumatskog stresnog poremećaja (PTSP), osobinama ličnosti, strategijama suočavanja i doživljenim profesionalnim stresorima.
4. Usporediti strategije suočavanja koje su koristile medicinske sestre koje su radile tijekom pandemije COVID-19 na odjelima bolnice s COVID-19 pozitivnim bolesnicima sa strategijama suočavanja koje su koristile medicinske sestre koje su radile s bolesnicima bez COVID-19, s obzirom na njihove sociodemografske karakteristike.

3.2. Pregled metodologije objedinjenih radova

3.2.1. Ispitanici i metode

Istraživanje za prvi znanstveni rad provedeno je *online* u razdoblju od ožujka do lipnja 2020. godine na prigodnom uzorku od 180 medicinskih sestara koje rade u zdravstvenom sustavu Republike Hrvatske. Anketa je bila provedena putem platforme Google Docs, a bila je dostupna svim medicinskim sestrama koje su koristile društvenu mrežu Meta i bile članice grupa medicinskih sestara, te su one odgovorile na upitnik klikom na odgovarajuću poveznicu. Kriteriji uključivanja bili su zaposlenje medicinske sestre u hrvatskom sustavu zdravstvene zaštite i pružanje zdravstvenih usluga pacijentima pozitivnim na COVID-19. Kriteriji isključenja bili su zapošljavanje medicinske sestre izvan hrvatskog zdravstvenog sustava, pružanje zdravstvenih usluga pacijenatima koji nisu bili pozitivni na COVID-19 i postojanje ranijih psiholoških problema. Ispitanici su bili pripadnici oba spola (ženski spol = 167, muški spol = 13) u dobi od 20 do 48 godina, s prosječnom dobi od 36,8 ± 15,5 godina. Svi sudionici dali su informirani pristanak za sudjelovanje u istraživanju pritiskom na gumb *Prihvaćam*. Sudionici su samostalno ispunjavali upitnik čije je popunjavanje trajalo oko pet minuta. Sudjelovanje je bilo dobrovoljno i potpuno anonimno, a stopa dovršenosti bila je 100%.

Istraživanje za drugi i treći znanstveni rad koji su objedinjeni u ovoj disertaciji provedeno je između 1305 medicinskih sestara zaposlenih u KBC-u Split u prosincu 2020. godine. Među njima je 250 medicinskih sestara radilo u bolničkoj jedinici za COVID-19 bolesnike (CoV medicinske sestre), dok je preostalih 1055 radilo na odjelima koji nisu povezani s COVID-19 pozitivnim bolesnicima (nonCoV medicinske sestre) tijekom prvog vala pandemije. Poveznica za *online* istraživanje poslana je svim 1305 medicinskih sestara putem njihove službene poslovne elektroničke pošte pri čemu je upitnike popunilo 217 CoV medicinskih sestara (skupina 1) i 163 nonCoV medicinske sestre (skupina 2). Skupine su formirane prema odgovoru na pitanje *Jeste li radili na odjelu za COVID-19 tijekom pandemije koronavirusa?*

Studiju je odobrilo Etičko povjerenstvo Medicinskog fakulteta Sveučilišta u Splitu (referenca: 003-08/20-03/0005; datum odobrenja: 16. studenoga 2020.) i Etičko povjerenstvo KBC-a Split (referenca: 500-03/20-01/108; datum odobrenja: 30. listopada

2020.) te je u potpunosti usklađena s načelima Helsinške deklaracije za dobru kliničku praksu (GCP). Odobrenja etičkih povjerenstava nalaze se u privitku disertacije. U ovom istraživanju korišteni su sljedeći mjerni instrumenti: Upitnik za procjenu socijalnih kontakata medicinskih sestara; Upitnik ličnosti; Upitnik za procjenu prisutnosti PTSP simptoma; Inventar suočavanja sa stresnim situacijama i Upitnik o stresorima bolničkih djelatnika.

3.2.2. Upitnik za procjenu socijalnih kontakata medicinskih sestara koje su radile s oboljelima od koronavirusa tijekom prvog vala pandemije COVID-19

Upitnik za procjenu socijalnih kontakata medicinskih sestara tijekom pandemije sastoji se od devet tvrdnji za ispitivanje osobnog iskustva medicinskih sestara koje rade s COVID-19 pozitivnim pacijentima tijekom prvog vala pandemije (58). Sudionici su odgovarali na ljestvici od 1 (*uopće se ne odnosi na mene*) do 5 (*u potpunosti odnosi se na mene*). Ukupni rezultat svakog sudionika izražen je kao konačni suma odgovor na svaku izjavu. Analiza glavnih komponenti provedena Promax rotacijskom metodom otkrila je trofaktorsku strukturu upitnika. Prva subskala, *Stigmatizacija i nerazumijevanje*, odražava osjećaje stigme medicinskih sestara s iskustvom u radu s pacijentima s COVID-19. Druga subskala, *Društveno distanciranje*, opisuje stvarno ili planirano distanciranje/izbjegavanje kontakata medicinskih sestara zbog osjećaja potrebe zaštitite voljenih osoba. Treća subskala, *Strah od infekcije*, opisuje strahove medicinskih sestara zbog mogućnosti prenošenja infekcije na sebe ili svoje voljene. Koeficijenti pouzdanosti upitnika varirali su između 0,81 i 0,88, što je ukazalo na dobru internu pouzdanost svih triju subskala.

3.2.3. Upitnik ličnosti Big Five Inventory (BFI) - hrvatska inačica

BFI korišten je za procjenu pet glavnih dimenzija osobnosti; ekstravertiranost, susretljivost, savjesnost, neurotičnost i otvorenost prema iskustvu (59). Upitnik se sastoji od 44 tvrdnje. Ispitanici su izrazili svoj stupanj slaganja sa svakom od tvrdnji, na ljestvici

od 1 do 5 (1: *u potpunosti ne slažem se*; 5: *u potpunosti se slažem*). Bodovanje sudionika utvrđeno je zbrajanjem procjene za odgovarajuće stavke svake dimenzije upitnika, što je omogućilo dobivanje ukupne ocjene za dimenzije BFI. Usprkos svojoj kratkoći, BFI ne ugrožava pokrivenost sadržaja ni dobra psihometrijska svojstva. Preliminarni rezultati provjere psihometrijskih karakteristika hrvatske inačice ovog upitnika zadržali su zadovoljavajuće psihometrijske karakteristike (60).

3.2.4. Upitnik za procjenu prisutnosti PTSP simptoma (PCL-5)

PCL-5 je upitnik od 20 čestica za procjenu posttraumatskih simptoma u posljednjih mjesec dana prema kriterijima DSM-5 (61). Za potrebe ovog istraživanja sudionici su procijenili svoje reakcije na izloženost COVID-19. Zamoljeni su da navedu broj na ljestvici od 0 (*uopće*) do 4 (*iznimno*) što se odnosi na najgori događaj prema njihovu vlastitom iskustvu. Ukupni rezultat kreće se od 0 do 80, gdje PCL-5 rezultat između 31 i 33 ukazuje na vjerojatni PTSP, dok rezultat od 33 ili više ukazuje na visoku razinu PTSP-a. Prethodna istraživanja otkrila su dobra psihometrijska svojstva i pouzdanost PCL-5 (62).

3.2.5. Inventar suočavanja sa stresnim situacijama (CISS)

Za mjerenje suočavanja sa stresnim situacijama korištena je hrvatska inačica Endlera i Parkersa (63,64). CISS se sastoji od 48 čestica podijeljenih u 3 strategije suočavanja od 16 čestica bodovanih od 1 (*nikako*) do 5 (*uvijek*), s višim rezultatom koji ukazuje na češće korištenje određenih strategija suočavanja (suočavanje usmjereno na problem, suočavanje usmjereno na emocije i izbjegavajuće suočavanje). Mogući raspon odgovora na svakoj ljestvici može varirati od 16 do 80. Koeficijent pouzdanosti hrvatske inačice upitnika je: 0,80 za suočavanje usmjereno na problem, 0,82 za suočavanje usmjereno na emocije i 0,75 za izbjegavajuće suočavanje.

3.2.6. Upitnik o stresorima na radnom mjestu bolničkih djelatnika

U ovom istraživanju korišten je upitnik o stresorima na radnom mjestu bolničkih zdravstvenih radnika izrađen na temelju standardiziranog Upitnika o profesionalnom stresu (65) i preliminarnog istraživanja. Ispitanicima je ponuđeno 37 stresora na poslu vezanih uz organizaciju rada, smjenu, rad, profesionalno napredovanje, obrazovanje, profesionalne zahtjeve, međuljudsku komunikaciju i komunikaciju zdravstvenih radnika s pacijentima, strah od opasnosti i opasnosti po zdravlje. Ispitanici su ocjenjivali svoje odgovore na Likertovoj ljestvici s ocjenama od 1 (*uopće nije stresno*) do 5 (*izuzetno stresno*). Faktorska analiza izdvojila je šest faktora relativno visoke pouzdanosti tipa unutarnje konzistentnosti (svi koeficijenti pouzdanosti veći su od 0,70) (66):

1) organizacija radnog mjesta i financijska pitanja (11 čestica: mali broj djelatnika, neadekvatna osobna primanja; neadekvatna materijalna sredstva; neadekvatan radni prostor; mala mogućnost napredovanja; oskudna komunikacija s nadređenima; nedostatan broj djelatnika; loša organizacija posla; svakodnevne nepredviđene situacije; administrativni poslovi; preopterećenost poslom);
2) javna kritika i sudske tužbe (6 čestica: prijetnja sudske tužbe; neadekvatna očekivanja bolesnika; neprimjerena javna kritika; pogrešno informiranje bolesnika; sukobi s bolesnikom; neodvajanje profesionalnog i privatnog života);
3) opasnosti i štetnosti na poslu (6 čestica: strah od ionizacijskog zračenja; strah od inhalacijskih anestetika; strah od zaraze; strah od izloženosti citostaticima; strah od ozljede oštrim predmetom; suočavanje s neizlječivim bolesnicima);
4) sukobi i komunikacija na poslu (5 čestica: sukobi s kolegama; sukobi s drugim suradnicima; sukobi s nadređenima; oskudna komunikacija s kolegama; oskudna komunikacija s nardeđenima);
5) Smjenski rad (5 čestica: noćni rad; smjenski rad; prekovremeni rad; dežurstva, 24h odgovornost);
6) profesionalni i intelektualni zahtjevi (6 čestica: uvođenje novih tehnologija; „bombardiranje“ novim informacijama; nedostatak trajne edukacije; pritisak vremenskih rokova; nedostupnost literature; vremensko ograničenje za pregled pacijenata).

3.3. Sažeti pregled rezultata objedinjenih radova

Prvu skupinu činio je uzorak medicinskih sestara koje su u vrijeme istraživanja radile u COVID-19 bolnici (N = 217) – CoV sestre. Većina sudionika bile su žene (89,9 %) u dobi od 33,2 godine, koje su prijavile prosječno 11,6 godina radnog staža. Najviše ih je bilo u braku (62,2 %). Podjednak broj medicinskih sestara imao je VSS (44,2 %) ili diplomu prvostupnika (44,7 %), a najmanje je bilo magistri sestrinstva (11,1 %). Drugu skupinu činile su 163 medicinske sestre obaju spola (96,3 % žena) – nonCoV sestre, starosti 42,1 godinu, koje su u vrijeme istraživanja radile u akutnoj bolnici. U prosjeku su imale 21 godinu radnog staža. Većina ih je bila u braku (79,1 %), Veća je bila zastupljenost medicinskih sestara sa srednjom stručnom spremom (44,2 %) ili prvostupništvom (52,1 %), a manje od 4 % s magisterijem sestrinstva.

Postupak validacije izrađenog Upitnika za procjenu socijalnih kontakata medicinskih sestara ekstrahirao je tri faktora nazvana *Stigmatizacija i nerazumijevanje, Socijalno distanciranje i Strah od zaraze*, koji zajedno objašnjavaju više od 70 % doživljenog stresa na početku pandemije. Koeficijenti pouzdanosti tipa Cronbach alfa pojedinačnih faktora variraju u rasponu od 0,82 do 0,88. Provedena analiza ukazuje na pouzdani instrument koji se može koristiti u istraživačke svrhe.

Istraživanje strategija suočavanja sa stresorima s obzirom na sociodemografske karakteristike ukazalo je na sljedeće rezultate: među medicinskim sestrama zaposlenim na CoV odjelu, one koje su u braku više su se koristile suočavanjem usmjerenim na probleme ($p=0,010$) i emocije ($p=0,003$), a manje izbjegavanjem ($p=0,007$) u odnosu na one koje nisu bile u braku. Višestruke post hoc usporedbe pokazale su da su medicinske sestre s magisterijem značajno manje koristile suočavanje usmjereno na probleme i emocije od medicinskih sestara u drugim obrazovnim skupinama ($p<0,001$), dok su medicinske sestre sa srednjom školom koristile izbjegavanje značajno više od svojih kolega s diplomom prvostupnika ($p=0,031$). Nadalje, starije medicinske sestre značajno su više koristile emocionalno suočavanje od mlađih medicinskih sestara ($p=0,027$), dok su mlađe medicinske sestre koristile izbjegavanje suočavanja značajno više od starijih medicinskih sestara ($p<0,010$). Medicinske sestre koje su imale 6 – 15 godina radnog iskustva više su koristile suočavanje usmjereno na problem od svojih kolegica s manje

radnog iskustva (p=0,011). CoV sestre također su se razlikovale u korištenju strategije izbjegavanja s obzirom na broj djece, što ukazuje da su one bez djece primjenjivale navedenu strategiju više od sestara koje su imale 2-3 djece (p<0,001).

Što se tiče nonCoV sestara, post hoc usporedbe ukazale su na manju uporabu emocionalnog suočavanja među medicinskim sestrama s magisterijem nego među medicinskim sestrama sa srednjoškolskom diplomom (p=0,002) i prvostupničkom (p=0,012) diplomom. Izbjegavanje su više koristile udane (p<0,001) medicinske sestre i one bez djece u usporedbi s onima s dvoje ili troje djece (p<0,001) te također medicinske sestre s diplomom prvostupnika u usporedbi s medicinskim sestrama sa srednjom školom (p<0,001). Medicinske sestre sa završenim magisterijem nisu se razlikovale u korištenju izbjegavanja ni od medicinskih sestara sa srednjom stručnom spremom (p=0,377) ni od onih s diplomom prvostupnika (p=0,790). Starija dob (p=0,029) i život u bračnoj zajednici (p<0,001) CoV sestara bili su povezani s višim razinama suočavanja usmjerenim na problem, a više razine obrazovanja (p < 0,001) i veći broj djece (p = 0,019) bili su povezani sa suočavanjem usmjerenim na problem.

Usporedbe rezultata CoV i nonCov medicinskih sestara pokazale su da su nonCoV sestre značajno više osjećale strah od infekcije, bile su više socijalno distancirane, imale su više simptoma PTSP-a i neuroticizma te su osjećale veću razinu stresa zbog javnih kritika i u vezi s profesionalnim i intelektualnim zahtjevima na poslu u odnosu na CoV sestre. Nadalje, medicinske sestre koje su na početku pandemije koristile bolovanje imale su izraženiji strah od SARS-CoV-2 infekcije virusom i manje su koristile strategiju suočavanja usmjerenu na problem, a bile su i manje otvorene prema novim iskustvima za razliku od medicinskih sestara koje nisu koristile bolovanje. Medicinske sestre koje su koristile bolovanje također su imale višu razinu simptoma PTSP-a te su se osjećale stigmatiziranije i neprihvaćenije od medicinskih sestara koje nisu koristile bolovanja. Što se tiče osobnosti, pokazivale su manje izraženu sklonost prema altruizmu i prijateljstvu, manje savjesnosti, bile su manje otvorene i imale su višu razinu neuroticizma. Naposljetku, imale su i veću osjetljivost na profesionalne stresore.

Kako bi se identificirali čimbenici utjecaja kod medicinskih sestara koje su koristile ili nisu koristile bolovanje na temelju iskustava povezanih s pandemijom, razina simptoma PTSP-a, osobina ličnosti, strategija suočavanja i profesionalnih stresora kod CoV i non-CoV sestara, provedena je diskriminantna analiza. Navedene varijable

korištene su kao nezavisne varijable, dok je korištenje bolovanja korišteno kao mjera ishoda. Najveći statistički doprinos objašnjenju korištenja bolovanja za CoV sestre utvrđen je za suočavanje usmjereno na problem, otvorenost, javnu kritiku, strah od infekcije i organizacijske probleme. Što se tiče nonCoV medicinskih sestara, najveći doprinos utvrđen je za neuroticizam, stigmatizaciju i nerazumijevanje, organizacijske probleme, socijalno distanciranje i strah od infekcije. Drugim riječima, ako su CoV sestre preferirale pristup usmjeren na probleme u suočavanju sa stresom, bile otvorenije životnim iskustvima i manje osjetljive na kritiku i organizacijske probleme na radnom mjestu te imale manje straha od infekcije, mogućnost korištenja bolovanja bila je manje vjerojatna. S druge strane, ako su nonCoV sestre imale niži rezultat na neuroticizmu, iskusile manju stigmatizaciju tijekom pandemije, prakticirale manje socijalnog distanciranja od najbližih, imale manji strah od zaraze SARS-CoV-2 i prijavile manje organizacijskih problema, imale su manju vjerojatnost korištenja bolovanja.

Diskriminacijska analiza pokazala je kako je, temeljem postignutih bodova na nezavisnim varijablama, 49,1 % ispitanika ispravno svrstano u skupinu CoV sestara koje su koristile bolovanje naspram 96,3 % ispravno svrstanih u skupinu koje nisu koristile bolovanje. Ukupan postotak točnih klasifikacija u ovoj ispitanoj skupini iznosio je 84,8 %. Nadalje, 62,2 % non-CoV medicinskih sestara ispravno je klasificirano u skupinu koja je koristila bolovanje naspram 87,7 % ispravnih klasifikacija među onima koje nisu koristile bolovanje. Ukupan postotak točnih klasifikacija među nonCoV medicinskim sestrama bio je 79,1 %.

3.4. Rasprava

Provedena su brojna istraživanja kako bi se ispitala percepcija javnosti o zdravstvenoj skrbi radnika tijekom pandemije virusa COVID-19 (2,3,8,67,68). Nedovoljno je istraživanja provedeno na zdravstvenim djelatnicima o stigmatizaciji i nerazumijevanju, socijalnom distanciranju, strahu od pandemije i njihovoj izloženosti istoj.

