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Likovno izražavanje adolescentice s graničnim poremećajem ličnosti: putovanje u njen unutarnji svijet

/ Artistic Expression of an Adolescent with Borderline Personality Disorder: A Journey into Her Inner World

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Ovaj je rad utemeljen na kvalitativnom i kvantitativnom istraživanju likovnog izražavanja adolescentice s graničnim poremećajem ličnosti. Kompleksnost njenog psihičkog stanja prikazana je u odabranim likovnim radovima iz triju tematskih ciklusa. Cilj likovnog stvaranja, ali i istraživanja, uključivao je tri problemska područja: otkrivanje doživljaja sebe s naglaskom na rodni/spolni identitet, osobnu interpretaciju vlastitog likovnog djela te uviđanje svojih unutrašnjih stanja prije i poslije likovnog stvaranja. Nadalje, cilj je uključivao i ispitivanje raspoloženja (osobnog zadovoljstva, samoregulacije, samoosnaživanja) ispitanice prije i poslije likovnog stvaranja, izraženog na diskretiziranim vizualno-analognim ljestvicama samoprocjene. Dodatni podatci korišteni u istraživanju proizašli su iz strukturiranog upitnika namijenjenoga interdisciplinarnoj grupi vanjskih promatrača. Rezultati istraživanja ukazuju na rizične parametre u mentalnom zdravlju adolescentice te potvrđuju projektivnu dimenziju njenih crteža/slika. Likovno izražavanje omogućuje uočavanje rizičnih parametara u njenom mentalnom zdravlju kod obje skupine vanjskih promatrača. Nadalje, tijekom likovnog izražavanja te nakon njega, utvrđena je poboljšana duhovna komponenta doživljaja sebe, izražena na diskretiziranim vizualno-analognim ljestvicama samoprocjene. To nam potvrđuje temeljnu pretpostavku o neupitnoj korisnosti likovnog izražavanja kao alata i puta za otkrivanje, prihvaćanje te, potencijalno, mijenjanje sebe.

/ This paper is based on a qualitative and quantitative study of the artistic expression of an adolescent with borderline personality disorder (BPD). The complexity of her mental state is presented in selected artworks from three thematic cycles. The aim of artistic creation, as well as the study, included three problem areas: discovering the perception of self with an emphasis on gender/sexual identity, personal interpretation of own artwork, and recognition of own inner states before and after the artistic creation. Furthermore, the aim also included examining the participant's mood (personal satisfaction, self-regulation and self-empowerment) before and after the artistic creation, expressed on discretized visual analogue self-assessment scales. Additional data used in the study were derived from a structured questionnaire intended for an interdisciplinary group of external observers. The study results point to risk parameters in the mental health of the adolescent, and confirm the projective dimension of her drawings/paintings. Artistic expression enables the recognition of risk parameters in her mental health to both groups of external observers. Furthermore, during and after the artistic expression, an improved spiritual component of self-perception was observed, as expressed on discretized visual analogue self-assessment scales. This confirms the underlying assumption of the undeniable usefulness of artistic expression as a tool and path for discovering, accepting, and potentially transforming oneself.

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UVOD

Likovni izraz je način neverbalnog izražavanja koji čovjek koristi od djetinjstva. Tijekom, poglavito druge polovice dvadesetoga stoljeća, likovno izražavanje je prepoznato kao važan način kojim osoba može izraziti sebe, pružiti uvid u svoje emocionalno i kognitivno funkcioniranje, potisnute traume te pokazati slojevite osjećaje i percepcije. Sigmund Freud je vjerovao da unutarnji sukobi i neuroze motiviraju pojedinca na umjetničko stvaranje (1). I Carl Gustav Jung je naglašavao da se cilj terapije usmjerava na oslobađanje kreativnosti koja je unutar pacijenta latentna, a oslobođenjem postaje katalizator promjene koja vodi izlječenju (1). S vremenom je većina psihijatara prihvatila mogućnost korištenja likovnog izraza kao pomoćnog sredstva u dijagnostici i kao terapijski alat. Zahvaljujući tomu razvija se novo interdisciplinarno područje likovne terapije koje promiče upotrebu različitih oblika likovnog izražavanja u lječiteljske svrhe, a primjenjuje se kod osoba s raznolikim poremećajima i stanjima (2,3).

Svaki čovjek posjeduje određenu ličnost koju sačinjava skup karakteristika određenih biološkim i sociološkim čimbenicima. Ličnost nije lako u potpunosti odrediti. Jedan od prihvaćenih modela ukazuje na to da se granični poremećaj ličnosti promatra kao kolaž nastao u srazu gena i okruženja (4). Granični poremećaj ličnosti je ozbiljan mentalni poremećaj s karakterističnim trajnim obrascem nestabilne afektivne regulacije, kontrole impulsa, me-

INTRODUCTION

Artistic expression is a method of nonverbal expression that humans use from childhood. During the second half of the twentieth century in particular, artistic expression was recognized as an important way for a person to express themselves, to provide insight into their emotional and cognitive functioning and suppressed traumas, and to reveal their complex feelings and perceptions. Sigmund Freud believed that inner conflicts and neuroses motivate an individual to create art (1). Carl Gustav Jung also emphasized that the goal of therapy is to unleash the creativity latent within a patient, and once released, it becomes a catalyst for change that leads to healing (1). Over time, most psychiatrists accepted the possibility of using artistic expression as an auxiliary diagnostic tool and as a therapeutic instrument. Consequently, a new interdisciplinary field of art therapy was developed, which promotes the use of various forms of artistic expression for healing purposes and is applied to individuals with a variety of disorders and conditions (2, 3).

Each person possesses a certain personality, which is made up of a set of characteristics determined by biological and sociological factors. Personality is not easy to determine in its entirety. One accepted model suggests that borderline personality disorder (BPD) should be viewed as a collage created by the interaction of genes and the environment (4). The borderline personality disorder is a serious mental disorder with a characteristic persistent pattern of unstable affect regulation, impulse control, interperson-

đuljudskih odnosa i slike o sebi. Takvi obrasci perzistiraju najčešće od adolescencije nadalje. Granični poremećaj ličnosti karakterizira ozbiljno psihosocijalno oštećenje i visoka stopa smrtnosti zbog samoubojstva (5). Oboljelih je 1 do 2% u općoj populaciji, pojavljuje se češće kod žena, iako neki podatci ukazuju u prilog nepostojanju razlika između spolova (6). Poremećaj identiteta samo je jedan od poremećenih aspekata, a očituje se izostankom potpunog razvoja zasebnog i konzistentnog identiteta tijekom života. Među prvim kriterijima u klasifikaciji ovog poremećaja su poremećeni odnosi što podrazumijeva sve interpersonalne odnose. Osobama s ovim poremećajem često je narušen i seksualni identitet s obzirom na lošu opću mentalizaciju. Mentalizacija je imaginativan i uglavnom nesvjestan proces u kojem osoba razumije ponašanja drugih te pozicionira sebe u odnosu na druge. Mentalizacija je razvojno postignuće i sposobnost koje dijete uspješno razvije u sklopu sigurnog i privrženog odnosa s roditeljem ili skrbnikom. Psihološka trauma i poremećaji privrženosti u djetinjstvu povezani su s nemogućnošću i deficitima mentalizacije te razvojem psihopatologije kod djece i adolescenata (7). Kod osoba s graničnim poremećajem ličnosti krhki mentalizirajući kapacitet, osjetljiv na međuljudsku interakciju, smatra se središnjom značajkom poremećaja. Stoga primjereni terapijski pristup mora sadržavati mentalizaciju kao svoj fokus ili barem poticati razvoj mentaliziranja (7).

Mnoga dosadašnja istraživanja potvrdila su pozitivne učinke likovnog izražavanja likovnom terapijom u pomoći i liječenju osoba s graničnim poremećajem ličnosti. Likovno-terapijske intervencije doprinose razvoju bolje mentalizacije (8), poboljšanju emocionalne regulacije, integraciji, oslobađanju od stresa, osnaživanju, otpuštanju kontrole, povjerenju i toleranciji osoba s ovim poremećajem (9). Tijekom ciljane upotrebe likovnih zadataka, obrade materijala i ekspresijom, osobe s gra-

al relationships, and self-image. Such patterns typically persist from adolescence onwards. The borderline personality disorder is characterized by severe psychosocial impairment and a high mortality rate due to suicide (5). Its prevalence is from 1% to 2% in the general population, and it occurs more frequently in women, although some data suggest there are no gender differences (6). Identity disorder is just one of the disturbed aspects, and is manifested in the absence of complete development of a separate and consistent identity throughout life. Among the first criteria in the classification of this disorder are disturbed relationships, which includes all interpersonal relationships. Individuals with this disorder also often have a disturbed sexual identity, due to poor general mentalization. Mentalization is an imaginative and mainly unconscious process in which a person understands the behaviours of others and positions themselves in relation to them. It is a developmental achievement and an ability that a child successfully develops within a secure and attached relationship with a parent or guardian. Psychological trauma and attachment disorders in childhood are associated with the impossibility of and deficits in mentalization, and the development of psychopathology in children and adolescents (7). Among individuals with BPD, a fragile mentalizing capacity, sensitive to interpersonal interaction, is considered the central feature of the disorder. An appropriate therapeutic approach must, therefore, include mentalization as its focus, or at least encourage the development of mentalizing (7).

Many previous studies have confirmed the positive effects of artistic expression through art therapy in helping and treating individuals with BPD. Art therapy interventions contribute to the development of better mentalization (8), improved emotional regulation, integration, stress relief, empowerment, release of control, trust, and tolerance in individuals with this disorder (9). Through the targeted use of art tasks, material processing and expression, individuals with BPD gain experience in emotion regulation (10). Art therapy represents a valuable tool and

ničnim poremećajem ličnosti stječu iskustvo regulacije emocija (10). Likovna terapija je vrijedan alat i nadopuna standardne psihijatrijske procjene i terapije, jer osobe s ovim poremećajem aktivno uključuje u proces ozdravljenja (11,12). S obzirom da je u Hrvatskoj profesionalno područje likovne terapije slabo razvijeno, nismo pronašli rezultate istraživanja koji bi ukazivali na njenu implementaciju, posebno u liječenju graničnog poremećaja ličnosti. Ali mnogi se psihijatri zalažu za primjenu likovnog izražavanja u kliničkom radu. To potvrđuje terapijski program Dnevne bolnice Klinike za psihijatriju KBC-a Zagreb gdje multidisciplinarni tim razvija integrativni model liječenja u dnevnobolničkom konceptu. Neki od članova programa su i osobe s graničnim poremećajem ličnosti (13). Važno je naglasiti i da najnovije spoznaje u području neuroestetike potvrđuju iznimno pozitivne utjecaje umjetnosti na mozak u smislu aktivacije centara za procesuiranje emocija tijekom estetskog iskustva (13).

CILJ I HIPOTEZE ISTRAŽIVANJA

Cilj istraživanja, provedenog tijekom izrade diplomskoga rada (14), odnosio se na ispitivanje dobrobiti likovnog izražavanja za adolescenticu s graničnim poremećajem ličnosti. Uključivao je usporedbu raspoloženja ispitanice, proizašlog iz objedinjenih stanja: osobnog zadovoljstva, samoregulacije i samoosnaženja, a izraženog na diskretiziranim vizualno-analognim ljestvicama samoprocjene prije i poslije likovnog izražavanja. U širem smislu obuhvaćao je i ispitivanje rizičnih parametara u mentalnom zdravlju adolescentice od osmero vanjskih promatrača (studentica Diplomskog studija likovne kulture i likovne umjetnosti Umjetničke akademije Sveučilišta u Splitu i kliničkih psihologa iz Kliničkog bolničkog centra u Splitu), koji su s različitih profesionalnih očišta doživljavali odabrane likovne radove ispitanice.

supplement to standard psychiatric assessment and therapy, as it actively involves individuals with this disorder in the healing process (11, 12). Considering that the professional field of art therapy is underdeveloped in Croatia, we did not find study results that would indicate its implementation, particularly in the treatment of BPD. However, many psychiatrists advocate for the use of artistic expression in clinical work. This is confirmed by the therapeutic program of the Day Hospital of the Department of Psychiatry at the University Hospital Centre Zagreb, where a multidisciplinary team is developing an integrative treatment model as part of the day hospital concept. Some of the program participants are also individuals with BPD (13). It is important to further emphasize that the latest findings in the field of neuroaesthetics confirm the exceptionally positive effects of art on the brain in terms of activating the centres in charge of processing emotions during the aesthetic experience (13).

STUDY AIM AND HYPOTHESES

The aim of the study, conducted during the preparation of a graduation thesis (14), was to examine the benefits of artistic expression for an adolescent with BPD. It involved a comparison of the participant's moods resulting from the combined states of personal satisfaction, self-regulation and self-empowerment, as were expressed on discretized visual analogue self-assessment scales before and after artistic expression. In a broader sense, it also included an examination of the risk parameters in the mental health of the adolescent, conducted by eight external observers (students of the Graduate Study Program of Visual Culture and Fine Arts at the Arts Academy of the University of Split, and clinical psychologists from the University Hospital of Split), who viewed the selected artworks of the subject from different professional perspectives.

Taking into consideration the aim of the study, the following hypotheses were formulated:

S obzirom na cilj istraživanja postavljene su sljedeće hipoteze:

H1: Likovno izražavanje ispitanice doprinosi razvoju njene mentalizacije suočavanjem, proradom i prihvaćanjem osobnog identiteta; boljim razumijevanjem interpersonalnih odnosa; stjecanjem uvida i razumijevanjem osobne promjene.

H2: Likovno izražavanje ispitanice potiče njeno osobno zadovoljstvo, samoregulaciju i samoosnaženje.

H3: Likovno izražavanje ispitanice omogućuje uočavanje rizičnih parametara u njenom mentalnom zdravlju kod obje skupine vanjskih promatrača.

METODE RADA

Prikaz slučaja

U istraživanju je sudjelovala adolescentica u dobi od dvadeset i jedne godine s graničnim poremećajem ličnosti. Ona je studentica, a definira se kao homoseksualna osoba. Tijekom srednjoškolskog obrazovanja pojavljuju se intenzivnije smetnje u njenom psihičkom zdravlju. Obiteljski odnosi su narušeni, poglavito odnos s majkom. Navodi da se ne može sjetiti ničega lijepog s majkom, a odgajala ju je majčina najbolja prijateljica iz istog mjesta. Djevojka je sa šesnaest godina prvi put hospitalizirana i prvi put viđena od psihijatra prilikom liječenja na Klinici za dječje bolesti u Splitu. Psihologijska eksploracija ličnosti ukazuje na obilježja granične organizacije uz aktualno klinički značajnu depresivnost i visoko izraženu autodestruktivnost sa suicidalnim idejama. Pregledali su je psiholog i dječji psihijatar koji zbog odstupanja u smislu poremećaja ponašanja i emocija u terapiju uvodi lijek te se savjetuje praćenje od psihologa i psihijatra. Nakon toga djevojka pristupa ambulantnom psihijatrijskom tretmanu. Danas, adolescen-

H1: The subject's artistic expression contributes to the development of her mentalization through confronting, processing and accepting her personal identity; better understanding of interpersonal relationships; gaining insight into and understanding of personal change.

H2: The subject's artistic expression encourages her personal satisfaction, self-regulation, and self-empowerment.

H3: The subject's artistic expression enables the identification of risk parameters in her mental health to both groups of external observers.

METHODS

Case study

The study involved a 21-year-old adolescent with BPD. She is a student and defines herself as homosexual. During her high school education, she started experiencing more intense disturbances relating to her mental health. Her family relationships are strained, especially the relationship with her mother. She states that she cannot recall any pleasant memories with her mother, and she was raised by her mother's best friend from the same town. At the age of sixteen, the girl was hospitalized for the first time and was examined for the first time by a psychiatrist during treatment at the Clinic for Children's Diseases in Split. The psychological exploration of personality indicates characteristics of borderline organization, along with current clinically significant depression and highly expressed self-destructiveness with suicidal ideation. She was examined by a psychologist and a child psychiatrist who, due to deviations in terms of behavioural and emotional disorders, introduced medication into therapy and advised observation by a psychologist and psychiatrist. After that, the girl began outpatient psychiatric treatment. Today, the adolescent is not sure whether leaving her family is temporary or has characteristics of permanence. She does not plan to return home long-term. She has always drawn, and she created drawings such as those

tica nije sigurna da li je odlazak od obitelji privremen ili ima obilježja trajnosti. Ne planira se dugoročno vraćati doma. Oduvijek crta, a crteže poput ovih, prezentiranih u istraživanju, nacrtala je krajem osmog razreda. To su sadržaji koje ona vidi (ne zamišlja), a drugi ne, halucinacije, ona ih je svjesna. I zvukovi su bili prisutni, neprepoznatljivi, najčešće kada bi išla spavati. Slike i glasove je počela vidjeti/čuti kada je bila mala. Zvukovi su prestali drugu noć u bolnici. Motivaciju za slikanjem i crtanjem objašnjava stanjem kao da joj netko govori da to mora napraviti kako bi razbistrila glavu. Ona sama, nakon istraživanja po internetu, smatra da je bipolarna, jer je „čas super, a čas nije". Vidjela je na uputama lijeku koji pije da je i bipolarni poremećaj jedna od indikacija. S obzirom na dob i kliničku sliku, adolescentica je prema Međunarodnoj klasifikaciji bolesti (MKB-10) (15) dijagnostički shvaćena kao kombinacija emocionalnog poremećaja s početkom specifičnim za djetinjstvo (F93 prema MKB-10) te drugog kombiniranog poremećaja ponašanja i emocija (F92.8 prema MKB-10). Povremeno su se javljale i kratkotrajne, prolazne psihotične epizode, klasificirane pod šifrom F23.9 (akutna i prolazna psihotična epizoda, nespecificirana). S vremenom je adolescentici dijagnosticiran granični poremećaj ličnosti (F60.31 prema MKB-10), što se temelji na evoluciji njezine kliničke slike i prisutnosti karakterističnih simptoma uključujući emocionalnu nestabilnost, impulzivnost, izražene poteškoće u međuljudskim odnosima te sklonost autoagresivnom ponašanju, što su sve obilježja koja su kod nje bila prisutna kontinuirano. Ranija dijagnostička kombinacija emocionalnih i ponašajnih poremećaja specifičnih za djetinjstvo bila je prikladna s obzirom na njezinu dob i tadašnju kliničku sliku koja je uključivala izražene teškoće u regulaciji emocija i ponašanja. Dijagnoza graničnog poremećaja ličnosti pružala je sveobuhvatan okvir za razumijevanje složenog kliničkog stanja adolescentice.

presented in this study at the end of the eighth grade. These are contents that she sees (she does not imagine them), while others do not see them, they are hallucinations she is aware of. Sounds were also present, unrecognizable, most often when she was going to sleep. She started seeing images and hearing voices when she was little. The sounds stopped the second night in the hospital. She explains her motivation for painting and drawing as a state in which it is as though someone is telling her that she must do it to clear her head. After researching on the Internet, she thinks she is bipolar because she is "sometimes great, and sometimes not." She saw that bipolar disorder is one of the indications for the medication she is taking. Given her age and clinical presentation, the adolescent has been diagnostically classified according to the International Classification of Diseases (ICD-10) (15) as a combination of an emotional disorder with onset specific to childhood (F93 according to ICD-10) and another mixed disorder of conduct and emotions (F92.8 according to ICD-10). Occasionally, brief, transient psychotic episodes also occurred, classified under code F23.9 (acute and transient psychotic disorder, unspecified). Over time, the adolescent was diagnosed with borderline personality disorder (F60.31 according to ICD-10), based on the evolution of her clinical presentation and the presence of characteristic symptoms, including emotional instability, impulsivity, significant difficulties in interpersonal relationships, and a tendency toward self-aggressive behaviour, all features that were consistently present in her case. The earlier diagnostic combination of emotional and behavioural disorders specific to childhood was appropriate given her age and the clinical presentation at the time, which included significant difficulties in regulating emotions and behaviour. The diagnosis of BPD provided a comprehensive framework for understanding the adolescent's complex clinical condition.

The information about the adolescent's medical history, as well as the statements in this part of the paper, were obtained from the doctors' hospital records during her treatment.

Podatci o povijesti bolesti adolescentice kao i izjave u ovom djelu rada ustupljeni su iz bolničkih zapisa liječnika prilikom njenog liječenja.

Način prikupljanja podataka i provođenja istraživanja

U istraživanju je sudjelovala ispitanica s graničnim poremećajem ličnosti te osmero vanjskih promatrača (tri studentice Diplomskog studija likovne kulture i likovne umjetnosti Umjetničke akademije Sveučilišta u Splitu i pet kliničkih psihologa iz Kliničkog bolničkog centra u Splitu, koji su činili raspoloživi ili prigodni uzorak). Odabrana skupina psihologa bila je heterogena, a sastojala se od četiri žene i jednog muškarca. Klinički su psiholozi odabrani jer njihova profesionalna osposobljenost uključuje i razumijevanje likovnog govora pojedinca, projektivnih dimenzija crteža ili slike nastalih tijekom likovnog izražavanja te otkrivanje odstupanja u njihovom sadržaju i/ili formi. Od studentica, budućih nastavnica likovne kulture i likovne umjetnosti, očekivalo se da su educirane za prepoznavanje uobičajenog likovnog izražavanja pojedinca te senzibilizirane za uočavanje neobičnog u likovnom izrazu. Njihovo obrazovanje na diplomskoj razini studija uključuje i kolegije: Psihodinamika razvoja ličnosti i likovna ekspresija, Kreativna terapija i Terapija likovnim izrazom u edukaciji i rehabilitaciji. Odabir studentica završne, pete, godine studija likovne edukacije utemeljen je i na spoznaji da je jedna od začetnica likovne terapije u Sjedinjenim Američkim Državama, čuvena Edith Kramer, prema svojoj temeljnoj profesiji bila umjetnica i likovna edukatorica. To potvrđuje da profesija likovne terapije, od svog utemeljenja do danas, ima uporišne točke u likovnoj edukaciji, u istoj mjeri kao i u psihologiji odnosno psihijatriji (16). S ovako odabranim uzorkom vanjskih promatrača željeli smo, također, provjeriti u kojoj mjeri su studentice sposobne procijeniti devijacije i neobičnosti, odnosno rizične parametre, u odabranim li-

Data collection and research methods

In addition to the adolescent with BPD, the study also involved eight external observers (three female students of the Graduate Study Program of Visual Culture and Fine Arts at the Arts Academy of the University of Split, and five clinical psychologists from the University Hospital of Split, who constituted the available or convenience sample). The selected group of psychologists was heterogeneous and consisted of four women and one man. The clinical psychologists were selected because their professional training includes the understanding of an individual's visual language, the projective dimensions of drawings or paintings created during artistic expression, and the ability to identify deviations in their content and/or form. It was expected that the students, future visual culture and fine arts teachers, were trained to recognize individuals' usual artistic expression and sensitized to notice unusual features in artistic expression. Their graduate-level education includes courses such as Psychodynamics of Personality Development and Artistic Expression, Creative Therapy, and Art Therapy in Education and Rehabilitation. The selection of final-year (fifth year) students of art education was also based on the understanding that one of the pioneers of art therapy in the United States, the famous Edith Kramer, was originally an artist and an art educator by profession. This confirms the notion that the profession of art therapy, from its foundation to the present day, has its grounding in art education just as much as in psychology, i.e. psychiatry (16). With this selected sample of external observers, we also aimed to assess the extent to which the students were able to identify deviations and unusual elements, i.e. risk parameters, in the adolescent's selected artworks in comparison to clinical psychologists. Some of the research tasks were designed and intended for the adolescent, while the rest were intended for the group of external observers.

The backbone of the part of the study intended for the adolescent consisted of art-motivated

kovnim radovima adolescentice u odnosu na kliničke psihologe. Dio istraživačkih zadataka bio je osmišljen i namijenjen adolescentici, a drugi dio skupini vanjskih promatrača.

Okosnicu istraživanja namijenjenoga adolescentici činilo je likovno motivirano stvaralaštvo u tri ciklusa i osobna interpretacija nastalih radova. Unutar tematski definiranih ciklusa ispitanica je istraživala osobni identitet, interpersonalne odnose i osobne promjene koje je osvijestila u sadašnjosti u odnosu na prošlost, što je bio prvi istraživački zadatak namijenjen adolescentici. Nadalje, za njen drugi zadatak korištena je i diskretizirana vizualno-analogna ljestvica samoprocjene raspoloženja u rasponu od 1 do 10 na kojoj je izražavala svoje raspoloženje prije i poslije stvaranja likovnog djela, a ono je proizašlo iz nekoliko objedinjenih stanja (osobnog zadovoljstva, samoregulacije, samoosnaživanja). Adolescentica je sve likovne radove nastale tijekom istraživanja nacrtala/naslikala drvenim olovkama u boji, prema osobnoj želji. Ostvareno je sedam likovno-istraživačkih susreta u kojima su sudjelovale adolescentica i apsolventica s Odsjeka za likovnu kulturu i likovnu umjetnost Umjetničke akademije u Splitu. Apsolventica je organizirala likovno-istraživačke susrete, pratila nastanak likovnih radova, bilježila izjave adolescentice te prikupljala podatke i zapažanja, u dogovoru s mentorima i u sklopu njenog diplomskog rada. Apsolventicu je s adolescenticom upoznao dječji psihijatar u Kliničkom bolničkom centru u Splitu, a potom su se likovno-istraživački susreti provodili u podstanarskom stanu adolescentice u Dubrovniku. Likovno-istraživački susreti trajali su u prosjeku dva do tri sata, s čestim pauzama jer je adolescentica imala potrebu mnogo verbalizirati i komentirati svoj likovni rad. Tijekom sedam susreta nastalo je sedam likovnih radova, no adolescentica je nastavljala stvarati likovne radove unutar tri tematski definirana ciklusa i nakon završetka susreta s apsolventicom. Stoga je teško točno reći koliko je likovnih radova

creation in three cycles and a personal interpretation of the created works. Within the thematically defined cycles, the subject explored personal identity, interpersonal relationships, and personal changes she became aware of in the present compared to the past, which was the first research task assigned to the adolescent. Furthermore, for her second task, a discretized visual analogue self-assessment mood scale ranging from 1 to 10 was used, in which she expressed her mood before and after creating an artwork. This mood assessment was derived from several unified states (personal satisfaction, self-regulation, self-empowerment). The adolescent drew/painted all the artwork created during the study with wooden coloured pencils, according to her personal preference. Seven art-research sessions were conducted, involving the adolescent and a graduate student from the Department of Visual Culture and Fine Arts at the Arts Academy in Split. The graduate student organized the art-research sessions, monitored the creation of artwork, recorded the adolescent's statements, and collected data and observations, all in consultation with her mentors and as part of her graduation thesis. The graduate student was introduced to the adolescent by a child psychiatrist at the University Hospital of Split, after which the art-research sessions were conducted in the adolescent's rented apartment in Dubrovnik. The art-research sessions lasted two to three hours on average, with frequent breaks because the adolescent felt a strong need to verbalize and comment on her artwork. Over the course of seven sessions, seven artworks were created, however, the adolescent continued to produce artworks within the three thematically defined cycles even after the sessions with the graduate student had ended. It is, therefore, difficult to determine the exact number of created artworks. Some of these works were later sent or shown to the graduate student by the adolescent. The graduate student had access to approximately ten additional artworks created independently by the subject within the thematically defined cycles.

nastalo ukupno. Neke od tih radova adolescentica bi joj naknadno poslala ili pokazala. Apsolventica je imala uvid u još desetak likovnih radova ispitanice nastalih samoinicijativno u okviru tematski definiranih ciklusa.

Dio podataka značajnih za istraživanje prikupljen je i retrospektivno. Pri tome je odabran prvi crtež koji je nacrtala nakon otpuštanja s bolničkog liječenja. On je korišten kao retrospektivni element na koji se vratila tijekom stvaranja posljednjeg ciklusa.

Za skupinu vanjskih promatrača, studentica i kliničkih psihologa, bila su osmišljena dva istraživačka zadatka. U prvom zadatku predočena su im dva likovna djela adolescentice koja su mogli slobodno interpretirati u pisanom obliku. Drugi istraživački zadatak temeljio se na prigodnom upitniku, koji nije dio standardiziranih dijagnostičkih alata, već je bio strukturiran za potrebe ovog istraživanja. Upitnik se sastojao od trideset i pet varijabli osmišljenih tako da odgovaraju istraživačkim komponentama graničnog poremećaja ličnosti u suodnosu s likovnim izrazom adolescentice. Varijable su formulirane kako bi ukazale na psihofizičke indikatore koji se možda mogu prepoznati u odabranim likovnim djelima. Vanjski promatrači trebali su subjektivne procjene pojedine varijable izraziti na diskretiziranoj grafičkoj ljestvici procjene u rasponu od 1 do 5 pri čemu je 1 značio da navedena varijabla (tema) nije važna u odabranom djelu dok je 5 značio postojanje krajnje ozbiljne važnosti procjenjivane varijable. Ako promatrači nisu bili dovoljno upoznati sa značenjem pojedine varijable iz upitnika, mogli su odabrati rubriku nisam upoznat/upoznata.

Metode obrade podataka

Istraživanje je u jednom dijelu bilo utemeljeno na kvalitativnoj istraživačkoj paradigmi koja je uključivala metodu promatranja, opisivanja i interpretacije likovnih radova adolescentice (17,18), a odvijalo se u tri faze: prikupljanje

Part of the data significant for the study was also collected retrospectively. For this purpose, the first drawing she drew after being discharged from hospital treatment was selected. The drawing was used as a retrospective element to which she returned during the creation of the last cycle.

Two research tasks were designed for the group of external observers – the students and clinical psychologists. In the first task, they were presented with two artworks created by the adolescent, which they could freely interpret in written form. The second research task was based on a custom questionnaire, which is not part of standardized diagnostic tools, but was structured specifically for the purposes of this study. The questionnaire consisted of thirty-five variables designed to correspond to the research components of BPD in relation to the adolescent's artistic expression. The variables were formulated to indicate psychophysical indicators that may be recognizable in the selected artworks. The external observers were asked to express their subjective assessments of each variable on a discretized graphic rating scale ranging from 1 to 5, where 1 meant that the given variable (theme) was not important in the selected artwork, and 5 indicated extreme importance of the evaluated variable. If the observers were not familiar enough with the meaning of a particular variable from the questionnaire, they could choose the option "not familiar".

Data processing methods

The study was partially based on a qualitative research paradigm which included the methods of observation, description, and interpretation of the adolescent's artworks (17, 18). It was conducted in three phases: data collection, content analysis and comparative analysis (19). In the second part of the study, for processing the numerical data obtained from the visual analogue (self)-assessment scales, descriptive statistical methods were used. For comparing the responses obtained from the two groups of external observers, descriptive and inferential non-para-

podataka, analiza sadržaja i komparativna analiza (19). U drugom dijelu, za obradu brojčanih podataka dobivenih na vizualno-analognim ljestvicama (samo)procjene, korištene su metode deskriptivne statistike, dok su za komparaciju odgovora dobivenih od dviju skupina vanjskih promatrača korištene metode deskriptivne i inferencijalne neparametrijske statistike, Mann-Whitneyev U-test (20).

REZULTATI I RASPRAVA

Tijekom likovnog stvaralaštva adolescentice s graničnim poremećajem ličnosti nastalo je mnogo likovnih radova. Za potrebe ovoga rada predstavljamo četiri najznakovitija uratka nastala unutar tematski definiranih ciklusa te jedan stariji retrospektivni rad kojega je ispitanica reinterpretirala tijekom posljednjeg ciklusa. U sva tri likovna ciklusa ona je istraživala osobni identitet, interpersonalne odnose i osobne promjene koje je osvijestila u sadašnjosti u odnosu na prošlost.

Tema prvog ciklusa bila je: *Slika sebe, doživljaj sebe*, a bavi se, poglavito, adolescentičinim doživljajem vlastite osobnosti, istraživanjem identiteta te projekcijom sebe u okruženju. Slika 1. nazvana *Narcis,* nastala je tijekom prvog ciklusa. Na njoj je prikazan portret mlade žene. Dio lica naslikan je poput skeleta, dok je vrat prekriven cvijetom narcisa iz kojeg teče krv. Ispitanica nam otkriva da je prikazala bivšu djevojku s kojom je bila u vezi. Doživjela ju je kao vrlo narcisoidnu osobu i stoga ju je tako predstavila. Pri tom je izjavila: „kostur sam nacrtala zato što svi narcisoidni ljudi trunu, ne mogu ih smisliti. Cvijet u grlu je narcis, i on ih guši. Ne mogu pokazati svoje pravo ja. Na pitanje kakve to veze ima sa mnom, odgovaram da me guši okolina u kojoj živim, najrađe bi se ubila“. Ispitanica je vidno uzrujana temom i vlastitim mislima. Na likovnom radu dominira lice žene koja gleda ravno u promatrača, dok je okolni prostor prekriven plavom i ljubičastom bojom. Dio lica

metric statistical methods were utilized, i.e. the Mann-Whitney U-test (20).

RESULTS AND DISCUSSION

Numerous artworks were produced in the course of artistic creation of the adolescent with BPD. For the purposes of this paper, we will present four of the most significant works created within the thematically defined cycles, and one older retrospective work reinterpreted by the subject during the last cycle. Throughout all three art cycles, she explored her personal identity, interpersonal relationships, and personal changes that she has become aware of in the present in relation to the past.

The theme of the first cycle was: *Self-image, self-perception*, and it mainly dealt with the adolescent's perception of her own personality, exploration of identity, and self-projection in the environment. Figure 1, titled *Narcissus*, was created during the first cycle. It depicts a portrait of a young woman. Part of the face is painted like a skeleton, while the neck is covered with a narcissus flower with blood flowing out of it. The subject reveals that she depicted her ex-girlfriend, with whom she used to be in a relationship. She experienced her as a very narcissistic person and thus portrayed her in this way. In doing so, she stated: "I drew the skeleton because all narcissistic people rot, I can't stand them. The flower in the throat is a narcissus, and it chokes them. They can't show their true selves. As for the question of what all that has to do with me, I respond that the environment I live in suffocates me, I would much rather kill myself." The subject is visibly upset by the theme and her own thoughts. The artwork is dominated by the face of a woman looking straight at the observer, while the surrounding area is covered in blue and purple colours. Part of the face and the hair are depicted in warm colours, pink and yellow. Besides the motif, the choice of colours contributes to the experience of pain and anxiety that the adolescent feels while creating the artwork. She projects precisely these

i kosa prikazani su toplim bojama, ružičastom i žutom. Osim motiva, i odabir boja doprinosi doživljaju boli i tjeskobe koje adolescentica osjeća pri stvaranju likovnog djela. A upravo te osjećaje ona projicira u sliku. Simbol u obliku slova T, nacrtan na području grla, često se pojavljuje na njenim likovnim radovima (slika 1).

Tema drugog ciklusa bila je: *Moj doživljaj okoline u odnosu na mene*, a bavi se načinom na koji adolescentica doživljava svoju okolinu, obitelj, prijatelje te u kojoj mjeri oni na nju utječu. Likovni rad pod nazivom *Pobuna marionete* (slika 2) prvi je rad nastao tijekom drugoga ciklusa. Prikazala se poput zoomorfnog stvora s ptičjim kljunom, djelomično rastrgane kože te sputanog i vezanog tijela kojega usmjeravaju, stežu i razvlače dvije ruke među mnogobrojnim dlanovima. Izobličene plošne maske predstavljaju lica koja su srasla s raznobojnim pozadinskim plohama. U prikazu su prisutni tipični simboli: oči i slovo T. Ispitanica otkriva što je naslikala te izjavljuje: „marioneta u sredini sam ja, ove ruke su ljudi iz moje okoline, ljudi upravljaju samnom, ako ja kažem

SLIKA 1. Narcis
FIGURE 1. Narcissus

feelings into the painting. A symbol in the shape of the letter T, drawn on the throat area, often appears in her artworks (Figure 1).

The theme of the second cycle was: *My perception of the environment in relation to myself*, and it deals with the way in which the adolescent experiences her surroundings, family, friends, and the extent to which they affect her. The artwork entitled *The Marionette Rebellion* (Figure 2) is the first work created during the second cycle. She depicted herself as a zoomorphic creature with a bird's beak, partially torn skin, and a restrained and bound body that is directed, squeezed, and stretched by two hands among many palms. Distorted flat masks represent faces fused with the multi-coloured background planes. The depiction includes typical symbols: eyes and the letter T. The subject reveals what she painted and states: "The marionette in the middle is me, these hands are the people from my environment, people control me. If I say what I think, people get scared, those are their faces in the form of masks. The hands are tearing me, and I choose whom I will obey." Furthermore, she claims she did not paint her family because she is "afraid to draw them, not ready to draw them." The artwork contains expressive and contrasting colours, which for the adolescent represent the contrast between good and bad people. Further symbolism is found in the depiction of clenched fists, as well as in faces that are reminiscent of torn masks. In the depictions of a human figure, people with mental difficulties often focus on the face and body parts, emphasizing certain elements as symbols or bizarreness (21). For the subject, hands symbolize mental and physical strength, and in this depiction, they express the power and dominance of the environment over her, while she perceives herself as torn and powerless. The masks symbolize the faces of others in the background who are blankly watching what is happening to her. She admits to being tired of fighting with her surroundings and the society. Through this artwork, she clearly expresses her emotional state in relation to those close to her.

The painting *Existence* (Figure 3) was also created during the second cycle. It depicts the motif of

SLIKA 2. Pobuna marionete
FIGURE 2. The Marionette Rebellion

što mislim ljudi se prepadnu, to su njihova lica u obliku maski. Ruke me trgaju, a ja odabirem kome ću se pokoriti". Nadalje, tvrdi da nije naslikala svoju obitelj jer ih se „boji nacrtati, nije ih spremna nacrtati". Likovni rad sadrži izražajne i kontrastne boje, koje za adolescenticu predstavljaju suprotnost dobrih i loših ljudi. Daljnju simboliku nalazimo u prikazu stisnutih šaka kao i u licima koja podsjećaju na otrgnute maske. Često se osobe s psihičkim tegobama u prikazu ljudskog lika fokusiraju na lice i dijelove tijela naglašavajući pojedine elemente kao simbole ili bizarnosti (21). Za ispitanicu ruke simboliziraju mentalnu i fizičku snagu, a u ovom prikazu izražavaju snagu i prevagu okoline nad njom, dok sebe doživljava rastrganom i nemoćnom. Maske simboliziraju tuđa lica u pozadini koja bezizražajno promatraju što se s njom događa. Priznaje da je umorna od borbe s okolinom i društvom. Ovim likovnim radom jasno izražava svoje emocionalno stanje u odnosu na bliske ljude.

strange trees with trunks resembling human bodies in different positions and with intertwined tree crowns. On the right side of the depiction, separated from the trees, there are two human figures, one of which is crouched, in an embrace. The subject spontaneously chose the motif of trees, motivated by the real trees growing under her window. They calm her because they are powerful, strong, and steadfast. Her trees represent the character traits (responsibility, stubbornness, charm and humility) that she wants to possess in the future, as well as her relationship with herself. The two bodies woven from leaves, which lie in the tree crowns and partially form them, connect and hold these precious traits together. The adolescent concludes the interpretation of her painting with the statement: "I want to possess the traits my trees have." In depicting this motif, thinking about her own identity, the subject has set out into the future. She painted two blue bodies in an embrace; they symbolize awareness of the moment, but also the knowledge of change

SLIKA 3. Postojanje
FIGURE 3. Existence

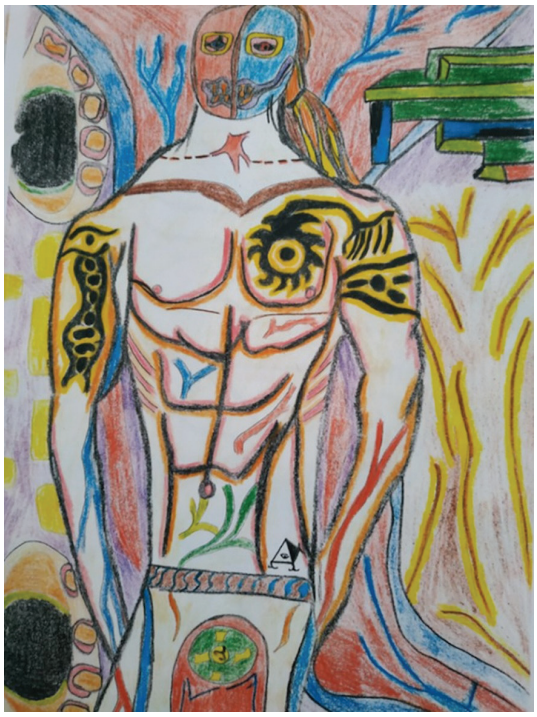
I slika *Postojanje* (slika 3) nastala je tijekom drugog ciklusa. Prikazuje motiv neobičnih stabala s deblima poput ljudskih tijela u različitim položajima i isprepletenim krošnjama. S desne strane prikaza, odvojeno od stabala, smještene su dvije ljudske figure, od kojih je jedna zgrčena, u zagrljaju. Ispitanica je spontano izabrala motiv stabala, a motivirala su je realna stabla koja rastu ispod njenog prozora. Ona je smiruju jer su moćna, snažna i postojana. Njezina stabla predstavljaju karakterne osobine (odgovornost, tvrdoglavost, šarm i poniznost) koje želi posjedovati u budućnosti, ali i odnos sa samom sobom. A dva tijela satkana od lišća, koja leže u krošnjama i djelomično ih tvore, povezuju i drže te dragocjene osobine na okupu. Interpretaciju naslikanog adolescentica zaključuje izjavom: „želim posjedovati osobine koje imaju moja stabla“. U prikazu ovog motiva, razmišljajući o vlastitom identitetu, ispitanica se otisnula u budućnost. Naslikala je dva plava tijela u zagrljaju; ona simboliziraju svjesnost trenutka, ali i spoznaju o budućim promjenama, in the future, of what she wants to be and who she wants to become. The motif of the tree is often present in diagnostic and projective tests, the most well-known of which is the *Baumtest* (22), as well as in art therapeutic approaches, and it is related to the notion of identity (23). However, in both ancient and modern interpretations, the symbolism of the tree is multifaceted and most often associated with fertility, the phallus, nobility, the highest principle, cognition, and life (24). The process of creating this artwork provoked a very positive reaction from the subject, a sense of purpose and a better future, while the power of self-activation filled her with satisfaction and enthusiasm. In this work, we do not observe her typical symbols, eyes or the letter T, nor any bizarreness or aggression. There is a significant difference in the atmosphere and perception of the depiction.

The theme of the third cycle was: *I am learning about myself, I am changing in time*. It covers the last part of the artistic research, and it includes retrospective and prospective data collection. The adolescent was shown her first artwork en-

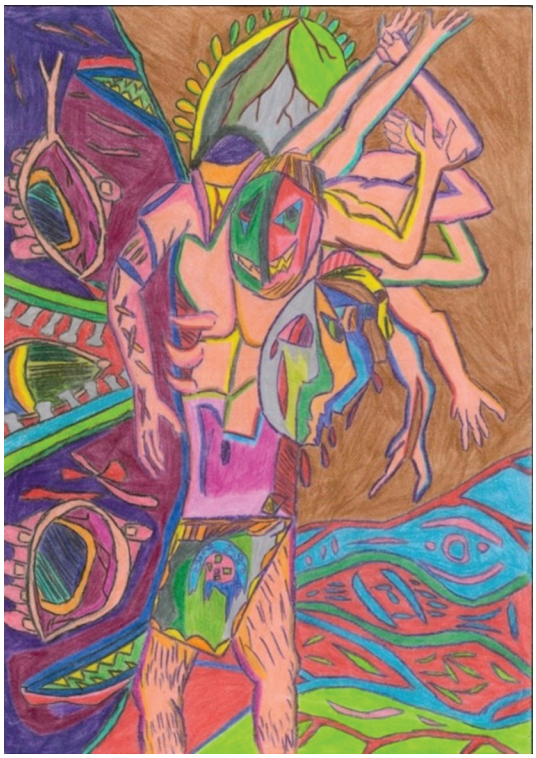
o onome što želi biti i tko želi postati. Motiv stabla često je prisutan u dijagnostičkim i projektivnim testovima, među kojima je najpoznatiji *Baumtest* (22), kao i u likovno-terapijskim pristupima, a povezuje se s pojmom identiteta (23). No, u drevnim i suvremenim tumačenjima simbolika stabla je mnogobrojna i najčešće asocira plodnost, falus, plemenitost, najviši princip, spoznaju i život (24). Proces stvaranja ovog likovnog rada izazvao je izrazito pozitivnu reakciju ispitanice, osjećaj svrhovitosti i bolje budućnosti, a moć samoaktivacije ispunila ju je zadovoljstvom i poletom. Na ovom radu ne uočavamo njene tipične simbole, oči ili slovo T, bizarnost i agresivnost. Primjetna je značajna razlika u atmosferi i doživljaju prikaza.

Tema trećeg ciklusa bila je: *Učim o sebi, mijenjam se u vremenu*. Ona obuhvaća posljednji dio likovnog istraživanja, a uključuje retrospektivno i prospektivno prikupljanje podataka. Adolescentici je pokazan njen prvi likovni rad s nazivom *Nebeske oči* (slika 4), koji je nastao nakon bolničkog liječenja, u vrlo izazovnom životnom razdoblju. Bila je uznemirena kad ga je ugledala, zatim se prisjetila okolnosti vezanih uz njegov nastanak. Svoju priču zaključuje govoreći: „bila sam mnogo agresivnija, ali više nisam“. Doživljavajući ponovno svoj likovni rad, u odmaku od četiri godine, ispitanica introspektivno sagledava samu sebe i promjene koje su se dogodile u proteklom vremenu. Sadašnji doživljaj sebe izražava u novom likovnom radu verbalno nadopunjujući naslikano i spoznato. Slika *Mračne misli* (slika 5) nastala je kao odgovor na stari crtež koji je vraća u teška stanja i traume proživljene u ranijoj adolescenciji. Uspoređujući oba rada uočavamo temeljnu sličnost u rasporedu ključnih dijelova kompozicije te prikazu muškog lika koji dominira plohom papira. Na crtežu *Nebeske oči* lice mu je prekriveno maskom, dok se na slici *Mračne misli* oslobađa mnogih maski, odbacujući ih multipliciranim kretnjama ruke. Iako se raniji crtež i novonastala slika tematski podudaraju, zamjetne su značajne razlike u detaljima i koloritu. Na slici *Mračne misli* prevladavaju boje

titled *Heavenly Eyes* (Figure 4), which was created after hospital treatment, during a very challenging period of her life. She was upset when she saw it, then she recalled the circumstances related to its creation. She concludes her story by saying: “I was much more aggressive, but I am no longer like that.” By re-experiencing her artwork, four years later, the subject introspectively looks at herself and the changes that happened in the meantime. She expresses her current self-perception through a new artwork, verbally complementing what was painted and recognized. The painting *Dark Thoughts* (Figure 5) was created in response to the old drawing which brings her back into the difficult states and traumas experienced in earlier adolescence. Comparing both works, we observe a fundamental similarity in the arrangement of the key parts of the composition and the depiction of a male figure who dominates the surface of the paper. In the drawing *Heavenly Eyes*, his face is covered with a mask, while in the painting *Dark Thoughts*, he is freeing himself from many masks, discarding them with multiple hand movements.



SLIKA 4. Nebeske oči
FIGURE 4. Heavenly Eyes



SLIKA 5. Mračne misli
FIGURE 5. Dark Thoughts

u snažnim kontrastima, dok je crtež *Nebeske oči* zasićen linijama i simbolima. Prema opisu adolescentice, na crtežu je *On* prikazan kao muški akt, oči simboliziraju halucinacije koje je prate posvuda, a piramida predstavlja preokupaciju vječnim životom. Ruke, posebno mišići, simboliziraju spolnost i ističu najprivlačniji dio tijela koji predstavlja zaštitu, snagu. Ispitanica na novom likovnom radu izražava oslobađanje od prijašnjih teškoća i stanja. Za razliku od ranijeg statičnog prikaza akta, u novonastaloj slici, kompozicija postaje dinamična zbog ritmiziranih kretnji ruku koje odbacuju maske, a što za adolescenticu simbolizira iskustvo i rast. Velike oči prijete s lijeve strane kroz otvorene patentne zatvarače, a na mjestu genitalija nalazi se djelomično razbijena električna naprava na kojoj je ispisano pet slova T, dok je u crtežu prisutno jedno takvo slovo. Donji dio desne polovice slike ispunjen je plošnim, ritmiziranim ornamentom, uglavnom crvene i plave boje, koji podsjeća na gibanje, protok, krvotok. Na desnoj ruci naglašeni su ožiljci koje adolescentica ima iz razdoblja

Although the earlier drawing and the newly created painting are thematically similar, there are significant differences in details and colours. In the painting *Dark Thoughts*, strong contrasting colours dominate, while the drawing *Heavenly Eyes* is saturated with lines and symbols. According to the adolescent's description, *He* is depicted in the drawing as a male nude, the eyes symbolize the hallucinations that follow her everywhere, and the pyramid represents a preoccupation with eternal life. The arms, especially the muscles, symbolize sexuality and emphasize the most attractive part of the body that represents protection, strength. In the new artwork, the subject expresses liberation from previous difficulties and states. Unlike the earlier static depiction of the nude, in the newly created painting, the composition becomes dynamic due to the rhythmic movements of the multiplied arms that reject the masks, which symbolizes experience and growth for the adolescent. Large eyes threaten from the left side through open zippers, and in the genital area there is a partially broken electrical device with five letters T written on it, while one such letter is present in the drawing. The bottom part of the right half of the painting is filled with a flat, rhythmic ornament, mostly in red and blue, which reminds of movement, flow, blood flow. The scars on the right arm, which the adolescent has had since the period of self-injury, are emphasized. Intense colours, arranged in strong contrasts, dominate the artwork. For the subject, the colour red symbolizes sexual and spiritual pleasure, while in earlier drawings it represented her aggression. Green represents peace and security, while yellow denotes the appearance of healthy moments, happiness. While in the right corner of the drawing blue-red veins flowed with anger, an energy she could not control, in the new painting, she uses blue to mark the desires flowing within her. Based on the comparison and analysis of the drawing *Heavenly Eyes* and the painting *Dark Thoughts*, and with additional explanations from the subject, we conclude that the last painting, *Dark Thoughts*, is an indicator

samoozljeđivanja. U likovnom radu prevladavaju intenzivne boje, raspoređene u snažnim kontrastima. Za ispitanicu, crvena boja simbolizira seksualno i duhovno zadovoljstvo, dok je u ranijem crtežu predstavljala njenu agresiju. Zelena boja predstavlja mir i sigurnost, dok žutom označava pojavljivanje zdravih trenutaka, sreće. Dok su desnim kutom crteža tekle plavo-crvene vene kojima je strujao bijes, energija koju nije mogla kontrolirati, u novoj slici ona plavom bojom označava svoje želje koje teku unutar nje. Na temelju usporedbe i analize crteža *Nebeske oči* i slike *Mračne misli* te uz dodatna pojašnjenja ispitanice, zaključujemo da je posljednja slika *Mračne misli* pokazatelj procesa njene transformacije u protekle četiri godine, od trenutka kad je bila hospitalizirana do danas kad je studentica koja se hvata u koštac sa životnim izazovima. Za nju transformacija nije završena. Ona i dalje preispituje svoje granice, definicije svog identiteta i seksualnosti. Nakon što je naslikala posljednju sliku izjavljuje: „prije crtanja, ja sam egoist, pravim se da sve znam, gledam ljude s visoka, volim omalovažavati druge, nezadovoljna sam, depresivna. Nakon crtanja osjećam se mirno, lakše otvaram oči. Uhvatim dodir sa stvarnošću, marim za ljude. Svijet gledam u boljem smislu, prije crtanja svijet mi je ogavan".

I dvije skupine vanjskih promatrača, studentice Umjetničke akademije u Splitu te klinički psiholozi iz Kliničkog bolničkog centra u Splitu, doživljavale su dva odabrana likovna rada adolescentice, a potom su ih slobodno interpretirali. Tijekom njihove evaluacije uočeni su mnogi zajednički elementi. Svih osam promatrača izjavilo je da likovni radovi izazivaju neugodne emocije. Bol, gorčina, napuštenost, agresija, bizarnost i strah zajedničke su asocijacije koje navode. Svi oni uočavaju simbole: muški akt, ruke, piramida, oči, potpis u obliku slova T, maske. Svi psiholozi prepoznaju neki oblik psihičkog poremećaja, dok sve studentice uočavaju neobičnost u prikazu identiteta te emocionalnu i seksualnu preokupaciju autorice radova. To bi značilo da obje skupine vanjskih promatrača u likovnim radovi-

of the process of her transformation over the past four years, from the moment when she was hospitalized until today, when she is a student struggling with the challenges of life. For her, the transformation is not over. She continues to test her limits, definitions of her identity and sexuality. After having painted the last painting, she states: "Before drawing, I am an egoist, I pretend to know everything, I look down on people, I like to belittle others, I am dissatisfied, depressed. After drawing I feel calm, I open my eyes more easily. I get in touch with reality, I care about people. I look at the world from a better perspective, while before drawing I find the world disgusting."

The two groups of external observers, students of the Arts Academy in Split and clinical psychologists from the University Hospital of Split, also viewed the adolescent's two selected artworks, and then provided their own interpretations. Many common elements were observed during their evaluation. All eight observers stated that the artworks evoke unpleasant emotions. Pain, bitterness, abandonment, aggression, bizarreness and fear are the common associations they mention. They all recognized the symbols: male nude, arms, pyramid, eyes, T-shaped signature, masks. All the psychologists recognized some form of mental disorder, while all the students noticed an unusual depiction of identity and the author's emotional and sexual preoccupation in the artworks. This would mean that both groups of external observers indirectly sensed or recognized the risk parameters in the adolescent's mental health within her artwork. Furthermore, only one student believed that the author of the artworks was a woman, while the other two thought it was a man. Three psychologists stated that the author was female, while the remaining two believed the author to be male.

Based on a comparative analysis of all of the subject's artworks created during the study, patterns that represent a risk of developing BPD can be observed. In the narrative expression full of symbols, a male nude as the central figure,

ma adolescentice, indirektno, naslućuju ili prepoznaju rizične parametre u njenom mentalnom zdravlju. Nadalje, samo jedna studentica smatra da je autor likovnih radova žena, dok preostale dvije misle da se radi o muškarcu. Troje psihologa navodi da se radi o ženskom spolu, dok preostalo dvoje smatra da je autor muškarac.

Na temelju komparativne analize svih likovnih radova ispitanice nastalih tijekom istraživanja mogu se uočiti obrasci rizični za razvoj graničnog poremećaja ličnosti. U narativnom izrazu prepunom simbola, muškom aktu kao središnjem liku, izolaciji i pretjeranoj upotrebi bizarnih seksualnih scena, uz poznavanje adolescentičine prošlosti, moguće je iščitati emocionalnu deprivaciju, uzrokovanu fizičkim odbacivanjem i emocionalnim zapostavljanjem te neželjenošću i nestalnošću primarnih odnosa. U svim nastalim radovima, učestalim odabirom simbola očiju i maski, koji se u psihologiji povezuju s pojmom identiteta, adolescentica izražava osobni izostanak središnje *attachment* figure, osobito istospolne (majke), za identifikaciju, što dovodi do dezorganiziranog *attachement*-a, a posljedično, moguće, i spolno identitetnim problemima. Navedeno potkrepljuju česta ponavljanja prikaza muške figure u suodnosu sa ženom, nejasnoće u artikulaciji svoje seksualnosti te prikazivanje sebe simboličnim potpisom na intimnom području. John Bowlby, tvorac teorije o privrženosti (*Attachment Theory*), smatrao je da niti jedan čovjek ne može živjeti bez podrške drugog čovjeka te da obrazac privrženosti koji smo formirali u ranom djetinjstvu utječe na sve naše buduće odnose. Sigurna privrženost koju pruža središnja figura privrženosti potiče razvoj djetetovog osjećaja vlastitog identiteta (25,26), a time i razvoj mentalizacije. Nekoliko izjava adolescentice prikupljenih tijekom likovno-istraživačkih susreta korespondira s prethodno navedenim: „Ja sam uvijek usamljena, sama sam i kad nisam, osjećam se usamljeno i kad sam s prijateljima. Oči su prijatelji u mojoj glavi, ali sam skužila da nisu stvarni… Lica predstavljaju moju okolinu, začuđenost ljudi, prijatelja i poznanika koji i

isolation and excessive use of bizarre sexual scenes, along with knowledge of the adolescent's past, it is possible to discern emotional deprivation caused by physical rejection and emotional neglect, as well as the undesirability and instability of primary relationships. In all her works, through the frequent selection of symbols such as eyes and masks, which in psychology are associated with the concept of identity, the adolescent expresses a personal absence of the central attachment figure, especially one of the same sex (mother), which provides identification, and which results in disorganized attachment and, consequently, possible sexual identity issues. These claims are supported by the frequent repeated depictions of a male figure in correlation with a woman, ambiguities in articulating her own sexuality, and presenting herself through a symbolic signature in the intimate area. John Bowlby, the creator of Attachment Theory, believed that no person can live without the support of another, and that the attachment pattern we form in early childhood influences all our future relationships. Secure attachment provided by the primary attachment figure fosters the development of the child's sense of self-identity (25, 26), and consequently, the development of mentalization. Several statements made by the adolescent which were collected during the art-research sessions correspond to the aforementioned: "I am always lonely, I am alone even when I am not. I feel lonely even when I am with friends. The eyes are friends in my head, but I figured out they are not real… The faces represent my surroundings, the astonishment of people, friends, and acquaintances who still cannot understand why I have such loyalty and attachment to women… I don't trust people." One of the clinical psychologists points out the following: "Preoccupation with the face may indicate difficulties in perceiving relationships with others in various ways." Furthermore, her clinical presentation includes various behaviours and conditions: impulsivity, self-injury, aggression, a tendency to risky behaviour, suicidality, brief psychotic decompen-

dalje ne mogu razumjeti zašto tolika odanost i privrženost ženama… Nemam povjerenja u ljude“. Jedan od kliničkih psihologa ističe: „Preokupiranost licem može ukazivati na poteškoće u percepciji odnosa s drugima na različite načine“. Nadalje, njena klinička slika uključuje različita ponašanja i stanja: impulzivnost, samoozljeđivanje, agresivnost, sklonost rizičnim ponašanjima, suicidalnost, kratkotrajne psihotične dekompenzacije, psihosomatske konverzivne smetnje. Sva su ona likovno izražena u agresivnim prikazima muško-ženskih odnosa, trganjem pojedinih dijelova tijela, komplementarnim kontrastima boja te figurativnom i koloristočkom zasićenošću papira. Likovni radovi mogu se detaljno raščlanjivati na mnoge elemente koji upućuju na žarišne točke u njenoj ličnosti.

Cilj istraživanja obuhvaćao je i usporedbu raspoloženja ispitanice, proizašlog iz objedinjenih stanja: osobnog zadovoljstva, samoregulacije i samoosnaženja, a izraženog na ljestvicama samoprocjene prije i poslije likovnog izražavanja. Za provjeru hipoteze (H2) o poticanju samoregulacije, samoosnaženja i osjećaju zadovoljstva tijekom procesa stvaranja te nakon njega korištene su metode deskriptivne statistike. Tri stanja izabrana za samoprocjenu, koja je ispitanica izrazila na ljestvici od 1 do 10 (1 = nepostojanje, 10 = maksimalna izraženost), objedinjena su u jednu vrijednost (raspoloženje) koja ukazuje na pozitivan utjecaj likovnog izražavanja na njeno unutarnje stanje. Iako je korištena diskretizirana vizualno-analogna ljestvica samoprocjene, ispitanica je željela neke vrijednosti procjene napisati na ljestvici kao decimalne brojeve, što joj je dopušteno. Stoga neke vrijednosti procjene raspoloženja nisu cijeli brojevi. Deskriptivni podatci vizualno-analogne ljestvice samoprocjene raspoloženja prije i poslije likovnog izražavanja prikazani su u tablici 1, a ukupne vrijednosti samoprocjene raspoloženja prije i poslije likovnog izražavanja na grafikonu 1. U tablici 1 prikazane mjere centralne tendencije i raspršenja 1., kao i grafički prikaz (grafikon 1) jasno ukazuju da nakon likovnog stvaranja dolazi do

sation, psychosomatic conversion disorders. All of these are artistically expressed in aggressive depictions of male-female relationships, tearing of body parts, complementary colour contrasts, and figurative and coloristic saturation of the paper. The artworks can be analysed in detail into the many elements that point to focal points in her personality.

The aim of the study also included a comparison of the participant's moods, derived from the combined states of personal satisfaction, self-regulation, and self-empowerment, as expressed on self-assessment scales before and after artistic expression. In order to test the hypothesis (H2) regarding the stimulation of self-regulation, self-empowerment and the feeling of satisfaction during and after the process of creation, descriptive statistics methods were used. The three states selected for self-assessment, which the adolescent rated on a scale from 1 to 10 (1 = absence, 10 = maximum intensity), were unified into a single value (mood), which indicates a positive impact of artistic expression on her inner state. Although a discretized visual analogue self-assessment scale was used, the subject wanted to write some assessment values on the scale as decimal numbers, which she was allowed to do. Therefore, some mood assessment values are not presented as whole numbers. Descriptive data from the visual analogue self-assessment scale of mood before and after artistic expression are presented in Table 1, while the total self-assessed mood values before and after artistic expression are shown in Graph 1. Measures of central tendency and dispersion presented in Table 1, as well as the graphical representation (Graph 1), clearly indicate that after artistic creation, there is an improvement in the level of personal satisfaction, self-empowerment, and self-regulation, when compared to the previous state. The obtained results confirm the hypothesis (H2) regarding the benefit of artistic expression and creation on the subject's self-assessment.

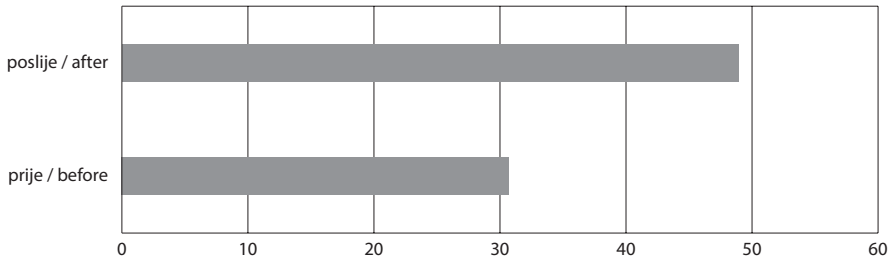
The structured part of the questionnaire, which was intended for external observers, students

TABLICA 1. Deskriptivni podatci diskretizirane vizualno-analogne ljestvice samoprocjene raspoloženja prije i poslije likovnog izražavanja
TABLE 1. Descriptive data of the discretized visual analogue self-assessment scale of mood before and after artistic expression

	Likovno-istraživački susreti / Art-research sessions							Zbroj / Sum
Broj susreta / Session number	1.	2.	3.	4.	5.	6.	7.	
Raspoloženje prije / Mood before	3,2	3	6,5	3	6	5	4,5	31,2
Raspoloženje poslije / Mood after	5	5	9	5,5	7,3	7,5	10	49,3

Sažetak / Summary					
	M (Sd)	D	Min	Max	TR
Prije / Before	4,46 (1,45)	3	3	6,5	3,5
Poslije / After	7,04 (1,98)	5	5	10	5

Bilješka: M = aritmetička sredina; Sd = standardna devijacija; D = dominantna vrijednost, mod; Min = minimalna vrijednost; Max = maksimalna vrijednost; TR = totalni raspon / *Note:* M = arithmetic mean; Sd = standard deviation; D = dominant value, mod; Min = minimum value; Max = maximum value; TR = total range



GRAFIKON 1. Ukupne vrijednosti samoprocjene raspoloženja prije i poslije likovnog izražavanja
GRAPH 1. Total values of self-assessed mood before and after artistic expression

porasta, tj. poboljšanja razine osobnog zadovoljstva, samoosnaženja i samoregulacije u odnosu na prijašnje stanje. Dobiveni rezultati potvrđuju hipotezu (H2) o dobrobiti likovnog izražavanja i stvaranja na samoprocjenu ispitanice.

Strukturirani dio upitnika koji je bio namijenjen vanjskim promatračima, studenticama i kliničkim psiholozima sastojao se od trideset i pet varijabli, koncipiranih na način da odgovaraju istraživačkim komponentama graničnog poremećaja ličnosti u suodnosu s likovnim izrazom adolescentice. Varijable su formulirane kako bi ukazale na psihofizičke indikatore koji se možda mogu iščitati iz priloženih likovnih djela. Procjene varijabli iz upitnika kod obje skupine vanjskih promatrača korespondiraju s likovnim radovima. U svrhu provjere pretpostavke o eventualnim razlikama između studentica i kliničkih psihologa u procjeni varijabli, tj. rizičnih parametara ispitanice korištene su metode deskrip-

and clinical psychologists, consisted of thirty-five variables designed to correspond to the research components of BPD in relation to the artistic expression of the adolescent. The variables were formulated so as to indicate psychophysical indicators that might be interpreted from the presented artworks. The assessments of the variables from the questionnaire in both groups of external observers correspond to the artworks. For the purpose of verifying the hypothesis about the potential differences between the students and the clinical psychologists in their variable assessments, i.e. the participant's risk parameters, descriptive and inferential nonparametric statistical methods were used. The Mann-Whitney U-test was used to test the significance of differences in assessments between the two groups. Table 2 presents the data from the conducted statistical analyses obtained based on the values of the variable assessments from the questionnaire.

tivne i inferencijalne neparametrijske statistike. Za provjeru značajnosti razlika u procjeni između dviju skupina korišten je Mann-Whitneyev U-test. U tablici 2. prikazani su podatci provedenih statističkih analiza dobivenih na temelju vrijednosti procjena varijabli iz upitnika.