Doživljaj stigmatiziranosti stavlja pojedinca pod veliki pritisak i dovodi do stvaranja negativnih emocija poput stresa, tjeskobe, tuge, pa čak i nekih fizičkih reakcija

(17,69–72). Izloženost javnosti dramatičnim slikama smrti uzrokovanih pandemijom COVID-19 iz Italije i drugih zemalja i dramatične vijesti o broju zaraženih te preminulih liječnika i medicinskih sestara navela je javnost na bojazan da se mogu zaraziti od zdravstvenih radnika (9,69). U istraživanju provedenom 2020. godine, više od trećine ispitanika smatralo je da su zdravstveni radnici pozitivni na COVID-19; gotovo polovica ispitanika (47 %) navela je da ne želi biti u blizini zdravstvenih radnika koji brinu za COVID-19 pozitivne pacijente te su imali nerealistične stavove o opasnosti kontakta sa zdravstvenim radnicima. Zbog straha od širenja infekcije, ispitanici su smatrali da bi zdravstvenim radnicima trebalo zabraniti ili spriječiti kontakt s članovima obitelji (31 %) kako bi se spriječila mogućnost širenja infekcija (68). Upravo stigmatizacija stvara nepotrebno opterećenje profesionalcima u zdravstvenoj skrbi i može pridonijeti razvoju mentalnih problema (73). Rezultati naših istraživanja u skladu su s izvješćima iz cijelog svijeta: liječnici i drugi zdravstveni radnici na početku pandemije bili su izolirani od svojih voljenih zbog očekivanog rizika od zaraze. Pritom su pojedini zdravstveni djelatnici čak doživjeli i fizički i/ili emocionalni napad od drugih osoba zbog straha i stigmatizacije (69). Sve ovo doprinosilo je otežavanju već ionako teške situacije, povećavalo mentalno opterećenje i ugrožavalo mentalno zdravlje zdravstvenih radnika (17,70,71).

Izbjegavanje druženja, odnosno fizičko distanciranje, smatra se važnom mjerom u borbi protiv COVID-19 infekcije. Zdravstveni radnici dužni su se fizički distancirati čak i od svojih kolega kako bi zaštitili jedni druge, zbog čega ostaju bez potrebne socijalne podrške. Poštivanje ovih mjera bilo je naročito važno na početku pandemije kada je ovo istraživanje provedeno. Rezultati brojnih istraživanja tijekom pandemije COVID-19 pokazali su da su se odnosi zdravstvenih radnika, članova njihovih obitelji i prijatelja promijenili. Mjere fizičkog distanciranja i *lockdown* doveli su do promjena u društvenom funkcioniranju, okrećući ljude prema njihovim užim obiteljima. Podatci iz istraživanja idu u prilog pozitivnom utjecaju pandemije na odnose između članova uže obitelji, posebice roditelja i djece (9,72–79). Godine 2020. provedeno je istraživanje na više od 4000 sudionika u Jordanu, a rezultati su pokazali negativan utjecaj pandemije COVID-19 na mentalno zdravlje jordanskog stanovništva, uzrokujući anksioznost i depresiju kod značajnog dijela populacije (80). Društveni odnosi i veze omogućuju pojedincima da reguliraju svoje osjećaje, nose se sa stresom i ostaju otporni u stresnim situacijama.

Nasuprot tome, usamljenost i društvena izolacija pogoršavaju stres i često rezultiraju negativnim učincima na mentalni, kardiovaskularni i imunološki sustav i zdravlje (81).

Zdravstveni radnici koji rade u visokorizičnim područjima (trijažni odjeli, bolnički pacijenti i jedinice intenzivne njege s COVID-19 pozitivnim pacijentima) imaju veći rizik od izloženosti infekcijama. Izbijanje pandemije promijenilo je načine rada zdravstvenih radnika; postali su izravno odgovorni za proces zbrinjavanja pacijenata bez obzira jesu li ili nisu pozitivni na SARS-CoV-2 infekciju, morali su stalno nositi osobnu zaštitnu opremu (koja zatim otežava provedbu medicinskih postupaka) (79,82), a uz to su često izostajale smjernice specifičnog liječenja (83). Visok rizik od izloženosti infekciji, briga za pacijente i strah od izlaganja članova obitelji i voljenih zarazi i infekciji, dovela je do pojave straha, tjeskobe i stresa među zdravstvenim radnicima, što može rezultirati psihičkim naporom i razvojem značajnih psiholoških problema (84–86). Multicentrična presječna studija provedena na više od 1000 zdravstvenih radnika u Kini zabilježila je iznimno visok udio depresije (50 %), anksioznosti (45 %) i nesanice (34 %) među njima (85). Meta-analiza u kojoj je objedinjeno trinaest studija s ukupno 33 062 ispitanika pokazala je da velik broj zdravstvenih radnika ima značajne razine anksioznosti, depresije i nesanice tijekom izbijanja pandemije COVID-19 (86,87). Stope prevalencije anksioznosti i depresije bile su oko 23 %. Visok udio zdravstvenih radnika prijavio je blage simptome depresije i anksioznosti, dok su umjereni i teški simptomi bili rjeđi (86–89). Strah i tjeskoba javljali su se i smanjivali u ranim fazama izbijanja, a javljala se i depresija, psihofiziološki simptomi i PTSP-a. Medicinske sestre u bolnicama pokazale su višu razinu stresa od ostalih zdravstvenih radnika jer su u izravnom i intenzivnom kontaktu s pacijentima (89).

Kang i suradnici procijenili su utjecaj pandemije COVID-19 na mentalno zdravlje liječnika i medicinskih sestara u Wuhanu ubrzo nakon početka pandemije. Studija je pokazala da je polovica zdravstvene populacije dobila psihološku podršku putem materijala dostupnih na internetu ili u medijima, jedno od troje zdravstvenih radnika dobilo je psihološko savjetovanje u papirnatom obliku (brošure, letci ili knjige), a otprilike jedan od petero zdravstvenih radnika bio je uključen u individualnu ili grupnu psihoterapiju (90,91). Oni koji su bili stavljeni u karantenu, radili u visokorizičnim objektima ili bili bliži kontaktu sa zaraženima SARS-CoV-2, imali su do tri puta veći rizik od teškog PTSP-a (82). Tijekom pandemije, medicinske sestre osjećale su najvišu

razinu stresa od svih zdravstvenih radnika jer su se suočile s većim opterećenjem i intenzitetom posla uz istovremenu potrebu implementiranja novih protokola (89).

Rezultati naše studije pokazali su da su nonCoV sestre osjećale više straha od infekcije i bile su više socijalno distancirane, imale su više simptoma PTSP-a i neuroticizma te su osjećale veći stres zbog javne kritike i zahtjeva posla od CoV sestara. Naši su nalazi u skladu s rezultatima nedavno objavljene studije koja je pokazala da je zamjenska traumatizacija, uključujući simptome i fiziološke i psihološke reakcije, bila značajno niža kod CoV sestara od nonCoV sestara ($p<0,001$) (92). Studije provedene u Kini (93) i u Hrvatskoj (58) češće su navodile povećanje zadovoljstva poslom među zaposlenicima uključenim u izravnu brigu o COVID-19 pacijentima, što je u skladu s našim rezultatima. Ovo može biti posljedica javnog priznanja CoV sestara u odnosu na nonCoV sestre koje su često prolazile ispod radara javnosti, a sudjelovale su u zbrinjavanju akutnih bolesnika i životno ugroženih bolesnika. Osim toga, zbog preraspodjele dijela medicinskih sestara u bolnicu COVID-19, nedostajalo je medicinskih sestara i nisu mogle koristiti svoje godišnje odmore dok su u javnosti, a čak i u bolničkim krugovima, smatrane pošteđenima (58). Također, rezultati naše studije ukazali su na mnogo veći odgovor CoV u odnosu na nonCoV sestre (86,8 % naspram 15,4 %), što ukazuje na veću motiviranost CoV sestara za istraživanje čimbenika koji doprinose psihološkoj prilagodbi medicinskih sestara na uvjete rada tijekom pandemije. Moguće objašnjenje je da bliži (fizički i emocionalni) kontakt sa zaraženim pacijenatima potiče želju CoV sestara da pronađu učinkovitije načine za prilagodbu ovim novim okolnostima kao i poboljšanju skrbi za oboljele od COVID-19 infekcije. Osim toga, ovaj nalaz može odražavati različite strategije suočavanja medicinskih sestara u dvjema skupinama; CoV sestre imale su tendenciju aktivnog traženja načina za rješavanje problema, dok je veća vjerojatnost bila da će nonCoV sestre koristiti manje učinkovite strategije, kao što su izbjegavanje ili korištenje bolovanja tijekom kriza. S druge strane, rezultati ove studije ograničavaju mogućnost generalizacije nalaza zbog velike razlike u odgovorima medicinskih sestara u objema skupinama.

Istraživanje mentalnog zdravlja od početka pandemije COVID-19 u Republici Hrvatskoj dosljedno ukazuje na postojanje psihičkih poremećaja kod zdravstvenih djelatnika, a vrste identificiranih poteškoća vrlo su slične globalnim trendovima (94,95). Rezultati multinacionalnih studija provedenih tijekom pandemije COVID-19 dosljedno

ukazuju na negativan utjecaj pandemije COVID-19 na mentalno zdravlje opće populacije, a posebice zdravstvenih radnika (96,97). Zdravstveni radnici prijavljuju višu razinu anksioznosti, depresije, PTSP-a i izgaranja u odnosu na sam početak pandemije (98). Nadalje, mentalne potrebe zdravstvenih radnika mogu se mijenjati tijekom vremena, ovisno o okolnostima rada i života općenito. U ranoj fazi takvih kriznih situacija, zdravstveni radnici pokušavaju dati prednost osnovnim ljudskim potrebama kao što su fizička sigurnost i odmor. S druge strane, na svom vrhuncu, više su usmjereni na rad i podršku kolegama (99). Nedavno objavljene studije o mentalnom zdravlju među zdravstvenim radnicima tijekom pandemija, uključujući SARS, MERS, Ebolu i COVID-19, kao i sindrom izgaranja, ukazuju da zdravstveni radnici izloženi radu povezanom s virusima imaju 1,7 puta veću vjerojatnost da će razviti psihološki stres i PTSP od neizloženih radnika (100,101). Štoviše, čak dvije godine nakon završetka pandemije SARS-a, 30 % zdravstvenih radnika s visokom razinom izloženosti SARS-u nastavilo je prijavljivati visoke razine emocionalne iscrpljenosti. Studije potvrđuju da je pandemija COVID-19 u razdoblju od svibnja 2019. do ožujka 2021. godine, izazvala slične razine tjeskobe te čak premašila stope depresije i PTSP-a kod zdravstvenih radnika nego što je to zabilježeno u pandemijama koje su se javljale od 2002. do 2020. godine (102–105). To je u suprotnosti s našim rezultatima, koji su pokazali više simptoma straha, stresa i PTSP-a među nonCoV sestrama. To se može objasniti činjenicom da je tijekom prvog vala pandemije nedostajalo zaštitne opreme, posebno u nonCoV sestara, što je moglo utjecati na mentalno zdravlje medicinskih sestara (105). NonCoV sestare koristile su medicinske maske bez zaštitnih vizira, bez kombinezona i ostale zaštitne opreme za rad s oboljelima od COVID-19, stoga su bile izložene mogućoj kontaminaciji asimptomatskih bolesnika s COVID-19 (58). Nadalje, utvrđeno je da je nedostatak zaštitne opreme faktor koji je negativno utjecao na mentalno zdravlje zdravstvenih radnika, posebno medicinskih sestara koje su prijavile više simptoma depresije, anksioznosti i PTSP-a (106).

Općenito, korištenje bolovanja kod medicinskih sestara područje je zabrinutosti na globalnoj razini, a u tijeku pandemije još se više aktualizirao ovaj problem (107). Preopterećenost medicinskih sestara u pandemiji glavni je uzrok korištenja bolovanja kao i kod ostalih zdravstvenih radnika. Zatim slijedi strah od bolesti, stres, tjeskoba i stigmatizacija (108–111). Ovi prediktori korištenja bolovanja u pandemiji razlikuju se od onih prije COVID-19 kao što su zadovoljstvo, predanost i stil vodstva (44,112). Naši

rezultati pokazuju da su medicinske sestre koje su koristile bolovanje tijekom prvog vala pandemije, baš kao i nonCoV sestre, osjećale veći strah od infekcije i imale više simptoma PTSP-a, ali su također bile više stigmatizirane i neshvaćene. Što se tiče njihove osobnosti, pokazivale su manje izraženu sklonost altruizmu i prijateljstvu, manje savjesnosti, bile su manje otvorene i iskazivale su više neurotičnosti. Također su koristile manje učinkovite strategije upravljanja stresom kao što je suočavanje usmjereno na problem.

CoV medicinske sestre međusobno su se razlikovale u pogledu korištenja gotovo svih strategija suočavanja s obzirom na bračni status, dob, obrazovanje i radno iskustvo. Općenito, nalazi sugeriraju da to što su sestre mlađe, neudane i s nižim razinama obrazovanja, može poslužiti kao zaštitni faktor od emocionalnog angažmana medicinskih sestara i aktivne izloženosti stresnim situacijama. Udane medicinske sestre sklonije su koristiti učinkovitije strategije suočavanja kao što je usmjerenost na probleme i suočavanje usmjereno na emocije, dok je rađanje više djece povezano s manjim korištenjem suočavanja usmjerenog na probleme. Slične rezultate dobili smo i u skupini nonCoV medicinskih sestara: mlađa dob povezana je s manjim korištenjem suočavanja usmjerenog na problem. Nadalje, udane sestre i sestre bez djece vjerojatnije će koristiti izbjegavanje, dok će sestre s višim razinama obrazovanja vjerojatnije koristiti suočavanje usmjereno na emocije. U skladu s našim rezultatima, Sagherian i suradnici (113) dokazali su da su CoV sestre najčešće koristile strategije usmjerene na problem kao i strategije usmjerene na emocije. Također su pokazali da su medicinske sestre koje rade s bolesnicima pozitivnim na COVID-19 bile mlađe, a istovremeno imale kraće radno iskustvo od medicinskih sestara koje su radile s pacijentima koji nisu zaraženi virusom SARS-CoV-2. S druge strane, naše mlađe nonCoV sestre više su se služile strategijama emocionalnog suočavanja vjerojatno zbog nedostatka iskustva, resursa ili nadzora (13). Upravo zato, naši su rezultati ukazali na to da nonCoV sestre također trebaju pažnju i podršku kako bi smanjile razvoj PTSP-a, što je u skladu sa studijom Xionga i suradnika (114).

Istraživanje provedeno na hrvatskim medicinskim sestrama uz to pokazuje da medicinske sestre u vrijeme pandemije COVID-19 češće od liječnika koriste stil suočavanja izbjegavanjem i pozitivno preispitivanje. Dok liječnici prvo koriste strategiju planskog i analitičkog pristupa problemu (stresoru), medicinske sestre prvo posežu za ponovnom procjenom. Nadalje, s obzirom na dobne skupine, studija pokazuje da osobe

mlađe od 40 godina češće koriste tehnike suočavanja izbjegavanjem (115). U našoj studiji nije utvrđen značajan utjecaj dobi na korištenje izbjegavajućeg suočavanja, iako smo otkrili češću upotrebu izbjegavanja kod medicinskih sestara s manje profesionalnog iskustva.

Drugo istraživanje iz Hrvatske pokazalo je da su općenito najčešće strategije suočavanja kod medicinskih sestara bile strategije usmjerene na problem, zatim strategije usmjerene na emocije, a najrjeđe izbjegavajuće strategije suočavanja. Studija je također pokazala da je viša razina obrazovanja povezana s većom potragom za smislom i češćom uporabom aktivnog suočavanja, planiranja i emocionalne podrške kao strategije suočavanja (116). Ovo je suprotno našim nalazima koji se mogu objasniti činjenicom da je ovo istraživanje provedeno prije pandemije COVID-19.

Studija iz Španjolske također je pokazala da su starije medicinske sestre, u bračnoj zajednici, samci i osoblje s više od 15 godina radnog iskustva, zaštićeni od stresora i percipiranih emocija, te su povezani s većom upotrebom tehnika suočavanja (117). Također, otkriven je veći utjecaj percipiranih negativnih emocija među medicinskim sestrama sa srednjim obrazovanjem u odnosu na medicinske sestre sa sveučilišnom diplomom, što je u skladu s našim nalazima da su CoV sestre sa srednjom stručnom spremom koristile izbjegavajuće suočavanje znatno više od svojih kolegica sa diplomom prvostupnika.

Trumelo i suradnici proveli su sličnu studiju među zdravstvenim radnicima u Italiji i pokazali su značajnu razliku u distribuciji percipiranog stresa, tjeskobe, depresije, izgaranja i razina sekundarne traume između zdravstvenih radnika koji su radili s pacijentima pogođenim bolešću COVID-19 u odnosu na one koji nisu radili (118).

Sukladno navedenom, poslodavci bi svakako trebali voditi evidenciju o bolovanjima kako bi mogli bolje i pravodobno podržati svoje osoblje i smanjiti rizik od budućih bolovanja. Mjere koje se mogu poduzeti uključuju pružanje i ažuriranje znanja o COVID-19, psihološku podršku, jačanje obuke o profesionalizmu i smanjenje broja stresora (101,119,120). U skladu s tim, zbog nezavisnih varijabli, naša je analiza pokazala da je 49,1 % sestara ispravno svrstano u skupinu CoV sestara koje su koristile bolovanje naspram 96,3 % koje nisu koristile bolovanje. Apsolutno točna klasifikacija bila je 84,8 %. Nadalje, 62,2 % nonCoV sestara ispravno su klasificirane u skupinu koja je koristila

bolovanje u odnosu na 87,7 % koje nisu koristile bolovanje. Ukupan postotak točnih klasifikacija među nonCoV sestarama bio je 79,1 %.

Naše istraživanje ima nekoliko ograničenja. Prvo, radilo se o presječnoj studiji koja je provedena u relativno kratkom razdoblju samo u jednoj hrvatskoj bolnici što ograničava mogućnost tumačenja uzročno-posljedičnih odnosa između različitih varijabli u ovoj studiji. Drugo, usvojili smo strategiju distribucije upitnika putem interneta zbog ograničenja društvenih kontakata pa je istraživanje provedeno samo u skupini ljudi koji koriste informacijske i komunikacijske tehnologije što je moglo utjecati na stopu odgovora (29,1 %). Kako bismo generalizirali naše rezultate, buduće longitudinalne studije trebale bi se provoditi korištenjem slučajnog uzorkovanja medicinskih sestara neovisno o ustanovi u kojoj rade.

3.5. Zaključci

Istraživanja provedena na medicinskim sestrama pokazuju da su medicinske sestre kao profesija iznimno sklone razvoju sindroma izgaranja, raznih poremećaja ponašanja i bolesti. Pandemija COVID-19 dodatno je opteretila medicinske sestre i sve zdravstvene djelatnike. Strah i izbjegavanje zdravstvenih radnika tijekom pandemije virusa COVID-19 raširen je problem u cijelom svijetu, ali još uvijek nije dovoljno prepoznat i stoga može imati dugoročne posljedice na zdravlje medicinskih sestara kao i na zdravlje obitelji zdravstvenih radnika. Jedan od mogućih razloga dosadašnjeg provođenja preventivnih mjera za ove probleme nedostatak je strukturiranih ljestvica za mjerenje. Ljestvica iskustava naših medicinskih sestara povezanih s pandemijom pokazala je dobra psihometrijska svojstva i može se primijeniti u budućim istraživanjima kao standardizirani alat za mjerenje ne samo za medicinske sestre već i za iskustva drugih zdravstvenih radnika tijekom krize COVID-19 ili tijekom rada s drugim zaraznim bolesnicima.