Dobiveni rezultati pokazuju da su procjene studentica i kliničkih psihologa za veliku većinu varijabli vrlo slične i upravo to je razlog visoke razine značajnosti na čak trideset i dvije od trideset i pet varijabli. To znači da za veliku većinu varijabli nisu utvrđene statistički značajne razlike između procjena studentica i kliničkih psihologa. Najveće slaganje u procjenama između dviju skupina vanjskih promatrača uočeno je na sljedećim varijablama: doživljavanja vlastite ličnosti i identiteta, raspoloženje, somatski uvjetovani psihopatološki simptomi i sindromi, autoagresivnost, procjena funkcioniranja autora/autorice, djelo je dio nekakve terapije, djelo je sredstvo ekspresije katarze, djelo je sredstvo ekspresije strategije suočavanja/preživljavanja, djelo je sredstvo samovrednovanja, djelo je sredstvo iskazivanja postojanja ciljeva, simboli u crtežu i motiv u slikarskom djelu. I studentice i klinički psiholozi smatraju da su navedene varijable (teme) vrlo važne za dva promatrana likovna djela adolescentice. To bi značilo da obje skupine vanjskih promatrača misle da autorica radova izražava doživljaj vlastite ličnosti i identiteta, svoje raspoloženje, autoagresivnost te somatski uvjetovane psihopatološke simptome i sindrome u svojoj likovnoj ekspresiji. Nadalje, smatraju da se iz njenih likovnih radova može dobiti uvid u procjenu funkcioniranja autora/autorice, da su sredstvo ekspresije katarze, strategije suočavanja/preživljavanja i samovrednovanja. Također navode da likovni radovi iskazuju postojanje ciljeva, da su u njima važni motivi i simboli te da su dio nekakve terapije. Na temelju navedenih sukladnih procjena varijabli može se zaključiti da i studentice i klinički psiholozi doživljavajući njen likovni izraz indirektno, uočavaju rizične parametre (poglavito neobičnost u prikazu identiteta, autoagresiv-

The obtained results show that the assessments of students and clinical psychologists were very similar for the vast majority of the variables, which results in a high level of significance of as many as thirty-two out of the thirty-five variables. This means that for the vast majority of the variables, no statistically significant differences were found between the assessments of students and clinical psychologists. The highest agreement in assessments between the two groups of external observers was observed in the following variables: experiencing own personality and identity, mood, somatically conditioned psychopathological symptoms and syndromes, auto-aggression, assessment of the author's functioning, the work being part of some form of therapy, the work being a means of catharsis expression, the work being a means of expressing a coping/survival strategy, the work being a means of self-evaluation, the work being a means of expressing the existence of goals, symbols in the drawing, and the motif in the painting. Both the students and clinical psychologists considered these variables (themes) to be very important for the two observed artworks done by the adolescent. This would mean that both groups of external observers believe that the author of the works expresses the perception of her own personality and identity, her mood, auto-aggression, and somatically conditioned psychopathological symptoms and syndromes through her artistic expression. Furthermore, they consider that her artistic works provide insight into the assessment of the author's functioning, serving as a means of catharsis expression, coping/survival strategy, and self-evaluation. They also state that the artworks reflect the existence of goals, that motifs and symbols are important in them, and that they are part of some form of therapy. Based on these consistent assessments of variables, it can be concluded that both the students and clinical psychologists, by indirectly experiencing her artistic expression, recognized the risk parameters (particularly the unusual depiction of identity, auto-aggression, motifs and symbols) in the mental health of the adolescent.

TABLICA 2. Podatci provedenih statističkih analiza dobivenih na temelju vrijednosti procjena varijabli iz upitnika
TABLE 2. Data from conducted statistical analyses derived on the basis of the assessed variable values from the questionnaire

Varijable (teme) / Variables (themes)	Psiholozi / Psychologists, N = 5			Studenti / Students, N = 3			p
	Min	Max	M (Sd)	Min	Max	M (Sd)	
Svijest i orijentacije / Awareness and orientation	1	4	2,6 (1,14)	3	4	3,67 (0,58)	0,25
Psihomotorike i vanjski izgled / Psychomotorics and external appearance	1	5	2,8 (1,48)	3	4	3,67 (0,58)	0,39
Formalni i sadržajni poremećaji mišljenja / Formal and content-thought disorders	4	5	4,8 (0,45)	2	5	3,67 (1,53)	0,25
Afekt i voljni dinamizmi / Affectation and voluntary dynamism	4	5	4,6 (0,55)	3	5	4 (1)	0,39
Pamćenje, inteligencija, opažanje, pažnja / Memory, intelligence, perception, attention	1	5	2,4 (1,67)	4	3	3,33 (0,58)	0,39
Nagoni i socijalno funkcioniranje / Instincts and social functioning	3	5	4,2 (0,84)	4	5	4,67 (0,58)	0,57
Doživljavanja vlastite ličnosti i identiteta / Perception of own personality and identity	4	5	4,8 (0,45)	4	5	4,67 (0,58)	0,79
Anksioznost / Anxiety	3	5	4,4 (0,89)	2	4	3 (1)	0,14
Raspoloženje / Mood	3	4	3,6 (0,59)	2	4	3,33 (1,16)	1,0
Psihotičnost / Psychoticism	3	5	4,4 (0,89)	1	5	2,67 (2,10)	0,25
Bihevioralni sindromi udruženi s fiziološkim poremećajima / Behavioural syndromes associated with physiological disorders	2	3	2,6 (0,55)	3	5	0,67 (1,16)	0,25
Somatski uvjetovani psihopatološki simptomi i sindromi / Somatically conditioned psychopathological symptoms and syndromes	1	3	2,2 (0,84)	1	4	2,33 (1,53)	1,0
Ovisnosti / Addictions	1	5	2,6 (1,52)	1	2	1,33 (0,58)	0,25
Agresivnost / Aggression	1	4	3,2 (1,30)	1	3	2 (1)	0,25
Autoagresivnost / Auto-aggression	2	5	4,2 (1,30)	3	5	4 (1)	0,79
Postojanje možebitne bolesti ili stanja / Existence of a possible disease or condition	2	5	3,8 (1,30)	1	4	2,33 (1,53)	0,25
Koje bi to stanje bilo „Normalnost" / What condition would constitute "Normality"	2	5	3,4 (1,14)	2	3	2,67 (0,58)	0,39
Procjena funkcioniranja autora/autorice / Assessment of the author's functioning	4	5	4,2 (0,45)	3	5	4 (1)	0,79
Djelo je / The work is							
Spontano / Spontaneous	3	4	3,4 (0,55)	1	5	2,67 (2,10)	0,57
Dio nekakve terapije / Part of some form of therapy	1	4	2,8 (1,30)	1	4	3 (1,17)	0,79
Djelo je sredstvo / The work is a means of							
Ekspresije katarze / Catharsis expression	3	5	4,2 (0,84)	3	5	4 (1)	0,79
Ekspresije, imaginacije / Expression, imagination	2	5	2,8 (1,30)	3	5	3,67 (1,16)	0,25
Ekspresije strategije suočavanja/preživljavanja / Expression of coping/survival strategy	2	5	3,6 (1,52)	4	5	4,33 (0,58)	0,79
Samo-otkrivanja / Self-disclosure	1	5	3,2 (1,48)	4	4	4 (0)	0,39
Iskazivanja duhovnosti, bez/smisla i ne/prihvaćanja / Expressing spirituality, lack of/sense and non/acceptance	2	4	3 (0,71)	3	4	3,33 (0,58)	0,57
Ekspresije samo-osnaživanja, osjećaja kontrole i utjecaja / Expression of self-empowerment, sense of control and influence	1	3	1,8 (0,84)	1	5	3,33 (2,08)	0,39
Samo-vrednovanja / Self-evaluation	3	4	3,4 (0,55)	1	5	3,33 (2,08)	0,79
Iskazivanja osjećaja identiteta / Expressing the sense of identity	1	3	2,2 (0,84)	1	5	3,67 (2,40)	0,39
Samopouzdanja / Self-confidence	1	3	2 (0,71)	3	4	3,33 (0,58)	0,07
Samozadovoljstva / Self-satisfaction	1	3	1,6 (0,89)	3	4	3,67 (0,58)	0,04*
Postojanja ciljeva / Existence of goals	1	4	1,8 (1,30)	1	3	2 (1)	0,79
Simboli u crtežu / Symbols in the drawing	1	5	3,2 (2,05)	1	5	3,67 (2,31)	0,79
Boje kojima se autor/ica služi / Colours used by the author	1	5	3,8 (1,79)	5	5	5 (0)	0,39
Slikarski rukopis/faktura u djelima / Painting style/techniques in works	2	4	3,2 (0,84)	5	5	5 (0)	0,04*
Motiv u slikarskom djelu / Motif in the painting	3	5	4,2 (1,10)	4	5	4,67 (0,58)	0,79

Bilješka: Min = minimalna vrijednost; Max = maksimalna vrijednost; M = aritmetička sredina; Sd = standardna devijacija; p = razina značajnosti; * = značajnost na razini < 0,05
/ Note: Min = minimum value; Max = maximum value; M = arithmetic mean; Sd = standard deviation; p = level of significance; * = significance at the level of < 0.05

nost, motive i simbole) u mentalnom zdravlju adolescentice. Jedine značajne razlike između studentica i kliničkih psihologa uočavaju se na procjeni samozadovoljstva i slikarskog rukopisa ispitanice ($p<0,05$). Marginalno značajna razlika postoji i u procjeni samopouzdanja ($p=0,07$). Klinički psiholozi su, za razliku od studentica, procijenili da adolescentica izražava niže samozadovoljstvo, pa i samopouzdanje u svojim likovnim radovima te da joj je slikarski rukopis manje izražajan i važan. Razlike na preostalim pitanjima nisu dosegle razinu statističke značajnosti, što ukazuje da su i studentice senzibilizirane za uočavanje neobičnog u likovnom izrazu. Ipak, rezultati upućuju na razlike u procjeni nekih elemenata likovnih radova ispitanice između studentica i kliničkih psihologa pa bi stoga bilo dobro te razlike provjeriti na većem uzorku vanjskih promatrača.

U obradi sveukupnih statističkih podataka potvrđene su hipoteze H2 i H3. Likovno stvaralaštvo adolescentice s graničnim poremećajem ličnosti povećalo je razinu osobnog zadovoljstva, samoosnaženje i samoregulaciju njenih emocionalnih stanja što potvrđuje drugu hipotezu (H2). U obradi strukturiranog upitnika, između studentica i kliničkih psihologa na većini varijabli dolazi do sukladnih procjena, tj. statistički neznačajnih razlika osim u procjeni samozadovoljstva, samopouzdanja i slikarskog rukopisa gdje se uočavaju značajne razlike. To znači da likovno izražavanje ispitanice omogućuje uočavanje rizičnih parametara u njenom mentalnom zdravlju kod obje skupine vanjskih promatrača što potvrđuje treću hipotezu (H3).

Manjkavosti ovog istraživanja mogu proizlaziti iz sudjelovanja samo jedne ispitanice, malog broja vanjskih promatrača, ograničavajućeg broja likovnih susreta i relativno kratkog trajanja procesa likovnog rada. Tematsko proširivanje likovnih ciklusa, proučavanje simbolike boja i upotrijebljenih simbola unutar odabranih tema uz verbalne nadopune adolescenti-

The only significant differences between the students and clinical psychologists are observed in the assessment of self-satisfaction and painting style of the subject ($p<0.05$). A marginally significant difference was also observed in the assessment of self-confidence ($p = 0.07$). Unlike the students, the clinical psychologists assessed that the adolescent expresses lower self-satisfaction, and even self-confidence, in her artwork and that her painting style is less expressive and significant. The differences in the remaining questions did not reach the level of statistical significance, indicating that the students are also sensitized to noticing unusual elements in the artistic expression. However, the results indicate differences in the assessment of some elements of the subject's artwork between the students and the clinical psychologists. It would, therefore, be beneficial to verify these differences using a larger sample of external observers.

In the processing of the overall statistical data, hypotheses H2 and H3 were confirmed. The artistic creativity of the adolescent with BPD increased the level of personal satisfaction, self-empowerment and self-regulation of her emotional states, which confirms the second hypothesis (H2). In the analysis of the structured questionnaire, the students and clinical psychologists showed consistent assessments on most variables, with statistically insignificant differences, except in the assessment of self-satisfaction, self-confidence, and painting style, where significant differences were observed. This means that the subject's artistic expression allows both groups of external observers to identify risk parameters in her mental health, which confirms the third hypothesis (H3).

The limitations of this study may stem from the participation of only one subject, the small number of external observers, the limited number of art sessions, and the relatively short duration of the artistic process. Expanding the themes of the art cycles, studying the symbolism of colours and symbols used within the selected themes, along with verbal supplements from the adolescent, provide opportunities for further research and

ce pružaju mogućosti za daljnja istraživanja i evaluacije, te mogu biti korisno ishodište kod sličnih istraživanja.

ZAKLJUČAK

Rezultati ovog istraživanja koji su proizašli iz strukturiranog upitnika namijenjenoga interdisciplinarnoj skupini vanjskih promatrača ukazuju na rizične parametre u mentalnom zdravlju adolescentice te potvrđuju projektivnu dimenziju njenih crteža/slika. Osim toga tijekom i nakon likovnog izražavanja utvrđena je poboljšana duhovna komponenta doživljaja sebe, izražena na diskretiziranim vizualno-analognim ljestvicama samoprocjene. S obzirom na likovne rezultate dobivene nakon stvaranja i verbalnog osvrta ispitanice može se zaključiti da je likovno izražavanje bilo primjeren alat u ovom istraživanju. Ono joj pomaže pri emocionalnim samoregulacijama u nadilaženju impulzivnosti, agresivnosti te posljedičnim stanjima samoozljeđivanja i suicidalnih misli, ali i pri tjelesnim smetnjama koje u podlozi imaju prije navedeno. Stoga je likovna ekspresija adolescentice poželjno sredstvo koje joj omogućuje sigurnu osobnu reorganizaciju i mogućnost eksploatacije vrlo kompleksnih spolno-identitetnih problema. Osim toga likovno joj izražavanje pruža mogućnost unutarnje promjene koja u konačnici pridonosi jačanju samosvijesti, samopoštovanja i osnaživanju ega odnosno boljoj mentalizaciji, kako navode Holmqvist i sur., a upravo to je potvrda temeljne hipoteze ovoga istraživanja (H1).

ZAHVALA

Izražavamo zahvalnost adolescentici jer je bez dvojbe i sa zadovoljstvom pristala sudjelovati u ovom istraživanju.

evaluations, and can serve as a useful starting point for similar studies.

CONCLUSION

The results of this study, derived from the structured questionnaire intended for an interdisciplinary group of external observers, point to the risk parameters in the mental health of the adolescent, and confirm the projective dimension of her drawings/paintings. Furthermore, during and after her artistic expression, an improved spiritual component of self-experience was established, expressed on the discretized visual analogue self-assessment scales. Considering the artistic results obtained after the creation and the verbal comments from the subject, it can be concluded that artistic expression was an appropriate tool in this study. It helps her with emotional self-regulation in overcoming impulsiveness, aggression, and consequent states of self-injury and suicidal thoughts, but also with the physical disturbances that are based on the above. Artistic expression is, therefore, a desirable tool that allows the adolescent to experience safe personal reorganization, and gives her the opportunity to explore very complex sexual-identity issues. Artistic expression also provides her with the opportunity to experience inner change, which ultimately contributes to the strengthening of self-awareness, self-confidence and ego empowerment, i.e. better mentalization, as stated by Holmqvist et al., which is precisely the aspect that confirms the fundamental hypothesis presented in this study (H1).

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Žene kao forenzički pacijenti – usporedba pacijentica oboljelih od shizofrenije i srodnih poremećaja s pacijenticama oboljelima od ostalih psihičkih poremećaja

/ Women as Forensic Patients – Comparison of Patients with Schizophrenia and Related Disorders and Those with Other Mental Disorders

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Žene su mnogo rjeđe forenzički pacijenti u odnosu na muškarce. Najčešće su hospitalizirane pod dijagnozom iz spektra psihotičnih poremećaja. Ipak, istraživanja pokazuju kako se forenzičke pacijentice mogu podijeliti u određene podskupine s različitim karakteristikama, ovisno o dijagnozi. Stoga je glavni cilj ovoga rada bio prikazati razlike između podskupina forenzičkih pacijentica. Uzorak se sastojao od 31 pacijentice Zavoda za forenzičku psihijatriju "Dr. Vlado Jukić". Pacijentice su na Zavodu bile hospitalizirane u razdoblju od 2009. do 2023. godine. Podijelili smo ih u dvije podskupine: podskupina pacijentica s dijagnozom shizofrenije ili srodnim poremećajem te podskupina pacijentica kojima su dijagnosticirani drugi psihički poremećaji. Pojedine karakteristike dviju podskupina uspoređivale su se pomoću hi-kvadrat-testa i t-testa. Istraživanje je pokazalo kako se navedene dvije podskupine pacijentica razlikuju. Prva glavna razlika je u razini postignutog obrazovanja. Pacijentice bez dijagnoze shizofrenije ili srodnog poremećaja bile su slabije obrazovane. Druga razlika je u većoj prisutnosti komorbiditeta u pacijentica bez dijagnoze shizofrenije ili srodnog poremećaja. Ove razlike treba uzeti u obzir za unaprjeđenje ishoda liječenja kao i u svrhu prevencije pogoršanja bolesti, a posljedično i prevencije počinjenja samog djela.

/ Women are much less likely to be forensic patients than men. They are most commonly hospitalized for a diagnosis within the psychotic disorder spectrum. However, studies show that female forensic patients can be divided into specific subgroups with different characteristics, depending on their diagnoses. The main aim of this study was, therefore, to reveal the differences between the subgroups of female forensic patients. Our sample consisted of 31 female forensic inpatients of the Department of Forensic Psychiatry "Dr. Vlado Jukić", who were hospitalized in the period from 2009 to 2023. We divided them into two subgroups: a subgroup of patients diagnosed with schizophrenia or related disorders, and a subgroup of patients diagnosed with other mental disorders. The individual characteristics of the two subgroups were compared using a chi-square test and a t-test. The study showed that differences exist between these two subgroups of patients. The first main difference is in the level of education. Patients who were not diagnosed with schizophrenia or related disorder were less educated. The other difference involved a more frequent occurrence of comorbidity in the patients who were not diagnosed with schizophrenia or related disorder. These differences should be taken into account in order to achieve the best possible treatment outcome and also to prevent the aggravation of the illness, consequently preventing the commission of the offence itself.

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UVOD

Žene čine samo manji dio forenzičkih pacijenata. Udio žena kao forenzičkih pacijentica varira između država. Prema dostupnim podatcima europskih zemalja iz 2013. godine najveći udio forenzičkih pacijentica - 18 % činile su pacijentice u Engleskoj i Walesu. U drugim zemljama taj je postotak niži. Primjerice, u Španjolskoj i Italiji iznosi 8 %, a u Hrvatskoj 6 % (1). Treba uzeti u obzir da određene zemlje imaju drugačije definirano poimanje forenzičkog pacijenta. U Engleskoj se i osuđene osobe s duševnim poremećajima smatraju forenzičkim pacijentima te se podvrgavaju liječenju (2), dok se u Hrvatskoj forenzičkim pacijentima smatraju samo oni koji su u stanju neubrojivosti počinili protupravno djelo (3). To je jedan od razloga navedenih razlika u postotcima.

U Republici Hrvatskoj, Kaznenim zakonom definiraju se kriminalno ponašanje, odgovarajuće kazne i sankcije za počinjena djela te kaznena odgovornost – krivnja. Termin ubrojivost usko je povezan s krivnjom. Ako je osoba u trenutku počinjenja djela bila neubrojiva, ne može biti kriva. Prema čl. 4. Kaznenog zakona osoba može biti kažnjena samo ako je proglašena krivom za određeno kazneno djelo (4). Nadalje, pojmovi koji su definirani Kaznenim zakonom su neubrojivost, bitno smanjena ubrojivost i samoskrivljena neubrojivost (5,6). U Hrvatskoj sustav forenzičke psihijatrije ima dužnost skrbiti se za one osobe za koje je utvrđeno da su u trenutku počinjenja protupravnog djela bile neubrojive. Riječima Kaznenog zakona, neu-

INTRODUCTION

Women constitute only a smaller fraction of forensic patients. The proportion of female forensic patients varies between countries. According to the data obtained from European countries for 2013, the largest share of female forensic patients – 18%, was in England and Wales. In other countries, that percentage is lower. In Spain and Italy, for example, it amounts to 8%, while in Croatia it is 6% (1). It should be taken into account that certain countries have different definitions of forensic patients. In England, for example, convicted persons with mental disorders are also considered forensic patients and undergo treatment (2), while in Croatia, only those who have committed an offence in a state of insanity are considered forensic patients (3). This is one of the reasons for the observable differences in percentages.

In the Republic of Croatia, the Criminal Code defines criminal behavior, the corresponding punishments and sanctions for committed acts, as well as criminal responsibility – guilt. The term mental capacity is closely related to guilt. If a person was mentally incapable at the time of committing the act, they cannot be guilty. According to Art. 4 of the Criminal Code, only a person who has been found guilty of a specific criminal offence can be punished for that offence (4). Furthermore, the terms that are defined by the Criminal Code are mental incapacity, diminished mental capacity and voluntary self-induced mental incapacity (5, 6). In Croatia, the forensic psychiatry system has the jurisdiction and duty to care for those people who were found to be mentally incapable at the time of

brojiva osoba je *„osoba koja u vrijeme ostvarenja protupravnog djela nije mogla shvatiti značenje svojeg postupanja ili nije mogla vladati svojom voljom zbog duševne bolesti, privremene duševne poremećenosti, nedovoljnog duševnog razvitka ili neke druge teže duševne smetnje“* (6). Njemački kazneni zakon na sličan način oslobađa pojedinca od kaznene odgovornosti, ako osoba nije bila sposobna razumjeti prirodu počinjenog djela ili nije mogla kontrolirati svoje ponašanje zbog duševne bolesti (7). S druge strane, u Engleskoj i Walesu procjena kaznene odgovornosti definirana je M'Naughtenovim pravilom prema kojem se mora dokazati da osoba nije razumjela prirodu kaznenog djela i/ili nije mogla razumjeti da je takav čin pogrešan zbog mentalne bolesti (8).

Psihotični poremećaji odnosno shizofrenija i srodni poremećaji najčešći su poremećaji kod osoba koje su počinile protupravno djelo i za koje je zbog neubrojivosti utvrđeno da nisu krive (9,10). Zbog tog su psihotični poremećaji ponekad povezani s agresivnim ponašanjem što povećava stigmatizaciju ovih bolesnika. Treba naglasiti da će samo oko 10 % ljudi koji pate od shizofrenije zapravo počiniti nasilni čin u nekom trenutku svog života (11). Uspoređujući osobe s psihotičnim poremećajem s općom populacijom može se uočiti da je u prvoj skupini riječ o povećanom riziku od nasilnog ponašanja, a ne o većoj pojavi samog agresivnog ponašanja (12-15). Rizik od kriminalnog ponašanja izraženiji je u bolesnica sa shizofrenijom nego u muških bolesnika u usporedbi s općom populacijom (13,16).

Istraživanja pokazuju da u forenzičkih pacijentica sa shizofrenijom negativni simptomi imaju zaštitnu ulogu od razvoja nasilnog ponašanja, dok su pozitivni psihotični simptomi oni koji povećavaju rizik od nasilja (17,18). Wolf i sur. (18) navode kako je u 42,9 % forenzičkih pacijentica sa shizofrenijom dijagnosticirana ovisnost o psihoaktivnim tvarima (PAT) kao komorbiditet. Landgraf i sur. usporedili su forenzički i opći uzorak bolesnica sa shizofrenijom. Prema njihovom istraživanju prosječna dob počinjenja protupravnog djela bila je 36,9 godina, a najčešća

committing an offence. The Criminal Code defines a mentally incapable person as a person "who at the time of the perpetration of an illegal act was incapable of understanding the significance of their conduct, or could not control their will due to mental illness, temporary mental disorder, mental deficiency or some other severe mental disturbance" (6). In a similar way, the German Criminal Code exempts an individual from criminal liability if they were incapable of understanding the nature of the committed act or could not control their behavior due to a mental illness (7). On the other hand, in England and Wales the evaluation of criminal responsibility is defined by the M'Naghten Rule according to which it must be proved that the person did not understand the nature of the criminal offence and/or could not understand that it was wrong due to a mental illness (8).

Psychotic disorders, i.e. schizophrenia and related disorders, are the most common disorders among the persons who have committed an offence and who were found not guilty by reason of insanity (9, 10). For this reason, psychotic disorders are sometimes associated with aggressive behavior, which increases the stigmatization of these patients. It should be noted that only about 10% of the individuals suffering from schizophrenia will actually commit a violent act at some point in their lives (11). When comparing individuals with psychotic disorders with the general population, it is observable that only the risk of violent behavior is higher in the first group, but not the committed aggressive behavior itself (12 – 15). The risk of criminal behavior is more pronounced in female patients with schizophrenia than in male patients compared to the general population (13, 16).

In terms of female forensic patients with schizophrenia, studies show that negative symptoms have a protective role against the development of violent behavior, while positive psychotic symptoms are the ones that increase the risk of violence (17, 18). In their study, Wolf et al. (18) noted that 42.9% of female forensic patients with schizophrenia had been diagnosed with psychoactive substance addiction as a comorbidity. Landgraf et al. compared forensic and general samples of

djela bila su napad na osobu (48,6 %), ubojstvo (20,0 %) i namjerno izazivanje požara (17,1%), pacijentice su djela počinile same te su poznavale svoje žrtve (19). Fazel i sur. su pokazali da shizofrenija nije jedini poremećaj povezan s nasilnim ponašanjem te da ovisnost o PAT pokazuje još veći rizik od nasilja (12). Proučavajući drugu podskupinu forenzičkih pacijentica Tuente i sur. uspoređivali su forenzičke pacijentice sa psihopatijom i bez psihopatije. Pokazali su da je prosječna dob počinjenja protupravnog djela za žene sa psihopatijom bila 22,7 godina, što je značajno niže u odnosu na žene bez psihopatije (prosječna dob 32,1 godina). Osim toga, žene sa psihopatijom počinile su manje nasilnih djela koja su završila smrću i obično nisu poznavale svoje žrtve (20). Karsten i sur. bavili su se forenzičkim pacijenticama s graničnim poremećajem ličnosti (BPD), a njihovo istraživanje pokazalo je da je preko 80 % tih žena bilo zlostavljano u djetinjstvu, uglavnom su bolovale i od ovisnosti kao komorbiditeta, a njihova djela češće su uključivala imovinsku i materijalnu štetu ili namjerno izazivanje požara, a manje nasilja usmjerenog na ljude u usporedbi sa ženama bez BPD-a (21).

Istraživanja koja se bave ženama kao forenzičkim pacijentima nisu brojna. Još je manje istraživanja koja uspoređuju ili ukazuju na pojedine podskupine forenzičkih pacijentica određene njihovim dijagnozama.

Cilj ovog istraživanja je usporediti sociodemografske i psihopatološke karakteristike forenzičkih pacijentica sa shizofrenijom i srodnim poremećajima i onih kojima je dijagnosticiran drugi mentalni poremećaj.

METODOLOGIJA

Ispitanici

Uzorak je činila 31 pacijentica Zavoda za forenzičku psihijatriju "Dr. Vlado Jukić", a pacijentice su bile hospitalizirane u razdoblju od 2009. do 2023. godine. Riječ je o pacijenticama koje

female patients with schizophrenia. According to their study, the average age of committing an offence was 36.9 years, while the most common offences included personal assault (48.6%), homicide (20.0%) and arson (17.1%), and the patients mostly committed them on their own and they knew their victims (19). The study conducted by Fazel et al. showed that schizophrenia was not the only disorder associated with violent behavior, and that psychoactive substance addiction presented an even greater risk of violence (12). Studying another subgroup of female forensic patients, Tuente et al. compared female forensic patients with and without psychopathy. They observed that the average age of committing an offence among women with psychopathy was 22.7 years, which was significantly lower compared to women without psychopathy (average age was 32.1 years). In addition, women with psychopathy committed fewer acts of violence that ended in death, and they usually did not know their victims (20). Karsten et al. dealt with female forensic patients with borderline personality disorder (BPD) and their research showed that over 80% of those women were abused as children, they mostly had substance use disorder as a comorbidity and their offences more often involved property and material damage or arson, and less frequently violence directed at people, compared to women without BPD (21).

There are not many studies involving women as forensic patients. There have been even fewer studies that compare or point out the individual subgroups of female forensic patients according to their diagnoses. The aim of this study was to compare the sociodemographic and psychopathological characteristics of female forensic patients with schizophrenia or related disorders and those diagnosed with other mental disorders.

METHOD

Respondents

The sample consisted of 31 female forensic inpatients of the Department of Forensic Psychiatry "Dr. Vlado Jukić", who were hospitalized in the

su u neubrojivom stanju počinile protupravno djelo. Prema dijagnozama zabilježenima u medicinskoj dokumentaciji i vještačkim nalazima u 23 pacijentice radilo se o shizofreniji i srodnim poremećajima, u 7 pacijentica o poremećaju ličnosti (2 pacijentice s paranoidnim poremećajem ličnosti i 5 s graničnim poremećajem ličnosti), u 3 pacijentice o organskom psihičkom poremećaju te poremećaju ovisnosti, a u 2 pacijentice dijagnosticiran je poremećaj raspoloženja i intelektualne teškoće. Bilo je brojčano više potvrđenih dijagnoza nego što je pacijentica, jer su neke od njih imale više od jedne potvrđene dijagnoze. U tri pacijentice je uz dijagnozu shizofrenije ili srodnog poremećaja bila riječ i o poremećaju ličnosti kao komorbidnom poremećaju, dok je u jedne bila prisutna akutna intoksikacija PAT u trenutku počinjenja djela. U pacijentica s potvrđenim drugim dijagnozama komorbiditeti su bili sljedeći: u dvije pacijentice riječ je bila o akutnoj intoksikaciji uz poremećaj ličnosti u jedne i sindrom ovisnosti, od ranije prisutan u druge. U tri pacijentice radilo se o organski uvjetovanoj sumanutosti uz postavljene dijagnoze F01, F70 i F01 prema MKB-10. Kod jedne pacijentice s intelektualnim poteškoćama riječ je bila o agresivnom i impulzivnom ispadu u sklopu poremećaja ličnosti, dok se kod druge pacijentice s utvrđenim drugim dijagnozama radilo o teškom povratnom depresivnom poremećaju bez simptoma psihoze uz utvrđen i poremećaj ličnosti. Prosječna dob pacijentica bila je 43,9 ± 15 godina.

Parametri

Podatci o pacijenticama dobiveni su pregledom medicinske dokumentacije i vještačkih nalaza i mišljenja. Iz navedene dokumentacije prikupljeni su sociodemografski i psihopatološki podatci kao i podatci o protupravnom djelu. Prikupljeni su sljedeći podatci: dob počinjenja djela i prvog javljanja na psihijatrijsko liječenje pacijentica, razina postignutog obrazovanja, radni status, lišenost poslovne sposobnosti,

period from 2009 to 2023. These are patients that committed an offence in a state of mental incapacity. According to the diagnoses recorded in the medical documentation and expert reports, 23 patients were diagnosed with schizophrenia and related disorders, seven had a personality disorder (two suffered from paranoid personality disorder and five from borderline personality disorder), three patients had an organic mental disorder and substance use disorder, while two patients were diagnosed with a mood disorder and intellectual disability. There were more confirmed diagnoses than the patients because some patients had more than one diagnosis confirmed. In three patients, aside from the diagnosis of schizophrenia or related disorder, a comorbid personality disorder was also present, while one patient experienced acute intoxication with psychoactive substances at the time of the offence. In patients with confirmed other diagnoses, the comorbidities were as follows: in two patients, there was acute intoxication which was accompanied by a personality disorder in one patient and a previously established substance disorder in the other. Three patients suffered from organic delusional disorder, together with diagnoses of F01, F70, and F01 according to ICD-10. One patient with intellectual difficulties had an aggressive and impulsive episode as part of a personality disorder, while in another patient with confirmed other diagnoses, a severe recurrent depressive disorder without psychotic symptoms was observed, along with a personality disorder. The average age of the patients was 43.9 ± 15 years.

Parameters

Data about the patients were obtained by reviewing their medical records and expert reports and opinions. Sociodemographic and psychopathological data, as well as data on the criminal offence itself, were collected from the aforementioned documentation. The following data were collected: the age when the offence was committed and when the patient was first psychiatrically treated, education level, employment status, loss of working capacity, marital status, number of children, data on previ-

bračno stanje, broj djece, podatci o prethodnom psihijatrijskom liječenju i dijagnozi/dijagnozama zbog kojih se pacijentica prethodno liječila, podatci o ranijem zlostavljanju, postojanje ovisnosti o PAT, prisutnost poremećaja ličnosti, dijagnoza pod kojom je pacijentica vještačena.

Što se tiče samog protupravnog djela važni su bili sljedeći podatci: podatci o prethodnom kažnjavanju, vrsta protupravnog djela, je li pacijentica samostalno počinila protupravno djelo ili zajedno s drugom osobom, je li djelo izvedeno do kraja ili je bila riječ o pokušaju i je li počinjeno pod utjecajem psihoaktivnih supstancija.

Statistička analiza

Uzorak od 31 pacijentice bio je podijeljen u dvije skupine: skupinu pacijentica s dijagnozom shizofrenije i srodnih poremećaja (23 pacijentice u skupini) i skupinu pacijentica s drugom dijagnozom (8 pacijentica). U rezultatima i dalje u tekstu ove dvije skupine bit će označene kao neubrojive pacijentice s dijagnozom shizofrenije i srodnih poremećaja (NP sa shizofrenijom i srodnim poremećajima) i neubrojive pacijentice s drugim dijagnozama (NP s drugim dijagnozama). Spomenute dijagnoze postavili su psihijatrijski vještaci tijekom procjene ubrojivosti. Za usporedbu traženih karakteristika korišteni su hi-kvadrat test i t-test.

REZULTATI

Sociodemografske karakteristike

Kada se govori o sociodemografskim karakteristikama, razlika se uočava samo u razini postignutog obrazovanja. Pacijentice sa shizofrenijom i srodnim poremećajima bile su obrazovanije, jer je gotovo 70 % bolesnica završilo srednju školu, dok je u skupini pacijentica s drugim dijagnozama oko trećine završilo srednju školu (37,5 %). Nisu se razlikovale u radnom statusu, broju djece i bračnom stanju (tablica 1).

ous psychiatric treatment and diagnosis/diagnoses for which the patient was previously treated, personal history of abuse, existence of psychoactive substance addiction, presence of personality disorders, the diagnosis made by a psychiatric expert.

As for the criminal offence itself, the following data were important: information about previous convictions, type of the offence, whether the offence was committed by the patient alone or with another person, whether the offence was completed or it was an attempt, and whether it was committed under the influence of psychoactive substances.

Statistical analysis

We divided our sample of 31 female forensic patients into two groups: a group of patients diagnosed with schizophrenia and related disorders (consisting of 23 patients) and a group of patients with another diagnosis (consisting of 8 patients). In the results and further in the text, these two groups will be labeled as patients who were found not guilty by reason of insanity due to schizophrenia or related disorders (NGRI with schizophrenia and related disorders) and patients who were found not guilty by reason of insanity with other diagnoses (NGRI with other diagnoses). The aforementioned diagnoses were made by psychiatric experts during the mental capacity evaluation. The characteristics of interest were compared using a chi-square test and a t-test.

RESULTS

Sociodemographic characteristics

In terms of sociodemographic characteristics, a difference was observed only in the education level. Patients with schizophrenia and related disorders were more educated, as almost 70% of the patients finished secondary school, while in the group of patients with other diagnoses about a third of them finished secondary school (37.5%). They did not differ in terms of the employment status, number of children and marital status (Table 1).

TABLICA 1. Sociodemografske karakteristike
TABLE 1. Sociodemographic characteristics

	NP sa shizofrenijom i srodnim poremećajima / NGRI with schizophrenia and related disorders	NP s drugim dijagnozama / NGRI with other diagnoses	
Razina obrazovanja / Education level	Osnovna škola / Primary 13 % Srednja škola / Secondary 69,6 % Viša stručna sprema / College 17,4 %	Osnovna škola / Primary 62,5 % Srednja škola / Secondary 37,5 % Viša stručna sprema / College 0 %	$\chi2=8,013$, df=2, p=0,018
Radni status / Employment status	Nezaposlena / Unemployed 52,2 % Zaposlena / Employed 13 % Umirovljenica / Retired 13 % Invalidska mirovina / Invalidity pension 21,7 %	Nezaposlena / Unemployed 25 % Zaposlena / Employed 25 % Umirovljenica / Retired 37,5 % Invalidska mirovina / Invalidity pension 12,5 %	$\chi2=3,593$, df=3, p=0,309
Bračno stanje / Marital status	Neudana / Single 43,5 % Udana / Married 17,4 % Razvedena / Divorced 26,1 % Udovica / Widowed 13 %	Neudana / Single 37,5 % Udana / Married 25 % Razvedena / Divorced 12,5 % Udovica / Widowed 25 %	$\chi2=1,239$, df=3, p=0,744
Broj djece / Number of children	0 – 39,1 % 1 – 30,4 % 2 – 30,4 % 4 – 0 %	0 – 37,5 % 1 – 12,5 % 2 – 37,5 % 4 – 12,5 %	$\chi2=3,711$, df=3, p=0,294

Psihopatološke karakteristike

Jedina razlika između NP sa shizofrenijom i srodnim poremećajima i NP s drugim dijagnozama bila je u broju dijagnoza u vještačkim nalazima. Više od 80 % NP sa shizofrenijom i srodnim poremećajima nije imalo komorbidni psihijatrijski poremećaj, dok se isto može reći za samo 12,5 % NP s drugim dijagnozama. Nije bilo statistički značajne razlike u dobi počinjenja protupravnog djela, dobi prvog javljanja na psihijatrijsko liječenje, ranijem zlostavljanju, u ranijim pokušajima samoubojstva niti u prisutnosti poremećaja ličnosti. Većina pacijentica u vrijeme prikupljanja podataka nije bila ovisna o PAT (87,1 %), psihijatrijski su liječene ranije, prije počinjenja protupravnog djela, a u obje skupine to je u većini slučajeva bilo bolničko liječenje (tablica 2).

Karakteristike protupravnog djela

Sve su pacijentice djelo počinile samostalno, nisu imale suučesnika. U obje skupine pacijentice većinom nisu bile ranije kažnjavane i nisu bile pod utjecajem PAT prilikom počinjenja protupravnog djela. Pacijentice su uglavnom poznavale žrtvu protupravnog djela (87 %). Pacijentice se nisu razlikovale prerma vrsti protu-

Psychopathological characteristics

The only difference between the patients NGRI with schizophrenia and related disorders and patients NGRI with other diagnoses was in the number of diagnoses in the expert reports. More than 80% of those NGRI with schizophrenia and related disorders did not have a comorbid psychiatric disorder while the same can be said for only 12.5% of the patients NGRI with other diagnoses. There was no statistically significant difference in the age of committing the offence, the age of first contact with a psychiatrist for treatment, the personal history of abuse, suicide attempts or the existence of a personality disorder. The majority of the patients, at the time when the data was collected, did not have any kind of psychoactive substance addiction (87.1%), they were previously treated by a psychiatrist before committing the offence, and in both groups, this mostly involved hospital treatment (Table 2).

Characteristics of the offence

All the patients committed the offence alone, they did not have accomplices. In both groups, the patients were predominantly not previously convicted and they were not under the influence of addictive substances when committing the il-

TABLICA 2. Psihopatološke karakteristike
TABLE 2. Psychopathological characteristics

	NP sa shizofrenijom i srodnim poremećajima / NGRI with schizophrenia and related disorders	NP s drugim dijagnozama / NGRI with other diagnoses	
Dob počinjenja protupravnog djela / Age of committing the offence	42,48 ± 12,06	47,88 ± 22,11	t=0,870, df=29 p=0,392
Dob prvog javljanja psihijatru / Age of first contact with a psychiatrist	30,42 ± 8,26	43,17 ± 27,09	t=1,136, df=5,297, p=0,305
Uporaba psihoaktivnih tvari / Psychoactive substance use	Nema uporabe / None 91,3 % Ovisnost / Addiction 8,7 %	Nema uporabe / None 75 % Ovisnost / Addiction 25 %	χ2=1,404, df=1, p=0,236
Prethodno psihijatrijsko liječenje / Previous psychiatric treatment	Nisu ranije liječene / None 4,3 % Ambulantno liječenje / Outpatient treatment 4.3 % Hospitalno liječenje / Hospital treatment 91,3 %	Nisu ranije liječene / None 12,5 % Ambulantno liječenje / Outpatient treatment 12,5 % Hospitalno liječenje / Hospital treatment 75 %	χ2=1,404, df=2, p=0,496
Broj dijagnoza u vještačkim nalazima / Number of diagnoses in expert reports	1 – 82,6 % 2 – 17,4 % 3 – 0 %	1 – 12,5 % 2 – 75 % 3 – 12,5 %	χ2=13,504, df=2, p=0,001
Pokušaji suicida / Suicide attempts	Nijedan / None 81 % Bar jedan / At least one 19 %	Nijedan / None 75 % Bar jedan / At least one 25 %	χ2=0,125, df=1, p=0,724
Ranije zlostavljanje / Personal history of abuse	Ne / No 63,2 % Da / Yes 36,8 %	Ne / No 66,7 % Da / Yes 33,3 %	χ2=0,024, df=1, p=0,876
Poremećaj ličnosti / Personality disorder	Ne / No 82,6 % Da / Yes 17,4 %	Ne / No 62,5 % Da / Yes 37,5 %	χ2=1,373, df=1, p=0,241

pravnog djela niti po tipu žrtve (je li žrtva bila član obitelji ili ne) (tablica 3).

RASPRAVA

Sociodemografske karakteristike

U ovom istraživanju uspoređena su sociodemografska i psihopatološka obilježja kao i obilježja protupravnog djela žena kao forenzičkih pacijentica sa shizofrenijom i srodnim poremećajima i onih kojima je dijagnosticiran drugi psihijatrijski poremećaj. Pacijentice se nisu razlikovale u radnom statusu, bračnom stanju niti broju djece koje su imale. Gotovo 50 % pacijentica bilo je nezaposleno, dok su zaposlene žene bile najmanje zastupljene u uzorku (16,1 %). Slabiju zaposlenost kod forenzičkih pacijenata pokazuju i druga istraživanja (19, 22). Za usporedbu, u općoj populaciji u Hrvatskoj, 33 % žena bilo je zaposleno. U usporedbi s tim podatcima, postotak zaposlenih forenzičkih pacijenata bio je upola manji nego kod

legal act. They mainly committed the illegal act against people they knew (87%). The patients did not differ in the type of the offence nor in type of victim (whether the victim was a family member or not) (Table 3).

DISCUSSION

Sociodemographic characteristics

In this study, we compared the sociodemographic and psychopathological characteristics, as well as the characteristics of the offence, of women as forensic patients with schizophrenia and related disorders and those diagnosed with other mental disorders. Our patients did not differ in the employment status, marital status or in the number of children they had. Almost 50% of the patients were unemployed, while those employed were the least represented in the sample (16.1%). Low employment in female forensic patients was also observed in other studies (19, 22). For comparison purposes, in the general population in Croatia, 33% of women were employed. Compared

TABLICA 3. Karakteristike protupravnog djela
TABLE 3. Characteristics of the offence

	NP sa shizofrenijom i srodnim poremećajima / NGRI with schizophrenia and related disorders	NP s drugim dijagnozama / NGRI with other diagnoses	
Ranije kažnjavanje / Previous convictions	Bez ranijeg kažnjavanja / None 95,7 % Da, za drugu vrstu djela / Yes, for different offence 4,3 %	Bez ranijeg kažnjavanja / None 100 % Da, za drugu vrstu djela / Yes, for different offence 0 %	χ2=0,359, df=1, p=0,549
Vrsta protupravnog djela / Type of offence	Djela protiv čovječnosti i ljudskog dostojanstva / Offences against humanity and human dignity 4,3 % Djela protiv života i tijela / Offences against life and limb 43,5 % Djela protiv osobne slobode / Offences against personal freedom 21,7 % Djela protiv braka, obitelji i mladeži / Offences against marriage, family and children 8,7 % Djela protiv opće sigurnosti / Offences against general safety 13 % Djela protiv imovine / Offences against property 4,3 % Djela protiv javnog reda / Offences against public order 4,3 %	Djela protiv čovječnosti i ljudskog dostojanstva / Offences against humanity and human dignity 0 % Djela protiv života i tijela / Offences against life and limb 37,5 % Djela protiv osobne slobode / Offences against personal freedom 37,5 % Djela protiv braka, obitelji i mladeži / Offences against marriage, family and children 12,5 % Djela protiv opće sigurnosti / Offences against general safety 0 % Djela protiv imovine / Offences against property 0 % Djela protiv javnog reda / Offences against public order 12,5 %	χ2=3,061, df=6, p=0,801
Utjecaj psihoaktivnih tvari pri počinjenju djela / Influence of psychoactive substances at the time of the offence	Ne / No 91,3 % Da / Yes 8,7 %	Ne / No 75 % Da / Yes 25 %	χ2=1,404, df=1, p=0,236
Poznavanje žrtve / Known victim	Ne / No 0 % Da / Yes 87 % Djelo ne uključuje žrtvu / The offence does not include the victim 13 %	Ne / No 12,5 % Da / Yes 87,5 % Djelo ne uključuje žrtvu / The offence does not include the victim 0 %	χ2=3,919, df=2, p=0,141
Član obitelji kao žrtva / Family member as a victim	Ne / No 26,1 % Da / Yes 60,9 % Djelo ne uključuje žrtvu / The offence does not include the victim 13 %	Ne / No 37,5 % Da / Yes 62,5 % Djelo ne uključuje žrtvu / The offence does not include the victim 0 %	χ2=1,312, df=2, p=0,519

opće populacije (23,24). Istraživanja pokazuju da je niska stopa zaposlenosti čest slučaj kod psihijatrijskih bolesnika, a najviše varira ovisno o težini poremećaja i razini postignutog obrazovanja (25). Budući da je u većine naših pacijentica dijagnosticiran teži psihički poremećaj, niska stopa zaposlenosti nije iznenađujuća. Ipak, zanimljive rezultate dobili su Landgraf i sur. (19) prema kojima je postotak zaposlenih forenzičkih pacijentica sa shizofrenijom bio 18 %, dok je postotak zaposlenih pacijentica sa shizofrenijom koje nisu forenzičke pacijentice bio znatno veći i iznosio je 47 %. Ovi rezultati

to these data, the percentage of forensic patients who were employed was half the amount compared to the general population (23, 24). Studies have shown that a low employment rate is common in psychiatric patients, and it varies mostly depending on the severity of the disorder and the level of education (25). Since the majority of our patients suffered from more severe mental disorders, the low employment rate is not surprising. However, interesting results were obtained by Landgraf et al. (19), whose study indicated that 18% of female forensic patients with schizophrenia were employed, while the percentage of employed patients with schizophrenia who were not

ukazuju da bi uz samu dijagnozu mogli postojati i neki drugi čimbenici koji utječu na veću nezaposlenost forenzičkih pacijenata. Žene u našem uzorku uglavnom su bile neudane (41,9 %) ili razvedene (22,6 %). U dostupnoj literaturi slični su podatci uočeni za forenzičke pacijentice s lakšim oblikom psihičkog poremećaja kao i za psihijatrijske pacijentice iz opće populacije (19,22). Forenzičke pacijentice sa shizofrenijom bile su neudane u većem postotku u usporedbi s našim rezultatima (19). Veći udio neudanih pacijentica bio je očekivan, budući da se brak smatra zaštitnim čimbenikom smanjujući rizik od nasilnog ponašanja (26). Više od 60 % pacijentica imalo je barem jedno dijete, što odgovara postojećoj literaturi (10). Jedina razlika uočena je u razini postignutog obrazovanja. Pacijentice sa shizofrenijom i srodnim poremećajima pokazale su se obrazovanijima, jer ih je gotovo 70 % završilo srednju školu, a 17,4 % ostvarilo je višu stručnu spremu, dok je u skupini pacijentica s drugim dijagnozama postotak pacijentica sa završenom srednjom školom bio gotovo upola manji (37,5 %) i nijedna od njih nije ostvarila više od srednjoškolskog obrazovanja. Naši se rezultati razlikuju od postojeće literature prema kojoj su forenzičke pacijentice uglavnom imale niži stupanj obrazovanja bez obzira na dijagnozu (18,19,22). Zanimljivo je da su i druga istraživanja pokazala kako forenzičke pacijentice sa shizofrenijom imaju nižu razinu obrazovanja u usporedbi s pacijenticama sa shizofrenijom iz opće populacije. U literaturi se dosta ukazuje na povezanost niže razine obrazovanja i sklonosti nasilju ili ponavljanju nasilnog ponašanja (27,28).

Psihopatološke karakteristike

Nije bilo statistički značajne razlike između neubrojivih pacijentica sa shizofrenijom i srodnim poremećajima i onih s drugim dijagnozama u dobi počinjenja protupravnog djela, dobi prvog javljanja na psihijatrijsko liječenje, u podatku o ranijem zlostavljanju, pokušajima samoubojforensic patients was much higher and amounted to 47%. These results suggest that there could be some other factors that influence the higher unemployment of forensic patients in addition to the diagnosis itself. The women in our sample were mostly unmarried (41.9%) or divorced (22.6 %). In the available literature, similar data were observed for female forensic patients with less severe mental disorders and female psychiatric patients from the general population (19, 22). The percentage of unmarried female forensic patients with schizophrenia was higher in comparison to our results (19). The higher rate of unmarried patients was expected, since marriage is considered to be a protective factor that reduces the risk of violent behavior (26). Over 60% of patients had at least one child, which corresponds to the existing literature (10). The only difference was observed in the education level. Patients with schizophrenia and related disorders were more educated, as almost 70% completed secondary school and 17.4% completed college, while in the group of patients with other diagnoses the percentage of patients with completed secondary school was lower by almost a half (37.5 %) and none of them finished college. Our results differ from the existing literature, according to which female forensic patients mostly had a lower level of education regardless of the diagnosis (18, 19, 22). It is interesting that other studies have also shown that female forensic patients with schizophrenia have a lower level of education compared to the patients with schizophrenia from the general population. The literature mostly points to the connection between a lower level of education and propensity for violence or repetition of violent behavior (27, 28).

Psychopathological characteristics

There was no statistically significant difference between mentally incapable patients with schizophrenia and related disorders and those with other diagnoses when it comes to the age of committing the offence, the age of first contact with a

stva niti u prisutnosti poremećaja ličnosti. Većina je pacijentica bila u četrdesetim godinama u vrijeme počinjenja djela što je nešto starija dob u odnosu na postojeću literaturu, prema kojoj su pacijentice u vrijeme počinjenja protupravnog djela bile u tridesetim godinama (18,20,29). Pacijentice sa shizofrenijom i srodnim poremećajima započele su psihijatrijsko liječenje u tridesetim godinama života, dok su pacijentice s drugim dijagnozama bile u svojim četrdesetima. Degl' Innocenti i sur. (30) pokazali su u svom istraživanju kako je prosječna dob prvog doticaja s psihijatrijskom skrbi bila znatno niža, pacijentice su započinjale liječenje u dobi od dvadeset godina. Jedan od mogućih razloga kasnijeg traženje psihijatrijske pomoći i liječenja u našem uzorku je strah od diskriminacije koja još uvijek u stopu prati psihijatrijsku dijagnozu. Istraživanja pokazuju da je diskriminacija najviše izražena u slučaju osoba oboljelih od shizofrenije ili ovisnosti o alkoholu ili drogama (32). Thornicroft i sur. (32) pokazali su na uzorku pacijenata sa shizofrenijom iz 27 zemalja da je gotovo 50 % pacijenata doživjelo diskriminaciju u odnosima s prijateljima i članovima obitelji, a više od 70 % osjećalo je potrebu zatajiti svoju dijagnozu. Osvrćući se na situaciju u Hrvatskoj zanimljivo je istaknuti istraživanje Rončević-Gržeta i sur. (33) koji navode da stigmatizacija još uvijek postoji u društvu, ali da obrazovaniji ljudi, medicinski radnici i oni koji su na neki način bili u kontaktu s psihijatrijskim pacijentima puno manje izražavaju diskrimininacijske stavove. U više od 90 % slučajeva prvo psihijatrijsko liječenje nije bilo nakon počinjenja protupravnog djela, već su pacijentice prethodno bile liječene, većinom bolnički što je u skladu s dostupnom literaturom (19,21). Oko 87 % pacijentica u uzorku u vrijeme prikupljanja podataka nije imalo nikakvu ovisnost. Dobiveni se rezultati razlikuju od drugih istraživanja prema kojima je zloporaba PAT bila mnogo češća među pacijenticama s psihijatrijskom dijagnozom (18,29). Nadalje, Landgraf i sur. (19) pokazali su u svojoj stu-

psychiatrist for treatment, the personal history of abuse, suicide attempts or the existence of a personality disorder. Most of the patients were in their forties when they committed the offence, which is a slightly older age compared to the existing literature, according to which the patients were in their thirties at the time of the offence (18, 20, 29). Patients with schizophrenia and related disorders started psychiatric treatment in their thirties, while the patients with other diagnoses started treatment in their forties. In their study, Degl'Innocenti et al. (30) showed that the average age of first psychiatric treatment was much lower, and the patients started their treatment at the age of twenty. One of the possible reasons for later seeking help and psychiatric treatment in our sample might be the fear of discrimination and prejudice that is still associated with a psychiatric diagnosis. Studies have shown that discrimination is most expressed against people suffering from schizophrenia or alcohol or drug addiction (32). Studying a sample of patients with schizophrenia from 27 countries, Thornicroft et al. (32) observed that almost 50% of the patients experienced discrimination in relationships with their friends and family members, while over 70% felt the need to hide their diagnosis. When describing the situation in Croatia, it is interesting to highlight the study of Rončević-Gržeta et al. (33), who observed that stigmatization still exists in the society, but that discriminatory attitudes are much less expressed among individuals with higher education, medical professionals and those who have in some way been in contact with psychiatric patients. In over 90% of the cases, the first contact with a psychiatrist was not after committing the offence, but the patients had actually undergone previous psychiatric treatment, most of which was hospital treatment, which is consistent with the available literature (19, 21). Approximately 87% of the patients in our sample did not have any type of substance use disorder at the time the data was collected. Our results differ from other studies, according to which psychoactive substance abuse was much more prevalent among female patients with a psychiatric diagno-

diji da su forenzičke pacijentice sa shizofrenijom u većem broju slučajeva imale ovisnost kao komorbiditet u usporedbi s neforenzičkim pacijenticama. Dostupna literatura ukazuje na povezanost između ovisnosti o PAT i povećane sklonosti nasilnom ponašanju kod psihijatrijskih pacijenata (14,18,34). U literaturi se također povezuje pojava zloporabe PAT kao odgovor na ranije traumatično iskustvo. Prema tome, ranije doživljena trauma i posljedični razvoj ovisnosti mogli bi doprinijeti razvoju nasilnog ponašanja (29). Budući da pacijentice iz našeg uzorka uglavnom nisu imale traumatska iskustva, to bi djelomično moglo objasniti manju prevalenciju ovisnosti. Zanimljivo je da neka istraživanja pokazuju kako u pacijentica sa shizofrenijom poremećaj ličnosti, jednako kao i ovisnost, povećava rizik od nasilnog ponašanja (34). Također, određene vrste poremećaja ličnosti, poput antisocijalnog poremećaja ličnosti, čak i ako su jedina dijagnoza, povezane su s većim rizikom od nasilnog ponašanja (35). U našem uzorku samo je u oko 20 % pacijentica dijagnosticiran poremećaj ličnosti. Ipak, zanimljive hipoteze iznijeli su Hodgins i sur. (13) i Wolf i sur. (18) koji spominju dva načina razvoja nasilnog ponašanja kod osoba sa shizofrenijom. Prvi način prikazuje nasilno ponašanje osoba od rane dobi, s ranim početkom bolesti i s poremećajem ponašanja nalik antisocijalnom ponašanju koji je prisutan od djetinjstva. Antisocijalno ponašanje može biti povezano s većom sklonošću korištenju PAT, ali i s razvojem poremećaja ličnosti u odrasloj dobi (36). Drugi način razvoja nasilnog ponašanja može se uočiti kod osoba s kasnim početkom bolesti, bez poremećaja ponašanja u prošlosti, kod kojih se nasilno ponašanje objašnjava samo simptomima akutnog poremećaja. Pacijentice iz uzorka uglavnom nisu imale poremećaj ličnosti ili sindrom ovisnosti, a prvo psihijatrijsko liječenje započelo je u kasnijoj dobi, pa se njihovo agresivno ponašanje može objasniti prethodno navedenim hipotezama. Otprilike trećina pacijentica bila je zlostavljana. Takav

sis (18, 29). Furthermore, Landgraf et al. (19) showed in their study that there was a larger number of female forensic patients with schizophrenia who had substance addiction as a comorbidity compared to non-forensic patients. The available literature indicates a connection between psychoactive substance addiction and increased propensity for violent behavior in psychiatric patients (14, 18, 34). The literature also points to the emergence of psychoactive substance abuse as a response to an earlier traumatic experience. Therefore, the experienced trauma and the consequent development of addiction could contribute to the development of violent behavior (29). Since our patients mostly did not have traumatic experiences, this could partially explain the lower prevalence of addiction in the sample. Interestingly, some studies show that in patients with schizophrenia, a personality disorder increases the risk for violent behavior just as much as addiction (34). Furthermore, certain types of personality disorders, such as antisocial personality disorder, are associated with a higher risk for violent behavior even if they are the only diagnosis present (35). In our sample, only about 20% of the patients were diagnosed with a personality disorder. However, interesting hypotheses were presented by Hodgins et al. (13) and Wolf et al. (18), who mention two ways in which violent behavior develops in individuals with schizophrenia. The first one explains the violent behavior of people from an early age, with an early onset of the illness and a behavioral disorder that resembles antisocial behavior that has been present since childhood. Antisocial behavior can be associated with an increased tendency to use psychoactive substances, but also with the development of personality disorders in adulthood (36). The second way for violent behavior to develop can be observed in individuals with late onset of the illness, without a behavioral disorder in the past, in whom violent behavior is explained only through the symptoms of an acute disorder. Our patients mostly did not have a personality disorder or substance use disorder, and started their first psychiatric treatment at a later age, therefore their aggressive behavior

je udio niži u usporedbi s drugim istraživanjima. Na primjer, de Vogel i sur. (29) utvrdili su da je 76 % forenzičkih pacijentica doživjelo neki oblik zlostavljanja u djetinjstvu, a 58 % ih je doživjelo zlostavljanje u odrasloj dobi. Nadalje, proučavajući forenzičke pacijentice s graničnim poremećajem ličnosti (BPD) i bez BDP-a, de Vogel je pokazala da su žene kojima je dijagnosticiran BPD češće bile zlostavljane (u 81,7 % slučajeva) u usporedbi s pacijenticama bez BPD-a (u 67,3 % slučajeva) (21). Krammer i sur. pokazali su svojim istraživanjem da je oko polovice pacijentica prethodno bilo zlostavljano (37). Proživljena trauma, posebno u djetinjstvu, često je povezana s povećanom sklonošću nasilnom ponašanju (38) i povećava rizik od razvoja psihičkih poremećaja (37). Prema tome, trauma bi mogla biti jedan od čimbenika rizika i za razvoj psihičkog poremećaja i za sklonost nasilnom ponašanju kod forenzičkih pacijentica. Naši rezultati ne podupiru prethodno rečeno, a glavno objašnjenje za takve rezultate je mali uzorak u kojem je vrlo malo žena s bilo kojim oblikom poremećaja ličnosti. Ipak, zanimljivu hipotezu iznijeli su Krammer i sur. (37). U njihovom istraživanju nije bilo značajne razlike između onih pacijentica koje su počinile nasilno protupravno djelo i koje su prethodno bile zlostavljane i onih koje nisu doživjele zlostavljanje. Iz toga se mogao izvesti zaključak da doživljeno zlostavljanje ne uzrokuje agresivno ponašanje žena već samo povećava rizik od takvog ponašanja. Prema tome, ne može se nužno očekivati postojanje traume u svih forenzičkih pacijentica. Nadalje, drugo objašnjenje za nižu prevalenciju zlostavljanja u našem uzorku može biti neadekvatna povijest bolesti i poricanje zlostavljanja, iako je možda ono i postojalo. Razlozi za poricanje mogu biti različiti, na primjer, strah od ishoda sudskog postupka i procesa utvrđivanja neubrojivosti, ako se zlostavljanje prizna ili želja za bržim oporavkom zbog čega pacijentice potisnu tako bolno iskustvo i ne žele ga spominjati. U našem uzorku je oko 20 % pacijentica pokušalo suicid. Dostupna

could be explained by the previously mentioned hypotheses. Approximately a third of the patients was abused. Such a result is lower compared to other studies. For example, de Vogel et al. (29) observed that 76% of female forensic patients experienced some form of abuse in childhood, and 58% of them experienced maltreatment as adults. Furthermore, in her study of forensic patients with and without borderline personality disorder (BPD), de Vogel showed that women diagnosed with BPD were abused more often (in 81.7% of cases) when compared to non-BPD female patients (in 67.3 % of cases) (21). Krammer et al. observed in their study that about half of the female patients had previously been abused (37). Experienced trauma, especially in childhood, is often associated with an increased propensity for violent behavior (38) and increases the risk of developing mental disorders (37). Therefore, trauma could be one of the risk factors for both the development of mental disorders and the propensity for violent behavior in female forensic patients. Our results do not support these findings, and the main explanation for such results lies in the small sample in which there are far fewer women with any type of personality disorder. However, an interesting hypothesis was presented by Krammer et al. (37). In their study there was no significant difference between those female patients who committed a violent offence and were previously abused, and those who did not experience abuse. This could lead to the conclusion that experiencing abuse does not cause female aggressive behavior, but only increases the risk of such behavior. Accordingly, we cannot necessarily expect the existence of trauma in all female forensic patients. Furthermore, another explanation for the lower prevalence of abuse in our sample may be in an inadequate medical history and denial of abuse even though it may have existed. The reasons for denial can vary, for example, fear of the outcome of the court process and the process of establishing mental incapacity if the maltreatment has been admitted, or a desire for faster recovery, which is why the patients repress such a painful experience and do not want to mention it. In our

literatura, međutim, pruža drugačije podatke. Landgraf i sur. navode da je 40 % forenzičkih pacijentica sa shizofrenijom pokušalo suicid u razdoblju prije hospitalizacije (19). De Vogel i sur. naveli su još veći udio od 61,1 % forenzičkih pacijentica sa suicidalnim ponašanjem (29). Karsten i sur. utvrdili su da su forenzičke pacijentice s BPD-om sklonije samoozljeđivanju (u 66,2 % slučajeva) u usporedbi s pacijenticama bez BPD (u 31,1 % slučajeva) (21). Vinokur i sur. pokazali su da su pacijenti s ranim početkom shizofrenije imali više pokušaja samoubojstva od onih s kasnom pojavom bolesti (39). Budući da su pacijentice sa shizofrenijom i srodnim poremećajima iz uzorka prvi kontakt s psihijatrom imali uglavnom u tridesetima, moglo bi se pretpostaviti da se radi o kasnoj pojavi bolesti što bi onda objasnilo manju pojavu suicidalnosti u ovoj skupini pacijentica u usporedbi s rezultatima koje su predstavili Landgraf i sur. Nadalje, de Vogel (29) i Karsten (21) navode visok postotak pacijentica koje su doživjele neki oblik zlostavljanja, dok to nije bio slučaj s našim pacijenticama. Moguće je da je manji broj pokušaja samoubojstva povezan i s činjenicom da pacijentice nisu imale traumatičnih iskustava.

Jedina razlika između dviju skupina pacijentica bila je u broju dijagnoza u vještačkim nalazima. Samo 17,4 % NP sa shizofrenijom i srodnim poremećajima imalo je komorbidni psihijatrijski poremećaj, dok je u drugoj skupini 87,5 % pacijentica imalo više od jedne dijagnoze. Krammer i sur. su pokazali kako su u 60 % slučajeva njihove pacijentice imale više od jedne psihijatrijske dijagnoze. Uzorak su činile žene koje su većinom bolovale od sindroma ovisnosti, poremećaja ličnosti i poremećaja raspoloženja (37). Karsten i sur. pokazali su da pacijentice s BPD-om u više od 75 % slučajeva imaju barem još jednu psihijatrijsku dijagnozu, a u ovom slučaju to je bio sindrom ovisnosti. Govoreći o pacijenticama sa shizofrenijom Landgraf i sur. pokazali su da 43 % pacijentica ima komorbidni

sample, about 20% of the patients had attempted suicide. The available literature, however, provides different data. Landgraf et al. state that 40% of female forensic patients with schizophrenia had attempted suicide in the period before hospitalization (19). De Vogel et al. observed an even higher percentage of 61.1% of female forensic patients with suicidal behavior (29). In their study, Karsten et al. determined that female forensic patients with BPD were more prone to self-harm (in 66.2% of cases) compared to non-BPD patients (in 31.1% of cases) (21). Vinokur et al. showed in their study that patients with an early onset of schizophrenia had attempted suicide more times than those with a late onset of the illness (39). Since our patients with schizophrenia and related disorders had their first psychiatric examinations mostly in their thirties, the assumption that it was a late-onset illness could explain the less prevalent suicidality in this group of patients compared to the results presented by Landgraf et al. Furthermore, de Vogel (29) and Karsten (21) observed that a high percentage of female patients had experienced some form of abuse, which was not the case with our patients. It is possible that the lower number of suicide attempts is related to the fact that the patients did not have traumatic experiences.