Naše nonCoV sestre imale su znatno više straha od infekcije i bile su više socijalno distancirane, imale su više simptoma PTSP-a i više su bile pod stresom javne kritike i profesionalnih zahtjeva od CoV sestara tijekom prvog vala COVID-19 pandemije. Dokazali smo da je moguće klasificirati medicinske sestre prema mogućnostima

korištenja bolovanja u vezi s pandemijskim profesionalnim iskustvom, osobinama ličnosti i strategijama suočavanja s velikom točnošću. Nadamo se da će naši rezultati potaknuti zdravstveni sustav da posveti posebnu pozornost radnim uvjetima i iskustvu medicinskih sestara pomažući im u odabiru najbolje strategije suočavanja kako bi zaštitile svoje mentalno zdravlje i spriječile izgaranje. Uprave bolnica i glavne medicinske sestre moraju biti svjesne osiguranja važnosti psihološke podrške i savjetovanja tijekom ove pandemije kako bi se smanjila namjera otvaranja bolovanja i spriječilo izgaranje medicinskih sestara. Ovim pristupom osigurava se održivost zdravstvene zaštite na globalnoj razini.

3.6. Sažetak

Cilj: Utvrditi prediktore korištenja bolovanja medicinskih sestara; ispitati razlike između medicinskih sestara koje su radile s bolesnicima oboljelima od COVID-19 bolesti (CoV) i onih koje nisu radile s COVID-19 pozitivnim bolesnicima (nonCoV) u razinama simptoma posttraumatskog stresnog sindroma (PTSP), osobinama ličnosti, strategijama suočavanja i doživljenim profesionalnim stresorima te usporediti strategije suočavanja s obzirom na njihove sociodemografske karakteristike.

Metode: Glavno istraživanje provedeno je među 1305 medicinskih sestara zaposlenih u Kliničkom bolničkom centru Split. Poveznica za *online* istraživanje poslana je putem njihove službene poslovne elektroničke pošte. U radovima su korišteni validirani i pouzdani upitnici te su korišteni relevantni statistički alati za analizu prikupljenih podataka.

Rezultati: Kod CoV sestara starija dob i život u bračnoj zajednici povezani su s višim razinama suočavanja usmjerenim na problem ($p = 0,010$). Magistre su značajno manje koristile suočavanje usmjereno na probleme i emocije ($p < 0,001$). NonCoV sestre manje su rabile emocionalno suočavanje među medicinskim sestrama s magisterijem. Izbjegavanje su više koristile udane ($p < 0,001$) sestre i one bez djece ($p < 0,001$) te također sestre s diplomom prvostupnika ($p < 0,001$).

Zaključak: Ako su CoV sestre preferirale pristup usmjeren na probleme u suočavanju sa stresom, bile otvorenije životnim iskustvima i manje osjetljive na kritiku i organizacijske

probleme na radnom mjestu te su imale manje straha od infekcije, mogućnost korištenja bolovanja bila je manje vjerojatna. S druge strane, ako su non-CoV sestre imale niži rezultat na neuroticizmu, iskusile manju stigmatizaciju tijekom pandemije, prakticirale manje socijalnog distanciranja od najbližih, imale manji strah od zaraze SARS-CoV-2 i prijavile manje organizacijskih problema imale su manju vjerojatnost korištenja bolovanja. Nadalje, rezultati provedenog istraživanja pokazali su da sociodemografski čimbenici poput radnog iskustva, dobi, stupnja obrazovanja i bračnog statusa utječu na odabir strategija suočavanja tijekom zdravstvene krize. Medicinske sestre koje rade na CoV odjelima biraju i aktivno suočavanje i suočavanje usmjereno na emocije, dok one koje rade na odjelima izvan CoV-a preferiraju strategije usmjerene na problem.

Ključne riječi: medicinske sestre, COVID-19, strategije suočavanja, PTSP, osobine ličnosti, bolovanje, mentalno zdravlje, pandemija

3.7. Summary

Dissertation title: Mental health of nurses during the coronavirus pandemic in Croatia

AIM: To determine the predictors of nurses sick leave utilization; to examine the differences between nurses who worked with patients with COVID-19 disease (CoV) and those who did not work with COVID-19 positive patients (nonCoV) in levels of post-traumatic stress syndrome (PTSD) symptoms, personality traits, coping strategies and experienced professional stressors and compare coping strategies with regard to their sociodemographic characteristics.

Methods: The main research was conducted among 1,305 nurses employed at the University hospital Split, Croatia. The online survey link was sent via their official business email. Validated and reliable questionnaires were used in the papers, and relevant statistical tools were used to analyze the collected data.

Results: In CoV nurses, older age and married life were associated with higher levels of problem-focused coping ($p = 0.010$). Master's students used problem and emotion-focused coping significantly less ($p < 0.001$). NonCoV nurses with a master's degree had

lower use of emotional coping. Avoidance was used more by married ($p < 0.001$) sisters and those without children ($p < 0.001$) and also by sisters with a bachelor's degree ($p < 0.001$).

Conclusion: If CoV nurses preferred a problem-oriented approach to coping with stress, were more open to life experiences and less sensitive to criticism and organizational problems in the workplace, and had less fear of infection, the possibility of using sick leave was less likely. On the other hand, if nonCoV nurses had lower neuroticism score, experienced less stigmatization during the pandemic, practised less social distancing from those closest to them, had less fear of contracting SARS-CoV-2 and reported fewer organizational problems, they were less likely to use sick leave. Furthermore, the results of the conducted research showed that sociodemographic factors such as work experience, age, level of education and marital status influence the choice of coping strategies during a health crisis. Nurses working in CoV departments choose both active, emotion-oriented coping and coping, while those working in non-CoV wards prefer problem-centered strategies.

Keywords: nurses, COVID-19, coping strategies, PTSD, personality traits, sick leave, mental health, pandemic

3.8. Životopis

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- Zdravstvena njega psihijatrijskih bolesnika;
- Povijest i modeli sestrinstva;
- Zdravstveni odgoj s metodama učenja i podučavanja;
- Primaljska skrb zdravog novorođenčeta;
- Primaljska skrb u babinju;
- Patronaža i rad u primarnoj zdravstvenoj zaštiti;
- Povijest i modeli sestrinstva;
- Palijativna zdravstvena njega;
- Kliničke vještine I, II, III.

Publikacije

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2. Šarić M, Mijač B, Radan R. i sur. Perinatalna dijagnostika i terapija s etičkog gledišta. Sestrinski edukacijski magazin 2007:4(4)
3. Šarić M. Porod i dojenje – prirodni procesi. Sestrinski edukacijski magazin 2007:4(5)
4. Šarić M. Stavovi i znanja zdravstvenih djelatnika o zlostavljanju i zapuštanju djece. HČZJZ 2010:7(60)
5. Šarić M, Romić M. i sur. Zdravstvena njega bolesnika s privremenom i trajnom elektrostimulacijom. Liječnički vjesnik ISSN 1330-4917, 2010.
6. Šarić M, Buljubašić A, Žunić Lj, Orlandini R, Vardo A. Mjere za sprječavanje i suzbijanje širenja bolničkih infekcija s osvrtom na pravnu regulativu u Republici Hrvatskoj. HČZJZ 2013:1(35)
7. Juratić K, Šarić M. Adolescentne trudnoće u Splitsko-dalmatinskoj županiji i postupci medicinske sestre/primalje u prevenciji i skrbi. Primaljski vjesnik. 22(61); 39.-45.
8. Babić I, Šarić M. Zadovoljstvo majki edukacijom o dojenju. Primaljski vjesnik. 1(61); 28.-35.
9. Kozina L, Šarić M. Učestalost kroničnih nezaraznih bolesti u trudničkoj populaciji Republike Hrvatske. Primaljski vjesnik. 1(61); 13.-.18.
10. Janković S, Koren S, Šarić M, Orlandini R, Antičević V, Švaljug D, Buljubašić A. The Croatian Model of University Education for Nurses. Nurs Health Care 2018, 4:093.
11. Bočina I, Dolić M. Stavovi studenata sestrinstva i primaljstva o cijepljenju djece. Primaljski vjesnik. 1(2020); 14.-20.
12. Jović, Jelena; Marović, Vanda; Dolić, Matea. David želi živjeti i dojiti! Primaljski vjesnik, (2020), 27/28; 69-73
13. Podrug, Mario; Aranza, Diana; Marendić, Mario; Buljubašić, Ante; Orlandini, Rahela; Dolić, Matea; Krželj, Vjekoslav. Učestalost ozljeda djece liječene u Zavodu za hitnu medicinu Splitsko-dalmatinske županije. Paediatria Croatica, 65 (2021), 1; 21-26.
14. Dolić, Matea; Antičević, Vesna; Dolić, Krešimir; Pogorelić, Zenon. Questionnaire for assessing social contacts of nurses who worked with coronavirus patients during the first wave of the COVID-19 pandemic. Healthcare, 9 (2021), 8; 930, 9.

15. Dolić, Matea; Antičević, Vesna; Dolić, Krešimir; Pogorelić, Zenon. Difference in Pandemic-Related Experiences and Factors Associated with Sickness Absence among Nurses Working in COVID-19 and Non-COVID-19 Departments. International journal of environmental research and public health, 19 (2022),3; 1093, 20.
16. Dolić, Matea; Antičević, Vesna; Dolić, Krešimir; Pogorelić, Zenon. The Impact of Sociodemographic Characteristics on Coping Strategies Used by Nurses Working at COVID and Non-COVID Hospital Departments during COVID-19 Pandemic: A Cross-Sectional Study. Healthcare, 10 (2022), 6;15.

Kongresna priopćenja

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2. Šarić M, Livaja A. Stres na radnom mjestu medicinske sestre. Zbornik radova Hrvatske udruge kardioloških medicinskih sestara, 2009.
3. Šarić, Matea; Racz, Aleksandar. Komparacija stavova medicinskih sestara i liječnika zaposlenih na internističkom i pedijatrijskom odjelu kliničke bolničke ustanove o zanemarivanju i zlostavljanju djece. Hrvatsko sestrinstvu u susret europskoj uniji. Opatija, Republika Hrvatska, 2011.
4. Brkljačić Pavelin, Elizabeta; Buljubašić, Ante; Šarić, Matea. Prvostupnica sestrinstva - zdravstvena voditeljica u dječjem vrtiću. 18. dani predškolskog odgoja Splitsko - dalmatinske županije / Mandeš, Branimir (ur.). Split: Dječji vrtić "Čarobni pijanino", Split, 2012. str. 117-124.
5. Šarić M, Buljubašić A, Žunić Lj, Orlandini R, Vardo A. Mjere za sprječavanje i suzbijanje širenja bolničkih infekcija s osvrtom na pravnu regulativu u Republici Hrvatskoj. Zbornik radova I. simpozija s međunarodnim sudjelovanjem Fakulteta zdravstvenih studija i Sveučilišne kliničke bolnice Mostar. Mostar, Bosna i Hercegovina 2013. 30-41
6. Orlandini R, Švaljug D, Ančić M, Šarić M. Upravljanje rizicima za nastanak upale pluća povezane s mehaničkom ventilacijom u jedinici intenzivnog liječenja. Zbornik radova I. simpozija s međunarodnim sudjelovanjem Fakulteta zdravstvenih studija i Sveučilišne kliničke bolnice Mostar. Mostar, Bosna i Hercegovina 2013. 48-53

7. Šarić, Matea; Orlandini, Rahela; Buljubašić, Ante. Standardi i smjernice za osiguranje kvalitete u europskom prostoru visokog obrazovanja medicinskih sestara // Zbornik sažetaka. II. Simpozij s međunarodnim sudjelovanjem. Inovacije u radu medicinskih sestara/tehničara / Mandić, Sanda; Puljić, Vedran (ur.). Mostar: Organizacijski odbor Simpozija, 2014. str. 36-36.
8. Modrić, Ivanka; Šarić, Matea. Zastupljenost depresije u bolesnika na nadomjesnom bubrežnom liječenju hemodijalizom u splitskom Kliničkom bolničkom centru. Hrvatski kongres psihosomatske medicine i psihoterapije Knjiga sažetaka / Braš, Marijana; Šendula Jengić, Vesna (ur.). Zagreb: Studio Hrg, 2017. str. 19-19.
9. Kelam, Antonia; Šarić, Matea. Učestalost anksioznosti u dječjoj dobi. Hrvatski kongres psihosomatske medicine i psihoterapije & 6. internacionalni simpozij psihijatrije i kognitivne neuroznanosti (ISPCN) / Braš, Marijana; Šendula Jengić, Vesna (ur.). Zagreb: Studio Hrg, 2017. str. 56-57.

Članstvo u profesionalnim/strukovnim udrugama

Hrvatska komora medicinskih sestara (član)
Hrvatska udruga informatike u sestrinstvu (doopredsjednica)
Hrvatska udruga kardioloških medicinskih sestara (član)
„Alumni“ udruga Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu (član)
Hrvatska udruga medicinskih sestara (član)

Znanstveno – istraživački projekti

1. Razina spolnih hormona u muškaraca sa zatajivanjem srčane funkcije. Klasa: 500-03/10-01/16, ur.br.: 2181-147-10-01/01.
2. Izrada standarda zanimanja/kvalifikacija uz unaprjeđenje zdravstvenih studijskih programa HR 3.1.15-0051.
3. Edukacija mentora za medicinske sestre i primalje u zdravstvenom sustavu u Hrvatskoj i provedba obrazovnog curriculuma usklađenog s Direktivom

2005/36/EC. Twinning projekt financiran u sklopu Prijelaznog instrumenta Europske unije za Hrvatsku.

Organizacijske i ostale aktivnosti

2003. Voditeljica humanitarne akcije za klimatizaciju Kliničkog odjela za bolesti srca i krvnih žila, KBS Split, lok. Križine

2010. Voditeljica humanitarne akcije za postavljanje električnih ulaznih vrata s videoparlafonom na Kliničkom odjelu za bolesti srca i krvnih žila, KBC Split, lok. Križine

2012. Organizator i koordinator predstavljanja Sveučilišnog odjela zdravstvenih studija na Smotri Sveučilišta u Splitu (Nagrada za najatraktivniji stand)

2013. Koordinator humanitarne akcije „Za Mia Lanin prvi korak“, Sveučilišni odjel zdravstvenih studija

2013. Organizator i koordinator humanitarne akcije „Darivanje“,Sveučilišni odjel zdravstvenih studija

2013. Organizator i koordinator predstavljanja Sveučilišnog odjela zdravstvenih studija na Smotri Sveučilišta u Splitu (Nagrada za najatraktivniji stand)

2013. Koordinator diplomske nastave Sveučilišnog odjela zdravstvenih studija

2013. Koordinator iznanastavnih aktivnosti Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu

2014. Organizator i koordinator humanitarne akcije „Darivanje“,Sveučilišni odjel zdravstvenih studija

2014. Organizator i koordinator predstavljanja Sveučilišnog odjela zdravstvenih studija na Smotri Sveučilišta u Splitu (Nagrada za najatraktivniji stand)

2014. Koordinator diplomske nastave Sveučilišnog odjela zdravstvenih studija

2014. Koordinator iznanastavnih aktivnosti Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu

2015. Organizator i koordinator humanitarne akcije “Ditetu o´jubavi”, Sveučilišni odjel zdravstvenih studija

2015. Koordinator aktivnosti SOZS u javnozdravstvenoj manifestaciji “Zdravlje je moj đir”

2015. Koordinator diplomske nastave Sveučilišnog odjela zdravstvenih studija

2015. Koordinator iznanastavnih aktivnosti Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu

2016. Organizator i koordinator humanitarne akcije “Ditetu o´jubavi”, Sveučilišni odjel zdravstvenih studija

2016. Zamjenica pročelnika Odsjeka za primaljstvo

2016. Zamjenica šefa Katedre za primaljstvo

2017. Organizacija i provedba aktivnosti za Sveučilišni odjel zdravstvenih studija na Festivalu znanosti 2017. godine

2017. Koordinator iznanastavnih aktivnosti Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu

Od 2016. godine - recenzor službenog glasila Hrvatske komore primalja “Primaljski vijesnik”

2018. Organizacija i provedba aktivnosti za Sveučilišni odjel zdravstvenih studija na Festivalu znanosti 2018. godine

2022. Organizacija i provedba 11 predavanja u sklopu Festivala znanosti 2022. godine Sveučilišta u Splitu.

2023. Članica organizacijskog odbora Škole infektologije ST 2023.

2012. – 2017. Članica Povjerenstva za nastavu Sveučilišnog odjela zdravstvenih studija

2012. – 2018. Članica Etičkog povjerenstva Sveučilišnog odjela zdravstvenih studija

Mentorica više od 40 završnih radova pri Sveučilišnom odjelu zdravstvenih studija Sveučilišta u Splitu

Recezentske aktivnosti

Primaljski vjesnik Hrvatske komore primalja

BCM Nursing.

Priznanja i nagrade

2021. Zahvalnica Sveučilišnog odjela zdravstvenog studija Sveučilišta u Splitu za osnivanje Alumni udruge SOZS i provedene izvannastavne aktivnosti.

2022. Plaketa Sveučilišnog odjela zdravstvenih studija Sveučilišta u Splitu za dva najbolja znanstvena rada u 2021./2022. godini

Dodatne informacije

Udana.

Majka jednog djeteta.

1640 sati volonterskog rada u brojnim udrugama.