The only difference between these two groups of patients was in the number of diagnoses in the expert reports. Only 17.4% of those NGRI with schizophrenia and related disorders had a comorbid psychiatric disorder, while in the other group 87.5% of the patients had more than one diagnosis. In their study, Krammer et al. observed that in 60% of the cases their female patients had more than one psychiatric diagnosis. The sample consisted of women who mostly suffered from disorders due to psychoactive substance use, personality disorders and mood disorders (37). Karsten et al. demonstrated that in over 75% of the cases patients with BPD have at least one other psychiatric diagnosis, and in this case, it was substance use disorder. In terms of patients with schizophrenia, Landgraf et al. presented that 43% of female patients had a comorbid psychiatric

psihijatrijski poremećaj (19). Wolf i sur. utvrdili su da je više od 40 % pacijentica sa shizofrenijom patilo bar od još jednog psihijatrijskog poremećaja, a to je sindrom ovisnosti (18). Naši se podatci razlikuju od literaturnih prema kojima su psihijatrijski komorbiditeti zastupljeni u većem postotku u obje skupine forenzičkih pacijentica. Ipak, može se primijetiti da nešto manji postotak pacijentica sa shizofrenijom i srodnim poremećajima ima komorbidne psihijatrijske poremećaje u usporedbi s pacijenticama bez te dijagnoze.

Karakteristike protupravnog djela

Sve su pacijentice samostalno počinile protupravno djelo. U literaturi se potvrđuje da su forenzičke pacijentice uglavnom bile bez suučesnika u vrijeme počinjenja djela (19,21,40). Samo je oko 3 % pacijentica prethodno bilo kažnjavano. De Vogel i de Spa navode kako je više od 50 % forenzičkih pacijentica prethodno bilo kažnjavano (40). Degl' Innocenti i sur. također navode kako je 51 % pacijentica prethodno bilo osuđeno (30). Razlozi za ovu razliku između naših rezultata i literaturnih mogu biti u veličini uzorka i u definiranju forenzičkih pacijenata u određenim zemljama. Kao što je spomenuto u uvodu, u nekim se zemljama forenzičkim pacijentom smatra i osoba koja je osuđena na zatvorsku kaznu zbog počinjenja kaznenog djela, ali joj je potrebno i psihijatrijsko liječenje. Osim toga, jedno od mogućih objašnjenja našeg rezultata može biti manja prevalencija ovisnosti u uzorku, jer je upotreba PAT povezana s povećanom agresivnošću i mogućim većim rizikom od ponavljanja nasilnog čina (12,14,18,34). Više od 87 % uzorka nije bilo pod utjecajem PAT prilikom počinjenja protupravnog djela. Ipak, u literaturi je postotak protupravnih djela počinjenih pod utjecajem tvari koje izazivaju ovisnost bio veći, oko 30 % (30,40). Razlog tome može biti veća prisutnost sindroma ovisnosti kao komorbiditeta kod ovih pacijentica (30). U 87 % slučajeva žrtva je bila

disorder (19). Wolf et al. observed that over 40% of schizophrenic patients suffered from at least one other psychiatric disorder, i.e. substance use disorder (18). Our data differ from the literature according to which psychiatric comorbidities are represented in higher percentages in both groups of forensic female patients. However, it can be observed that a slightly lower percentage of patients with schizophrenia and related disorders have comorbid psychiatric disorders when compared to patients without such diagnosis.

Characteristics of the offence

All the patients committed the offence on their own. The literature confirms that female forensic patients were mostly without an accomplice when committing the offence (19, 21, 40). Only about 3% of the patients had previously been convicted. De Vogel and de Spa reported that over 50% of female forensic patients had previously been convicted (40). Degl'Innocenti et al. also mentioned in their study that 51% of female patients had previously been convicted (30). The reasons for the difference between our results and those in the literature may be due to the size of the sample and the definition of forensic patients in certain countries. As mentioned in the introduction, in some countries, forensic patients are also considered to be individuals who have been sentenced to prison for a criminal offence, but who also need psychiatric treatment. In addition, one possible explanation for our results may lie in the lower prevalence of addiction in our sample, since the use of psychoactive substances is associated with increased aggressiveness and possibly a higher risk of repeating a violent act (12, 14, 18, 34). More than 87% of the women in our sample were not under the influence of psychoactive substances when they committed the offence. However, in the literature, the percentage of offences committed under the influence of psychoactive substances was higher, at about 30% (30, 40). This could be due to a greater presence of substance use disorder as a comorbidity in these patients (30). In 87% of the cases, the perpetrator knew the victim, and in about 60% of

osoba poznata počiniteljici, a u oko 60 % slučajeva to je bio član obitelji. Druga su istraživanja potvrdila kako su najčešće žrtve pacijentica bile osobe koje one poznaju, uglavnom bliske osobe poput članova obitelji ili partnera (40-42). Pacijentice se nisu razlikovale prema vrsti protupravnog djela. Najčešća protupravna djela bila su kaznena djela protiv života i tijela (u 41,9 % slučajeva). Dostupna literatura također spominje (pokušaj) ubojstva i tjelesnu ozljedu kao najčešće protupravno djelo. Zanimljivo je da je namjerno izazivanje požara drugo najčešće kazneno djelo prema dostupnim istraživanjima (18,21,30, 40). Iako su naši rezultati pokazali da nema razlika u vrsti protupravnog djela s obzirom na dijagnozu, Karsten i sur. (21) su pokazali kako su žene s BPD-om sklonije oštećenju imovine i namjernom izazivanju požara u usporedbi s pacijenticama bez BPD-a čija su djela bila više usmjerena na ljude.

ZAKLJUČAK

Za unaprjeđenje ishoda liječenja kao i u svrhu prevencije pogoršanja bolesti žena s forenzičkim poremećajima, a posljedično i prevencije počinjenja samog djela treba uzeti u obzir razliku prema određenim karakteristikama pacijentica: razini postignutog obrazovanja i postojanju komorbidnih psihijatrijskih poremećaja. Glavno ograničenje ove studije je mali broj ispitanica, posebno u skupini pacijentica bez dijagnoze shizofrenije i srodnih poremećaja, te je to potrebno uzeti u obzir prilikom promatranja rezultata. Osim toga, treba još jednom naglasiti tko se u Hrvatskoj smatra forenzičkim psihijatrijskim pacijentom i kako se sustavi forenzičke psihijatrije mogu razlikovati među pojedinim zemljama. Kako postoji povezanost nižeg stupnja obrazovanja i povećanog rizika za kriminalno ponašanje, otvara se mogućnost smanjenja rizika od nasilnog ponašanja poticanjem obrazovanja osoba sa psihičkim poremećajima u djetinjstvu i adolescenciji ili poticanjem prekva-

the cases it was a family member. Other studies confirmed that the most frequent victims of female patients were individuals they knew, mainly close persons such as family members or partners (40, 41, 42). The patients did not differ in the type of the offence. The most frequently committed offences were offences against life and limb (in 41.9% of the cases). Available literature also mentions (attempted) homicide and bodily harm as the most common offences. It is interesting that arson is the second most common offence according to the available studies (18, 21, 30, 40). Although our results showed that there were no differences in the type of offence in terms of the diagnosis, Karsten et al. (21) showed in their study that women with BPD were more inclined to property damage and arson compared to non-BPD patients, whose actions were more directed at people.

CONCLUSION

In order to improve the treatment outcomes, as well as to prevent the aggravation of illness in women suffering from forensic disorders and, consequently, to prevent the occurrence of the offence itself, the differences in certain characteristics among the patients should be taken into account: the education level and the existence of comorbid psychiatric disorders. The main limitation of the study is the small number of respondents, especially in the group of patients who were not diagnosed with schizophrenia and related disorders, and this should be taken into account when observing the results. In addition, the definition of individuals who are considered forensic psychiatric patients in Croatia should be emphasized once more, as well as the ways in which the systems of forensic psychiatry may differ in different countries. Considering the existing connection between lower levels of education and an increased risk of criminal behavior, the possibility arises of reducing the risk of violent behavior by encouraging the education of individuals with mental disorders in childhood and adolescence, or by encouraging the retraining of individuals in adult age. Since individuals

lifikacije osoba u odrasloj dobi. Kako je u osoba sa psihičkim poremećajima povećan rizik za nasilno ponašanje čemu doprinosi postojanje komorbidnih psihijatrijskih poremećaja treba otkrivati i liječiti i takve poremećaje kako bi se spriječilo počinjenje i ponavljanje protupravnih djela. Treba naglasiti važnost prepoznavanja i rada na ostalim rizičnim čimbenicima za nasilno ponašanje kao što je postojanje štetne uporabe ili ovisnosti o PAT-u kao i proživljen traumatski događaj koji povećava rizik i od razvoja ovisnosti i od nasilnog ponašanja. Rad na smanjenju diskriminacije također može doprinijeti ranijem javljanju na liječenje i boljoj kontroli bolesti. Potrebno je više ovakvih istraživanja s većim brojem pacijentica kako bi se s novim saznanjima poboljšao pristup ženama kao psihijatrijskim pacijenticama, smanjila često prisutna stigma i spriječilo nasilno ponašanje ili ponavljanje kaznenih djela.

with mental disorders have an increased risk of violent behavior, which is further exacerbated by the presence of comorbid psychiatric disorders, greater attention should be paid to the identification and treatment of such disorders as well, in order to prevent the commission and repetition of criminal offences. It is important to emphasize the need to recognize and treat other risk factors for violent behavior, such as the presence of psychoactive substance abuse or addiction, or experienced traumatic events, which increase the risk of both developing addiction and engaging in violent behavior. Efforts to reduce discrimination can also contribute to earlier treatment seeking and better management of the illness. More studies of this type, with a larger number of female patients, are necessary so that the new knowledge could be used to improve the approach towards women as psychiatric patients, reduce the often present stigma, and prevent violent behavior or the repetition of criminal offences.

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Odrednice ranog postoperacijskog funkcionalnog statusa nakon operacije prijeloma kuka starijih od 65 godina

/ Determinants of Early Postoperative Functional Status After Hip Fracture Surgery in Patients over 65 Years Old

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Prijelom kuka je jedan od najtežih prijeloma u starijih osoba. Povezan je s visokim stopama smrtnosti, morbiditeta i invaliditeta te je ekonomski opterećujući za bolesnike, njihove obitelji i sustav zdravstvene zaštite. Zato je, uz preventivne mjere koje mogu smanjiti incidenciju padova i prijeloma, vrlo važno identificirati one čimbenike koji mogu olakšati postoperacijski funkcionalni oporavak kod prijeloma i posljedične operacije. Glavni cilj provedenog istraživanja bio je utvrditi najvažnije odrednice uspješnosti funkcionalnog oporavka neposredno nakon operacije prijeloma kuka u starijih osoba, odnosno ispitati i usporediti prediktivne doprinose čimbenika iz triju različitih skupina (sociodemografskih, zdravstvenih i funkcionalnih te psihosocijalnih) uspješnosti funkcionalnog oporavka starijih osoba neposredno nakon operacije kuka, tj. na dan izlaska iz bolnice. U istraživanju je sudjelovalo 150 pacijenata, u dobi od 65 do 99 godina (M = 81,63, SD = 8,11) hospitaliziranih zbog operacije prijeloma kuka, od čega 35 muškaraca i 115 žena. Podatci o potencijalnim prediktorima uspješnosti postoperacijskog funkcionalnog oporavka prikupljeni su na dan prijma u bolnicu, a podatci o postoperacijskom funkcionalnom statusu na dan otpusta iz bolnice. Funkcionalni status ispitan je Barthelovim indeksom. Rezultati istraživanja pokazuju značajnu ulogu sociodemografskih obilježja, ranijeg funkcionalnog statusa te ranije uključenosti u napornije tjelesne aktivnosti u postoperacijskom funkcionalnom oporavku starijih osoba neposredno nakon operacije prijeloma kuka. Rezultati ne potvrđuju veću ulogu ispitanih psihosocijalnih resursa (mentalnog zdravlja, otpornosti i socijalne podrške) u funkcionalnom oporavku neposredno nakon operacije. Identificiranje i osnaživanje onih čimbenika koji mogu olakšati oporavak pacijenata nakon operacije prijeloma kuka izuzetno je važno jer može ubrzati njihov oporavak i, općenito, pridonijeti njihovoj kvaliteti života, ali i smanjiti opterećenje zdravstvenog sustava.

/ Hip fracture is one of the most severe fractures in elderly individuals. It is associated with high rates of mortality, morbidity and disability, representing an economic burden for the patients, their families and the healthcare system. For this reason, in addition to the preventive measures that could reduce the incidence of falls and fractures, it is important to identify the factors that could facilitate the postoperative functional recovery after a fracture and the consequent surgery. The main aim of the conducted study was to identify the most important determinants of successful functional recovery immediately after hip fracture surgery in elderly individuals, i.e. to examine and compare the predictive contributions of factors from three different functional recovery performance groups (sociodemographic, health and functional, and psychosocial) among elderly individuals immediately after hip surgery, i.e. on the day of discharge from the hospital. The study involved 150 patients between 65 and 99 years of age (M = 81.63, SD = 8.11) hospitalized for hip fracture surgery, of whom 35 were male and 115 were female. Data on the potential predictors of successful postoperative functional recovery were collected on the day of hospital admission, while data on the postoperative functional status were collected on the day of hospital discharge. The Barthel Index was used to assess the functional status. The study results point to a significant role of sociodemographic characteristics, previous functional status and previous involvement in more strenuous physical

activity in the postoperative functional recovery of elderly individuals immediately after hip surgery. The results do not confirm a greater role of the examined psychosocial resources (mental health, resilience and social support) in the course of postoperative functional recovery. The identification and strengthening of the factors that could facilitate patients' postoperative recovery after hip fracture surgery are of extreme importance, since they could accelerate their recovery and, generally, contribute to their quality of life, as well as lessen the burden on the healthcare system.

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UVOD

U starijoj populaciji povećanjem dobi obično dolazi do opadanja funkcionalne sposobnosti koja se odnosi na sposobnost samostalnog izvođenja aktivnosti svakodnevnog života i samozbrinjavanja kao što su samostalno hranjenje, odijevanje, kupanje, kretanje i dr. Očuvana funkcionalna sposobnost iznimno je važna jer je značajno povezana s višim razinama zadovoljstva životom (1,2), dok se s druge strane ovisnost osoba o pomoći drugih negativno odražava na njihovo zadovoljstvo životom (3). Ako se sposobnost samostalnog funkcioniranja znatnije reducira, osoba će trebati pomoć i njegu u kući (4).

Ono što može bitno narušiti funkcionalni status starije osobe jesu posljedice prijeloma zbog pada. Pad se definira kao iznenadna, nenamjerna promjena položaja tijela koja dovodi osobu na nižu razinu, predmet, pod ili zemlju, a isključuje namjernu promjenu položaja tijela (5). Padovi i prijelomi su značajan problem za stariju populaciju. Svake godine pad doživi 28-35 % osoba starijih od 65 godina, a za osobe starije od 70 godina broj

INTRODUCTION

In the elderly population, with increasing age there is usually a decline in functional capacity related to the ability to independently perform everyday activities and self-care, such as self-feeding, dressing, bathing, moving etc. Preserved functional capacity is of extreme importance as it has a significant correlation to higher levels of life satisfaction (1, 2), while on the other hand, dependence on the help of others has a negative impact on life satisfaction (3). Should the capacity to function independently significantly reduce, the individual will require help and in-home care (4).

The consequences of fractures due to a fall can significantly impair an elderly individual's functional status. A fall is defined as a sudden and unintentional change in body position resulting in an individual landing at a lower level, on an object, the floor, or on the ground, and excludes intentional change of body position (5). Falls and fractures are a major problem among the elderly population. A total of 28%-35% of individuals over 65 years of age experience a fall each year, while for those older than 70 the percentage ris-

raste na 32-42 % (5). Primjerice, u Hrvatskoj su 2017. godine od ukupnog broja hospitaliziranih pacijenata s prijelomom, 84 % činile osobe starije životne dobi, a od ukupnog broja umrlih zbog prijeloma, 99 % su bile osobe u dobi od 65 ili više godina. Nadalje, prema podatcima Hrvatskog zavoda za javno zdravstvo 2017. godine su vodeći uzroci smrti od ozljeda, kao i vodeći uzrok hospitalizacija starijih osoba bili padovi (6).

Padovi starijih osoba rezultiraju posljedicama koje narušavaju njihovu kvalitetu života, a najčešće posljedice pada su prijelomi, strah od pada koji se javlja u oko 90 % osoba koje su pale, odustajanje od dosadašnjih aktivnosti, promjena navika i imobilizacija (7). Prijelom kuka česta je i ozbiljna posljedica padova i osteoporoze u starijih osoba s prevalencijom u porastu u populaciji koja kontinuirano stari (8,9). Prijelom kuka smatra se jednim od najtežih prijeloma u starijih osoba. Prijelomi kuka povezani su s visokim stopama smrtnosti, morbiditeta i invaliditeta, a jednogodišnje stope smrtnosti kreću se od 14 % do 58 % (10,11). Prijelomi također ekonomski opterećuju bolesnike, njihove obitelji, sustav zdravstvene zaštite, pružatelje usluga i širi zdravstveni sustav (12,13). Posljedice padova i prijeloma kuka često uključuju bol, strah, nesigurnost, anksioznost, depresiju, ali i ozbiljne fizičke ozljede koje mogu dovesti i do smrti (14). Stoga je, uz preventivne mjere koje mogu smanjiti incidenciju padova i prijeloma, vrlo važno identificirati i one faktore koji mogu olakšati postoperacijski funkcionalni oporavak u slučaju prijeloma i posljedične operacije.

Dosadašnja istraživanja oporavka nakon operacije prijeloma kuka uglavnom su se usmjeravala na osnovne sociodemografske te tjelesne čimbenike ili čimbenike povezane s funkcionalnim statusom, npr. doživljaj boli te raniji funkcionalni ili zdravstveni status. Ta su ranija istraživanja pokazala da se mlađe osobe, one višeg socioekonomskog statusa, općenito boljeg zdravstvenog stanja, očuvanih kognitivnih funkcija, te osobe koje žive s bračnim partnerom, brže oporavljaju od ozljede loma kuka, kao i osobe koje su imale

es to 32%-42% (5). For example, the statistics for Croatia in 2017 showed that among the total number of patients hospitalized due to fracture, 84% were elderly individuals, while 99% of the deaths due to fracture consisted of patients aged 65 or older. Furthermore, according to the data from the Croatian Institute of Public Health for 2017, falls were the leading cause of death due to injury, as well as the leading cause of hospitalizations among the elderly (6).

Falls among the elderly result in consequences that impair their quality of life, and the most common consequences of a fall include fractures, fear of further falls which occurs in 90% of individuals who have experienced a fall, giving up previous activities, change in habits, and immobilization (7). Hip fracture is a common and serious consequence of falls and osteoporosis in the elderly, with increasing prevalence among the population that is continuously aging (8, 9). Hip fracture is considered as one of the most severe fractures in elderly individuals. Hip fractures are associated with high rates of mortality, morbidity and disability, with one-year mortality rates between 14% and 58% (10, 11). Fractures also constitute an economic burden for the patients, their families, the healthcare system, service providers and the overall health system (12, 13). The consequences of falls and hip fractures often include pain, fear, insecurity, anxiety, depression, as well as serious physical injuries that can potentially lead to death (14). For this reason, in addition to the preventive measures that could reduce the incidence of falls and fractures, it is important to identify the factors that could facilitate the postoperative functional recovery after a fracture and the consequent surgery.

The studies on postoperative recovery after hip fracture surgery conducted so far mainly focused on the basic sociodemographic and physical factors or factors associated with the functional status, e.g. the sensation of pain and previous functional or health status. These earlier studies have shown that younger individuals, those of higher

bolji funkcionalni status prije same ozljede (15-19). Pritom se raniji funkcionalni status pokazuje jednim od najsnažnijih prediktora postoperacijskog oporavka funkcionalne sposobnosti ili aktivnosti svakodnevnog života (20-23).

Istraživanjima je dobro potvrđena važnost tjelesne aktivnosti za očuvanje funkcionalne sposobnosti i prevenciju padova u starijoj dobi. Kontinuirano provođenje tjelesne aktivnosti smatra se jednom od najboljih metoda za očuvanje funkcionalne sposobnosti te sprječavanje i ublažavanje promjena i bolesti koje dolaze sa starijom životnom dobi (24). Fizička aktivnost smanjuje rizik padova u starijoj dobi i pomaže oporavku narušene funkcionalne sposobnosti (25). Ranija istraživanja pokazala su i da doživljaj boli može značajno utjecati na funkcionalni oporavak. Tako su Williams i sur. (19) utvrdili visoku povezanost intenziteta boli s oporavkom u domeni fizičkog i socijalnog funkcioniranja (osobe s višim intenzitetom boli slabije su se oporavljale), čak i uz kontrolu funkcionalnog statusa prije ozljede.

U manjoj su mjeri u ranijim istraživanjima u ovome području zahvaćeni aspekti mentalnog zdravlja poput ranije postojeće ili postoperacijske anksioznosti i depresivnosti i njihove uloge u procesu oporavka nakon operacije prijeloma kuka (22,26,27). Očekivano, ta istraživanja pokazuju da narušeno mentalno zdravlje prije ili nakon operacije otežava postoperacijski funkcionalni oporavak.

Uloga različitih psihosocijalnih faktora, poput socijalne podrške ili osobnih resursa kao što je otpornost, u ranijim je istraživanjima bila uglavnom zanemarena pa ne znamo mnogo o njihovom utjecaju na funkcionalni oporavak nakon operacije prijeloma kuka. Novi nalazi ukazuju da bi uključivanje psihosocijalnih čimbenika u model rehabilitacijske skrbi za pacijente nakon prijeloma kuka moglo biti važno za poboljšanje ishoda oporavka, smanjenje smrtnosti i ekonomskog opterećenja te osiguravanje poboljšanja kvalitete života nakon prijeloma u ovoj rastućoj populaciji pojedinaca (28-30). Primjerice, ot-

socioeconomic status, generally better health, preserved cognitive functions, and living with a spouse, experience a faster recovery following a hip fracture, including individuals with a better functional status before the injury (15-19). At the same time, previous functional status has proved to be one of the strongest predictors of postoperative functional capacity or daily life activity recovery (20-23).

Studies have certainly confirmed the importance of physical activity for the preservation of functional capacity and prevention of falls in older age. Continuous engagement in physical activity is considered to be one of the best methods for preserving functional capacity, and preventing and mitigating changes and diseases that occur with old age (24). Physical activity reduces the risk of falls in older age and helps in the recovery of impaired functional capacity (25). Earlier studies have also shown that the sensation of pain can have a significant impact on functional recovery. In that sense, Williams et al. (19) observed a high correlation between pain intensity and recovery within the scope of physical and social functioning (individuals with higher pain intensity were slower to recover), even if functional status was controlled before the injury.

Mental health aspects such as pre-existing or postoperative anxiety and depression, and their role in the recovery process after hip fracture surgery, were covered to a lesser extent in the earlier studies on this topic (22, 26, 27). Expectedly, these studies indicate that impaired mental health before or after surgery makes the postoperative functional recovery more difficult.

The role of various psychosocial factors, such as social support or personal resources like resilience, was mostly neglected in previous studies, therefore we do not have much knowledge with regard to their influence on postoperative functional recovery after hip fracture surgery. New findings indicate that the inclusion of psychosocial factors into the rehabilitation care model for patients following a hip fracture could be significant for improving the recovery outcomes,

pornost (engl. *resilience*) bi mogla imati značajnu ulogu u ovom kontekstu. Ona se odnosi na sposobnost efikasnog suočavanja s potencijalno stresnim događajima i situacijama (31) odnosno mogućnost osobe da izdrži i/ili se lako i brzo oporavi od teških situacija, nesreće ili bolesti (32) uz zadržavanje normalnog fiziološkog i psihološkog funkcioniranja (33) u mjeri u kojoj je to moguće. U takve stresne događaje zasigurno spadaju prijelom i operacija kuka pa bi izražena osobina otpornosti mogla olakšati nošenje s ovim stresnim događajima te postoperacijski oporavak.

Sve je više nalaza da i socijalni čimbenici poput ranije socijalne podrške ili podrške obitelji, prijatelja i medicinskog osoblja nakon operacije imaju značajnu ulogu u oporavku (29,30,34,35). Međutim, ti se čimbenici obično ne razmatraju, ne procjenjuju ili im se ne pridaje veća važnost u programima rehabilitacije prijeloma kuka (28,36,37).

Ranija istraživanja zahvaćala su manji broj uglavnom tjelesnih i funkcionalnih determinanti oporavka, dok su psihosocijalni čimbenici većinom bili zanemareni. Danas su stručnjaci u ovom području (npr. Kristensen, 2011) suglasni s mišljenjem da je oporavak poslije operacije prijeloma kuka determiniran većim brojem čimbenika, a ne samo jednim ili dvama pojedinačnim faktorima.

Glavni cilj provedenog istraživanja bio je utvrditi najvažnije odrednice uspješnosti funkcionalnog oporavka neposredno nakon operacije prijeloma kuka starijih osoba, odnosno ispitati i usporediti prediktivne doprinose čimbenika iz triju različitih skupina:

a) sociodemografskih (spol, dob, obrazovanje, bračni status, veličina kućanstva/način života),
b) zdravstvenih i funkcionalnih (ranija razina tjelesne aktivnosti, jačina boli, raniji funkcionalni status, kronične bolesti) i
c) psihosocijalnih (mentalno zdravlje, otpornost i socijalna podrška)

reducing mortality and economic burden, as well as improving the quality of life after the fracture in this growing population of individuals (28-30). For example, resilience could play a significant role in this context. It refers to the ability to efficiently cope with the potentially stressful events and situations (31), that is, the individual's ability to endure and/or easily and quickly recover from difficult situations, accidents, or diseases (32), all the while maintaining normal physiological and psychological functioning (33) to the extent possible. Such stressful events surely include hip fracture and surgery, therefore pronounced resilience could facilitate an individual's ability to cope with these stressful events and their postoperative recovery.

Increasing evidence suggests that social factors such as previous social or family support, or support provided by friends and medical personnel following a surgery play a significant role during recovery (29, 30, 34, 35). However, these factors are usually not considered, assessed or given higher priority in hip fracture rehabilitation programs (28, 36, 37).

Earlier studies included only a smaller number of mainly physical and functional determinants of recovery, while the psychosocial factors were mostly neglected. Nowadays, the experts in this field (e.g. Kristensen, 2011) agree that postoperative recovery after hip fracture surgery is determined by a larger number of factors, rather than only one or two individual factors.

The main aim of the conducted study was to identify the most important determinants of successful postoperative functional recovery immediately after hip fracture surgery in the elderly, i.e. to examine and compare the predictive contributions of factors from three different groups:

a) sociodemographic (gender, age, education, marital status, household size/lifestyle),
b) health and functional (previous physical activity level, pain intensity, previous functional status, chronic diseases), and
c) psychosocial (mental health, resilience and social support),

uspješnosti funkcionalnog oporavka starijih osoba neposredno nakon operacije kuka, tj. na dan izlaska iz bolnice.

Na temelju rezultata ranijih istraživanja i teorijskih razmatranja u ovome području pretpostavljeno je da će čimbenici iz svih triju skupina (sociodemografski, zdravstveni i funkcionalni te psihosocijalni) dati značajan doprinos postoperacijskom funkcionalnom statusu kao pokazatelju postoperacijskog oporavka.

METODA

Sudionici

U istraživanju je sudjelovalo 150 sudionika, u dobi od 65 do 99 godina (*M* = 81,63, *SD* = 8,11), hospitaliziranih zbog operacije prijeloma kuka. Korišten je neprobabilistički kvotni uzorak jer se istraživanjem namjeravalo zahvatiti oko 70 % ženskih i 30 % muških pacijenata Odjela traumatologije i ortopedije Opće bolnice Zadar, što odgovara godišnjem omjeru ženskih i muških pacijenata s prijelomom kuka. Kriteriji uključivanja sudionika bili su minimalna dob od 65 godina i hospitalizacija zbog prijeloma i operacije kuka. U uzorku je na kraju bilo 35 muškaraca (23,3 % uzorka) i 115 žena (76,7 %). U istraživanju nisu sudjelovale osobe s dijagnozom demencije i osobe koje su i prije pada bile nepokretne. Većina sudionika živjela je u bračnoj zajednici (N=93; 62 %) ili su bili udovci/udovice (N=46; 30,7 %). Samaca ili nikad vjenčanih bilo je sedmero (4,7 %), a razvedenih četvero (2,6 %). Niti jedan sudionik nije živio u nevjenčanoj zajednici. Većina sudionika je živjela samo s bračnim partnerom (N=65; 43,3 %). Osamnaest sudionika je navelo da žive sami (12 %). S partnerom i djecom živjelo je 27 (18 %), a samo s djecom (s unucima ili bez njih) 19 (12,7 %). Neki drugi oblik suživota (npr. s prijateljem ili drugim rođacima) naveo je 21 sudionik (14 %). S obzirom na stupanj obrazovanja, većina sudionika završila je srednju

for a successful functional recovery in the elderly immediately after hip surgery, i.e. on the day of hospital discharge.

Based on the results of previous studies and theoretical considerations in this field, the assumption was that the factors pertaining to all three groups (sociodemographic, health and functional, and psychosocial) would significantly contribute to the postoperative functional status as an indicator of postoperative recovery.

METHOD

Participants

The study involved 150 participants between 65 and 99 years of age (*M* = 81.63, *SD* = 8.11), hospitalized for hip fracture surgery. Nonprobability quota sampling was used since the aim of the study was to include approx. 70% of female and 30% of male patients admitted to the Department of Traumatology and Orthopedics at the Zadar General Hospital, which corresponds to the annual ratio of female and male patients with hip fracture. Participant inclusion criteria included a minimum age of 65 years and hospitalization due to hip fracture and surgery. The sample ultimately included 35 men (23.3% of the sample) and 115 women (76.7%). The study did not involve individuals with a diagnosis of dementia or those who were immobile before the fall. The majority of the participants were married (N=93; 62%) or widowed (N=46; 30.7%). Seven of the participants were single or never married (4.7%), while four were divorced (2.6%). None of the participants were living in a consensual union. The majority of the participants reported living alone with their spouses (N=65; 43.3 %). Eighteen participants reported living alone (12%). A total of 27 participants (18%) reported living with their partners and children, while 19 (12.7%) lived only with their children (with or without grandchildren). Some other form of cohabitation (e.g. living with a friend or other relatives) was reported by 21 participants (14%). With regard to the level

školu kao najviši stupanj obrazovanja (N=50; 33,3 %). 11 (7,33 %) završilo je nekoliko razreda osnovne škole, dok je 41 osoba (27,33 %) završila osmogodišnju osnovnu školu. Višu školu je završilo 30 sudionika (20 %), a visoku njih 18 (12 %). Velika većina ispitanih osoba je imala djecu (N=142; 94,7 %) pri čemu se kod njih broj djece kretao od 1 do 5, a većina je imala dvoje djece (Mod=2). Šezdeset i sedam sudionika (44,7 %) imalo je dijagnozu FCF (*fractura colli femoris*), 83 (55,3 %) dijagnozu FPF (*fractura pertrochanterica femoris*). Deset (7%) sudionika je prošlo operaciju TEP (totalna endoproteza), 57 (38 %) operaciju PEP (parcijalna endoproteza), a 83 (55 %) operaciju OS (osteosinteza).

Instrumenti

1. Upitnik općih sociodemografskih podataka koji sadrži pitanja koja se odnose na spol, dob, razinu obrazovanja, bračni status i veličinu kućanstva, tj. osobe s kojima pojedinac živi u istom kućanstvu. U prvom dijelu upitnika prikupljeni su i podatci koji se odnose na objektivni zdravstveni status pacijenta (broj i vrsta kroničnih bolesti), a evidentiran je i podatak o težini ozljede/dijagnozi i, naknadno, o vrsti operacije koju je osoba prošla.
2. Barthelovim indeksom funkcionalne sposobnosti (38) procijenjen je funkcionalni status prije i nakon operacije. Barthelov indeks ispituje sposobnost izvođenja 11 svakodnevnih aktivnosti: hranjenje, kupanje, osobna higijena, oblačenje, funkcioniranje probavnog trakta, funkcioniranje urinarnog trakta, upotreba WC-a, pomicanje s kreveta na stolac i obrnuto, pokretljivost i savladavanje stepenica. Pomoću odgovarajuće brojčane ljestvice, za svaku je aktivnost procijenjena sposobnost pacijenta da ju samostalno izvede. Viši ukupni rezultat označava veću samostalnost u izvođenju svakodnevnih aktivnosti i radnji. Barthelov indeks često se koristi za praćenje funkci-

of education, the majority of the participants reported completing high school as the highest level of education (N=50; 33.3%). Another 11 participants (7.33%) reported completing several grades of elementary school, while 41 participants (27.33%) completed the eight-year elementary school program. A total of 30 participants (20%) had higher education, while 18 (12%) had a university degree. The vast majority of the participants had children (N=142; 94.7%), whereby the number of children varied between 1 and 5, and most had two children (Mod=2). Sixty-seven participants (44.7%) were diagnosed with a femoral neck fracture (FCF - *fractura colli femoris*), and 83 (55.3%) with a pertrochanteric fracture of the femur (FPF - *fractura pertrochanterica femoris*). Ten participants (7%) underwent total hip replacement (THR), 57 (38%) underwent partial hip replacement (PHR), while 83 (55%) participants underwent osteosynthesis (OS).

Instruments

1. The general sociodemographic data questionnaire was used, containing questions in relation to the gender, age, education level, marital status and household size, i.e. persons living in the same household with the patient. Data relating to the objective health status of the patients (the number and types of chronic diseases) were also collected in the first part of the questionnaire, together with the data on the severity of the injury/diagnosis and, subsequently, the type of surgery they underwent.
2. The Barthel Index was used to assess functional capacity (38), examining the functional status before and after the surgery. The Barthel Index assesses the capacity to perform 11 daily activities: feeding, bathing, grooming, dressing, bowel control, bladder control, toilet use, transfers from the bed to chair and back, mobility on level surfaces and on stairs. Using the appropriate numerical scale, the patients' capacity to independently perform each activity is assessed. A higher

onalnog oporavka u kontekstu bolničke rehabilitacije, medicinske i kućne njege i sl.

3. Za procjenu ranije razine fizičke aktivnosti korištena su pitanja osmišljena za potrebe ovoga istraživanja. Ona ispituju prosječnu količinu vremena (sati, odnosno minuta u tjednu) koje je osoba provodila u tjelesnim aktivnostima visokog i umjerenog intenziteta, te vrijeme koje je provodila hodajući tijekom jednog tjedna, u razdoblju koje je prethodilo ozljedi. Slična pitanja korištena su i u ranijim istraživanjima tjelesne aktivnosti u starijih osoba. Pritom se mogu zasebno koristiti rezultati za svaku razinu aktivnosti (naporna, umjerena aktivnost i hodanje). Također bi bilo moguće izračunati ukupni rezultat koji bi se odnosio na ukupnu razinu tjelesne aktivnosti na način da se ponderira svaka razina aktivnosti prije njihova zbrajanja. U analizama u okviru ovoga rada korištene su zasebne procjene za svaku od tri razine tjelesne aktivnosti. Rezultati su izraženi kao broj sati tjedno proveden u pojedinim tjelesnim aktivnostima različitog intenziteta
4. Jačina fizičke boli ispitana je jednim pitanjem iz Upitnika zdravstvenog statusa SF-36 (39,40). Njime se na ljestvici od 1 (nikakva) do 6 (vrlo teška) procjenjuje jačina tjelesnih bolova u protekla četiri tjedna.
5. Mentalno zdravlje ispitano je pomoću podljestvice mentalnog zdravlja (MH, *mental health*) iz Upitnika zdravstvenog statusa SF-36 (39,40). Ljestvica sadrži pet pitanja koja ispituju doživljaje anksioznosti, depresivnosti i stresa kao glavne indikatore mentalnog zdravlja. Pojedini odgovori na svaku od tvrdnji različito se boduju prema unaprijed utvrđenim empirijskim normama, a s obzirom na dijagnostičku vrijednost određenog odgovora ispitanika. Ukupan rezultat na ljestvici izražava se kao standardizirana vrijednost u rasponu od 0 do 100 pri čemu viši rezultat označava bolje mentalno zdravlje.

overall score implies greater independence in the performance of daily activities and actions. The Barthel Index is often used for the purpose of monitoring functional recovery within the context of hospital rehabilitation, medical and in-house care, etc.

3. Questions designed for the purposes of this study were used for the assessment of previous physical activity level. They assess the average amount of time (hours, i.e. minutes in a week) that the individual spent engaging in physical activities of high and moderate intensity, and the time spent walking in the course of a week, in the period preceding the injury. Similar questions were used in previous studies examining the physical activities of elderly individuals. In doing so, the results for each level of activity (strenuous, moderate activity and walking) can be used separately. It would also be possible to calculate the overall result relating to the total level of physical activity by weighting each level of activity before adding them together. Separate assessments for each of the three levels of physical activity were used in the analyses conducted for the purposes of this paper. The results are expressed as the number of hours per week spent engaging in individual physical activities of different intensity.
4. The intensity of physical pain was assessed using one question from the Short Form Health Survey (SF-36) (39, 40). It is used to estimate the intensity of physical pain in the past four weeks using a scale from 1 (none) to 6 (very severe).
5. Mental health was assessed using the Short-Form Health Survey (SF-36) mental health subscale (MH) (39, 40). The scale consists of five questions that evaluate the perception of anxiety, depression and stress as the main indicators of mental health. Answers to each individual statement are scored differently according to predetermined empirical standards, taking into account the diagnostic values of specific answers provided by the respondents. The total score on the scale is

6. Konstrukt otpornosti ispitan je Kratkom ljestvicom otpornosti (41), odnosno njezinom adaptiranom hrvatskom verzijom (42). Ljestvica sadrži šest čestica kojima se ispituje osobni resurs otpornosti definiran kao mogućnost osobe da izdrži i/ili se lako i brzo oporavi od stresne situacije, nesreće ili bolesti. Ispitanik označava svoje slaganje sa svakom tvrdnjom na ljestvici od pet stupnjeva, od 1 (uopće se ne slažem) do 5 (u potpunosti se slažem). Ukupan rezultat na ljestvici se, uz prethodno obrnuto bodovanje triju čestica negativnog smjera, izračunava kao prosječan rezultat na svim česticama pri čemu viši rezultat ukazuje na izraženiju otpornost.
7. Socijalna podrška je ispitana Ljestvicom socijalne podrške (43). Riječ je o kratkoj ljestvici koja pomoću tri pitanja ispituje učestalost triju vrsta socijalne podrške: druženje, emocionalnu i instrumentalnu podršku. Ispitanik pomoću ljestvice od tri stupnja (1 = nemam nikoga, 2 = imam, povremeno i 3 = imam, gotovo uvijek) odgovara na tri tvrdnje koje procjenjuju tri vrste podrške („Imate li nekoga tko Vam obično pravi društvo?“, „Imate li nekoga s kim razgovarate kad imate problema?“ i „Imate li nekoga tko Vam pomaže u raznim sitnim poslovima?“). Ukupan rezultat računa se kao zbroj procjena na tri čestice te se kreće od 3 do 9 ili kao zbroj procjena podijeljen brojem čestica u kojem se slučaju kreće u rasponu od 1 do 3. Pritom viši rezultat označava veću socijalnu podršku.

Postupak

Provedeno je kratko longitudinalno istraživanje s dvije točke mjerenja, uz individualnu primjenu upitnika kojim su zahvaćeni relevantni konstrukti te procjena funkcionalnog statusa. Podatci su prikupljani od 1. siječnja 2023. do 30. lipnja 2024. godine. Prikupljala ih je prva autorica ovoga rada koja je ujedno i glavna se-

expressed as a standardized value ranging from 0 to 100, with a higher score indicating better mental health.

6. The resilience construct was assessed using the Brief Resilience Scale (41), i.e. its adapted version in Croatian (42). The scale consists of six items that evaluate the personal resilience resource defined as the individual's ability to endure and/or easily and quickly recover from a stressful situation, accident or illness. The respondent marks their agreement with each statement using a five-point scale, ranging from 1 (I totally disagree) to 5 (I totally agree). The total score on the scale, with previous reverse scoring for the three negative direction items, is calculated as the average score in all items, whereby a higher score indicates higher resilience.
7. Social support was assessed using the Social Support Scale (43). This is a short scale containing three questions used to examine the availability of three types of social support: companionship, emotional, and instrumental support. Using a three-degree scale (1 = I have no one, 2 = I have, occasionally, and 3 = I have, almost always), the respondents provide answers to three statements assessing the three types of support ("Do you have anyone who usually keeps you company?", "Do you have anyone to talk to when you have a problem?", and "Do you have anyone to help you in doing various little chores?"). The total result is calculated as the sum of the answers provided for the three items and ranges from 3 to 9, or as the sum of answers divided by the number of items, in which case it ranges from 1 to 3. A higher score, thereby, indicates higher social support.

Procedure

A short longitudinal study with two measurement points was conducted, along with an individual application of the questionnaire encompassing the relevant constructs, and a functional status assessment. The data were collected in the period

stra Odjela za traumatologiju i ortopediju Opće bolnice Zadar. Podatke je prikupila usmenom primjenom upitnika koji je obuhvatio sve ranije opisane relevantne instrumente.

Prvo mjerenje provedeno je neposredno (unutar nekoliko sati) nakon prijma na odjel, nakon inicijalnog razgovora s bolesnikom s ciljem lakše prilagodbe na bolničke uvjete i predstojeću operaciju. Sudionici su prije početka istraživanja upoznati sa svrhom i načinom provođenja istraživanja, dobrovoljnošću sudjelovanja i pravom na odustajanje u bilo kojem trenutku nakon čega je zatražen njihov obaviješteni pristanak na sudjelovanje u istraživanju. U prvoj točki mjerenja usmeno je primijenjen upitnik s mjernim instrumentima kojima su zahvaćeni potencijalni prediktori uspješnosti postoperacijskog funkcionalnog oporavka, tj. sociodemografske varijable, postojeće kronične bolesti, funkcionalni status prije operacije, ranija razina tjelesne aktivnosti, jačina boli, mentalno zdravlje, osobina otpornosti i percipirana socijalna podrška. Drugo mjerenje je provedeno osmi dan nakon što je osoba operirana, tj. na dan otpusta iz bolnice, kada su ponovnom primjenom Barthelovog indeksa prikupljeni podatci o ishodnoj varijabli, tj. funkcionalnom statusu nakon operacije. Evidentiran je i podatak o dijagnozi i o vrsti provedenog kirurškog zahvata. Provedbu istraživanja odobrilo je Povjerenstvo za etička pitanja Opće bolnice Zadar.

Sudionici su bili izjednačeni s obzirom na broj dana hospitalizacije i postoperacijski medicinski i rehabilitacijski tretman tako da ove varijable u planiranom istraživanju nisu razmatrane kao potencijalni prediktori uspješnosti oporavka. Svi su pacijenti imali sličan postoperacijski tretman, dobivali su istu analgeziju (nesteroidne antireumatike, NSAR); kirurška rana je zarasla *per primam*. Fizioterapeuti su radili svaki dan u 2 navrata po 25 minuta sa svakim pacijentom u svrhu rehabilitacije, tako da su svi imali slične uvjete za što bolju funkcionalnu rehabilitaciju.

between 1 January 2023 and 30 June 2024. They were collected by the first author of this study, who is also the head nurse of the Department of Traumatology and Orthopedics at the Zadar General Hospital. The data were collected by oral application of the questionnaire which included all of the aforementioned relevant instruments.

The first assessment was performed immediately (within several hours) after admission to the Department, and following an initial conversation with the patient conducted in order to facilitate their adjustment to hospital conditions and the upcoming surgery. Before the start of the study, the participants were familiarized with the purpose and method of the study, they were informed that their participation was voluntary and that they were entitled to withdraw from the study at any moment, after which an informed consent was requested from the patients for their participation in the study. At the first point of assessment, the questionnaire containing the measuring instruments was orally applied, which encompassed the potential predictors of successful postoperative functional recovery, i.e. the sociodemographic variables, existing chronic diseases, functional status before surgery, previous level of physical activity, pain intensity, mental health, resilience and perceived social support. The second assessment was conducted on the eighth day post-surgery, i.e. on the day of hospital discharge, when the Barthel Index was used again in order to collect data on the outcome variable, i.e. functional status after the surgery. Data on the diagnosis and the type of surgical procedure performed were collected as well. The study was approved by the Ethics Committee of the Zadar General Hospital.

The participants spent an equal number of days in the hospital and had the same postoperative medical and rehabilitation treatment, therefore these variables were not considered as potential predictors of successful recovery in the planned study. All patients had similar postoperative treatment, the same analgesia protocol (nonsteroidal antirheumatics, NSAR), and their surgical wound healed *per primam*. For rehabilitation

REZULTATI

Osnovni deskriptivni pokazatelji korištenih instrumenata

Prije odgovora na glavno istraživačko pitanje izračunati su osnovni deskriptivni parametri ispitanih varijabli koji su prikazani u tablici 1.

Kolmogorov-Smirnovljev test normalnosti distribucije pokazao je da distribucije rezultata na svim ljestvicama značajno odstupaju od normalne. Međutim, indeksi asimetričnosti i spljoštenosti nemaju ekstremne vrijednosti što dopušta korištenje parametrijske statistike (44). Koeficijenti unutarnje konzistencije Cronbach alpha korištenih validiranih mjernih instrumenata s većim brojem čestica (Barthelovog indeksa u obje primjene, ljestvice mentalnog zdravlja, ljestvice otpornosti i ljestvice socijalne podrške) kreću se oko vrijednosti od

purposes, physical therapists worked with each patient two times every day, each treatment lasting 25 minutes, therefore all of them had similar conditions for the best possible functional rehabilitation.

RESULTS

Basic descriptive indicators of instruments used

The basic descriptive parameters of the examined variables were calculated before answering the main research question, as presented in Table 1.

The results of the Kolmogorov-Smirnov test for normality of distribution showed that the result distributions on all scales significantly deviated from normal. However, the skewness and kurtosis indices did not indicate extreme values, which

TABLICA 1. Osnovni deskriptivni podatci ispitanih varijabli (N=150)
TABLE 1. Basic descriptive data of the variables examined (N=150)

Varijable / Variables	Aritmetička sredina / Arithmetic mean (M)	Raspon / Range	Standardna devijacija / Standard deviation (SD)	Asimetričnost / Skewness (SKW)	Spljoštenost / Kurtosis (KTS)	Kolmogorov-Smirnovljev test / Kolmogorov–Smirnov test (K-S d)	Cronbach alpha / Cronbach alpha
Barthelov indeks u predoperacijskoj primjeni / Preoperative Barthel Index	94,16	43,00-105,00	12,64	-1,41	1,70	0,22**	0,92
Barthelov indeks u postooperacijskoj primjeni / Postoperative Barthel Index	53,80	18,00-81,00	17,28	-0,22	-1,29	0,17**	0,89
Broj bolesti / Number of diseases	1,03	0,00-3,00	0,83	0,29	-0,73	0,22**	---
Naporna tjelesna aktivnost / Strenuous physical activity	4,44	0,00-14,00	3,05	0,71	-0,76	0,30**	---
Umjerena tjelesna aktivnost / Moderate physical activity	11,62	0,00-24,00	6,32	-0,12	-0,74	0,21**	---
Šetnja / Strolls	12,37	4,00-21,00	4,56	0,30	-0,59	0,25**	---
Procjena boli / Pain assessment	3,50	1,00-5,00	0,81	-0,78	0,26	0,33**	---
Mentalno zdravlje / Mental health	55,86	28,00-72,00	10,83	-0,59	0,06	0,16**	0,91
Otpornost / Resilience	2,73	1,00-4,33	0,96	-0,05	-1,18	0,17**	0,97
Socijalna podrška / Social support	2,42	1,00-3,00	0,54	-0,20	-1,08	0,31**	0,98

*p < 0,05, **p < 0,01

0,90 ili prelaze tu vrijednost, što ukazuje na visoku pouzdanost tipa unutarnje konzistencije korištenih instrumenata.

Iz tablice 1 je nadalje vidljivo da su prosječni rezultati na Barthelovom indeksu u prvoj primjeni pomaknuti prema višim vrijednostima te ukazuju na u prosjeku dobar predoperacijski funkcionalni status ispitanih osoba, odnosno na njihovu prosječno malu ovisnost o tuđoj pomoći u obavljanju procijenjenih aktivnosti. Ukupni rezultati na Barthelovom indeksu u drugoj primjeni, nakon operacije, značajno su niži. Kreću se u rasponu od 18 do 81 s prosječnim rezultatom od 53,80 koji ukazuje na težu ovisnost o tuđoj pomoći u ovom razdoblju neposredno nakon operacije. T-test za zavisne uzorke potvrdio je da je razlika u ukupnim rezultatima na Barthelovom indeksu u dvije primjene statistički značajna ($t(149) = 44,89$, $p < 0,00001$).

Što se tiče prediktorskih varijabli zahvaćenih ovim istraživanjem koje se odnose na zdravlje i zdravstvene navike pokazalo se da su sudionici ovoga istraživanja od ponuđenih 8 kroničnih bolesti i dijagnoza najčešćih u starijoj populaciji (artritis, povišeni krvni tlak, bolesti srca i krvnih žila, dijabetes, rak, osteoporoza, moždani udar i plućne bolesti), uz mogućnost navođenja dodatnih dijagnoza, navodili da imaju od nijedne do maksimalno tri bolesti. Prosječan broj bolesti (M) je iznosio jedan, a najveći broj sudionika je naveo da ima jednu od ponuđenih bolesti (Mod=1). Iznenađuje relativno velik broj sudionika - 44 (29,3 % uzorka), koji je naveo da ne boluje ni od jedne od ponuđenih bolesti.

U tablici 2 su navedene frekvencije bolesti od kojih su sudionici naveli da boluju.

Iz tablice 2 je vidljivo da su ispitane starije osobe najčešće navodile da boluju od bolesti srca i krvnih žila (32 % uzorka) i hipertenzije (30 % uzorka).

U pogledu tjelesne aktivnosti sudionici su naveli da su u razdoblju koje je neposredno pret-

allows for the use of parametric statistics (44). The Cronbach Alpha internal consistency coefficients of used validated measuring instruments with a higher number of items (Barthel Index in both applications, mental health scale, resilience scale and social support scale) were within the approx. value of 0.90 or exceeded the value, which indicates high reliability of the internal consistency type of the instruments used.

Table 1 further shows that the average Barthel Index scores in the first application shifted toward the higher values, indicating generally good preoperative functional status of the participants, i.e. their general low dependence on the help of others in the performance of the assessed activities. The total Barthel Index scores in the second application, after surgery, are significantly lower. They range between 18 and 81, with the average score of 53.80, indicating greater reliance on the help of others in the period immediately after surgery. The t-test for dependent samples confirmed the statistically significant difference between the final scores of the Barthel Index in the two applications ($t(149) = 44.89$, $p < 0.00001$).

Regarding the predictor variables included in this study which refer to health and health habits, it was observed that among the presented eight chronic diseases and diagnoses most common in the elderly population (arthritis, high blood pressure, heart and blood vessel diseases, diabetes, cancer, osteoporosis, stroke and lung diseases), with the possibility of naming additional diagnoses, the study participants generally reported suffering from none and up to three diseases. The average number of diseases (M) was one, and most of the participants reported suffering from one of the presented diseases (Mod=1). It was surprising that a relatively large number of participants - 44 (29.3% of the sample) reported not suffering from any of the presented diseases.

The aforementioned frequencies of the diseases reported by the participants are presented in Table 2.

It is evident from Table 2 that the surveyed elderly individuals most commonly reported suffering

TABLICA 2. Frekvencija kroničnih bolesti u ispitanom uzorku (N=150)
TABLE 2. Frequency of chronic diseases in the examined sample (N=150)

Vrsta bolesti / Type of disease	f (%)
Bolesti srca i krvnih žila / Heart and blood vessel diseases	48 (32)
Hipertenzija / Hypertension	45 (30)
Osteoporoza / Osteoporosis	23 (15,3)
Dijabetes / Diabetes	14 (9,3)
Artritis / Arthritis	11 (7,3)
Plućne bolesti / Lung diseases	5 (3,3)
Karcinom / Cancer	4 (2,7)
Neka druga bolest: / Other diseases:	
Hipotireoza / Hypothyroidism	3 (2)
Hipertireoza / Hyperthyroidism	1 (0,6)
Dermatitis / Dermatitis	1 (0,6)

Napomena: f - frekvencija navođenja određene bolesti ili broj sudionika koji je naveo da boluje od određene bolesti; % - postotak sudionika koji je naveo da boluje od određene bolesti
/ Note: f - frequency of reporting certain disease or number of participants who reported suffering from a certain disease; % - percentage of participants who reported suffering from a certain disease

hodilo ozljedi provodili u prosjeku 4,44 sati/tjedan u napornijoj tjelesnoj aktivnosti (npr. trčanje, plivanje, brza vožnja bicikla, dizanje teških predmeta, kopanje). U umjerenoj tjelesnoj aktivnosti (npr. lagani ples, vježbanje na prostirci, umjereni rad u vrtu, lakši kućanski poslovi kao što su usisavanje ili nošenje lakog tereta) u istom razdoblju su provodili 11,62 sati tjedno, dok su šetajući ili hodajući u razdoblju koje je neposredno prethodilo ozljedi provodili u prosjeku 12,37 sati/tjedan (slika 1). Očekivano, najviše vremena provodili su u šetnji i umjerenoj tjelesnoj aktivnosti.

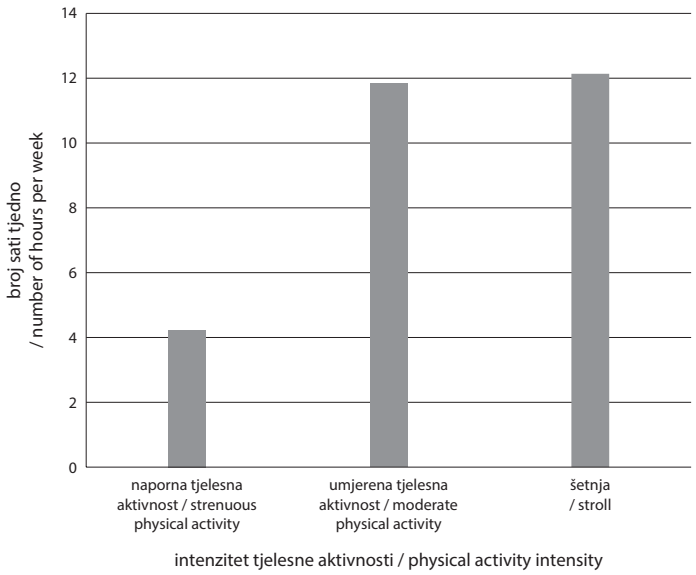
Prosječna procjena tjelesnih bolova u protekla četiri tjedna na ljestvici od 1 (nikakvi) do 6 (vrlo teški) iznosila je 3,5, što odgovara blagim do umjerenim bolovima. Najčešća vrijednost (Mod) iznosila je pak 4, što znači da je najveći broj sudionika istraživanja označio da je u protekla četiri tjedna doživljavao umjerene bolove (slika 2). Niti jedan sudionik nije naveo da je doživljavao vrlo teške bolove što bi odgovaralo maksimalnoj procjeni.

Što se tiče ispitanih psihosocijalnih čimbenika (mentalno zdravlje, otpornost i socijalna podrška), prosječna vrijednost ukupnih rezultata

from heart and blood vessel diseases (32 % of the sample) and hypertension (30% of the sample).

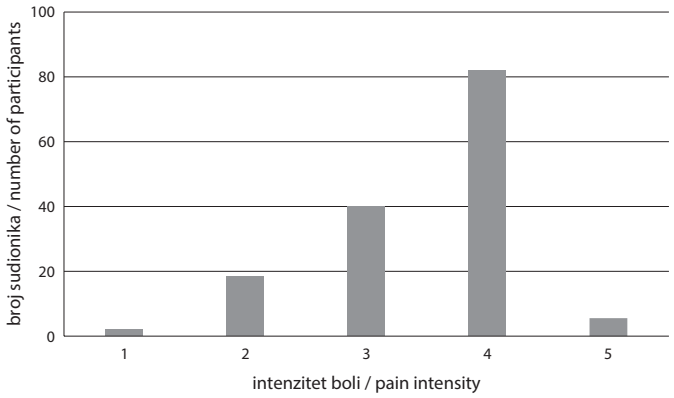
As regards physical activity, the participants reported spending 4.44 hours/week on average engaging in more strenuous physical activities in the period immediately preceding the injury (e.g. running, swimming, fast cycling, lifting heavy objects, digging). They spent 11.62 hours/week engaging in moderate physical activities (e.g. slow dancing, exercising on a mat, moderate gardening, easier household chores such as vacuuming or lifting light objects) in the same period, while they spent an average of 12.37 hours/week strolling or walking in the period immediately preceding the injury (Figure 1). Expectedly, they spent the most time strolling or engaging in moderate physical activity.

The reported average assessment of physical pain in the past four weeks on a scale from 1 (none) to 6 (severe) amounted to 3.5, which corresponds to mild to moderate pain. The most common value (Mod) amounted to 4, meaning that the majority of the study participants experienced moderate pain in the past four weeks (Figure 2). None of the participants reported experiencing severe pain, which would correspond to the maximum assessment.



SLIKA 1. Prosječan broj sati/tjedan provedenih u tjelesnim aktivnostima različitog intenziteta u razdoblju koje je prethodilo ozljedi (N=150)

FIGURE 1. Average hours/week spent engaging in physical activities of various intensity in the period preceding the injury (N=150)



SLIKA 2. Procjena intenziteta boli u protekla 4 tjedna (N= 150)

FIGURE 2. Pain intensity assessment in the past four weeks (N=150).

na podljestvici mentalnog zdravlja niža je u odnosu na hrvatske nacionalne norme za populaciju osoba starijih od 65 godina (40). Prosječni rezultat na ljestvici otpornosti blizu je teorijskom prosjeku na ljestvici, dok su rezultati na ljestvici socijalne podrške blago pomaknuti prema višim vrijednostima.

Svi prethodno opisani deskriptivni parametri na razini ukupnih rezultata na pojedinim mjerama ukazuju da je riječ o uzorku osoba relativno dobroga općeg zdravlja (ako izuzmemo dijagnozu zbog koje su operirani) i zadovolja-

With regard to the psychosocial factors examined (mental health, resilience and social support), the average total score on the mental health subscale is lower in comparison to the Croatian national norms for the population of individuals older than 65 (40). The average score on the resilience scale is close to the scale theoretical average, while the score on the social support scale is slightly in favor of the higher values.

All of the abovementioned descriptive parameters at the total score level per individual measure indicate that this is a sample of individuals

vajućeg mentalnog zdravlja, psihološke otpornosti i percipirane socijalne podrške.

Povezanosti među ispitanim varijablama

Prije odgovora na glavno istraživačko pitanje, izračunati su Pearsonovi koeficijenti korelacije između potencijalnih prediktorskih varijabli iz triju različitih skupina (sociodemografske, zdravstvene i funkcionalne te psihosocijalne) te rezultata na kriterijskoj varijabli, tj. Barthelovom indeksu primijenjenom nakon operacije. Rezultati korelacijskih analiza prikazani su u tablici 3.

Sve su ispitane varijable bile međusobno značajno i uglavnom umjereno visoko povezane. Povezanosti su bile očekivanog smjera, odnosno sve su bile pozitivne osim koeficijenata povezanosti procjene boli, broja bolesti te dobi s ostalim ispitanim varijablama, koji su bili negativnog smjera. Među demografskim varijablama u

in relatively good general health (apart from the diagnosis for which they underwent surgery) and with satisfactory levels of mental health, psychological resilience and perceived social support.

Association between the variables examined

The Pearson correlation coefficients between potential predictor variables from the three different groups (sociodemographic, health and functional, and psychosocial) and the results on the criterion variable, i.e. Barthel Index applied after surgery, were calculated before answering the main research question. The results of correlation analyses are presented in Table 3.

All of the examined variables were significantly and generally moderately highly correlated. The correlations were expected, i.e. all were positive except for the correlation coefficients of pain assessment, number of diseases and age with the other examined variables, which were nega-

TABLICA 3. Pearsonovi koeficijenti korelacije između ispitanih prediktorskih (dob, zdravstvene i funkcionalne te psihosocijalne varijable) i kriterijskih varijabli (postoperacijski funkcionalni status)
TABLE 3. The Pearson correlation coefficients between the examined predictor (age, health and functional, and psychosocial variables) and criterion variables (postoperative functional status)

Varijable / Variables	Dob / Age	BI1	BI2	BB / ND	NTA / SPA	UTA / MPA	Š / S	PB / PA	BMI	SZ / SS	MZ / MH	OT / RE
Dob / Age	1,00											
Barthelov indeks u predoperativnoj primjeni / Preoperative Barthel Index (BI1)	-0,72*	1,00										
Barthelov indeks u postooperativnoj primjeni / Postoperative Barthel Index (BI2)	-0,74*	0,77*	1,00									
Broj bolesti (BB) / Number of diseases (ND)	0,55*	-0,28*	-0,36*	1,00								
Naporna tjelesna aktivnost (NTA) / Strenuous physical activity (SPA)	-0,77*	0,61*	0,73*	-0,40*	1,00							
Umjerena tjelesna aktivnost (UTA) / Moderate physical activity (MPA)	-0,73*	0,71*	0,66*	-0,37*	0,56*	1,00						
Šetnja (Š) / Walk (W)	-0,70*	0,63*	0,59*	-0,43	0,55**	0,81*	1,00					
Procjena boli (PB) / Pain assessment (PA)	0,62*	0,51	-0,58*	0,41*	-0,64*	-0,49*	-0,49*	1,00				
Mentalno zdravlje (MZ) / Mental health (MH)	-0,46*	0,51*	0,56*	-0,33*	0,45*	0,46*	0,36*	-0,56			1,00	
Otpornost (OT) / Resilience (RE)	-0,66*	0,63*	0,70*	-0,41*	0,61*	0.60*	0,54*	-0,57*			0,72*	1,00
Socijalna podrška (SP) / Social support (SS)	-0,62*	0,54*	0,61*	-0,30*	0,55*	0,54*	0,53*	-0,55			0,58*	0,67*

*p < 0,01

tablicu 3 je uključena jedino dob kao kontinuirana varijabla. Pokazalo se da je dob značajno negativno i većinom umjereno visoko povezana sa svim ispitanim varijablama, osim njezine pozitivne korelacije s brojem bolesti i doživljajem boli. To znači da je u ispitanom uzorku starijih osoba s višom dobi bio značajno povezan veći broj kroničnih bolesti, lošiji predoperacijski i postoperacijski funkcionalni status, manje vremena provedenog u tjelesnim aktivnostima različite razine napora, veća procjena boli te lošije mentalno zdravlje, manja psihološka otpornost i niža percipirana socijalna podrška.

Procjena boli kao intenzivnije bila je značajno povezana s višom dobi, lošijim funkcionalnim statusom u oba mjerenja, manjom uključenošću u različite razine tjelesne aktivnosti, lošijim mentalnim zdravljem, manjom psihološkom otpornošću te manjom percipiranom socijalnom podrškom. Funkcionalni status nakon operacije (BI2), tretiran kao kriterijska varijabla u regresijskim analizama u nastavku, značajno je i većinski umjereno visoko korelirao sa svim prediktorskim varijablama iz tablice 3, tj. s varijablama iz skupine zdravstvenih i funkcionalnih (boljim predoperativnim funkcionalnim statusom, manjim brojem kroničnih bolesti, višim različitim razinama tjelesne aktivnosti prije ozljede,s manjom procjenom jačine boli). Nadalje, postoperacijski funkcionalni status bio je značajno povezan i sa psihosocijalnim resursima, tj. s boljim mentalnim zdravljem, većom otpornošću u nošenju sa životnim izazovima i s većom percipiranom dostupnošću socijalne podrške.

Značajne korelacije između pojedinih ispitanih psihosocijalnih varijabli, tj. između mentalnog zdravlja, otpornosti i socijalne podrške, također su očekivane, jer je za pretpostaviti da među njima postoje obostrani međusobni utjecaji. Primjerice, otpornost i socijalna podrška vjerojatno doprinose boljem mentalnom zdravlju, ali i bolje mentalno zdravlje može ojačati psihološku otpornost i povećati mogućnost dobivanja socijalne podrške. Međutim, na osnovi provetive. Age as a continuous variable was the only demographic variable included in Table 3. It was observed that age has a significant negative and mostly moderately high correlation with all of the examined variables, except for its positive correlation with the number of diseases and the perception of pain. This means that, in the examined sample of elderly individuals, higher age was significantly correlated with a larger number of chronic diseases, worse preoperative and postoperative functional status, less time spent engaging in physical activities of various intensity, higher pain assessment and worse mental health, lower psychological resilience and lower perceived social support.