3.9. Literatura

1. Tsamakis K, Rizos E, Manolis AJ, Chaidou S, Kympouropoulos S, Spartalis E. i sut. COVID-19 pandemic and its impact on mental health of healthcare professionals. Exp Ther Med. 2020;19(6):3451-3.
2. Jackson D B-JC, Baptiste D, Gelling L, Morin K, Neville S, Smith GD. Life in the pandemic: Some reflections on nursing in the context of COVID-19. J Clin Nurs. 2020;29(13/14):2041-3.
3. Saeed F MR, Mousavi SZ, Reniers RL, Bateni FS, Alikhani R, Mousavi SB. A Narrative Review of Stigma Related to Infectious Disease Outbreaks: What Can Be Learned in the Face of the Covid-19 Pandemic? Front Psychiatry. 2020;11:565919.
4. Alharbi J JD, Usher K. Personal characteristics, coping strategies, and resilience impact on compassion fatigue in critical care nurses: A cross-sectional study. Nurs Health Sci. 2020;22(1):20-7.
5. Lee SH JY, Su YJ, Lee HL, Lin YH, Chao CC. Facing SARS: psychological impacts on SARS team nurses and psychiatric services in a Taiwan general hospital. Gen Hosp Psychiatry. 2005;27(5):352-8.
6. Gaki E KN, Niakas D. Investigating demographic, work-related and job satisfaction variables as predictors of motivation in Greek nurses. J Nurs Manag. 2013;21(3):483-90.
7. Hrvatska komora medicinskih sestara: Proglas medicinskih sestara Republike Hrvatske u 2020. godini (Hrvatska komora medicinskih sestara). Zagreb; 2020 (citirano 10. ožujka 2023.). Dostupno na: content/uploads/2020/02/Proglas-hrvatskog-sestrinstva-2020.pdf
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4. PRESLIKE RADOVA

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Questionnaire for Assessing Social Contacts of Nurses Who Worked with Coronavirus Patients during the First Wave of the COVID-19 Pandemic

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Abstract: (1) Background: The aim of the present study was to develop and validate the psychometric characteristics of a scale measuring nurses' experiences working with COVID-19 patients. (2) Methods: The participants were 180 Croatian nurses who worked in departments with COVID-19 patients, with a mean age of 36.8 years (ranging from 20 to 48). Research was conducted from March to June 2020. For the purpose of constructing the scale, 10 statements were developed. Factor analysis was used to determine the factor structure and construct validity of the scale. (3) Results: The scale consisted of nine statements divided into a three-factor structure: factor I—stigmatization and mistrusting (four items), factor II—social distancing (four items), and factor III—fear of infection (two items). Cronbach α was calculated to confirm the reliability of the scale: factor I—$\alpha = 0.80$, factor II—$\alpha = 0.76$, and factor III—$\alpha = 0.70$. (4) Conclusion: The nurses' pandemic-related experiences scale showed good psychometric properties and can be applied in future research as a standardized tool for measuring health care workers' experience during COVID-19 or other infectious crises.

Keywords: COVID-19; nurses experience; social distancing

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1. Introduction

The COVID-19 pandemic caused by new coronaviruses represents a major global public health care problem that is causing changes in the current way of life and work in all segments of society. The Covid-19 pandemic is progressively being regarded as a social problem rather than just an infectious disease. There are diseases that not only burden the medical system but also instill increased tension in each individual by provoking social stigma [1]. Health care professionals, including nurses around the world, have shown exceptional courage and professional morality in responding to the challenge of the pandemic in the International Year of Nursing and Midwifery [2,3]. The entire public, including health care professionals, are confronted daily with images and reports of a health care system collapse due to the COVID-19 virus pandemic, especially in Italy and Spain during the first wave of pandemic, but also around the world [4]. There was fear of infection and the possibility of transmission from family members and friends, but also fear of a lack of COVID-19 protective clothing for the health workforce and equipment to treat patients [5]. Staff may be concerned about their own risks from exposure to a new pathogen, or the risk that they might infect family or friends. These concerns can be particularly acute when the etiology and outcomes from a new virus are not well understood [6]. Data on the large number of sick health care workers in Italy and Spain—especially doctors and nurses, with over 100 deaths—further added to the unrest and concern among health care staff. Furthermore, the results of research conducted on health care workers who worked with COVID-19 patients in Wuhan, China, showed that health care workers reported

symptoms of anxiety, depression, and insomnia. Also, in comparison with health care workers who worked with non-COVID-19 patients, nurses that worked "on the front lines" with COVID-19 patients showed negative outcomes of mental health [7]. Another piece of research on the psychological and mental impact of COVID-19 disease on medical staff and the general population has identified risk factors for anxiety and depression, including female gender, nurse occupation, lower socioeconomic status, high risk of COVID-19 virus infection, and social isolation [8].

A review of the literature did not find research using a standardized questionnaire to assess the socializing (at work and out of work) of nurses who worked with coronavirus patients during the first wave of the pandemic. The aim of this study was to develop and validate psychometric characteristics of a questionnaire designed to measure nurses' experiences working with COVID-19 patients.

2. Materials and Methods

A correlation cross-sectional design was used in this study. The research was conducted online on a suitable sample of 180 nurses working in the health care system of the Republic of Croatia with regards to the COVID-19 virus pandemic. The survey was conducted via the Google docs platform, and was available to all nurses who used the Facebook group of nurses, and they responded to the questionnaire by clicking on the appropriate link. The inclusion criteria were the employment of a nurse in the Croatian health care system and providing health care services to the COVID-19 positive patients from March to June 2020. The exclusion criteria were the employment of a nurse outside the Croatian health care system, providing health care services to the COVID-19 negative patients, and a positive history of previous psychological problems. Subjects were of both sexes (female = 167, male = 13) and aged 20–48 years, with a mean age of 36.8 $\pm$ 15.5 years. The results analyzed in this study are the part of a broader study of the effect of ward work with patients with COVID-19 on a nurse's mental health, in which a series of standardized mental health assessment questionnaires were used.

All participants gave their informed consent to present the data in the submitted manuscript by accepting the click of a button before taking the online tests. Participants completed the questionnaire on their own, which lasted approximately 5 min. Only data obtained based on responses to the scale of experiences associated with the pandemic nurses were used in this study. Participation was voluntary and completely anonymous, and the completion rate was 100%.

2.1. Instruments

A scale named "Nurses' pandemic-related experiences questionnaire" was constructed for the purposes of this research. The scale consists of 10 statements examining the different experiences of nurses working in COVID-19 departments. Participants were asked to respond on a scale from 1 (does not apply to me at all) to 5 (fully applies to me). The total score of each participant is expressed as the final sum of responses to each statement [9].

Taking into account the specificity of pandemic-related professional experiences in comparison with non-pandemic working circumstances, the statements were compiled based on a study of literature sources on the most frequent stressors of health care providers during pandemics [10–15]. The questionnaire was also accompanied by items compiled based on an interview with three experienced nurses who were working in a COVID-19 department during the "first wave" of the pandemic about what was most stressful to them. Nurses expressed their perceptions of feelings, behaviors, and socializing during the first wave pandemic "lock-down". In this way, an initial list of 10 stressors was obtained, the frequencies of which were estimated by 180 nurses who participated in this study. In order to examine the psychometric properties of the questionnaire, we performed a factor analysis, where one item had a saturation less than <0.5 and was thus excluded from further analysis. Scree plots were examined and enabled a three-factor model solution. The first factor (Stigmatization and misunderstanding) explained 45.70% of the variance,

the second factor (Social distancing) explained 15.56% of the variance, and the third factor (Fear of infection) explained 10.71% of the variance. The final version of the questionnaire consists of 9 items. The results of factor analysis and reliability measures are explained in detail in the Results section.

The data collected from the questionnaire were entered into Microsoft Excel spreadsheets according to a previously prepared code plan.

2.2. Statistical Analysis

Data were recoded, sorted, and prepared for analysis using the SPSS version 26.0 software package (IBM Corp, Armonk, NY, USA). There was no missing data in the dataset. For the purpose of data processing, descriptive statistics were used to calculate means and standard deviations. To identify psychometric properties of the scale, the Principal Axis Factoring with Promax rotation method was used, including scree plots. The internal consistency and reliability were measured by McDonald's ω and Cronbach's α. The suitability of data for structure detection was verified using Kaiser–Meyer–Olkin (KMO) and Bartlett's tests. The Kolmogorov–Smirnov (KS) test was used to examine the normality of distribution. As a part of statistical analysis, we also checked skewness and kurtosis to determine whether the data were heavy-tailed or light-tailed relative to a normal distribution. The results are presented in tables in the Results section. The α-error level was set to 0.05.

3. Results

3.1. Factor Structure

The Kaiser–Meyer–Olkin statistic proved the satisfying sampling adequacy of the data (KMO = 0.80), enabling the factor analysis. The Bartlett's test of sphericity was significant ($x2(21) = 676.77$, $p < 0.001$).

An analysis of the main components with the Promax rotation method was performed and a three-factor structure was disclosed (Table 1). The Principal Axis Factoring extraction method was used to determine item saturations by each factor. Only one item ("When we were on shift, we had problems with food delivery because the restaurant staff did not want to deliver food to a department with infected persons") had saturations <0.50 and was thus excluded from further analysis. The total score was recalculated with the remaining 9 items.

Table 1. Factor structure of the nurses' pandemic-related experiences questionnaire.

Items	Factor I Stigmatization and Misunderstanding	Factor II Social Distancing	Factor III Fear of Infection
% of Variance	45.70	15.56	10.71
Item 1	0.917	0.383	0.246
Item 2	0.785	0.407	0.347
Item 3	0.580	0.570	0.373
Item 4	0.539	0.486	0.312
Item 5	0.398	0.852	0.553
Item 6	0.419	0.816	0.395
Item 7	0.312	0.661	0.639
Item 8	0.253	0.483	0.842
Item 9	0.311	0.389	0.689

The first factor reflects feelings of stigma and misunderstanding that nurses had while working in a department with COVID-19 patients; this factor was named "Stigmatization and misunderstanding". The second factor describes actual or planned distanc-

ing/avoidant behaviors of nurses in order to protect significant others; this factor was named "Social distancing". The third factor describes nurses' fears of infecting oneself or loved ones; this factor was named "Fear of infection".

Descriptive indicators (means and standard deviations) for each statement are shown in Table 2.

Table 2. Descriptive properties of items (n = 180).

Item	Mean	Standard Deviation	Number of Items
I felt that my neighbors avoided me when we met in a building, on the street, or in a store because of my work in the hospital.	3.28	1.35	
People close to me avoided me because of fear of exposing them to a possible infection.	3.23	1.43	
I felt that I could not talk to close people about my work because they would not understand me.	3.24	1.55	
I preferred spending free time with my colleagues because we were at the same risk of infection, so I didn't feel afraid that I would infect them.	3.44	1.45	
Factor I: Stigmatization and misunderstanding	**3.30**	**1.14**	**4**
I avoided intimacy with my partner because of the possibility to exposing him/her to a possible infection.	3.98	1.27	
I spent less time with my family because of the possibility to exposing them to a possible infection.	3.58	1.46	
I considered having physical separation from my family while working in a department with infected patients.	2.89	1.58	
When we were on shift, we had problems with food delivery because the restaurant staff didn't want to deliver food to a department with infected persons.	2.54	1.59	
Factor II: Social distancing	**3.49**	**1.23**	**4**
I was afraid I would get a COVID-19 infection.	3.39	1.28	
I was afraid I would pass the infection on to my family.	4.47	0.91	
Factor III: Fear of infection	**3.93**	**0.98**	**2**

3.2. Internal Consistency

The values of the internal reliability of both the items and the factors are shown in Table 3. All coefficients range from 0.81 to 0.88 for both measures, indicating satisfactory internal consistency of the items and extracted factors.

Table 3. Internal consistency of the nurses' pandemic-related experiences questionnaire.

	If Item Excluded	
Item	**McDonald's ω**	**Cronbach's α**
1.	0.83	0.83
2.	0.84	0.83
3.	0.84	0.84
4.	0.83	0.83
5.	0.84	0.83
6.	0.83	0.82
7.	0.83	0.83
8.	0.85	0.84
9.	0.84	0.84
Total score for Factor I	0.85	0.85
Total score for Factor II	0.82	0.81
Total score for Factor III	0.88	0.88

3.3. Testing for Normality

The Kolmogorov–Smirnov test indicated that the distributions within all three factors were not normally distributed ($p < 0.001$) (Table 4).

Table 4. Kolmogorov–Smirnov test of normality.

	Statistic	df	*p*
Factor I Stigmatization and Misunderstanding	0.12	180	<0.001
Factor II Social Distancing	0.13	180	<0.001
Factor III Fear of infection	0.17	180	<0.001

Additionally, the distributions of the three factors were examined for skewness and kurtosis (Table 5). The skewness of distributions indicate a moderate shift to the left. Furthermore, most kurtosis values are less than zero, showing platykurtic distribution with the central peak being lower and broader, as well as fewer values close to the mean.

Table 5. Skewness and kurtosis of the nurses' pandemic-related experiences questionnaire.

Factor	Kurtosis	Skewness
Factor 1	−0.74	−0.35
Factor 2	−0.95	−0.29
Factor 3	0.65	−0.97

Since most of the values for asymmetry and kurtosis ranged between −2 and +2, it can be considered acceptable in order to prove normal univariate distribution [9].

4. Discussion

Numerous studies have been conducted to investigate public perceptions of health care workers during the COVID-19 virus pandemic [1,3,5,7,8]. However, insufficient research has been conducted on health care professionals on stigmatization and misunderstanding, social distancing, and fear regarding the pandemic and their exposure to it.

The most important result of this study is that the scale of pandemic-related experiences of our nurses showed good psychometric properties. The validation results of the 10-particle scale in this paper point to a three-membered structure: Stigmatization and misunderstanding (four items), Social distancing (four items), Fear of infection (two items) Each of these three factors poses a risk of developing psychological and physical consequences from performing work and providing health care to patients with COVID-19.

4.1. Stigmatization and Misunderstanding

Being the target of stigmatization places individuals under great pressure. Stigma is a common phenomenon in the prevalence and spread of infectious diseases. It leads to negative emotions among the stigmatized, including stress, anxiety, sadness, and even some physical reactions [14–18].

Stigma leads to a social misunderstanding of risk and extreme fear amongst members of society, which is accompanied by a disproportionate allocation of health care resources by politicians and health care professionals [16,17].

Public exposure to dramatic images of deaths caused by the COVID-19 pandemic from Italy and other countries and dramatic news reporting the number of infected and deceased doctors and nurses has led the public to assess personal risk of infection through contact with health care professionals [4,14]. In a survey conducted in 2020, more than a third of respondents thought that health care workers were COVID-19 positive, almost

half of respondents (47%) said they did not want to be near health care workers caring for COVID-19-positive patients, they had unrealistic attitudes about the danger of contact with health care workers and felt that they should even be banned or prevented from contacting their family members (31%) in order to prevent the possibility of spreading the infection [8]. Stigmatization creates an unnecessary burden on the lives of health care professionals and can contribute to the development of mental problems [9]. Confusion, misunderstandings, and the presentation of "false science" by sources deemed to be trustworthy are breeding grounds of stigma, as they evoke stereotypes, discriminatory behaviors, and prejudice [11–13]. Our results are in the line with reports from around the world that doctors and other health care providers have been isolated from loved ones because of anticipated risk of contamination, and have also been assaulted physically or emotionally due to fear and stigmatization [14]. This makes this already tough situation even more challenging, as the increased burden on medical staff's mental health may negatively affect their functioning and resilience [15–17].

Further, stigmatization will arouse emotions and trigger the stress response or reaction mechanism. Due to the global nature of the COVID-19 pandemic, stigmatization has become a psychosocial phenomenon with a larger scope and more influence [18]. At present, while worldwide public health is facing difficulties, studies on the social-emotional burdens caused by stigmatization have real-life significance; thus, it is important to test the existing theories against the background of this global public health and security crisis [19,20].

The stigma needs to be addressed rigorously by professionals and health care providers as well as authorities [1,20].

4.2. Social Distancing

Avoiding socializing, or physical distancing, is considered an important measure to combat infection. Health care workers are also obliged to physically distance themselves from their colleagues in order to protect each other, causing them to go without the necessary social support, especially in these challenging times. The results of numerous studies during the COVID-19 pandemic have shown that health care workers' relationships with family members and friends have changed. The measures of physical distancing and "lock down" have led to changes in social functioning, turning people towards their immediate family. The data obtained support the positive impact of the pandemic on the relations between close family members, especially parents and children [18–21]. In 2020, a survey of more than 4000 participants was conducted in Jordan, and the results suggested that the COVID-19 pandemic negatively affects the mental health of the Jordanian population, causing anxiety and depression in a significant portion of the population [22]. Social relationships and connections allow individuals to regulate their feelings, cope with stress, and remain resilient during stressful situations. In contrast, loneliness and social isolation exacerbate stress and often result in negative effects on mental, cardiovascular, and immune health [23].

4.3. Fear of Infection

Health care professionals working in a high-risk area (triage wards, inpatients, and intensive care units with COVID-19-positive patients) have a higher risk of exposure to infection. The outbreak of the pandemic changed the work scenarios of health care workers; they are directly responsible for the process of caring for patients both with and without COVID-19, must constantly wear personal protective equipment (which further complicates the implementation of medical procedures) [10,21], and lack specific treatment guidelines [24]. Wuhan showed that 88% of health care workers were exposed to COVID-19 infection [25]. Such a high risk of exposure to infection, care for patients, and fear of exposing their family members and loved ones to infection leads to fear, anxiety, and stress among health care workers, which can result in mental strain and the development of significant psychological problems [26–28]. A multicenter cross-sectional study of more than 1,000 Chinese health care workers recorded an exceptionally high proportion of de-

pression (50%), anxiety (45%), and insomnia (34%) [27]. In a another meta-analysis of 13 studies, a total of 33,062 respondents confirmed that a large number of health care workers had significant levels of anxiety, depression, and insomnia during the outbreak of the COVID-19 pandemic [28,29]. The prevalence rates of anxiety and depression were about 23%. A high proportion of health care workers reported mild symptoms of both depression and anxiety, while moderate and severe symptoms were less common [28–31]. Fear and anxiety appeared and decreased in the early stages of the outbreak, and depression, psychophysiological symptoms, and symptoms of post-traumatic stress appeared in the second stage and lasted for a long time, leading to a more severe picture of the situation [29,30]. Nurses in hospitals have shown higher levels of stress than other health care professionals because they are in direct and intensive contact with patients [31].

Kang et al. estimated the impact of the COVID-19 pandemic on the mental health of physicians and nurses in Wuhan, soon after the onset of the pandemic [32]. Interestingly, half of the health care population had received psychological support through materials available online or provided by media, one out of three had obtained paper-based psychological counselling (brochures, leaflets, or books), and approximately one out of five had received individual or group psychotherapy [32,33].

Those who had been placed in quarantine, worked in high-risk facilities, or had close contacts (friends or family members) affected by SARS-CoV-2 were at up to a three-fold higher risk of having severe post-traumatic stress symptoms [10].

4.4. Limitations

This study has a several limitations. The first limitation of this study is related to the relatively small sample size and the fact that it was conducted only in Croatia at the end of the first wave of the pandemic, when participants were already sensitized and had more information about the pandemic to protect against the spread of infection. Also, it was used only among nurses and no other health care workers.

The second limitation is related to the online convenient sampling method that was used in this study, which could result in a distribution asymmetry. We are aware of the limitations of this type of sampling, but we would like to emphasize that, at the time when the research was conducted, strict epidemiological measures of social distancing were present, and that was the reason why all research, including this one, was conducted online, on convenience samples.

The next source of bias is related to the applied methodology that disables determination of the constructive and predictive validity of the questionnaire. Our primary goal was to verify the applicability of the scale by testing specific stressors in nurses and to identify the factors underlying nurses' responses to the questions. Furthermore, as it was noted in the Methods section, this questionnaire is part of a broader study examining emotional responses of health care professionals working with infected patients during a pandemic. In future research, in addition to this questionnaire, we will also use other standardized scales, where the correlation between this scale and similar measures will be examined. Therefore, this research serves as a pilot study aimed to determine the justification for further use of this questionnaire for Croatian nurses working with infected patients.

Future research should include all categories of health care workers, verify the influence of public stigma on other groups in social public crisis events, and deeply explore different types of emotional arousal mechanisms for different groups.

5. Conclusions

This research conducted on nurses has proven that nurses as a profession are extremely prone to the development of burnout syndrome and various behavioral disorders and diseases. The COVID-19 pandemic further burdened nurses and all health care workers. Fear and avoidance of health care workers during the COVID-19 virus pandemic is a widespread problem throughout the world, but it is still not sufficiently recognized and can therefore have long-term consequences for the health of nurses and the health of other

health care professionals' families. One of the possible reasons for interventions to identify and prevent these problems is the lack of structured scales to measure it. The pandemic-related experiences scale of our nurses has shown good psychometric properties and can be applied in future research as a standardized measurement tool not only for nurses' but also other health care workers' experiences during the COVID-19 crisis or while working with other infectious patients.

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Data Availability Statement: The data presented in this study are available upon request of the respective author. Due to the protection of personal data, the data are not publicly available.

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Difference in Pandemic-Related Experiences and Factors Associated with Sickness Absence among Nurses Working in COVID-19 and Non-COVID-19 Departments

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Abstract: Background: The aim of this study is to determine the main variables associated with nurses' sickness absence (SA) and to improve the prediction of SA based on pandemic-related experiences. The second aim is to examine the differences between COVID-19 (CoV) and non-COVID-19 (non-CoV) nurses in levels of post-traumatic stress disorder (PTSD) symptoms, personality traits, coping strategies and professional stressors experienced. Methods: This historical prospective study enrolled 1305 nurses from the University Hospital of Split, Croatia. A total of 380 subjects participated in the study, 163 non-CoV and 217 CoV subjects. Nurses' pandemic-related experience questionnaires, Big Five Inventory (BFI), Post-traumatic Stress Disorder Checklist (PCL-5), Coping Inventory for Stressful Situations (CISS) and Occupational Stress Questionnaire, were used for evaluation. Results: Non-CoV nurses felt more fear of infection, were more socially distanced, had more PTSD symptoms and neuroticism and felt more stress due to public criticism and job requirements compared to CoV nurses; $p < 0.001$. The groups of SA users and non-SA users could be distinguished based on predictor variables in CoV and non-CoV nurses, with a correct classification of 84.8% vs. 79.1%. Conclusions: It was possible to predict the probability of using SA among nurses due to pandemic professional experience, personality traits and coping strategies.

Keywords: sickness absence; coping strategies; personality traits; COVID-19; nurses

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1. Introduction

The World Health Organisation (WHO) declared the COVID-19 pandemic in March 2020 due to the rapid spread of coronavirus globally [1]. It poses unique challenges, both due to the impact it has on health systems and the degree of personal risk it places upon those who work in healthcare, in particular on the front line in hospitals and long-term care facilities [2–4]. The pandemic has caused a large increase in the workload not only because of the sheer number of patients requiring treatment for illness, but also because of the need to do more due to the absence of colleagues who tested positive for coronavirus, in isolation or self-isolation due to close contact with infection or personal serious risk factors that could adversely affect the clinical outcome in the event of virus infection. It definitely represents a new challenge in the context of sick absence (SA) in the health system, in which there was already a shortage of staff even before the pandemic [4–7]. Nurses play a crucial role in providing health care and, as such, are the most exposed in this pandemic. At the same time, the shortage of nursing personnel severely affects the quality of medical services globally. This problem has been trending in most countries around the world even before this pandemic [7]. Another global challenge is SA in healthcare due to burnout syndrome (BOS), characterized by mental, physical and emotional exhaustion and fatigue,

depression, anxiety and PTSD, with increased prevalence of suicide among HCWs. The high prevalence of BOS among health care workers (HCWs) was widely reported even before this pandemic with a potentially negatively impact on the quality and safety of patient care [8,9]. In a meta-analysis of 13 included studies using the Maslach Burnout Inventory (MBI) scale, Gómez-Urquiza et al. found that around 30% of the included nurses working in intensive care showed burnout in each of the three subscales of the MBI [9]. Nurses are very susceptible to burnout due to the specific relationship between the patient and the caregiver. This relationship requires emotional involvement in which they need to deal with a variety of possible situations, including suffering, fear, aggression, or a lack of respect for their work [10]. Research and experience, to date, have shown that nurses are willing to sacrifice their own needs during the sudden natural disasters and epidemics/pandemics of infectious diseases to actively participate and make selfless contributions out of moral and professional responsibility [11]. Due to the high workload during those public emergencies, at the same time, nurses would be in a state of physical and mental stress and would feel isolated and helpless facing health threats and work pressure. Stress can also have a significant impact on nurses and their ability to perform tasks, as well as an impact on making bad professional decisions. Job performance can also be impaired by apathy, lack of concentration, anxiety and decreased motivation that can cause uncharacteristic errors that can lead to poor clinical outcome [11,12]. That is another reason why we need to use supportive coping strategies to reduce the amount of stress and prevent the onset of burnout syndrome. These parameters should be influenced by professional experience, education level and resources available in a social context, and are usually individualised [13,14]. On the other hand, nurses' health and patient outcomes might be compromised by long-lasting and continuous stress and inefficient coping strategies. We definitely need to better understand the needs and experiences of high-risk HCWs to be able to improve psychological support by using targeted interventions until the end of this pandemic or during similar disasters [15].

The health care system (HCS) in England recorded around 73,200 (18%) more SA days among nurses and health visitors in May 2021 than in May 2019. Over that time, the number of SAs taken for mental health reasons increased by 31% [16,17]. From a business perspective, due to increased workload, SA is an expensive issue affecting service delivery and quality due to staff shortages [18]. Therefore, it is critical to identify previous SAs among nurses so that future SAs may be predicted [19].

Because the HCS globally already struggles with thousands of vacancies, it is imperative to identify the factors resulting in staff SAs and to take steps to prevent morbidity and mortality among the staff responding to the COVID-19 pandemic [19–21].

The primary outcome of this study is to investigate whether nurses who worked in the COVID-19 department (CoV nurses) and nurses who did not work in the COVID-19 department (non-CoV nurses) differed in (a) pandemic-related experiences, (b) levels of post-traumatic stress disorder symptoms, (c) personality traits, (d) coping strategies and (e) professional stressors experienced.

Further, the secondary aim is to investigate the association between SA with pandemic/professional-related stressors and personal features (personality traits and coping strategies), as well as post-traumatic stress symptoms among nurses working at CoV and non-CoV departments, separately.

2. Materials and Methods

2.1. Ethical Approval

The study was approved by the Ethics Committee of the University of Split, School of Medicine (Reference: 003-08/20-03/0005; date of approval 16 November 2020) and by the Ethics Committee of the University Hospital of Split (Reference: 500-03/20-01/108; date of approval 30 October 2020) in full conformance with the principles of the Declaration of Helsinki for Good Clinical Practice (GCP).

2.2. Participants

This historical prospective study was conducted among 1305 nurses employed at the University Hospital of Split, Croatia, in December 2020.

Among them, 250 frontline nurses were reassigned to work in the hospital COVID-19 unit treating the most severe cases of patient with COVID-19 disease (Group 1), while 1055 were working in non-COVID-19 departments treating patients who were seeking hospital care for symptoms of diseases other than COVID-19 disease (Group 2) during the first pandemic wave. The groups were formed according to the answer to the question "Did you work at a COVID-19 department during the coronavirus pandemic?"

Inclusion criteria: nurses employed at the University Hospital of Split who worked during the first wave of the COVID-19 pandemic. Exclusion criteria: long-term sickness absences, especially during the pandemic's first wave, and incomplete forms.

The online survey link was sent to all 1305 participants via their official corporate email. The online form contained information on the purpose of the research study, guaranteed anonymity and asked for consent to participate in the research study. Pressing the "Agree" button was considered as consent to participate in the survey. This was followed by questions about sociodemographic characteristics and sickness absence from the beginning of the pandemic, followed by the questionnaires used in this study. After completing the form, participants had to press the "Submit" button to confirm their participation. The data were automatically recorded into an Excel spreadsheet. Only participants who completed the entire online form were eligible for further processing, while incomplete forms were not registered by Google forms. We set a two-week deadline to complete the survey. Two reminder emails were sent, the first after five days and the second after ten days, with an invitation to participate in the research study. The data were collected by the co-investigators, entered into an Excel spreadsheet and were coded and double-checked by the PI (the PI was the link between the data and code list). The data were stored in a protected computer by the researcher in accordance with the corporate policies and guidelines.

The sampling procedure and response rates are shown in Figure 1.

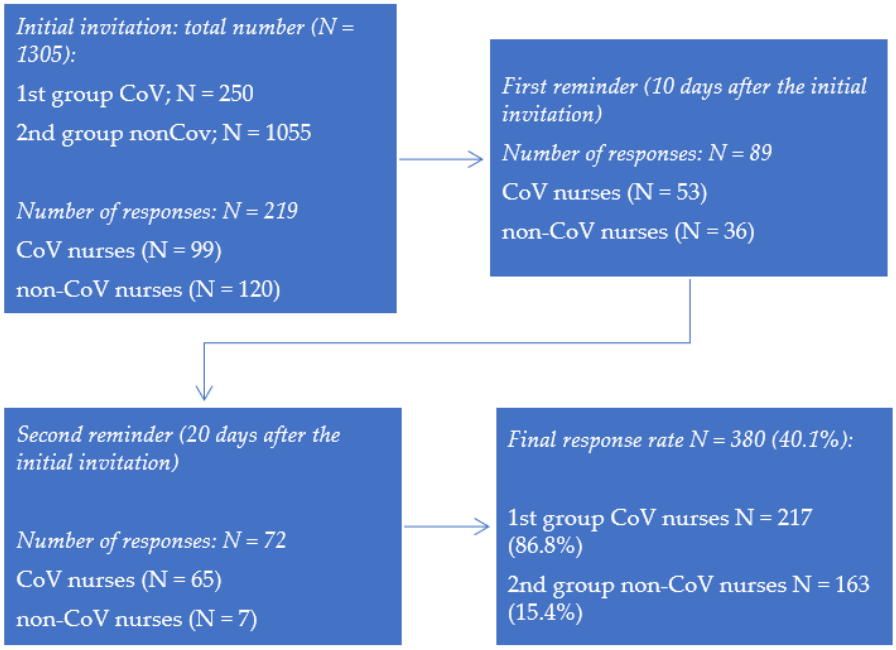

Figure 1. Flow chart of data collection and response rates.

2.3. Measures

2.3.1. Demographic Information

For the purpose of this research study, a general information questionnaire to collect the participants' demographic information was prepared.

2.3.2. Nurses' Pandemic-Related Experiences Questionnaire

The questionnaire consisted of nine statements to examine the personal experience of nurses working with COVID-19-positive patients during the first wave of the pandemic. The participants responded on a scale from 1 ("does not apply to me at all") to 5 ("fully applies to me"). The total score of each participant was expressed as the final sum of responses to each statement. The analysis of the main components performed with the Promax rotation method disclosed the three-factor structure of the questionnaire. The first subscale, "Stigmatization and misunderstanding", reflected feelings of stigma that nurses experienced while working with COVID-19 patients. The second subscale, "Social distancing", described actual or planned distancing/avoidant behaviours of nurses in order to protect significant others. The third subscale, "Fear of infection", described nurses' fears of infecting oneself or loved ones. The Cronbach's alpha coefficients vary between 0.81 and 0.88, indicating good internal reliabilities of all three subscales.

2.3.3. The Big Five Inventory (BFI)

The Big Five Inventory (BFI) [22] was used to assess five major dimensions of personality, namely, extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. The questionnaire consisted of 44 statements. the participants expressed their degree of agreement with each of the statements, on a scale from 1 to 5 (1—"completely disagree"; 5—"completely agree"). The score of the participants was determined by summing the estimates for the corresponding items of each dimension of the questionnaire, which allowed us to obtain the total score for the dimensions of the BFI. In spite of its brevity, the BFI does not compromise content coverage or good psychometric properties. The preliminary results of verifying the psychometric characteristics of the Croatian version of this questionnaire retained satisfactory psychometric characteristics [23].

2.3.4. Post-Traumatic Stress Disorder Checklist (PCL-5)

PCL-5 is a 20-item questionnaire for assessing post-traumatic symptoms in the last month according to the DSM-5 criteria [24]. For the purpose of this study, the participants estimated their reactions to COVID-19 exposure. They were asked to indicate the number on a scale from 0 ("not at all") to 4 ("extremely") referring to the worst event according to his/her own experience. The overall result ranges from 0 to 80, where a PCL-5 cut-off score between 31 and 33 is indicative of probable PTSD, while a score of 33 or higher is used to indicate a high level of PTSD. Previous research has found good psychometric properties and reliability of the PCL-5 [25].

2.3.5. Coping Inventory for Stressful Situations (CISS)

For the measurement of coping with stressful situations, the Croatian version of the Endler and Parkers' CISS [26] was used. The CISS consists of 48 items divided in 3 subscales (coping strategies) of 16 items scored from 1 ("not at all") to 5 ("always"), with a higher score indicating more frequent use of certain coping strategies (problem-oriented coping, emotion-oriented coping and avoidant coping). The possible range of responses on each scale can vary from 16 to 80. The internal consistency Cronbach's alpha in the Croatian version of the scale are, starting from above, 0.80, 0.82 and 0.75.

2.3.6. Occupational Stress Questionnaire

A questionnaire on stressors in the workplace of hospital health workers was made based on the standardized Occupational Stress Questionnaire [27] and preliminary research. The respondents were offered 37 stressors at work related to work organization, shift

work, professional advancement, education, professional requirements, interpersonal communication and communication of healthcare professionals with patients and the fear of danger and health hazards. The subjects rated their responses on a Likert scale with grades from 1 = "not stressful at all" to 5 = "extremely stressful". The factor analysis extracted six factors of relatively high reliability of the type of internal consistency (all Cronbach's α values greater than 0.7), i.e., workplace organization and financial issues; public criticism; dangers and harms at work; conflicts and communication at work; shift work; and professional and intellectual requirements.

Prior to the online test, all participants gave their informed consent regarding the data they submitted. They completed the questionnaire, which lasted approximately 20 min, on their own. The data obtained based on the nurses' responses to the scales of experience associated with the pandemic were used. Study participation was voluntary and completely anonymous and all who approached the survey answered all questions.

2.4. Strength of the Study

The data in Table 1 show that the expected minimum number of subjects for a test strength of 0.8 and 95% confidence interval was 2 × 162 (324) subjects in total for each observed group (dichotomous endpoint, two-independent sample study). A total of 380 subjects participated in the study, with non-CoV N = 163 and CoV N = 217 subjects.

Table 1. Display of study strength–sample size.

Group	Sample Size
Group 1	162
Group 2	162
Total	324
Group incidence 1	15%
Group incidence 2	85%
Alpha	0.05
Beta	0.2
Strength	0.8

2.5. Statistical Analysis

The data were recorded, sorted and prepared for analysis using the SPSS version 26.0 software package (IBM Corp., Armonk, NY, USA). The characteristics of the groups were described by descriptive parameters of frequency and percentages, as well as means and standard deviations. A t-test was used to examine differences between CoV and non-CoV nurses who worked in departments treating patients with SARS-CoV-2 during the first wave of the pandemic. Additionally, the differences between nurses who used sick leave and those who did not were also established using independent t-tests. Finally, for the purpose of identifying variables which separated nurses who used sick leave or not based on personality features and pandemic experiences, a discriminant analysis was used. The significance threshold was set at 5%.

3. Results

3.1. Differences in Pandemic Experiences, Psychological Characteristics and Psychological Symptoms

Table 2 shows that non-CoV nurses significantly felt more fear of infection, were more socially distanced, had more PTSD symptoms and neuroticism and felt more stress due to public criticism and job requirements than CoV nurses. On the other hand, avoidance strategies were more used by CoV nurses.

Table 2. Differences in pandemic experiences, psychological characteristics and psychological symptoms between nurses who worked in COVID-19 and non-COVID-19 departments.

Variables		N	M	SD	t	*p*
Nurses' Experiences						
Stigmatization and misunderstanding	CoV nurses	217	3.75	0.881	1.32	0.187
	Non-CoV nurses	163	3.62	1.02		
Socially distanced	CoV nurses	217	3.14	0.88	−2.24	0.026
	Non-CoV nurses	163	3.34	0.86		
Fear of infection	CoV nurses	217	3.81	0.96	−4.63	<0.001
	Non-CoV nurses	163	4.24	0.86		
Personality traits						
Extraversion	CoV nurses	217	3.769	0.572	1.32	0.186
	Non-CoV nurses	163	3.692	0.546		
Comfort	CoV nurses	217	4.070	0.478	−0.80	0.426
	Non-CoV nurses	163	4.113	0.539		
Conscientiousness	CoV nurses	217	4.349	0.516	0.99	0.325
	Non-CoV nurses	163	4.298	0.488		
Neuroticism	CoV nurses	217	2.19	0.631	−2.44	0.015
	Non-CoV nurses	163	2.38	0.79		
Openness	CoV nurses	217	3.524	0.524	0.53	0.594
	Non-CoV nurses	163	3.497	0.438		
PTSD symptoms						
PCL-5 in total	CoV nurses	217	22.216	15.242	−3.71	<0.001
	Non-CoV nurses	163	28.38	16.536		
Coping strategies						
Problem-oriented coping strategy	CoV nurses	217	3.910	0.529	0.81	0.42
	Non-CoV nurses	163	3.859	0.648		
Emotions-oriented coping strategy	CoV nurses	217	2.774	0.735	−1.64	0.10
	Non-CoV nurses	163	2.907	0.814		
Avoidance	CoV nurses	217	3.54	0.660	4.53	<0.001
	Non-CoV nurses	163	3.242	0.598		
Professional stressors						
Workplace organization and financial issues	CoV nurses	217	3.734	0.865	−0.70	0.483
	Non-CoV nurses	163	3.796	0.833		
Public criticism	CoV nurses	217	3.268	1.097	−2.37	0.018
	Non-CoV nurses	163	3.53	1.015		
Dangers and harms at work	CoV nurses	217	2.960	1.034	−1.15	0.251
	Non-CoV nurses	163	3.080	0.996		
Conflicts and communication at work	CoV nurses	217	3.260	0.968	−0.43	0.667
	Non-CoV nurses	163	3.309	1.164		
Shift work	CoV nurses	217	3.588	0.972	−0.53	0.600
	No	163	3.650	1.229		
Professional and intellectual requirements	CoV nurses	217	3.227	0.920	−2.36	0.019
	No	163	3.47	1.044		

3.2. Differences in Pandemic Experiences, Psychological Characteristics and Psychological Symptoms Regarding Use of Sick Leave

Table 3 shows the characteristics of CoV nurses with respect to the use of sick leave during the pandemic. Nurses who used SA had a more pronounced fear of SARS-CoV-2 virus infection and made less use of a problem-oriented coping strategy. According to personality traits, they were less open to experiences than nurses who did not use sick leave.