The assessment of pain as more intense was significantly correlated with higher age, worse functional status in both assessments, lower engagement in various levels of physical activity, worse mental health, lower psychological resilience and lower perceived social support. The postoperative functional status (BI2), treated as a criterion variable in regression analyses further in the text, had a significant and mostly moderately high correlation with all of the predictor variables in Table 3, i.e. with the health and functional variables (better preoperative functional status, fewer chronic diseases, higher various levels of physical activity before the injury, lower pain intensity assessment). Furthermore, the postoperative functional status was also significantly correlated with psychosocial resources, i.e. better mental health, higher resilience in coping with the challenges of life and better perceived availability of social support.

Significant correlations between individual examined psychosocial variables, i.e. between mental health, resilience, and social support were also expected, since it was presumable that reciprocal mutual influences existed between them. For example, resilience and social support likely contribute to better mental health, but better mental health can also strengthen psychological resilience and increase the possibility of receiving social support. However, based on the conducted correlation analyses, we can only make reliable

denih korelacijskih analiza možemo pouzdano zaključivati samo o povezanostima ali ne i o kauzalnim odnosima među ispitanim varijablama.

Prediktivni doprinos socidemografskih, zdravstvenih i funkcionalnih te psihosocijalnih varijabli postoperacijskom funkcionalnom statusu

Kako bi se odgovorilo na glavno istraživačko pitanje, a to je utvrditi koliki je relativni doprinos čimbenika iz triju različitih skupina: a) socidemografskih (spol, dob, obrazovanje, bračni status, veličina kućanstva / s kim žive), b) zdravstvenih i funkcionalnih (ranija razina tjelesne aktivnosti, jačina boli, raniji funkcionalni status, postojeće kronične bolesti) te c) psihosocijalnih (mentalno zdravlje, otpornost i socijalna podrška) uspješnosti funkcionalnog oporavka starijih osoba neposredno nakon operacije prijeloma kuka, tj. na dan otpusta iz bolnice, provedene su regresijske analize. Najprije je provedena standardna multipla regresijska analiza u kojoj su svi potencijalni prediktori zajedno uvedeni u regresijsku analizu kako bi se mogao usporediti relativni doprinos svakoga od potencijalnih prediktora objašnjenju varijance rezultata na Barthelovom testu primijenjenom nakon operacije (tablica 4).

Rezultati provedene regresijske analize, prikazani u tablici 4, pokazali su da među svim uvedenim prediktorima samo obrazovanje, predoperacijski funkcionalni status i broj sati proveden u napornijoj tjelesnoj aktivnosti u razdoblju neposredno prije ozljede značajno doprinose objašnjenju postoperacijskog funkcionalnog statusa. Najveći zasebni doprinos postoperacijskom funkcionalnom oporavku, odnosno najveći beta koeficijent, imao je rezultat na Barthelovom testu primijenjenom poslije prijma u bolnicu, tj. predoperacijski funkcionalni status. Na osnovi smjera i značajnosti utvrđenih regresijskih koeficijenata može

conclusions about the correlations, and not about the causal relationships between the variables examined.

Predictive contribution of sociodemographic, health and functional, and psychosocial variables to the postoperative functional status

In order to answer the main research question, which was to determine the extent of the relative contribution of the factors from three different groups: a) sociodemographic (gender, age, education, marital status, household size/who they live with), b) health and functional (previous level of physical activity, pain intensity, previous functional status, existing chronic diseases), and c) psychosocial (mental health, resilience and social support), for a successful functional recovery among the elderly immediately after hip fracture surgery, i.e. on the day of hospital discharge, regression analyses were conducted. A standard multiple regression analysis was carried out first, in which all potential predictors were introduced together in the regression analysis in order to compare the relative contribution of each of the potential predictors to explaining the variance of the results on Barthel's test applied after the surgery (Table 4).

The results of the conducted regression analysis presented in Table 4 show that among all of the introduced predictors, only education, preoperative functional status and number of hours spent engaging in more strenuous physical activity in the period immediately before the injury significantly contribute to the explanation of postoperative functional status. The biggest individual contribution to postoperative functional recovery, that is the highest beta coefficient, was seen in the results of the Barthel test applied after admission to the hospital, i.e. the preoperative functional status. Based on the direction and significance of determined regression coefficients, it can be concluded that a better preoperative func-

TABLICA 4. Rezultati standardne multiple regresijske analize sa sociodemografskim karakteristikama, značajkama zdravstvenog i funkcionalnog statusa te psihosocijalnim varijablama kao prediktorima postoperacijskog funkcionalnog statusa (N=150)
TABLE 4. Results of standard multiple regression analysis with sociodemographic characteristics, health and functional status features and psychosocial variables as predictors of postoperative functional status (N=150).

	Postoperacijski funkcionalni status (Barthelov indeks) / Postoperative functional status (Barthel Index)
Prediktori / Predictors	**ß**
Spol (1 – muškarci, 2 – žene) / Gender (1 – male, 2 – female)	-0,08
Dob / Age	-0,16
Obrazovanje (1 – nezavršena i završena OŠ, 2 – SŠ, 3 – viša i visoka škola) / Education (1 – incomplete and completed elementary school, 2 – high school, 3 – higher education and university degree)	-0,18*
Bračni status (1 – u braku, 2 – samci, razvedeni, udovci) / Marital status (1 – married, 2 – single, divorced, widowed)	-0,04
Veličina kućanstva/način života (1 – živi sami, 2 – živi s nekim) / Household size/lifestyle (1 – living alone, 2 – cohabiting)	-0,07
Funkcionalna sposobnost (Barthelov indeks) prije operacije / Functional capacity (Barthel Index) before surgery	0,34***
Broj bolesti / Number of diseases	0,02
Naporna tjelesna aktivnost / Strenuous physical activity	0,25**
Umjerena tjelesna aktivnost / Moderate physical activity	0,10
Šetnja / Strolls	-0,02
Procjena boli / Pain assessment	-0,00
Mentalno zdravlje / Mental health	0,08
Otpornost / Resilience	0,15
Socijalna podrška / Social support	0,08
R^2	0,754***
Korigirani R^2 / Corrected R^2	0,728***
F (14,135)	29,550***

*p < 0,05, **p < 0,01, ***p < 0,001
β – β-koeficijent / β – β-coefficient

se zaključiti da bolji predoperacijski funkcionalni status i veći broj sati proveden u napornijim tjelesnim aktivnostima u razdoblju koje je prethodilo ozljedi značajno doprinose boljem funkcionalnom oporavku nakon operacije prijeloma kuka. Međutim, rezultat koji pokazuje da viša razina obrazovanja doprinosi lošijem postoperacijskom funkcionalnom statusu je rezultat koji nije očekivan.

Sve su varijable uvedene u regresijsku analizu zajedno objasnile značajnih i visokih oko 73 % varijance rezultata na Barthelovom indeksu, kao pokazatelju postoperacijskog funkcionalnog oporavka, usprkos neznačajnim zasebnim doprinosima većine zahvaćenih prediktora

tional status and larger number of hours spent engaging in more strenuous physical activities in the period preceding the injury significantly contribute to a better functional recovery after hip fracture surgery. However, the results showing that higher levels of education contribute to a worse postoperative functional status were unexpected.

All of the variables introduced together into the regression analysis explain the significant and high result of approx. 73% of the result variance in the Barthel Index as an indicator of postoperative functional recovery, despite the insignificant individual contributions of most of the predictors included.

Kako bi se usporedio doprinos pojedinih skupina prediktora (a) sociodemografski, b) zdravstveni i funkcionalni te c) psihosocijalni) postoperacijskom funkcionalnom oporavku, u nastavku je provedena hijerarhijska regresijska analiza, rezultati koje su prikazani u tablici 5.

Sociodemografske značajke spol, dob, stupanj obrazovanja, bračni status i način života uvedene su u prvom koraku hijerarhijske regresijske analize. Varijable koje se odnose na zdravstveno i fizičko funkcioniranje i predoperacijski i funkcionalni status uvedeni su u drugom koraku. U trećem, zadnjem, koraku u analizu su uvedene psihosocijalne varijable mentalno zdravlje, otpornost i socijalna podrška.

Sve uvedene sociodemografske varijable, osim obrazovanja, imale su značajan doprinos objašnjenju postoperacijskog funkcionalnog statusa u prvom koraku analize. Pri tome su muški spol, niža dob, bračna veza i, iznenađujuće, samački život doprinosili boljem postoperacijskom funkcionalnom oporavku. Sociodemografske varijable zajedno su objasnile značajnih i visokih 60 % varijance kriterijske varijable. Uz kontrolu doprinosa sociodemografskih značajki, varijable zdravstvenog i funkcionalnog statusa su u drugom koraku objasnile dodatnih značajnih oko 11 % varijance postoperacijskog funkcionalnog statusa. Pritom su značajan pozitivan doprinos ostvarili predoperacijski funkcionalni status procijenjen Barthelovim indeksom i broj sati proveden u napornijim tjelesnim aktivnostima u razdoblju koje je prethodilo ozljedi i operaciji. Nakon kontrole doprinosa varijabli uvedenih u prethodna dva koraka, psihosocijalne varijable uvedene u trećem koraku hijerarhijske regresijske analize objasnile su dodatnih skromnih, ali statistički značajnih 2,7 % varijance postoperacijskog funkcionalnog statusa. Pritom niti jedna od varijabli uvedenih u trećem koraku nije imala značajan zasebni doprinos. U zadnjem koraku analize značajnim prediktorima (među svima ispitanima) pokazali su se isti oni koji su se značajnima pokazali i

In order to compare the contribution of individual groups of predictors (a) sociodemographic, b) health and functional, and c) psychosocial) to the postoperative functional recovery, a hierarchical regression analysis was further conducted, and the results are presented in Table 5.

The sociodemographic characteristics of gender, age, education level, marital status and lifestyle were introduced in the first step of the hierarchical regression analysis. The variables referring to the health and physical functioning and preoperative functional status were introduced in the second step. The psychosocial variables of mental health, resilience and social support were introduced in the third and final step.

All of the introduced sociodemographic variables, with the exception of education, significantly contributed to the explanation of the postoperative functional status in the first step of the analysis. In that regard, the male gender, younger age, marriage and, surprisingly, single life contributed to a better postoperative functional recovery. All of the sociodemographic variables together explained the significant and high 60% variance of the criterion variable. Upon controlling the contribution of sociodemographic characteristics, the health and functional status variables in the second step explained the additional significant 11% of the postoperative functional status variance. In that regard, preoperative functional status assessed using the Barthel Index and the number of hours spent engaging in more strenuous physical activities in the period preceding the injury and surgery, had a significant positive contribution. After controlling the contribution of the variables introduced in the previous two steps, the psychosocial variables introduced in the third step of the hierarchical regression analysis explained the additional modest, yet statistically significant 2.7% of the postoperative functional status variance. None of the variables introduced in the third step had a significant individual contribution. In the final step of the analysis, significant predictors (among all of those examined) were proven to be those that were significant in the standard regression analysis as well: preoperative functional

TABLICA 5. Rezultati hijerarhijske regresijske analize sa sociodemografskim karakteristikama, značajkama zdravstvenog i funkcionalnog statusa te psihosocijalnim varijablama kao prediktorima postoperacijskog funkcionalnog statusa (N=150)
TABLE 5. Results of hierarchical regression analysis with sociodemographic characteristics, health and functional status features and psychosocial variables as predictors of postoperative functional status (N=150).

	Postoperacijskifunkcionalni status (Barthelov indeks) / Postoperative functional status (Barthel Index)	
Prediktori / Predictors	**ß**	**(ß)**
1. korak / 1st step		
Sociodemografske varijable / Sociodemographic variables		
Spol (1 – muškarci, 2 – žene) / Gender (1 – male, 2 – female)	-0,16**	(-0,08)
Dob / Age	-0,58***	(-0,16)
Obrazovanje (1 – nezavršena i završena OŠ, 2 – SŠ, 3 – viša i visoka škola) / Education (1 – incomplete and completed elementary school, 2 – high school, 3 – higher education and university degree)	0,02	(-0,18*)
Bračni status (1 – u braku, 2 – samci, razvedeni, udovci) / Marital status (1 – married, 2 – single, divorced, widowed)	-0,24**	(-0,04)
Veličina kućanstva/način života (1 – žive sami, 2 – žive s nekim) / Household size/lifestyle (1 – living alone, 2 – cohabiting)	-0,19**	(-0,07)
R^2	0,616***	
Korigirani R^2 */ Adjusted* R^2	0,602***	
F (5,144)	46,174***	
2. korak / 2nd step		
Zdravstveni i funkcionalni prediktori / Health and functional predictors		
Funkcionalna sposobnost (Barthelov indeks) prije operacije / Functional capacity (Barthel Index) before surgery	0,39***	(0,34***)
Broj bolesti / Number of diseases	-0,00	(0,02)
Naporna tjelesna aktivnost / Strenuous physical activity	0,26**	(0,25**)
Umjerena tjelesna aktivnost / Moderate physical activity	0,14	(0,10)
Šetnja / Walk	-0,04	(-0,02)
Procjena boli / Pain assessment	-0,08	(-0,00)
ΔR^2	0,111***	
R^2	0,727***	
Korigirani R^2 */ Corrected* R^2	0,705***	
F (11,138)	33,362***	
3. korak / 3rd step		
Psihosocijalni prediktori / Psychosocial predictors		
Mentalno zdravlje / Mental health	0,08	(0,08)
Otpornost / Resilience	0,14	(0,15)
Socijalna podrška / Social support	0,07	(0,08)
ΔR^2	0,027*	
R^2	0,754***	
Korigirani R^2 */ Corrected* R^2	0,728***	
F (14,135)	29,550***	

*p < 0,05, **p < 0,01, ***p < 0,001
β – β-koeficijent, (β) – β-koeficijent u završnom koraku / β – β-coefficient, (β) – β-coefficient in the final step

u standardnoj regresijskoj analizi: predoperacijski funkcionalni status i uključenost u naporniје tjelesne aktivnosti kao najbolji prediktori te razina obrazovanja (koja se neočekivano pokazala negativnim prediktorom postoperacijskog funkcionalnog statusa).

RASPRAVA

Prijelom kuka jedna je od najozbiljnijih ozljeda koja se može dogoditi starijoj osobi. To je događaj koji je veliki stres za pojedinca, ali i problem za širu zajednicu pa i društvo općenito (45). Prema nekim podatcima, 37 % svih fraktura u dobi između 65 i 89 godina otpada na frakturu kuka, a 20 % lomova kuka rezultira smrću u razdoblju od godine dana od ozljede starije osobe (45). Podatci o smrtnosti variraju pa se izvješćuje o stopi smrtnosti između 8,4 % i 36 % tijekom prve godine nakon prijeloma kuka (46,47). Standardno liječenje prijeloma kuka je kirurško liječenje (48,49), koje ima 10 i 20 godišnju stopu uspješnosti od 90 do 95 %, odnosno 80-85 % (50). Međutim, nakon operacije ponekad slijede komplikacije poput dislokacije (u 8,3 % slučajeva) i infekcije (u 1,0 % slučajeva) (51-53). Nekoliko neovisnih čimbenika povezanih s povećanim rizikom od smrtnosti uključuju prijam u jedinicu intenzivne njege zbog postoperacijskih komplikacija kao što su delirij ili nedostatak kretanja (54,55), starija dob, predfrakturni komorbiditet i vrijeme između ozljede i operacije duže od 48 sati (45,56,57).

Unatoč tome što se ozljeda kuka medicinski prilično uspješno tretira, manje od polovice ozlijeđenih osoba dosegne razinu mobilnosti i funkcioniranja kakvu su imali prije ozljede (58). S obzirom na ozbiljnost mogućih posljedica prijeloma kuka kod starijih osoba i njegov nepovoljan utjecaj na kvalitetu života, izuzetno je važno identificirati ključne čimbenike u prevenciji, ali i postoperacijskom liječenju i tretmanu kada se prijelom dogodi. Danas znamo da je postoperacijski funkcionalni oporavak nakon operastatus and inclusion in more strenuous physical activities as the best predictors, as well as the education level (which, surprisingly, proved to be a negative predictor of postoperative functional status).

DISCUSSION

Hip fracture is one of the most serious injuries that could happen to an older person. Such an event is extremely stressful for the individual, but also represents a problem for the wider community and the society in general (45). According to some data, hip fractures account for 37% of all fractures that occur between the ages of 65 and 89, while 20% of hip fractures result in death in the period of one year after the elderly individual was injured (45). The data on mortality vary, therefore the mortality rate is reported between 8.4% an 36% within the first year after hip fracture (46, 47). Surgery is the standard treatment for hip fracture (48, 49), with 10- and 20-year success rates of 90% to 95%, i.e. 80% to 85% (50). However, surgery is sometimes followed by complications such as dislocation (in 8.3% of cases) and infection (in 1.0% of cases) (51-53). Several independent factors associated with an increased mortality risk include admission into intensive care units due to postoperative complications such as delirium or lack of movement (54, 55), older age, pre-fracture comorbidity and more than 48 hours passing between the injury and surgery (45, 56, 57).

Despite the fact that a hip injury is quite successfully medically treated, less than half of the injured individuals reach the levels of mobility and functioning they had before the injury (58). Considering the severity of the possible consequences of hip fracture in the elderly and its adverse impact on the quality of life, it is extremely important to identify the key factors for prevention, as well as for the postoperative care and treatment once the fracture occurs. Nowadays, we know that postoperative functional recovery after hip fracture surgery is determined

cije prijeloma kuka determiniran većim brojem čimbenika iz različitih domena, ne samo onima koji se odnose na fizičko funkcioniranje i zdravlje. U ranijim su istraživanjima zahvaćeni brojni pojedinačni prediktori kratkoročnog i dugoročnog (najčešće u razdoblju od godine dana nakon operacije) oporavka nakon operacije kuka, no njima uglavnom nisu ispitani u istom istraživanju prediktori iz različitih domena (npr. sociodemografski, tjelesni i zdravstveni te psihosocijalni čimbenici). To bi omogućilo usporedbu njihova zasebnog doprinosa uspješnosti oporavka starijih osoba nakon operacije kuka. Stoga je glavni cilj ovoga istraživanja bio utvrditi najvažnije odrednice uspješnosti funkcionalnog oporavka neposredno nakon operacije prijeloma kuka u starijih osoba, odnosno ispitati doprinose čimbenika iz različitih skupina (sociodemografski, zdravstveni i funkcionalni te psihosocijalni) uspješnosti funkcionalnog oporavka starijih osoba neposredno nakon operacije kuka, tj. na dan izlaska iz bolnice.

Rezultati istraživanja provedenog na 150 starijih osoba hospitaliziranih i operiranih zbog prijeloma kuka pokazali su da je predoperacijski funkcionalni status, procijenjen Barthelovim indeksom nakon prijma u bolnicu, bio u prosjeku dobar što ukazuje na malu ovisnost ispitanih pacijenata o tuđoj pomoći u obavljanju procijenjenih aktivnosti. Postoperacijski funkcionalni status procijenjen pomoću Barthelovog indeksa u drugoj primjeni, na dan otpusta iz bolnice, bio je značajno lošiji i, u prosjeku gledano, ukazivao je na težu ovisnost o tuđoj pomoći u razdoblju neposredno nakon operacije. To je i očekivano zbog kratkog vremena nakon operacije i potrebe za dužim postoperacijskim oporavkom.

Korelacijske analize pokazale su da su sve varijable uključene u ispitivanje međusobno značajno i uglavnom, umjereno visoko povezane. Povezanosti su bile očekivanog smjera. Primjerice, viša dob bila je značajno povezana s većim brojem kroničnih bolesti, lošijim predoperacijskim i postoperacijskim funkcionalnim statusom, s ma-

by numerous factors from different domains, not only those referring to physical functioning and health. Earlier studies included numerous individual predictors of short- and long-term recovery (most commonly in the period of one year after the surgery) after hip surgery, however the predictors pertaining to different domains (e.g. sociodemographic, physical and health, as psychosocial factors) were generally not examined together in the same studies. This would enable a comparison of their individual contributions to a successful recovery of the elderly after undergoing hip surgery. The main aim of this study was, therefore, to identify the most important determinants of successful functional recovery immediately after hip fracture surgery in elderly individuals, that is, to examine the contributions of factors from different groups (sociodemographic, health and functional, and psychosocial) to a successful functional recovery of the elderly immediately after hip surgery, i.e. on the day of discharge from the hospital.

The results of the study conducted on 150 hospitalized elderly patients who underwent hip fracture surgery showed that their average preoperative functional status, estimated using the Barthel Index after hospital admission, was good, thus indicating a low dependence of the examined patients on the help of others in performing the assessed activities. The postoperative functional status estimated using the Barthel Index in the second application, on the day of hospital discharge, was significantly worse, and on average indicated higher dependence on the help of others in the period immediately after the surgery. This was expected due to the short time that had passed after the surgery and the need for a longer postoperative recovery.

Correlation analyses have shown that all of the variables included in the assessment were significantly and mainly moderately highly intercorrelated. The correlations were expected. For example, older age had a significant correlation with a higher number of chronic diseases, worse preoperative and postoperative functional status,

nje vremena provedenog u tjelesnim aktivnostima različite razine napora, većom procjenom boli te lošijim mentalnim zdravljem, manjom psihološkom otpornošću i nižom percipiranom socijalnom podrškom. To se može objasniti lošijim zdravstvenim i funkcionalnim statusom te većom socijalnom izolacijom starijih osoba. Zanimljivo je spomenuti utvrđenu značajnu povezanost između ranije uključenosti u tjelesne aktivnosti različite razine napora s manjim doživljajem boli, boljim funkcionalnim statusom u oba mjerenja, kao i s boljim mentalnim zdravljem, otpornošću i socijalnom podrškom. Ovi nalazi ponovno potvrđuju višestruke blagotvorne učinke tjelesne aktivnosti i na tjelesno i na mentalno zdravlje te funkcionalnu sposobnost starijih osoba. Sudionici su naveli da su u razdoblju koje je neposredno prethodilo ozljedi provodili u prosjeku 4 sata tjedno u napornijoj tjelesnoj aktivnosti. Najviše vremena su provodili u šetnji (12,37 sati/tjedan) i umjerenoj tjelesnoj aktivnosti (11,62 sati/tjedan). Ovi podatci ukazuju na relativno zadovoljavajuću razinu tjelesne aktivnosti u ovoj skupini starijih osoba u razdoblju prije operacije.

Pokazalo se da je funkcionalni status nakon operacije bio značajno i većinski umjereno visoko povezan s gotovo svim ispitanim prediktorskim varijablama. Dobiveni rezultati pokazuju da je uspješniji postooperacijski funkcionalni oporavak značajno povezan s boljim predoperativnim funkcionalnim statusom, manjim brojem kroničnih bolesti, većom ranijom uključenošću u različite razine tjelesne aktivnosti (naporna, umjerena tjelesna aktivnost i šetnja), s manjim doživljajem boli, s boljim mentalnim zdravljem te s izraženijom psihološkom otpornošću i većom percipiranom socijalnom podrškom. To je sukladno rezultatima nekih ranijih istraživanja (15-17,20-23,25,29,30,56).

Rezultati provedenih regresijskih analiza pokazali su da su predoperacijski funkcionalni status i broj sati proveden u napornijoj tjelesnoj aktivnosti u razdoblju neposredno prije ozljede

less time spent engaging in physical activities of various levels of effort, higher pain assessment and worse mental health, lower psychological resilience and lower perceived social support. This can be explained by a lower health and functional status and higher social isolation of the elderly. Interestingly, a significant association was found between previous participation in physical activities of varying levels of effort and experiencing less pain, presenting a better functional status in both assessments, as well as better mental health, resilience, and social support. These findings again confirm the multiple benefits of physical activity on the physical and mental health and functional capacity of the elderly. The participants reported spending an average of four hours per week engaging in more strenuous physical activity in the period immediately preceding the injury. They spent most of the time walking (12.37 hours/week) and engaging in moderate physical activity (11.62 hours/week). These data indicate a relatively satisfactory level of physical activity in this group of elderly individuals in the period before the surgery.

The functional status after surgery has been shown to have a significant and mainly moderately high correlation with almost all examined predictor variables. The obtained results indicate that successful postoperative functional recovery is significantly associated with a better preoperative functional status, fewer chronic diseases, greater previous involvement in various levels of physical activity (strenuous, moderate physical activity and walking), less intense pain, better mental health and more pronounced psychological resilience, as well as higher perceived social support. This is consistent with the results of some earlier studies (15-17, 20-23 ,25, 29, 30, 56).

The results of the conducted regression analyses have shown that the preoperative functional status and the number of hours spent engaging in more strenuous physical activity in the period immediately before the injury are the best predictors of postoperative functional status.

najbolji prediktori postoperacijskog funkcionalnog statusa. Pritom je najznačajniji prediktor bio predoperacijski funkcionalni status. To je i očekivano budući da se radi o istom području procjene, istim instrumentom, tj. o procjeni funkcionalne sposobnosti u dva navrata. Ovaj je nalaz sukladan nekim ranijim nalazima koji također potvrđuju ključnu ulogu predoperacijskog funkcionalnog statusa u predviđanju postoperacijskog oporavka (20-23).

O važnosti tjelesne aktivnosti za očuvanje zdravlja i funkcionalne sposobnosti već je dosta toga rečeno u uvodu. Ovdje ćemo samo naglasiti da ona pomaže očuvanju pokretljivosti što osobi omogućuje lakše zadovoljenje temeljnih potreba te potreba za sudjelovanjem u društvenim interakcijama uz povećanje osjećaja samoefikasnosti i zadovoljstva (60). Tjelesna aktivnost ne samo da smanjuje rizik padova u starijoj dobi, nego i pomaže oporavku narušenog funkcionalnog statusa (25). U ovom se istraživanju posebno važnom pokazala naprornija tjelesna aktivnost, možda zato što većina starijih osoba prakticira u određenoj mjeri tjelesne aktivnosti umjerenog intenziteta i šetnju. Stoga je moguće da je upravo veći angažman u napornijim tjelesnim aktivnostima, koji je rjeđi u starijih osoba, onaj koji bitnije doprinosi očuvanju ili kasnijem postoperacijskom oporavku funkcionalnog statusa.

Hijerarhijska regresijska analiza potvrdila je također značajan doprinos nekih sociodemografskih varijabli postoperacijskom funkcionalnom oporavku. Muški spol, niža dob i bračna veza doprinosili su boljem oporavku. Ovi su rezultati u skladu s nalazima nekih ranijih istraživanja koja su pokazala da su starija dob (18,20-22,27,61) i život izvan braka (16) povezani s lošijim funkcionalnim oporavkom neposredno nakon ili u razdoblju od godine dana poslije operacije kuka. Također su utvrđene spolne razlike sukladne ranijim dobro potvrđenim nalazima o općenito više ograničenja u funkcionalnoj sposobnosti i kretanju u žena u usporedbi

In that sense, the most important predictor was the preoperative functional status. This was to be expected, since it involves the same assessment scope, the same instrument, i.e. assessment of functional capacity conducted on two occasions. These findings are consistent with some earlier findings that also confirm the key role of preoperative functional status in predicting postoperative recovery (20-23).

The importance of physical activity for the preservation of health and functional capacity has already been extensively discussed in the introduction. At this point, we will only emphasize that it helps maintain mobility, thus making it easier for the individual to meet their basic needs and the needs to participate in social interactions, in addition to increasing the sense of self-efficacy and satisfaction (60). Physical activity not only reduces the risk of falls in older age, but also helps in the recovery of an impaired functional status (25). More strenuous physical activity has proven to be particularly important in this study, perhaps because the majority of elderly individuals engage in physical activities of moderate intensity and strolls to a certain extent. It is, therefore, possible that precisely higher engagement in more strenuous physical activities, which is less frequent among the elderly, is the factor that largely contributes to the preservation of functional status and its later postoperative recovery.

Hierarchical regression analysis has also confirmed the significant contribution of some sociodemographic variables to postoperative functional recovery. The male gender, younger age and marriage contributed to a better recovery. These results are consistent with those of some previous studies which showed that older age (18, 20-22, 27, 61) and life outside of marriage (16) were associated with poorer functional recovery immediately after or in the period within a year after the hip surgery. Gender differences were also confirmed consistent with the earlier well-established findings on the generally more limited functional capacity and movement of women compared to men in the

s muškarcima u općoj populaciji starijih osoba, iako nisu u skladu s nekim nalazima o lošijem funkcionalnom oporavku muškaraca nakon operacije prijeloma kuka (27).

Psihosocijalne varijable, uz kontrolu sociodemografskih i varijabli zdravstvenog i predoperacijskog funkcionalnog statusa, objasnile su dodatnih skromnih ali statistički značajnih 2,7 % varijance postoperacijskog funkcionalnog statusa, ali niti mentalno zdravlje, niti psihološka otpornost, niti socijalna podrška, suprotno očekivanjima, nisu imali značajan zasebni doprinos. Uloga psihološke otpornosti u nošenju sa stresorima kao što su prijelom i operacija kuka te u nošenju s izazovima postoperacijskog oporavka uglavnom je u ranijim istraživanjima bila zanemarena. Mentalno zdravlje, odnosno uloga depresivnosti i anksioznosti dijelom je zahvaćena u ranijim istraživanjima, koja ukazuju na lošiji funkcionalni oporavak osoba s izraženijom predoperacijskom ili postoperacijskom anksioznošću i depresivnošću (22,26,27). Nalazi koji se odnose na ulogu socijalne podrške u postoperacijskom oporavku nisu suglasni. Neki ukazuju na značajnu ulogu socijalne podrške u procesu oporavka (17), dok drugi ne potvrđuju njezinu značajniju ulogu (62). Također, rezultati pojedinih istraživanja pokazuju da doprinos različitih vrsta socijalne podrške (npr. emocionalne ili instrumentalne) varira ovisno o vremenu koje je prošlo od operacije (27).

Na kraju treba spomenuti i ograničenja ovoga istraživanja koja se u prvom redu odnose na mali i nereprezentativni uzorak zbog toga što su sudionici regrutirani u samo jednoj ustanovi. To smanjuje mogućnost generalizacije dobivenih rezultata na čitavu populaciju hrvatskih pacijenata operiranih zbog prijeloma kuka. Nadalje, postoperacijski funkcionalni status procijenjen je kratko nakon operacije prijeloma kuka. Opetovane procjene nakon dužih razdoblja nakon operacije također bi bile poželjne kako bi se mogao kontinuirano pratiti funkcionalni oporavak tijekom dužeg razdoblja te čimbenici koji na njega utječu.

general elderly population, although they are not consistent with some findings on the poorer functional recovery of men after hip fracture surgery (27).

In addition to the control of sociodemographic, as well as health and preoperative functional status variables, the psychosocial variables have explained the additional modest, yet statistically significant 2.7% variance in the postoperative functional status. However, contrary to expectations, neither mental health, psychological resilience, nor social support have had a significant contribution. The role of psychological resilience in coping with stressors such as hip fracture and surgery, and in coping with the challenges of postoperative recovery, was mainly neglected in previous studies. Mental health, i.e. the role of depression and anxiety, was partially included in the earlier studies, which indicated a poorer functional recovery of the individuals with more pronounced preoperative or postoperative anxiety and depression (22, 26, 27). The findings relating to the role of social support in postoperative recovery were inconsistent. Some indicate a significant role of social support in the recovery process (17), while others do not confirm its significant role (62). Furthermore, the results of some studies indicate that the contribution of different types of social support (e.g. emotional or instrumental) varies depending on the time passed since the surgery (27).

Finally, the limitations of this study should also be mentioned, as they primarily relate to the small and nonrepresentative sample due to the fact that all of the participants were recruited in one institution. This reduces the possibility of generalizing the obtained results to the entire population of Croatian patients who underwent hip fracture surgery. Moreover, the postoperative functional status was assessed shortly after the hip fracture surgery. It would also be advisable to conduct repeated assessments after longer periods following the surgery, so that functional recovery, and the factors influencing it, could be continuously monitored over a longer period.

ZAKLJUČAK

Rezultati ovoga istraživanja potvrđuju značajnu ulogu sociodemografskih obilježja, ranijeg funkcionalnog statusa te ranije uključenosti u napornije tjelesne aktivnosti u postoperacijskom funkcionalnom oporavku starijih osoba neposredno nakon operacije prijeloma kuka. Ipak, rezultati ne potvrđuju veću ulogu ispitanih psihosocijalnih resursa u postoperacijskom funkcionalnom oporavku neposredno nakon operacije, ali oni bi mogli imati značajniju ulogu u dugoročnijem oporavku.