Table 3. Differences in pandemic experiences, psychological characteristics and psychological symptoms regarding use of sick leave separately for nurses who worked and did not work in COVID-19 departments.

Variable		Sick Leave *	N	Mean	SD	t	*p*
Stigmatization and misunderstanding	Non-CoV nurses	Yes	57	3.964	0.740		
		No	106	3.436	1.107	3.631	<0.001
	CoV nurses	Yes	53	3.712	0.866		
		No	164	3.766	0.887	−0.396	0.693
Socially distanced	Non-CoV nurses	Yes	57	3.438	0.769	0.101	
		No	106	3.292	0.898	0.877	0.28
	CoV nurses	Yes	53	3.094	1.015		
		No	164	3.158	0.830	−0.417	0.678
Fear of infection	Non-CoV nurses	Yes	57	4.570	0.467	0.061	
		No	106	4.066	0.961	0.933	<0.001
	CoV nurses	Yes	53	4.198	0.769		
		No	164	3.682	0.989	3.940	<0.001
Extraversion	Non-CoV nurses	Yes	57	3.618	0.558	0.740	
		No	106	3.732	0.538	0.052	0.21
	CoV nurses	Yes	53	3.792	0.475		
		No	164	3.761	0.601	0.385	0.701
Comfort	Non-CoV nurses	Yes	57	4.003	0.486	0.064	
		No	106	4.171	0.559	0.054	0.48
	CoV nurses	Yes	53	4.100	0.507		
		No	164	4.061	0.470	0.503	0.616
Conscientiousness	Non-CoV nurses	Yes	57	4.113	0.474	0.062	
		No	106	4.39	0.47	0.05	<0.001
	CoV nurses	Yes	53	4.304	0.537		
		No	164	4.364	0.509	−0.720	0.473
Neuroticism	Non-CoV nurses	Yes	57	2.736	0.804	0.106	
		No	106	2.175	0.722	0.070	<0.001
	CoV nurses	Yes	53	2.121	0.705		
		No	164	2.208	0.606	−0.806	0.423
Openness	Non-CoV nurses	Yes	57	3.345	0.402	0.053	
		No	106	3.579	0.437	0.042	<0.001
	CoV nurses	Yes	53	3.243	0.577		
		No	164	3.614	0.473	−4.240	<0.001
PCL-5 in total	Non-CoV nurses	Yes	57	32.789	14.641	1.939	
		No	106	26.009	17.068	1.657	0.01
	CoV nurses	Yes	53	19.377	18.337		
		No	164	23.134	14.039	−1.368	0.176

Table 3. *Cont.*

Variable		Sick Leave *	N	Mean	SD	t	*p*
Problem-oriented coping strategy	Non-CoV nurses	Yes	57	3.577	0.642	0.085	
		No	106	4.011	0.601	0.058	<0.001
	CoV nurses	Yes	53	3.63	0.58		
		No	164	4.000	0.481	−4.188	<0.001
Emotions-oriented coping strategy	Non-CoV nurses	Yes	57	3.040	0.723	0.958	
		No	106	2.836	0.853	0.082	0.11
	CoV nurses	Yes	53	2.668	0.772		
		No	164	2.809	0.722	−1.169	0.246
Avoidance	Non-CoV nurses	Yes	57	3.060	0.506	0.067	
		No	106	3.340	0.623	0.060	<0.001
	CoV nurses	Yes	53	3.497	0.520		
		No	164	3.548	0.700	−0.568	0.571
Workplace organization and financial issues	Non-CoV nurses	Yes	57	4.033	0.728	0.096	
		No	106	3.669	0.861	0.083	0.01
	CoV nurses	Yes	53	3.838	0.678		
		No	164	3.701	0.9165	1.170	0.244
Public criticism	Non-CoV nurses	Yes	57	3.918	0.862	0.114	
		No	106	3.316	1.033	0.100	<0.001
	CoV nurses	Yes	53	3.154	0.912		
		No	164	3.304	1.151	−0.978	0.330
Dangers and harms at work	Non-CoV nurses	Yes	57	3.242	0.988	0.130	
		No	106	2.993	0.994	0.965	0.13
	CoV nurses	Yes	53	3.037	1.034		
		No	164	2.935	1.036	0.629	0.531
Conflicts and communication at work	Non-CoV nurses	Yes	57	3.554	1.082	0.143	
		No	106	3.177	1.190	0.115	0.04
	CoV nurses	Yes	53	3.252	0.878		
		No	164	3.263	0.997	−0.074	0.941
Shift work	Non-CoV nurses	Yes	57	3.463	1.321	0.175	
		No	106	3.750	1.171	0.113	0.17
	CoV nurses	Yes	53	3.645	1.032		
		No	164	3.570	0.954	0.465	0.643
Professional and intellectual requirements	Non-CoV nurses	Yes	57	3.886	0.985	0.130	
		No	106	3.245	1.010	0.098	<0.001
	CoV nurses	Yes	53	3.367	0.824		
		No	164	3.181	0.946	1.379	0.171

* Using sick leave after June 2020.

Further, Table 3 also shows the differences between non-CoV nurses with respect to whether they did or did not use sick leave. The results show that nurses who used sick leave during the first wave of the pandemic were more afraid of infection, had more PTSD symptoms and felt more stigmatized and misunderstood than nurses who worked all the time. Regarding their personality, they showed less pronounced tendency towards altruism and friendship, less conscientiousness, were less open minded and expressed more neuroticism. Further, they used less effective stress management strategies such as problem oriented coping. Finally, they had greater sensitivity to professional stressors such

as organizational problems in the workplace, public criticism, conflicts and communication problems, and professional demands during the pandemic.

In order to identify variables in nurses who used sick leave or not based on pandemic-related experiences, levels of PTSD symptoms, personality traits, coping strategies and experiencing professional stressors among CoV and non-CoV nurses, a discriminant analysis was implemented. Nurses' experiences, personality traits, PTSD symptoms, coping strategies and professional stressors were used as independent variables, while using sick leave was treated as an outcome.

3.3. Canonical Correlation Coefficients and Eigenvalues

Both canonical discriminant functions (working at CoV and non-CoV departments separately) were statistically significant ($p < 0.001$) (Table 4), indicating that the groups of sick leave users and non-sick leave users could be distinguished based on independent variables in CoV and non-CoV nurses.

Table 4. Standardized canonical discriminant function coefficients.

	CoV Nurses	Non-CoV Nurses
	Function	**Function**
Stigmatization and misunderstanding	−0.007	0.557
Socially distanced	0.232	−0.471
Fear of infection	−0.540	0.446
Extraversion	−0.083	0.160
Comfort	−0.116	0.277
Conscientiousness	−0.023	−0.139
Neuroticism	0.410	0.670
Openness	0.561	0.670
PCL-5 total	−0.080	−0.223
Problem-oriented coping strategy	0.646	−0.203
Emotions-oriented coping strategy	0.014	−0.495
Avoidance	−0.283	−0.102
Workplace organization and financial issues	−0.365	−0.517
Public criticism	0.546	0.984
Dangers and harms at work	−0.080	0.272
Conflicts and communication at work	−0.185	−0.144
Shift work	0.245	−0.720
Professional and intellectual requirements	−0.298	0.294

Standardized beta coefficients were given for each variable in the discriminant (canonical) function showing the variable's unique contribution to the discrimination between groups (Table 4). It is evident that the greatest contribution for CoV nurses departments had problem-oriented coping, openness, public criticism, fear of infection and organizational problems. Regarding non-CoV nurses, the greatest contribution was provided by neuroticism, stigmatization and misunderstanding, organizational problems, social distancing and fear of infection.

In other words, if CoV nurses preferred a problem-oriented approach in coping with stress, were more open to life experiences and less sensitive to criticism and organizational problems in their workplace and had less fear of infection, the possibility of using SA was less likely. On the other hand, if non- CoV nurses scored lower on neuroticism, experienced less stigmatization during the pandemic, practiced less social distancing from close ones,

had less fear of infection by SARS-CoV-2 and reported less organizational problems, they probably used sick leave less frequently.

Table 5 shows that, due to independent variables, 49.1% were correctly classified in the group of CoV nurses who used sick leave vs. 96.3% not using sick leave. The absolute correct classification was 84.8%. Further, 62.2% non-CoV nurses were correctly classified in the group who used sick leave vs. 87.7% not using sick leave. The total percentage of correct classification among non-CoV nurses was 79.1%.

Table 5. Number and percentage of correct identification of nurses who used sick leave.

		Using Sick Leave after June 2020	Predicted Group Membership		Total
			YES	NO	
CoV nurses	Count	Yes	26	27	53
		No	6	158	164
	%	Yes	49.1	50.9	100
		No	3.7	96.3	100
Non-CoV nurses	Count	Yes	36	21	57
		No	13	93	106
	%	Yes	63.2	36.8	100
		No	12.3	87.7	100

In other words, it was possible to classify nurses according to the possibility of using sick leave regarding pandemic professional experience, personality traits and coping strategies and this classification was much more accurate than random guessing.

4. Discussion

Health care systems around the world have borne a heavy burden due to the rapid spread of COVID-19 disease [2]. Particular pressure was put on the medical staff on the front line, especially among nurses who were at greater risk of infection [4,28,29]. During the pandemic, they were more stressed because they faced a higher workload and intensity of their work, as well as being forced to implement new protocols at the same time. The results of our study showed that non-CoV nurses felt more fear of infection and were more socially distanced, had more PTSD symptoms and neuroticism and felt more stress due to public criticism and job requirements than CoV nurses. Our findings are in line with the results of a recently published study which showed that vicarious traumatization scores for front-line nurses, including scores for physiological and psychological responses, were significantly lower than those of non-front-line nurses ($p < 0.001$) [30].

Studies conducted in China [31] and in Croatia [32] have more often reported an increase in job satisfaction among employees involved in the direct care of COVID-19 patients, which is in line with our results mentioned in the previous paragraph. This may be a consequence of the public recognition of CoV nurses in relation to nurses who did not work with COVID-19 positive patients and, as such, remained under the public radar, often caring for acute patients and life-threatening patients. In addition, due to the redistribution of part of the nurses to the COVID-19 hospital, there was a lack of nurses and they could not use their vacations and, in public and even in hospital circles, they were seen as spared [32].

Our findings indicate a much higher response of CoV nurses than non-CoV nurses (86.8% vs. 15.4%), which indicates a greater motivation of CoV nurses to investigate factors that contribute to the psychological adjustment of nurses to the working conditions during the pandemic. It is possible that closer (physical and emotional) contact with infected patients reflects the desire of CoV nurses to find more efficient ways to adapt to these new circumstances as well as to improving care for infected patients. In addition, this finding may reflect different coping strategies of nurses in the two groups; CoV nurses tended to

actively seek ways to address problems, while non-CoV nurses were more likely to use less effective strategies, such as avoiding or using SA during crises. On the other hand, this finding prevents the possibility of generalizing the findings due to the large difference in the response of nurses in both groups.

Mental health research since the beginning of the COVID-19 pandemic in the Republic of Croatia has consistently indicated the existence of mental disorders in health professionals and the types of difficulties identified have been very similar to global trends [33,34]. Based on the findings to date, risk and protective factors that contribute to the mental health outcomes of health professionals during the COVID-19 pandemic have been identified [35,36]. Although multinational studies conducted during the COVID-19 pandemic have been largely based on online research using appropriate samples and various self-assessment measurement instruments, the results consistently point to the negative impact of the COVID-19 pandemic on the psychological well-being of the general population and health workers in particular [36,37]. During the COVID-19 pandemic, health workers have adapted, innovated and accelerated work to meet the needs of patients and the community, resulting in their congestion and a significant extension of time spent at work [38]. As a result, they have had higher levels of anxiety, depression, PTSD and burnout since the beginning of the pandemic [35]. Further, the mental needs of health professionals may change over time, depending on the circumstances of work and life generally. In the early phase of such crisis situations, HCWs try to give more priority to basic human needs such as physical safety and rest. On the other hand, at its peak, they are more focused on work and support of colleagues [39]. Recently published studies on mental health outcomes among health care workers during pandemics, including Severe Acute Respiratory Syndrome Coronavirus-2 (SARS), Middle East Respiratory Syndrome (MERS), Ebola and COVID-19, as well as burn out syndrome, suggested that healthcare workers exposed to virus-related work are 1.7 times more likely to develop psychological distress and PTSD than non-exposed workers [40,41]. Moreover, even two years after the end of the SARS pandemic, 30% of health professionals with high levels of exposure to SARS patients continued to report high levels of emotional exhaustion. Compared to estimates of previous pandemics from 2002 to 2020, it was found that, from May 2019 to March 2021, the COVID-19 pandemic caused similar levels of anxiety and even exceeded the rates of depression and PTSD in health workers in relation to all past pandemics [28,42–44]. This is in contrast with our results, which showed more fear, stress and PTSD symptoms among non-CoV nurses. This can be explained by the fact that, during the first wave of the pandemic, there was lack of personal protective equipment, especially in non-COVID-19 departments, which could have affected the nurses' mental health [44]. In non-COVID-19 departments, nurses used only medical masks without protective visors, overalls and other protective equipment to work with COVID-19 patients; thus, they were considered exposed to possible contamination of asymptomatic COVID-19 patients [32]. Further, in a cross-sectional study, Arnetz et al. found that the lack of protective equipment was the worst factor impacting the mental health of HCWs, especially nurses who reported more symptoms of depression, anxiety and PTSD [45].

Generally, SA is an area of concern in nursing globally due to lack of staff, even more now during the pandemic [18]. The shortage of health staff has proven to be a major indicator for SA among front-line staff as well as fear of the disease, stress, anxiety and stigmatization [46–49]. Those SA predictors definitely differ from the pre-COVID-19 ones, such as satisfaction, commitment and leadership style [7,8]. In England, compared to the time before the pandemic, the number of full-time equivalent (FTE) days lost for mental health reasons has increased by 31.4% and days lost due to chest and respiratory problems have increased by 52.5% as well as for headaches or migraine, by 51.9% [16,50]. The most common reason for staff sickness remains anxiety, stress or depression with negative implications for both the employee and the employer. Future sick leaves were clearly associated with previously prolonged SA [51]. Thus, it is critical to identify the antecedents of SA among nurse staff. For instance, Roelen et al. tried to examine SA among

HCWs and found that SA episodes in the past year predicted approximately 25% of future prolonged SA and 30% within two years [52]. One or multiple personal and occupational factors increase the risk of future SA [7]. Personal demographic variables include age and work experience, job role/duties, history of sick leaves, mild aches and personality traits, while occupational factors include working environment (e.g., hospital or long-term care facilities), shift work and unplanned shifts, the organization's safety culture and job support among employees and management. Our results showed that nurses who used SA during the first wave of pandemic, just as non-CoV nurses, felt more fear of infection and had more PTSD symptoms but also were more stigmatized and misunderstood. Further, regarding their personality, they showed less pronounced tendency towards altruism and friendship, less conscientiousness, were less open minded and expressed more neuroticism. They also used less effective stress management strategies such as problem-oriented coping. Accordingly, employers should definitely keep records regarding SA to be able to better and timely support their staff and to reduce the risk of future sick leaves. The measures that can be taken include providing and updating knowledge about COVID-19, offering psychological support, strengthening training on professionalism and reducing the number of stressors [53,54].

In line with that, due to independent variables, our analysis showed that 49.1% of nurses were correctly classified in the group of CoV nurses who used sick leave vs. 96.3% not using sick leave. The absolute correct classification was 84.8%. Further, 62.2% of non-CoV nurses were correctly classified in the group who used sick leave vs. 87.7% not using sick leave (Table 5). The total percentage of correct classifications among non-CoV nurses was 79.1%.

Limitations

There are few limitations of this study. First, our respondents were from only one hospital with a considerably low response rate from non-CoV nurses; therefore, the generalisation of our results has yet to be verified in larger multicentric studies. Secondly, we are also aware of the disadvantages of self-administered questionnaires which may limit the depth of the nurses' experiences. Future research should increase the response of non-CoV nurses using a different sampling methodology (e.g., send more research reminders). It might be possible to get a better understanding of the COVID-19 impact on clinical practice by interviews with nurses or adding open-ended questions. In addition, in future studies, the follow-up on the short-term and long-term psychological impacts of epidemics need to be investigated.

5. Conclusions

Our non-CoV nurses experienced significantly more fear of infection and were more socially distanced, had more PTSD symptoms and were more stressed by public criticism and professional job requirements than CoV nurses during the first wave of the COVID-19 pandemic. We found that it was possible to classify nurses according to the possibility of using sick leave regarding pandemic professional experience, personality traits and coping strategies with great accuracy. Hospital management and nurse leaders need to be aware of the importance of psychological support and counselling during this pandemic to reduce their intention to take sick leave and prevent burnout, thus ensuring the sustainability of health services globally.

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The Impact of Sociodemographic Characteristics on Coping Strategies Used by Nurses Working at COVID and Non-COVID Hospital Departments during COVID-19 Pandemic: A Cross-Sectional Study

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Abstract: Background: The aim of our study was to compare coping strategies applied by nurses working during the COVID-19 pandemic at COVID-19 (CoV) and non-COVID-19 (non-CoV) hospital departments with regards to their sociodemographic characteristics in order that the system can provide them better support in future similar situations. Methods: A total of 380 out of 1305 nurses participated in the survey during December 2020. Coping Inventory for Stressful Situations (CISS) was used. Stepwise regression analysis was used to determine the interaction between sociodemographic characteristics and coping strategies. Results: The CoV married nurses (62.2%) used problem- ($p = 0.010$) and emotion- ($p = 0.003$) focused coping more and avoidance coping less ($p = 0.007$). CoV nurses with master's degrees (11.1%) used both problem- and emotion-focused coping less ($p < 0.01$), and older nurses used emotional coping more than the younger nurses ($p = 0.027$), whereas younger nurses used more avoidance coping ($p < 0.01$). CoV nurses without children (41%) used avoidance strategies more than nurses who had 2–3 children ($p < 0.001$). Among non-CoV nurses, less use of emotional coping was recorded in nurses with master's degrees (4%) than in those with a high school diploma (44.2%) ($p = 0.002$). Avoidance coping was also used more by married non-CoV nurses (79.1%) ($p < 0.001$) and those without children ($p < 0.001$). Conclusions: Sociodemographic factors such as working experience, age, level of education and marital status influenced chosen coping strategies during the health crisis.

Keywords: COVID-19 pandemic; nurse; coping strategies; sociodemographic factors

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1. Introduction

Since the World Health Organization (WHO) declared the severe acute respiratory syndrome coronavirus 2 (SARS-Cov2) pandemic on 11 March 2020 that caused COVID-19, healthcare workers (HCW) at the forefront have suffered enormous pressure, causing their physical and mental exhaustion [1]. Long work shifts, high risk of infection, lack of specific skills and protective equipment, frustrations, stigmatization and concern about spreading the virus to their families definitely compromised their health with a high prevalence of burnout syndrome among them [2–4]. According to studies in the first months of the pandemic, between 71% and 89% of health workers that were in high-risk situations had suffered psychological symptoms [4–6].

Among HCW, nurses form the largest group worldwide and the quality of services provided by them decisively affects the efficiency of the health care system and largely determines the satisfaction level of the patients [7]. The same situation is true for Croatia, with approx. 41332 registered nurses, which make up almost 60% of the total number of

HCW. Unfortunately, Croatia has not yet reached the European standard for the number of nurses per 100,000 inhabitants, and there is a continuous shortage of them on the market. It is assumed that there are 4000 nurses needed in the Croatian health care system [8]. The crucial role of nurses was also noticed during previous pandemics such as Severe Acute Respiratory Syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV) and Influenza A (H1N1) [9,10].

This is also emphasized in the International Council of Nurses (ICN) report which says that nurses worldwide are currently experiencing a psychological trauma, which may ultimately cause a direct threat to the nursing profession and health care systems [11]. The ICN admits that stress experienced during the COVID-19 pandemic affects more than 50% of American nurses; 49% of Brazilian nurses report anxiety and 25%, depression; 60% of Chinese nurses feel exhausted, and 90% suffer from anxiety; Spanish nurses reported symptoms of anxiety and growing burnout; and 40% of Israeli nurses were also afraid of providing care for COVID-19 patients [12].

The COVID-19 pandemic had more than an impact on nurses' emotions; their coping strategies have also undergone a change, leading them to adopt more efficient coping strategies to prevent the effect on their mental health [12,13]. Coping strategies by definition represent behavioral and cognitive tactics used to manage crises, conditions and demands that are appraised as distressing. Endler & Parker identify three styles of coping: problem-focused (making efforts to solve the problem), emotion-focused (concentrating on oneself and one's own emotional experiences) and avoidance-oriented (avoiding the problem by engaging in substitute tasks or seeking social contacts) [14].

A study done before this pandemic with Polish nurses showed that they usually chose active coping, planning, self-distraction, seeking emotional support, positive reframing and development [12]. Another study also done before the pandemic among Polish nurses with the use of a multidimensional inventory to measure coping with stress (COPE) showed that active coping and support seeking strategies were dominant in everyday practice [15].

On the other hand, a study carried out in China at the beginning of the pandemic showed that nurses displayed quite intensive reactions to the crisis they were experiencing, concentrating on problem-focused strategies rather than on emotions [16].

Coping strategies are usually individualized and influenced by eternal factors such as cultural and workplace context and by individual components such as personal experiences, education levels and resources available to them in a social context [13,17–19].

The aim of this study was to compare coping strategies applied by nurses working at COVID-19 (CoV) and non-COVID-19 (non-CoV) hospital departments regarding their sociodemographic characteristics during the first wave of the pandemic. Further, it was aimed at investigating the contribution of sociodemographic characteristics to the use of coping strategies among nurses working at CoV and non-CoV departments, respectively.

We hope that the results will help to define which groups of nurses are more exposed to stress and thus save them from burnout in similar crises.

2. Materials and Methods

2.1. Ethical Approval

The Ethics Committee of the University Hospital of Split (Ref.: 500-03/20-01/108; approval date 30 October 2020) and the Ethics Committee of the School of Medicine at the University of Split (Reference: 003-08/20-03/0005; approval date 16 November 2020) confirmed that the study was fully in line with the principles of the Helsinki Declaration on Good Clinical Practice (GCP) and approved its implementation.

2.2. Participants and Data Collection

A correlation cross-sectional design was used in this study due to data collection in a single time point. It was conducted among nurses (n = 1305) employed at the University Hospital of Split, Croatia, in December 2020. Inclusion criteria: nurses employed at University Hospital of Split who worked during the first wave of the COVID-19 pandemic.

Exclusion criteria: use of sick leave and maternity leave during the first wave of the pandemic and incomplete forms.

The link for the online survey was sent to the official e-mail addresses of all 1305 nurses. The online form contained clear instructions to the respondent on the purpose of the research, the anonymity of the research participants was emphasized and it was stated that they answered the questions honestly. It was stated that they need approximately 20 min to participate and that only fully completed questionnaires will be accepted. Pressing the "I agree" button was considered consent to participate in the survey. This was followed by questions dealing with demographic and social characteristics (gender, age, education, marital status, financial status), workplace during the COVID-19 pandemic (with patients infected or not infected with SARS-CoV-2 virus) and working experience in the nursing profession (monthly number of working hours, and standardized tools). After filling out the form, participants had to press the "Submit" button to confirm their participation. The data is automatically saved to an Excel spreadsheet. Google Forms does not register incomplete forms. A two-week deadline to complete the survey was set. Two reminder emails were sent, the first after five days and the second after ten days, with an invitation to participate in the research. The data in the Excel spreadsheet was coded by the researchers and re-checked by the PI (PI is the link between the data and the codebook).

Of the 1305 nurses, 380 fully completed the online survey so the response rate was 29.1%. They were divided into two groups according to the answer to the question "Did you work in the COVID-19 department during the COVID-19 pandemic?" The sampling procedure and response rates are shown in Figure 1.

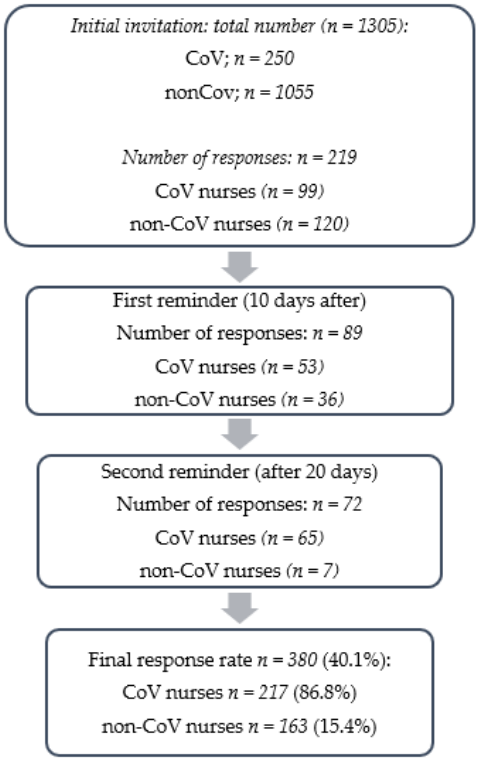

Figure 1. Flow chart of the study.

2.3. Study Instruments

Coping Inventory for Stressful Situations (CISS)—In this research, the Croatian version of Endler's and Parkers' CISS [20] was used for the purpose of measuring coping in stressful situations. CISS consists of 48 tasks divided into three subscales (coping strategies; problem-oriented, emotion-oriented and avoidance-oriented). Problem-oriented coping is defined as solving a stressful situation. Emotion-oriented coping is defined as focusing on reducing feelings of stress and concentrating on one's own feelings, whereas avoidance

refers to behaviors aimed at avoiding coping with stressful situations [21]. Each subscale consists of 16 statements to which respondents respond with a score from 1 ("generally") to 5 ("always"). The possible range of responses on each scale can vary from 16 to 80, and a higher score indicates more frequent use of certain coping strategies. The internal consistency of Cronbach's alpha in the Croatian version of the scale starts from above 0.80, 0.82 and 0.75 [20].

In the research of Grgin, Sorić and Kale on the sample of teachers (1994), the original three-factor structure was not completely confirmed [22]. Whereas the first two factors (problem-oriented and emotion-oriented coping) correspond to the original factors, the third extracted factor corresponded to the part of the original factor called Social Diversion, whereas the second part—Distraction—was not confirmed. The Cronbach-alpha coefficients of the obtained three subscales were satisfactorily high (0.85, 0.79 and 0.71). In other research conducted on a student sample [23], four factors were obtained using CFA, i.e. the factor structure of the questionnaire reported by the authors was replicated. Based on this, four subscales were formed to measure styles: problem-oriented coping, emotion-oriented coping, distraction, and social diversion. The internal reliability coefficients of the Cronbach alpha for each scales were 0.80, 0.82, 0.73 and 0.76. Due to the relatively high and significant correlation between scores on the distraction and social diversion subscales, Endler and Parker treat both subscales as one that measures the avoidance-coping strategy. After the formation of such a unique scale, Cronbach's alpha in the Croatian sample was 0.80. The adapted scales also had satisfactory test-retest reliability coefficients of 0.60 for the problem-oriented subscale, 0.61 for the emotion-oriented subscale and 0.71 for the avoidance-oriented subscale.

2.4. The Power of Study

The expected minimum number of subjects for the test power of 0.8 and a 95% confidence interval was a total of 2 × 162 (324) subjects for each observed group (dichotomous endpoint, study of two independent samples). A total of 380 respondents participated in the study; CoV—n = 217 subjects and non-CoV—n = 163 subjects.

2.5. Outcomes of the Study and Hypotheses

The main outcome of the study is to identify the relationship between demographic characteristics and coping strategies during a pandemic between the nurses who worked in the CoV department and nurses who worked in the non-CoV departments.

The hypotheses of the study were as follows:

Hypothesis 1 (H1). *More efficient coping strategies (problem-focused and emotion-focused) will be used by nurses employed at both CoV and non-CoV departments who are older, not married, have no children, have more working experience and have no professional experience.*

Hypothesis 2 (H2). *Older age, more professional experience, single, childless and higher education will predict more efficient (problem-focused and emotion-focused) coping in nurses working at CoV and non-CoV departments.*

Hypothesis 3 (H3). *Younger age, less professional experience, married, have children and less nursing education will contribute to more use of avoidance-coping strategies in nurses working at CoV and non-CoV departments.*

2.6. Statistical Analysis

The data were analyzed using Statistical Package for Social Sciences software, version 21 (IBM SPSS Corp, Armonk, NY, USA) for data statistics. Average values of variables were described using the mean (M) and standard deviation (SD). After the descriptive statistical analyses, the t-test or one-way ANOVA with Tukey's honest significance test (HSD) was used to examine any inter-group differences in coping strategies across the

nurses' sociodemographic variables. The t-test was used to determine whether two groups within a nominal variable (marital status) were statistically different from each other, whereas ANOVA was used to explore whether three or more groups within nominal variables (age, professional experience, number of children and nursing education level) were statistically different from each other. First-order correlations among all variables were explored using the Pearson correlation coefficient. Stepwise regression analysis based on Pearson correlation coefficients was used to determine the interaction between sociodemographic characteristics and coping strategies wherein demographic variables were used as predictor variables, whereas coping strategies were used as a criterion. Using of the stepwise regression enabled testing the addition of each predictor variable using a chosen model fit criterion, adding the variable whose inclusion gives the most statistically significant improvement of the fit and repeating this process until none improves the model to a statistically significant extent. Among the demographic variables, marital status, number of children and educational level were treated as nominal variables, whereas age was treated as a continuous variable. With respect to marital status, participants were divided in two groups comprising those who were married or not married at the time of the research. p-values of less than 0.05 were considered statistically significant. There were no missing data in data set.

3. Results

The first group included a sample of nurses working at a CoV department at the time of the research (n = 217). Most of participants were women (89.9%), aged 33.2 years, who reported an average of 11.6 years of working experience. Most of them were married (62.2%), whereas 30.9% were single or divorced (6.9%) and had no children (41%), and others had one (20.9%) or two (29%) and three (9.2%) children. An equal number of nurses had a high school diploma (44.2%) or a bachelor degree (44.7%), and the least number had a master's degree (11.1%).

The second group consisted of 163 nurses of both genders (96.3% female), aged 42.1 years, who were working in non-CoV departments at the time when the research took place. On average, the participants in this group had 21 years of working experience. Similar to their counterparts working in CoV departments, most of them were married (79.1%), whereas others were single (12.3%) or divorced (8.6%) and have mostly two (41.7%) children. There was a higher prevalence of nurses with a high school diploma (44.2%) or a bachelor's degree (52.1%), and less than 4% had a master's degree (Table 1).

Table 1. Demographic data of the nurses.

Characteristics		CoV Department (n = 217)	Non-CoV Department (n = 163)	Total (n = 380)
Age (years)		33.15 ± 9.12	42.13 ± 9.53	37.00 ± 10.30
Gender	Female	195 (89.9%)	157 (96.3%)	352 (92.6%)
	Male	22 (10.1%)	6 (3.7%)	28 (7.4%)
Working experience (years)		11.59 ± 7.80	21.00 ± 9.68	15.63 ± 9.82
Marital status	Not married	67 (30.9%)	20 (12.3%)	87 (22.9%)
	Married	135 (62.2%)	129 (79.1%)	264 (69.5)
	Divorced	15 (6.9%)	14 (8.6%)	29 (7.6%)
	Widowed	0 (0%)	0 (0%)	0 (0%)
Number of children	0	89 (41.0%)	31 (19.0%)	120 (31.6%)
	1	45 (20.7%)	32 (19.6%)	77 (20.3%)
	2	63 (29.0%)	68 (41.7%)	131 (34.5%)
	3	20 (9.2%)	32 (19.6%)	52 (13.7%)
Education degree	High school	96 (44.2%)	72 (44.2%)	168 (44.2%)
	Bachelor's degree	97 (44.7%)	85 (52.1%)	182 (47.9%)
	Master's degree	24 (11.1%)	6 (3.7%)	30 (7.9%)

Abbreviations: CoV—COVID-19 department; Non-CoV—Non-COVID-19 department.

Testing the differences between sociodemographic characteristics and the use of coping strategies among CoV nurses (Table 2) indicated that CoV nurses differed from each other in the use of all coping strategies with regard to marital status and education. The independent sample t-test found that married nurses used more problem- (p = 0.010) and emotion- (p = 0.003) focused coping and less avoidance coping (p = 0.007) in relation to those who were not married. Multiple post-hoc comparisons indicated that the nurses with master's degrees used both problem- and emotion-focused coping significantly less than the nurses in other educational groups ($p < 0.001$), whereas the nurses with a high school diploma used avoidance coping significantly more than their colleagues with bachelor's degrees (p = 0.031).

Table 2. Differences in coping strategies regarding sociodemographic characteristics in CoV and non-CoV nurses.

			CoV Department				Non-CoV Department			
Coping Strategies			**Mean**	**SD**	**F/t**	***p***	**Mean**	**SD**	**F/t**	***p***
Problem-focused coping	Age (years)	22–29	3.952	0.544	1.469	0.224	3.631	0.752	2.307	0.079
		30–39	3.812	0.528			3.681	0.803		
		40–49	3.920	0.579			3.969	0.523		
		≥50	4.067	0.161			3.899	0.642		
	Professional experience (years)	0–5	3.879	0.469	3.430 *	0.018	3.400	0.559	2.193	0.091
		6–15	4.026	0.556			3.882	0.656		
		16–25	3.732	0.574			3.961	0.643		
		≥26	3.867	0.184			3.783	0.639		
	Marital status	Yes	4.012	0.559	2.593 **	0.010	3.905	0.630	0.933	0.352
		No	3.827	0.491			3.810	0.668		
	Number of children	0	4.016	0.556	2.062	0.106	3.755	0.636	0.544	0.653
		1	3.855	0.460			3.858	0.525		
		2	3.828	0.521			3.927	0.706		
		3	3.823	0.544			3.821	0.657		
	Nursing educational level	High school	3.922	0.487	11.989 ***	0.000	3.791	0.692	0.858	0.426
		Bachelor degree	4.012	0.559			3.905	0.629		
		Master Degree	3.450	0.283			4.044	0.0344		
Emotion-focused coping	Age (years)	22–29	2.668	0.602	2.762 *	0.043	2.794	0.446	1.057	0.369
		30–39	2.778	0.929			3.086	0.638		
		40–49	2.832	0.717			2.814	0.751		
		≥50	3.223	0.210			2.982	1.105		
	Professional experience	0–5	2.727	0.539	0.762	0.517	2.844	0.273	0.254	0.859
		6–15	2.810	0.822			2.955	0.663		
		16–25	2.704	0.853			2.948	0.683		
		≥26	3.014	0.404			2.833	1.0856		
	Marital status	Yes	2.939	0.706	3.007 **	0.003	2.86	0.776	−0.785	0.433
		No	2.642	0.735			2.96	0.856		
	Number of children	0	2.694	0.707	1.040	0.376	2.724	0.551	1.241	0.297
		1	2.861	0.679			3.0293	0.749		
		2	2.864	0.741			2.991	0.91		
		3	2.659	0.945			2.787	0.86		
	Nursing educational level	High school	2.747	0.671	9.971 ***	0.000	3.049	0.826	6.241	0.002
		Bachelor degree	2.939	0.706			2.86	0.776		
		Master Degree	2.224	0.841			1.896	0.355		

Table 2. *Cont.*

Coping Strategies			CoV Department				Non-CoV Department			
			Mean	SD	F/t	*p*	Mean	SD	F/t	*p*
Avoidance coping	Age	22–29	3.848	0.5123	14.471 ***	0.000	3.257	0.412	0.092	0.965
		30–39	3.311	0.534			3.195	0.65		
		40–49	3.241	0.856			3.247	0.598		
		≥50	3.496	0.621			3.267	0.641		
	Professional experience	0–5	3.836	0.444	9.546 ***	0.000	3.344	0.174	1.021	0.385
		6–15	3.507	0.643			3.243	0.584		
		16–25	3.204	0.786			3.316	0.605		
		≥26	3.423	0.612			3.131	0.636		
	Marital status	Yes	3.402	0.756	−2.734 **	0.007	3.456	0.571	5.098	0.000
		No	3.645	0.551			3.01	0.542		
	Number of children	0	3.773	0.54	10.698 ***	0.000	3.617	0.584	7.995	0.000
		1	3.586	0.703			3.373	0.483		
		2	3.306	0.62			3.119	0.567		
		3	3.097	0.742			3.014	0.607		
	Nursing educational level	High school	3.641	0.559	3.729 *	0.026	2.986	0.532	13.953	0.000
		Bachelor degree	3.402	0.756			3.456	0.571		
		Master Degree	3.662	0.528			3.302	0.622		

SD-standard deviation, F/t *-ANOVA/*t*-test, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Further, nurses in the oldest age category used emotional coping significantly more than the younger nurses ($p = 0.027$), whereas younger nurses, including those with the least working experience, used avoidance coping significantly more than nurses in older age categories ($p < 0.01$). Nurses with 6–15 years of working experience used problem-focused coping more than their colleagues with less working experience ($p = 0.011$). The CoV nurses also differed in the use of avoidance coping with respect to the number of children, indicating that those without children avoided more than nurses who had 2–3 children ($p < 0.001$).

Regarding non-CoV nurses, multiple comparisons found less use of emotional coping among nurses with master's degrees than among nurses with a high school diploma ($p = 0.002$) and bachelor's ($p = 0.012$) degrees. Avoidance coping was used more by the married ($p < 0.001$) nurses, those without children compared to those with two or three children ($p < 0.001$) and also by the nurses with bachelor's degrees compared to the nurses with a high school diploma ($p < 0.001$). Nurses with completed master's degrees did not differ in the use of avoidance coping, neither from nurses with a high school diploma ($p = 0.377$) nor from those with bachelor's degrees ($p = 0.790$).

Correlation analyses were conducted to investigate the relationship among the explored variables in CoV and non-CoV nurses (Table 3).

As can be expected, binary correlations, in both groups of nurses, showed that sociodemographic characteristics such as age, marital status, number of children as well as working experience and marital status were mostly interrelated, indicating that older nurses were more often married, had more children and more working experience.

In CoV nurses, age and marital status were mainly positively associated either with problem- or emotion-oriented strategies and negatively with avoidance, showing that older nurses who are married and have fewer children used more efficient (problem- or emotion-oriented) coping strategies, whereas their younger colleagues, who are not married and have fewer children as well as less working experience, used avoidance- coping strategies more during the pandemic. In the other group of non-CoV nurses, less effective avoidance coping was more often used by more educated married nurses with fewer children.

Next, these associations were explored in more detail using stepwise regression analyses. Several separate stepwise regression analyses were run to identify coping strategies preferred by CoV and non-CoV nurses with regards to gender, age, working experience, marital and nursing educational status as well as number of children. Sociodemographic variables were used as independent variables whereas coping strategies were used as criterion.

Table 3. Correlation matrix for the tested variables.

	Age	Marital Status	Number of Children	Working Experience	Eductional Level	Problem-Oriented Coping	Emotion-Oriented Coping	Avoidance Coping
Age	-	0.212**	0.616 **	0.806 **	0.390 **	0.055	0.183 **	−0.235 **
Marital status	−0.086	-	−0.041	0.150 *	0.570 **	0.215 **	0.236 **	−0.168 *
Number of children	0.248 **	−0.307 **	-	0.697 **	0.170 *	−0.148 *	0.028	−0.347 **
Working experience	0.954 **	−0.098	0.300 **	–	0.385 **	−0.072	0.085	−0.338 **
Educational level	−0.057	0.833 **	−0.367 **	−0.074	-	−0.109	−0.096	−0.090
Problem-focused coping	0.115	0.083	0.037	0.063	0.111	-	0.194 **	0.451 **
Emotion-focused coping	−0.060	−0.123	0.047	−0.011	−0.255 **	−0.012	-	0.200 **
Avoidance coping	−0.035	0.403 **	−0.358 **	−0.074	0.408 **	0.419 **	0.095	-

Above diagonal—CoV department, below diagonal—non CoV departments, * $p < 0.05$. ** $p < 0.01$.

For CoV nurses (Table 4), the regression model in the third step explains almost 13% of the variance of problem-focused coping, whereas older age ($p = 0.029$) and being married ($p < 0.001$) were related to higher levels of problem-focused coping, and higher levels of education ($p < 0.001$) and having more children ($p = 0.019$) were related to less problem-focused coping. Nurses' working experience had no significant effect on problem-focused strategies.

Table 4. Results of the stepwise regression analysis using coping strategies as a criterion in CoV nurses.

Criterion	Predictors	Step 1			Step 2			Step 3		
		β	*t*	*p*	*β*	*t*	*p*	*β*	*t*	*p*
Problem-focused coping	Age (years)	0.035	0.508	0.612				0.178	2.204	0.029
	Marital status (Y/N)				0.116	1.410	0.160	0.264	3.584	0.000
	Number of children				0.140	2.015	0.045	−0.184	−2.367	0.019
	Educational level				−0.210	−2.613	0.010	−0.305	−4.079	0.000
		R = 0.035 R^2 = 0.001 F (1.215) = 0.258 *p* = 0.612			R = 0.246 R^2 = 0.060 F (3.213) = 4.569 * *p* = 0.004			R = 0.359 R^2 = 0.129 F (4.212) = 7.839 * *p* = 0.000		
Emotion-focused coping	Age (years)	0.185	2.753	0.006	0.166	2.014	0.045	0.228	2.813	0.005
	Marital status				0.162	2.338	0.020	0.285	3.879	0.000
	Number of children				−0.033	−0.412	0.681	−0.007	−0.096	0.924
	Educational level							−0.304	−4.057	0.000
		R = 0.185 R^2 = 0.034 F (1.215) = 7.577 * *p* = 0.006			R = 0.248 R^2 = 0.062 F (3.213) =4.657 * *p* = 0.004			R = 0.359 R^2 = 0.129 F (4.212) =7.860 * *p* = 0.000		
Avoidance coping	Age (years)	−0.255	−3.862	0.000	−0.019	−0.239	0.811	0.168	1.621	0.106
	Marital status				−0.193	−2.951	0.004	−0.184	−2.855	0.005
	Number of children				−0.358	−4.740	0.000	−0.264	−3.199	0.002
	Working experience							−0.300	−2.665	0.008
		R = 0.255 R^2 = 0.065 F (1.215) = 14.917 * *p* = 0.006			R = 0.411 R^2 = 0.169 F (3.213) = 14.464 * *p* = 0.000			R = 0.443 R^2 = 0.196 F (4.212) = 12.934 * *p* = 0.000		

* $p < 0.05$.

Further, the use of emotion-focused coping was determined by age, number of children, marital and educational status, explaining together almost 13% of the variance in the third

step, whereas more use of emotion-focused coping is preferred by nurses who are older ($p = 0.005$), married ($p < 0.001$) and have lower levels of nursing education ($p < 0.001$). The significant effects of number of children to the use of emotion-focused coping were not established.

Finally, more use of avoidance coping was associated with single status ($p = 0.005$), fewer children ($p = 0.002$) and less professional experience ($p = 0.008$), indicating that the nurses who are not married, have no children and have less working experience exhibit more avoidance behaviors. The significant effect of age to the use of avoidance coping was not established. This model in the third step explains about 20% of the variance of avoidance coping (Table 4).

For the non-CoV nurses (Table 5), use of problem-focused coping strategies was related to age, indicating that problem-focused strategies have been more widely used by older nurses ($p < 0.05$). The significant effects of marital status and number of children to the use of problem-focused coping were not established. This model in the second step explains 3.6% of the variance. Further, about 8% of the variance of the emotion-focused coping was explained based on age, marital and educational status and number of children, whereas only education reached the level of significance ($p = 0.001$). The significant effects of age and number of children to the use of emotion-focused coping were not established. The marginal effect of marital status ($p = 0.052$) on the use of emotional coping was determined, indicating a tendency of married nurses to cope with emotions.

Table 5. Results of the stepwise regression analysis using coping strategies as a criterion in non-CoV nurses.

Criterion	Predictors	Step 1			Step 2			Step 3		
		β	*t*	*p*	*β*	*t*	*p*	*β*	*t*	*p*
Problem-focused coping	Age (categories)	0.164	2.113	0.036	0.163	2.008	0.046			
	Marital status				0.099	1.202	0.231			
	Number of children				0.034	0.393	0.695			
		R = 0.164 R^2 = 0.027 F (1.161) = 4.465 * *p* = 0.036			R = 0.189 R^2 = 0.036 F (3.159) =1.965 * *p* = 0.121					
Emotion-focused coping	Age	−0.075	−0.961	0.338	−0.091	−1.106	0.271	−0.064	−0.800	0.425
	Marital status				−0.059	−0.709	0.479	0.228	1.959	0.052
	Number of children				0.035	0.410	0.682	−0.038	−0.445	0.657
	Educational level							−0.409	−3.404	0.001
		R = 0.075 R^2 = 0.006 F (1.161) = 0.923 *p* = 0.338			R = 0.107 R^2 = 0.011 F (3.159) = 0.616 *p* = 0.606			R = 0.281 R^2 = 0.079 F (4.158) = 3.390 * *p* = 0.011		
Avoidance coping	Age	−0.001	−0.013	0.989	0.111	1.515	0.132			
	Marital status				0.290	3.912	0.000			
	Children				−0.297	−3.845	0.000			
		R = 0.001 R^2 = 0.000 F (1.161) =0.000 *p* = 0.989			R = 0.462 R^2 = 0.213 F (3.159) =14.364 * *p* = 0.000					

* $p < 0.05$.

Finally, avoidance coping strategies have been preferred by nurses who are married ($p < 0.001$) and have no children ($p < 0.001$). This model explains 21% of the variance (Table 5). The significant effect of age was not established.

4. Discussion

This study was aimed at assessing the contribution of sociodemographic features to the use of coping strategies in nurses working in CoV and non-CoV departments. A strength of this study is that it was conducted only among nurses, the biggest professional

group among HCW and this is the first study like this provided in Croatia. Our study showed that CoV nurses differed from each other in the terms of use of almost all coping strategies with regard to marital status, age, education and working experience. In general, the findings suggest that being younger, single and with lower levels of nursing education can serve as protective factors from nurses' emotional engagement and active exposure to stressful situations. Married nurses were more likely to use more effective coping strategies such as problem-oriented and emotion-oriented coping, whereas having more children was associated with less use of problem-oriented coping.

We also obtained similar results in a group of nurses employed in non-CoV wards: younger age was associated with less use of problem-oriented coping. Further, married and childless nurses were more likely to use avoidance coping, whereas nurses with higher levels of education were less likely to use emotion-focused coping.

Working during the COVID-19 pandemic was a particular challenge for nurses due to intensified stress and fear of the unknown, especially at the beginning of the pandemic itself [24]. It was already shown that choosing appropriate coping strategies was very important in maintaining good mental health and psychological well-being among health-care staff. During the SARS epidemic in 2004 and 2005, medical staff in Hong Kong used problem solving strategies rather those focusing on emotions [25].

In line with our results, Sagherian et al. [26] showed that in the groups of nurses working with patients infected with the SARS-CoV-2 virus, the most frequently chosen strategies of coping with stress were strategies focused on the problem as well as emotion-focused strategies. They also showed that nurses working with patients infected with the virus were younger and at the same time had shorter professional experience than nurses working with patients not infected with the SARS-CoV-2 virus, which is similar to our case, where often avoidance coping was used more. On the other hand, our younger non-CoV nurses used more emotional coping probably due to their lack of experience, resources or supervision [12]. Thus, our results addressed that nurses working at non-CoV departments also needed attention and support to minimize the development of posttraumatic stress disorder (PTSD), which is in line with a study by Xiong et al. [27].

A study on Croatian nurses also shows that in the time of the COVID-19 pandemic, nurses use the avoidance and positive reappraisal coping style much more often than physicians do. Whereas physicians first use a strategy of planned and analytical approach to the problem (stressor), nurses first resort to positive reassessment. Furthermore, with respect to age groups, the study shows that individuals under 40 use avoidance coping techniques more often [28]. In our study, the significant effect of age on the use of avoidance coping was not established, although we found more often the use of avoidance coping in nurses with less professional experience.

Another study from Croatia showed that, generally, the most common coping strategies in nurses were problem-focused strategies, then emotion-focused strategies and, most rarely, avoidance coping strategies. The author also showed that higher levels of education was correlated with a higher search for meaning and more common use of active coping, planning and emotional support as coping strategies [29]. This is opposite to our findings, which can be explained with the fact that this study was conducted before the COVID 19 pandemic.

A study from Spain also showed that being older, not being single, living in an independent house and having more than 15 years of working experience protected against stressors and perceived emotions, and were associated with a greater use of coping techniques [30]. They also found a greater impact of perceived negative emotions among auxiliary nurses than among university graduated nurses, which is in line with our findings that CoV nurses with high-school diplomas used avoidance coping significantly more than their colleagues with bachelor's degrees.

Trumelo et al. also conducted a similar study between HCW in Italy and showed a significant difference in the distribution of perceived stress, anxiety, depression, burnout

and secondary trauma levels between HCW who worked with patients affected by the COVID-19 disease [31].

Our study has several limitations. First, it was a cross-sectional study that was conducted in a relatively short period in only one Croatian hospital, which limits the ability to interpret the causal relationships between the different variables in this study. Second, we adopted the strategy of distributing the questionnaire online due to the limitations of social contacts; thus, the study was conducted only in a group of people using information and communication technologies which may have affected the response rate (29.1%). Third, the study sample was only chosen from one city. In order to generalize our results, future longitudinal studies should be conducted using randomized sampling.

5. Conclusions

This study clearly showed that sociodemographic factors such as working experience, age, level of education and marital status have an influence on chosen coping strategies during the health crisis. Nurses working in CoV departments choose both active- and emotion-focused coping, whereas those working in non-CoV departments prefer strategies focused on the problem. We hope that our results will encourage the health care system to give special attention to nurses' working conditions and experience, helping them to choose the best coping strategies to protect their mental health and prevent their burnout.

Author Contributions: M.D. conceptualized the study design, questionnaire and writing. V.A. contributed to the results and supervision. K.D. contributed to the drafting and editing of the paper. Z.P. conducted supervision and writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: This research was approved by the Ethics Committee of the University Hospital of Split (Ref.: 500-03/20-01/108; approval date 30 October 2020) and the Ethics Committee of the School of Medicine at the University of Split (Reference: 003-08/20-03/0005; date approvals of 16 November 2020).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon request of the respective authors. Due to the protection of personal data, the data are not publicly available.

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Conflicts of Interest: The authors declare no conflict of interest.

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5. DODATAK

- Prilog 1 – Odobrenje Etičkog povjerenstva Kliničkog bolničkog centra Split
- Prilog 2 – Odobrenje Etičkog povjerenstva Medicinskog fakulteta Sveučilišta u Splitu

Prilog 1. Odobrenje Etičkog povjerenstva Kliničkog bolničkog centra Split

KLINIČKI BOLNIČKI CENTAR SPLIT
ETIČKO POVJERENSTVO

Klasa: 500-03/20-01/108
Ur.br.: 2181-147-01/06/M.S.-20-02
Split, 30.10.2020.

I Z V O D
IZ ZAPISNIKA SA SJEDNICE ETIČKOG POVJERENSTVA KBC SPLIT 27.10.2020.

5.

Prof.dr.sc. Zenon Pogorelić iz Klinike za dječje bolesti KBC-a Split, uputio je Etičkom povjerenstvu zamolbu za odobrenje provedbe istraživanja:

" Povezanost rada u Centru za liječenje bolesti uzrokovane korona virusom sa zadovoljstvom poslom, faktorom stresa, profesionalnim izgaranjem i psihosocijalnom dobrobiti medicinskih sestara "

Istraživanje za potrebe doktorske disertacije mag.med.techn. Matee Dolić će se provesti na nivou cijelog KBC-a Split u studenom 2020. godine.

Nakon razmatranja zahtjeva, donijet je sljedeći

Z a k lj u č a k

Iz priložene dokumentacije razvidno je da je Plan istraživanja usklađen s odredbama o zaštiti prava i osobnih podataka ispitanika iz Zakona o zaštiti prava pacijenata (NN169/04, 37/08) i Zakona o provedbi Opće uredbe o zaštiti podataka (NN 42/18), te odredbama Kodeksa liječničke etike i deontologije (NN55/08, 139/15) i pravilima Helsinške deklaracije WMA 1964-2013 na koje upućuje Kodeks.

Etičko povjerenstvo je suglasno i odobrava provođenje istraživanja.

PREDSJEDNIK ETIČKOG POVJERENSTVA
KLINIČKOG BOLNIČKOG CENTRA SPLIT
PROF. DR. SC. MARIJAN SARAGA

KLINIČKI BOLNIČKI CENTAR SPLIT
Etičko povjerenstvo

Prilog 2. Odobrenje Etičkog povjerenstva Medicinskog fakulteta Sveučilišta u Splitu

MEDICINSKI FAKULTET
SVEUČILIŠTA U SPLITU
Etičko povjerenstvo
Split, 16. studenog 2020.

Klasa: 003-08/20-03/0005
Ur. br.: 2181-198-03-04-20-0093

MIŠLJENJE

Etičkog povjerenstva povodom prijave istraživanja:

Povezanost rada u Centru za liječenje bolesti uzrokovane koronavirusom sa zadovoljstvom poslom, faktorom stresa, profesionalnim izgaranjem i psihosocijalnom dobrobiti medicinskih sestara

I. Zaprimljen je zahtjev Matee Dolić, studentice poslijediplomskog studija EBM, za odobrenjem znanstvenog istraživanja pod nazivom **Povezanost rada u Centru za liječenje bolesti uzrokovane koronavirusom sa zadovoljstvom poslom, faktorom stresa, profesionalnim izgaranjem i psihosocijalnom dobrobiti medicinskih sestara** – provedba znanstvenog istraživanja na ljudima. Predviđeno je da ovo istraživanje započne u studenom 2020. godine i da traje 1 mjesec, a provodit će se u Kliničkom bolničkom centru Split, tj. svim njegovim ustrojstvenim jedinicama (Klinikama, Zavodima i Odjelima) putem online upitnika. Glavni ciljevi ovog istraživanja su 1.) istražiti razinu stresa na radu u medicinskih sestara koje su radile u COVID-19 bolnici KBC-a Split u odnosu na razinu njihove stručne edukacije i radnog iskustva, 2.) istražiti razlike u doživljaju stresa na poslu, stupnju izraženosti simptoma PTSP-a i strategijama suočavanja između medicinskih sestara koje su radile u COVID bolnici i medicinskih sestara koje nisu bile neposredno izložene radu sa zaraženim pacijentima, 3.) istražiti doprinos psiholoških čimbenika (osobine ličnosti, temperament, strategija suočavanja) na intenzitet stresa i simptoma PTSP-a kod medicinskih sestara u uvjetima izvanredne krizne situacije, 4.) istražiti doprinos razine obrazovanja i sociodemografskih čimbenika na doživljaj stresa na radu i simptome PTSP-a kod medicinskih sestara u uvjetima izvanredne krizne situacije, 5.) ispitati postoji li razlika u procjeni razine stresa i simptoma PTSP-a između medicinskih sestara s Klinike za infektivne bolesti u odnosu na medicinske sestre koje su radile u Respiracijskom centru za bolesnike s respiratornim teškoćama, u stacionarnom djelu za prihvat bolesnika s težom kliničkom slikom COVID-19 infekcije te na medicinske sestre iz Jedinice intenzivnog liječenja za pacijente s COVID-19 infekcijom na respiratoru, te 6.) izraditi program za cjeloživotno usavršavanje medicinskih sestara – tehničara za rad u izvarednim situacijama.

II. Etičko povjerenstvo Medicinskog fakulteta Sveučilišta u Splitu je, prilikom raspravljanja o ovom predmetu, uzelo u obzir izjavu prijavitelja da su rizika za ispitanike nema. Također je uzeta u obzir izjava da će identitet ispitanika (zdravog ili pacijenta) uvijek ostati anoniman.

III. Sukladno odredbi članka 16. Etičkog kodeksa Medicinskog fakulteta u Splitu Povjerenstvo je zauzelo stajalište kako je predmetno istraživanje **u skladu s odredbama Etičkog kodeksa** koje reguliraju istraživanja na ljudima u znanstvenom, istraživačkom i stručnom radu i etičkim načelima Helsinške deklaracije.

IV. Mišljenje je doneseno jednoglasno.

Predsjednik Povjerenstva:

prof. dr. sc. Marko Ljubković

Dostaviti:
- Matea Dolić
- arhiv Etičkog povjerenstva Medicinskog fakulteta
- arhiv Fakulteta