Budući da je postoperacijski funkcionalni status zasigurno pod utjecajem velikog broja čimbenika koji su međusobno isprepleteni, a koje nije sve bilo moguće predvidjeti niti zahvatiti ovim istraživanjem, ostaje još dovoljno prostora za buduća istraživanja u ovom području. Ta su istraživanja izuzetno važna i zbog svojih praktičnih implikacija. Naime, identificiranje i osnaživanje onih čimbenika na koje se može djelovati, a koji olakšavaju oporavak pacijenata nakon operacije prijeloma kuka ubrzalo bi njihov oporavak, pridonijelo njihovoj kvaliteti života, ali i potencijalno smanjilo korištenje lijekova i broj dana hospitalizacije.

CONCLUSION

The results of this study point to a significant role of sociodemographic characteristics, previous functional status and early involvement in more strenuous physical activity in the postoperative functional recovery of elderly individuals immediately after hip fracture surgery. Nevertheless, the results do not confirm a more significant role of the assessed psychosocial resources in the postoperative functional recovery immediately after surgery, but they could play a more significant role in long-term recovery.

Since the postoperative functional status is surely influenced by numerous interconnected factors, all of which could not have been predicted or included in this study, enough room is left for future studies in this field. These studies are extremely important due to their practical implications. Indeed, identifying and strengthening those factors that can be influenced, and which facilitate the recovery of patients after hip fracture surgery, would accelerate their recovery, contribute to their quality of life, and would potentially reduce medication use and the number of days spent at the hospital.

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Interakcije benzodiazepina i njihove kliničke implikacije

/ Benzodiazepine Interactions and Their Clinical Implications

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Anksiozni poremećaji se ubrajaju među najčešće psihijatrijske poremećaje te je broj oboljelih osoba posljednjih nekoliko desetljeća u značajnom porastu. Takve promjene su rezultirale povećanom upotrebom anksiolitika, a posebno benzodiazepina. S obzirom na to da mnogi pacijenti koriste benzodiazepine zajedno s drugim terapijama, važno je uzeti u obzir moguće interakcije do kojih može doći. Cilj ovog preglednog rada je pružiti uvid u farmakokinetičke i farmakodinamske interakcije benzodiazepina s različitim lijekovima, s posebnim naglaskom na ulogu enzima citokroma P450 i GABA-A receptora. Evaluacija specifičnih kombinacija lijekova, njihovih učinaka na metabolizam i djelovanje benzodiazepina kao i mogućih kliničkih posljedica može pomoći u donošenju informiranih kliničkih odluka te smanjenju rizika od nuspojava lijekova.

/ Anxiety disorders are among the most common mental health conditions, with a notable rise in the affected population in the past few decades. Such changes have led to an increased prescription of anxiolytics, particularly benzodiazepines. Given that many patients use benzodiazepines alongside other medications, it is crucial to consider the potential interactions that may occur. The aim of this review article is to provide insight into the pharmacokinetic and pharmacodynamic interactions of benzodiazepines with various other drugs, with special emphasis on the role of cytochrome P450 enzymes and the GABA-A receptors. An evaluation of specific drug combinations, their effects on the metabolism and benzodiazepine action, as well as potential clinical implications, can provide valuable insights when it comes to making informed clinical decisions and minimizing the risk of adverse drug reactions.

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UVOD

Anksiozni poremećaji su među najraširenijim mentalnim poremećajima, osobito u zemljama s visokim prihodima. Broj oboljelih značajno je porastao, sa 194,9 milijuna 1990. godine na 301,4 milijuna 2019. godine (1). U Europi su mentalni poremećaji glavni uzroci godina života s nesposobnošću (YLD) pri čemu anksiozni poremećaji čine 4 % ukupnog tereta invaliditeta. Najčešće propisivani lijekovi za liječenje ovih stanja su anksiolitici i hipnotici čija je primjena doživjela značajan porast (2). Anksiolitici su namijenjeni za smanjenje anksioznosti i poboljšanje sna tako što djeluju na središnji živčani sustav (SŽS). Benzodiazepini su najčešće korištena skupina zbog svog brzog djelovanja i relativno velike terapijske širine (3). Povijest anksiolitika seže u drevna vremena; alkohol i opijum bili su najraniji poznati sedativi i ostali su stoljećima glavni izbor za sedaciju. Sinteza barbiturne kiseline bila je veliki napredak početkom 20. stoljeća te je dovela do stvaranja barbiturata. Međutim, ovi su lijekovi imali značajne nedostatke. Benzodiazepini su slučajno otkriveni 1955. godine i brzo su stekli popularnost zbog poboljšanog sigurnosnog profila (4). Mnogi pacijenti, osobito oni stariji, obično uzimaju više lijekova istovremeno s navedenim psihotropnim lijekovima. To može dovesti do interakcija koje uključuju i farmakokinetičke i farmakodinamske procese što potencijalno ima neželjene posljedice liječenja i dobrobiti pacijenta (2,5).

Cilj ovog preglednog rada jest sveobuhvatno prikazati najčešće farmakokinetičke i farmakodinamske interakcije benzodiazepina kako bi se osigurala njihova sigurna primjena u kliničkoj praksi.

METODE

Proveden je opsežan pregled literature korištenjem baza podataka PubMed i Google Scholar. Korišteni su sljedeći pojmovi za pretraživanje: *"anxiety disorders", "anxiolytics", "benzodiazepi-*

INTRODUCTION

Anxiety disorders are among the most prevalent mental disorders, especially in high-income countries. The number of patients has significantly increased, from 194.9 million in 1990 to 301.4 million in 2019 (1). Mental disorders are the primary contributors to years lived with disability (YLD) in Europe, while anxiety disorders account for 4% of the overall disability burden. The most frequently prescribed medications for the treatment of these conditions are anxiolytics and hypnotics, therefore their use has increased significantly (2). Anxiolytics are designed to reduce anxiety and improve sleep by affecting the central nervous system (CNS). Benzodiazepines are the most commonly used group due to their rapid onset of action and relatively high therapeutic range (3). The history of anxiolytics dates back to ancient times; alcohol and opium were the earliest known sedatives and for centuries remained the primary option for sedation. Barbituric acid synthesis represented a major breakthrough in the early 1900s, leading to the creation of barbiturates. However, these drugs had significant drawbacks. Benzodiazepines were discovered by accident in 1955, and quickly gained popularity due to their improved safety profile (4). Many patients, particularly older individuals, tend to take multiple medications along with the aforementioned psychotropic drugs. This can lead to drug-drug interactions involving both pharmacokinetic and pharmacodynamic processes, which may potentially lead to undesirable consequences for the patient's treatment and well-being (2, 5).

The aim of this review article is to provide a comprehensive presentation of the most common pharmacokinetic and pharmacodynamic interactions of benzodiazepines in order to optimize their safe use in clinical practice.

METHODS

A comprehensive literature review was conducted using the PubMed and Google Scholar databases. The following search terms were utilized: "anxiety

nes", "benzodiazepine pharmacokinetics", "benzodiazepine pharmacodynamics," "benzodiazepine drug-drug interactions", "benzodiazepines and cytochrome P450", "GABA-A receptor system", "benzodiazepine metabolism", "clinical implications of benzodiazepines", "benzodiazepine adverse effects", "benzodiazepine and antidepressants", "benzodiazepine and SSRI", "benzodiazepine and SNRI", "benzodiazepine and antibiotics", "benzodiazepine and tuberculosis", "benzodiazepine and antimycotics", "benzodiazepine and azoles", "benzodiazepine and oral contraceptives", "benzodiazepine and antisecretory drugs", "benzodiazepine and PPIs", "benzodiazepine and antiepileptics", "benzodiazepine and ethanol", "benzodiazepine and opioids", "benzodiazepines and propofol" i "benzodiazepine and anaesthetics". Istraživanja koja nisu bila objavljena na engleskom ili hrvatskom jeziku nisu pružala relevantne podatke o interakcijama benzodiazepina ili su bila objavljena kao sažetci konferencija bez dostupnog punog teksta nisu uzeta u obzir. Podatci su sintetizirani kako bi se pružio sveobuhvatan pregled farmakokinetičkih i farmakodinamičkih interakcija benzodiazepina.

PREGLED LITERATURE

Vrste interakcija između lijekova

Interakcije između lijekova mogu se svrstati u dvije glavne kategorije: farmakokinetičke i farmakodinamske. Farmakokinetičke interakcije nastaju djelovanjem jednog lijeka na koncentraciju drugog u krvi. To može biti posljedica promjena u metabolizmu, apsorpciji, izlučivanju ili distribuciji lijeka i teško je predvidivo (6). Važan mehanizam farmakokinetičkih interakcija je biotransformacija, proces kojim se strane tvari modificiraju i eliminiraju. Najčešće se odvija u dvije faze:

1. Faza I: Enzimi citokroma P450 (CYP) uvode funkcionalne skupine u molekulu lijeka čime strane tvari postaju topljive u vodi i podložnije daljnjem metabolizmu.

disorders," "anxiolytics," "benzodiazepines", "benzodiazepine pharmacokinetics", "benzodiazepine pharmacodynamics", "benzodiazepine drug-drug interactions", "benzodiazepines and cytochrome P450", "GABA-A receptor system", "benzodiazepine metabolism", "clinical implications of benzodiazepines", "benzodiazepine adverse effects", "benzodiazepine and antidepressants", "benzodiazepine and SSRI", "benzodiazepine and SNRI", "benzodiazepine and antibiotics", "benzodiazepine and tuberculosis", "benzodiazepine and antimycotics", "benzodiazepine and azoles", "benzodiazepine and oral contraceptives", "benzodiazepine and antisecretory drugs", "benzodiazepine and PPIs", "benzodiazepine and antiepileptics", "benzodiazepine and ethanol", "benzodiazepine and opioids", "benzodiazepines and propofol" and "benzodiazepine and anaesthetics". Studies which were not published in English or Croatian languages, which did not provide relevant data on benzodiazepine interactions, or which were published as conference abstracts without full text available, were not taken into consideration. The data obtained were synthesized in order to provide a comprehensive overview of the pharmacokinetic and pharmacodynamic interactions of benzodiazepines.

LITERATURE REVIEW

Types of drug interactions

Drug-drug interactions primarily fall into two main categories: pharmacokinetic and pharmacodynamic. Pharmacokinetic interactions occur when one drug alters the blood concentration of another. This can happen through changes in the metabolism, absorption, excretion or distribution of a drug, and is hard to anticipate (6). An important mechanism in pharmacokinetic interactions is biotransformation, a process through which foreign substances are modified and eliminated. It typically occurs in two phases:

1. Phase I: Cytochrome P450 (CYP) enzymes introduce functional groups to the drug

2. Faza II: Reakcije konjugacije povezuju metabolite iz faze I s endogenim molekulama poput glukuronske kiseline, sulfata ili aminokiselina kako bi se poboljšala stabilnost i olakšalo izlučivanje (7,8).

Glavne izoforme CYP enzima važne za metabolizam psihotropnih lijekova, uključujući anksiolitike, su: CYP1A2, CYP2A6, CYP2B6, CYP2C9, CYP2D6, CYP2E1 i CYP3A4, pa je razumijevanje njihove funkcije i mogućih interakcija ključno za uspješno izbjegavanje štetnih učinaka lijekova (8,9).

Farmakodinamika, s druge strane, proučava kako lijekovi utječu na tijelo i na koji način uzrokuju svoje terapijske učinke. Fokusira se na mehanizme djelovanja, kinetiku vezivanja za receptore i signalne kaskade, što pruža uvid u selektivnost lijeka i moguće nuspojave (8,10).

Farmakokinetičke interakcije benzodiazepina

Benzodiazepini se brzo apsorbiraju oralnim putem zbog svoje lipofilnosti i podliježu jetrenom metabolizmu dvama glavnim putovima: oksidacijom CYP450 enzimima (posebno CYP3A4) i glukuronidacijom. Mnogi benzodiazepini proizvode farmakološki aktivne metabolite od kojih neki imaju dugi poluvijek eliminacije. Vrijeme eliminacije značajno varira među različitim benzodiazepinima što određuje trajanje učinaka te mogućnost akumulacije (4,8).

Antidepresivi

Anksiozni i depresivni poremećaji često se javljaju istovremeno. Glavna farmakološka terapija za ove poremećaje uključuju selektivne inhibitore ponovnog unosa serotonina (SIPPS), selektivne inhibitore ponovnog unosa serotonina i noradrenalina (SNRI) i benzodiazepine. Iako korisna, ovakva kombinirana terapija povećava mogućnost klinički važnih interakcija (11) (tablica 1). Među antidepresivima, SIPPS se posebno ističu po svojim farmakokinetičkim

molecule, making the foreign substances water-soluble and more susceptible to further metabolism.

2. Phase II: Conjugation reactions bind Phase I metabolites to endogenous molecules such as glucuronic acid, sulfate, or amino acids to enhance stability and facilitate excretion (7, 8).

The main CYP enzyme isoforms important for the metabolism of psychotropic drugs, including anxiolytics, are: CYP1A2, CYP2A6, CYP2B6, CYP2C9, CYP2D6, CYP2E1, and CYP3A4, therefore understanding their function and potential interactions is crucial for successfully avoiding adverse drug reactions (8, 9).

Pharmacodynamics, on the other hand, studies how drugs affect the body and in which way they produce their therapeutic effects. It focuses on mechanisms of action, receptor binding kinetics, and (downstream) signaling cascades, thus providing insight into drug selectivity and possible side effects (8, 10).

Pharmacokinetic interactions of benzodiazepines

Benzodiazepines are rapidly absorbed orally due to their high lipophilic profile, and undergo hepatic metabolism through two main pathways: oxidation via CYP450 enzymes (especially CYP3A4), and glucuronidation. Many benzodiazepines produce pharmacologically active metabolites, some with long elimination half-lives. Their elimination time varies considerably among different types of benzodiazepines, which determines the duration of effects and possibility of accumulation (4, 8).

Antidepressants

Anxiety and depressive disorders often occur together. The most well-established pharmacological treatments for these disorders include selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), and benzodiazepines. This combination therapy, while beneficial, raises the potential of clinically significant interactions (11) (Table 1).

TABLICA 1. Klinički značajne farmakokinetičke interakcije benzodiazepina s lijekovima
TABLE 1. Clinically significant pharmacokinetic interactions of benzodiazepines with drugs

LIJEK / DRUG	Učinak na CYP enzime / Effect on CYP enzymes	Učinak na koncentraciju benzodiazepina i kliničko značenje / Effect on benzodiazepine concentration and clinical significance
Fluoksetin / Fluoxetine	inhibicija CYP3A4 / inhibition of CYP3A4	alprazolam: ↑ konc.; psihomotorno oštećenje / alprazolam: ↑ concentration; psychomotor impairment
Fluvoksamin / Fluvoxamine	inhibicija CYP3A4, CYP2C, CYP1A2 / inhibition of CYP3A4, CYP2C, CYP1A2	alprazolam: ↑↑ konc.; psihomotorno oštećenje i oštećenje pamćenja / alprazolam: ↑↑ concentration; psychomotor impairment and memory impairment
Eritromicin / Erythromycin	inhibicija CYP3A4 / inhibition of CYP3A4	midazolam: ↑↑↑ konc.; dulji sedativni učinak – smanjiti dozu 50-75 % / midazolam: ↑↑↑ concentration; prolonged sedative effect – lower the dose by 50-75%
Klaritromicin / Clarithromycin	inhibicija CYP3A4 / inhibition of CYP3A4	midazolam: ↓ klirens; povećanje vremena spavanja / midazolam: ↓ clearance; increased sleep time
Itrakonazol / Itraconazole	inhibicija CYP3A4 / inhibition of CYP3A4	midazolam: ↑ konc.; / midazolam: ↑ concentration; triazolam: ↑ konc.; / triazolam: ↑ concentration
Cimetidin / Cimetidine	inhibicija više CYP enzima / inhibition of multiple CYP enzymes	diazepam: ↑ poluvijek eliminacije; pojačan sedativni učinak / diazepam: ↑ elimination half-life; enhanced sedative effect
Karbamazepin/fenitoin / Carbamazepine/Phenytoin	indukcija CYP3A4 / induction of CYP3A4	midazolam: ↓↓ konc.; potrebne veće doze midazolama za postizanje terapijskog učinka / midazolam: ↓↓ concentration; higher doses of midazolam required to achieve therapeutic effect
Valproat / Valproic acid	inhibicija glukuronidacije / inhibition of glucuronidation	lorazepam: ↓ glukuronidacija; pospanost i vrtoglavica – pratiti pacijenta / lorazepam: ↓ glucuronidation; drowsiness and dizziness – monitor patient

učincima zbog utjecaja na jetrene CYP enzime. Tri SIPPS-a se izdvajaju kao snažni inhibitori CYP enzima: fluoksetin, fluvoksamin i paroksetin (12,13). Među benzodiazepinima koji se metaboliziraju putem faze I preko CYP enzima su alprazolam, diazepam, klonazepam, midazolam i triazolam. CYP3A4 je primarni enzim koji metabolizira većinu benzodiazepina, dok su CYP2C19 i CYP2D6 također često uključeni, što može dovesti do promjena koncentracija ako se uzimaju zajedno s prethodno navedenim antidepresivima (14). Kada se alprazolam primjenjuje s fluoksetinom, dolazi do povećanja koncentracije alprazolama u plazmi za približno 30 %, što je povezano s većim psihomotornim oštećenjem, evidentnim u lošijim rezultatima psihomotornih testova (15). Fluoksetin također povećava koncentracije i diazepama smanjujući klirens i produžujući poluvijek eliminacije. Međutim, ta interakcija nije dovela do klinički vidljivih oštećenja (16). Triazolam i midazolam se intenzivno metaboliziraju putem enzima CYP3A4 (14). Međutim, istraživanja nisu pronašla značajne promjene u njihovim koncen-

Among antidepressants, SSRIs particularly stand out due to their pharmacokinetic effects caused by their influence on hepatic CYP enzymes. Three SSRIs emerge as potent CYP enzyme inhibitors: fluoxetine, fluvoxamine, and paroxetine (12, 13). Among benzodiazepines metabolized through Phase I reactions that involve CYP enzymes are alprazolam, diazepam, clonazepam, midazolam, and triazolam. CYP3A4 is the primary enzyme metabolizing most benzodiazepines, while CYP2C19 and CYP2D6 are also often involved, which can lead to potential concentration changes if they are co-administered with aforementioned antidepressants (14). When alprazolam is administered with fluoxetine, the concentration of alprazolam in the plasma increases by approximately 30%, which is associated with greater psychomotor impairment, evident in lower results in psychomotor tests (15). Fluoxetine also increases the concentrations of diazepam by decreasing clearance and prolonging elimination half-life. However, this interaction did not cause observable clinical impairments (16). Triazolam and midazolam are extensively metabolized by the CYP3A4 enzyme (14). However, studies have found no significant

tracijama kada se ti lijekovi uzimaju s fluoksetinom (17,18). Kao inhibitor CYP2C i CYP1A2, fluvoksamin može povećati koncentracije diazepama i alprazolama (19,20). Perucca i sur. (19) su primijetili da istovremena primjena diazepama s fluvoksaminom može dovesti do povećanja vršnih koncentracija diazepama u plazmi, smanjenja klirensa i produljenja poluvijeka eliminacije pa je preporučljivo da pacijenti koji koriste fluvoksamin ne uzimaju istovremeno i benzodiazepine koji se primarno metaboliziraju oksidacijom (19). Fleishaker i sur. (20) su pokazali da fluvoksamin može značajno smanjiti klirens alprazolama što rezultira približno udvostručenim koncentracijama tog lijeka u plazmi, te dovodi do većeg oštećenja psihomotoričkih sposobnosti i pamćenja u usporedbi sa svakim lijekom posebno (20). Farmakokinetičke interakcije sertralina i paroksetina s diazepamom također su proučavane no nisu pronađene klinički relevantne promjene (21,22). Sertralin pri 200 mg/dan je uzrokovao smanjenje klirensa diazepama za 13 % u usporedbi s placebom, ali ta promjena se ne smatra značajnom (21).

Antibiotici i antimikotici

Poznato je da antibiotici imaju potencijal za interakcije s lijekovima putem inhibicije ili indukcije CYP enzima. Među različitim skupinama antibiotika, makrolidi, rifamicini i fluorokinoloni su pokazali najznačajnije učinke na metabolizam drugih lijekova uključujući i benzodiazepine (23) (tablica 1). Istraživanje Luurile i sur. (24) pokazalo je da eritromicin, inhibitor CYP3A4, umjereno utječe na farmakokinetiku diazepama i flunitrazepama. Zabilježeno je povećanje koncentracije diazepama u plazmi za 63 % i produljenje poluvijeka eliminacije za 70 % te dvostruko produljenje poluvijeka eliminacije flunitrazepama prilikom uzimanja navedenih lijekova s eritromicinom. Međutim, ove interakcije bile su od male kliničke važnosti, bez značajnih promjena u psihomotornim učincima (24). Benzodiazepin koji je pokazao značajnu interakciju s eritromicinom je midazolam. Studija Olkkole i sur. (25) pokazala je

changes in their concentrations when these drugs are taken with fluoxetine (17, 18). As an inhibitor of CYP2C and CYP1A2, fluvoxamine can increase the concentrations of diazepam and alprazolam (19, 20). Perucca et. al (19) found that concurrent administration of diazepam with fluvoxamine can lead to increased peak plasma diazepam concentrations, reduced clearance and prolonged elimination half-life, therefore it is recommended that patients using fluvoxamine should not combine it with benzodiazepines that are primarily metabolized by oxidation (19). Fleishaker et al. (20) demonstrated that fluvoxamine can significantly reduce the clearance of alprazolam, resulting in approximately doubled plasma concentrations of this drug, which leads to greater impairment of psychomotor skills and memory compared to each drug alone (20). Pharmacokinetic interactions of sertraline and paroxetine with diazepam were also studied, however, no clinically relevant changes were found (21, 22). A dose of 200 mg/day of sertraline caused a 13% decrease in diazepam clearance compared to the placebo, however this change is not considered meaningful (21).

Antibiotics and antimycotics

It is well-known that antibiotics have a potential for drug-drug interactions due to inhibition or induction of CYP enzymes. Among various classes of antibiotics, macrolides, rifamycins, and fluoroquinolones have shown the most significant effects on the metabolism of other drugs, including benzodiazepines (23) (Table 1). It was observed in the study conducted by Luurila et al. (24) that erythromycin, a CYP3A4 inhibitor, moderately affects diazepam and flunitrazepam pharmacokinetics. It was noted that the diazepam plasma concentration increased by 63% and the elimination half-life was prolonged by 70%, while the elimination half-life of flunitrazepam was doubled when these drugs were taken together with erythromycin. However, these interactions were of minor clinical importance, and caused no significant changes in psychomotor effects (24). A benzodiazepine that showed significant interaction when administered together with erythromycin

da eritromicin gotovo trostruko povećava maksimalnu koncentraciju midazolama u plazmi, produljuje poluvijek eliminacije s 2,4 na 5,7 sati te povećava oralnu bioraspoloživost s 33 % na 82 %. Posljedica navedenih promjena su snažniji i dulji sedativni učinci s psihomotornim oštećenjima koja traju i do 6 sati, stoga se preporučuje smanjiti doze midazolama za 50-75 %. ako se koristi u kombinaciji s eritromicinom. Klaritromicin je još jedan antibiotik koji značajno utječe na kinetiku midazolama, najvjerojatnije inhibicijom CYP3A. Ova interakcija je dovela do smanjenja klirensa midazolama, povećanja njegove biodostupnosti u jetri te dvostrukog povećanja vremena spavanja (interval između trenutka kada blagi zvučni podražaji više ne mogu probuditi pacijente i trenutka kada su još uvijek budni i svjesni takvih podražaja) (26). Antituberkulotici također mogu djelovati na metabolizam drugih lijekova putem farmakokinetičkih mehanizama, prvenstveno uključujući CYP1A2, CYP2C9/10, CYP2C19, CYP2E1 i CYP3A3/4. Rifampicin, koji djeluje kao induktor, i izoniazid, koji je inhibitor, su tuberkulotici s najznačajnijim mogućnostima interakcija (27). Studija Ochs i sur. (28) pokazala je da izoniazid može značajno produljiti poluvijek eliminacije diazepama s 34 na 45 sati i smanjiti njegov klirens. Nasuprot tome, pacijenti na kombiniranoj terapiji koja uključuje rifampicin pokazali su skraćeni poluvijek eliminacije diazepama s 58 na 14 sati te povećan klirens (28). Antimikotici, posebno azoli, također mogu imati značajan utjecaj na CYP enzime (29). Pacijenti kod kojih je itrakonazol primjenjivan istovremeno s midazolamom ili triazolamom pokazali su povećane teškoće na testovima psihomotorike, sugerirajući moguću izraženiju sedaciju, pospanost te oštećenu koordinaciju kao posljedicu kombinacije navedenih lijekova. Budući da je itrakonazol potentan inhibitor CYP3A4 koji značajno povećava koncentracije midazolama i triazolama u plazmi te produžuje njihov poluvijek eliminacije čak i pri niskim dozama (100 mg), istovremenu primjenu ovih lijekova treba izbjegavati (30). Učinak itrakonazola na konis midazolam. A study conducted by Olkkola et al. (25) found that erythromycin increased the maximum midazolam plasma concentration (Cmax) by almost three times, prolonged the elimination half-life from 2.4 to 5.7 hours, and increased its oral bioavailability from 33% to 82%. This led to stronger and longer-lasting sedative effects, with psychomotor impairment lasting up to six hours, therefore it was recommended to reduce midazolam doses by 50-75% if they are administered together with erythromycin. Clarithromycin is another antibiotic that has a significant effect on midazolam kinetics, most likely due to CYP3A inhibition. This interaction led to reduced midazolam clearance, its increased hepatic bioavailability, and a doubled sleep time (the interval between the moment when mild auditory stimuli can no longer wake the patient and the moment when they are still awake and aware of such stimuli.) (26). Antituberculotic drugs can affect the metabolism of other medications as well, through pharmacokinetic mechanisms primarily involving CYP1A2, CYP2C9/10, CYP2C19, CYP2E1, and CYP3A3/4. Rifampicin, which acts as an inducer, and isoniazid, an inhibitor, are antituberculotics with the most significant drug-drug interactions (27). A study by Ochs et al. (28) found that isoniazid can significantly prolong the elimination half-life of diazepam from 34 to 45 hours, and can reduce its clearance. In contrast, patients on a combination therapy which includes rifampicin showed a shortened diazepam elimination half-life from 58 to 14 hours, and increased clearance (28). Antimycotics, particularly azoles, can also significantly interact with CYP enzymes (29). Patients who were administered itraconazole together with midazolam or triazolam showed increased difficulty in their psychomotor tests, suggesting a more pronounced sedation, drowsiness, and impaired coordination as a consequence of combining these drugs. Since itraconazole is a potent CYP3A4 inhibitor that markedly increases plasma concentrations of midazolam and triazolam, and prolongs their elimination half-life even at low doses (100 mg), this drug combination should be avoided (30). The effect of itraconazole

centracije diazepama također je proučavan te su primijećene neznatne farmakokinetičke interakcije bez kliničke važnosti, pa se, za razliku od midazolama i triazolama, diazepam može koristiti u normalnim dozama prilikom kombiniranja s itrakonazolom (31). Isavukonazol je noviji antimikotik širokog spektra te je posebno istraživana njegova mogućnost interakcije s drugim lijekovima. Njegov učinak inhibicije CYP3A4 prikazan je kroz interakcije s raznim supstratima CYP3A4, među kojima je i midazolam. Kada se midazolam primjenjuje zajedno s isavukonazolom, koncentracija midazolama u krvi značajno se povećava, pri čemu se njegov Cmax povećava i za 72 % (32).

Oralni kontraceptivi

Žene su sklonije doživljavanju anksioznosti u odnosu na muškarce zbog čega često koriste psihotropne lijekove. Mnoge žene koriste oralne kontraceptive (OK) koji mogu inhibirati enzime CYP1A2, CYP3A4, CYP2C19 i CYP2D6 odgovorne za metabolizam mnogih psihotropnih lijekova, uključujući benzodiazepine (33) (tablica 1.). Iako su provođena istraživanja o interakcijama između oralnih kontraceptiva i benzodiazepina, pokazalo su da većina interakcija nije klinički značajna (34-37). Međutim, primijećeno je da OK mogu usporiti eliminaciju alprazolama i triazolama smanjujući njihov klirens (34,35), te ubrzati eliminaciju temazepama i lorazepama (35). OK mogu i povećati glukuronidaciju lorazepama i oksazepama, što dovodi do brže eliminacije i povećanog klirensa tih lijekova. To može značiti da će žene koje koriste OK potencijalno trebati veće doze lorazepama i oksazepama kako bi postigle terapijske razine (36). Ipak, potrebna su dodatna istraživanja kako bi se u potpunosti razjasnila klinička važnost ovih farmakokinetičkih interakcija (34-37).

Antisekretorni lijekovi

Antisekretorni lijekovi, kao što su inhibitori protonske pumpe (IPP) i antagonisti histaminskih receptora, često se koriste za liječenje

on diazepam concentrations was also studied and minor pharmacokinetic interactions with no clinical significance were observed, therefore, unlike midazolam and triazolam, diazepam can be used in normal doses if combined with itraconazole (31). Isavuconazole is a novel broad-spectrum antifungal agent, and its drug-drug interactions were especially studied. Its CYP3A4 inhibitory effect was demonstrated through interactions with various CYP3A4 substrates, among which was midazolam. When midazolam is co-administered with isavuconazole, midazolam concentrations in blood increase substantially, and its Cmax increases by as much as 72 % (32).

Oral contraceptives

Women are more likely than men to experience anxiety, which is why they often use psychotropic medications. Many women use oral contraceptives (OCs) which can inhibit CYP1A2, CYP3A4, CYP2C19 and CYP2D6 enzymes responsible for the metabolism of many psychotropic drugs, including benzodiazepines (33) (Table 1). Although studies have been conducted on the interactions between oral contraceptives and benzodiazepines, most have shown no clinically relevant interactions (34-37). It was observed, however, that OCs can impair the elimination of alprazolam and triazolam by lowering their clearance (34, 35), and can accelerate the elimination of temazepam and lorazepam (35). OCs can also increase the glucuronidation of lorazepam and oxazepam, resulting in faster elimination and increased clearance of these drugs. This may suggest that women taking OCs could potentially require higher doses of lorazepam and oxazepam in order to achieve therapeutic levels (36). However, additional research is needed in order to fully elucidate the clinical significance of these pharmacokinetic interactions (34-37).

Antisecretory drugs

Antisecretory drugs, such as proton pump inhibitors (PPIs) and histamine receptor antagonists, are commonly used to treat conditions involving

pretjerane sekrecije želučane kiseline. Poznato je da mogu utjecati na koncentracije drugih lijekova, prvenstveno zbog svog učinka na pH želučane kiseline te metabolizma putem jetrenih CYP enzima (38). U istraživanju Locniskara i sur. (39) ispitanici su dobivali 10 mg intravenskog diazepama istovremeno s cimetidinom četiri puta dnevno. Pokazalo se da cimetidin povećava poluvijek eliminacije diazepama s 55 na 72 sata, smanjuje ukupni klirens diazepama te povećava površinu ispod krivulje (AUC) za desmetildiazepam (aktivni metabolit diazepama), što može rezultirati pojačanim i produljenim sedativnim učinkom (39) (tablica 1.). Učinak cimetidina na oksazepam i lorazepam također je proučavan. Utvrđeno je da kombinacija ovih lijekova nema značajan učinak na farmakokinetičke parametre, stoga se oksazepam i lorazepam mogu sigurno koristiti s cimetidinom (40). Omeprazol pokazuje slične interakcije s diazepamom kao i cimetidin te dovodi do smanjenja klirensa diazepama i produljenja poluvijeka eliminacije (41). Intenzitet ove interakcije ovisi o brzini kojom osoba metabolizira omeprazol: kod brzih metabolizatora omeprazola, klirens diazepama može se smanjiti za oko 26 %, a poluvijek eliminacije diazepama može se povećati za oko 20 %, Nasuprot tome, spori metabolizatori pokazuju malo ili nimalo interakcija, pa mogu sigurno koristiti kombinacije prethodno navedenih lijekova (42).

Antiepileptici

Antiepileptici (AED) se primarno koriste za liječenje epilepsije, često u kombinaciji s drugim lijekovima. Većina se metabolizira u jetri uz pomoć enzima CYP2C9, CYP2C19 i CYP3A4, te uridin difosfat glukuronosiltransferaze. AED mogu djelovati kao induktori ili inhibitori navedenih enzima što može utjecati na njihov vlastiti metabolizam i metabolizam drugih lijekova koji se koriste istovremeno (43). Fenitoin i fenobarbital su poznati induktori više skupina CYP enzima te se pokazalo da mogu značajno utjecati na farmakokinetiku klonazepama. Fenitoin može sma-

excessive gastric acid secretion. They are known to interact with the concentrations of other medications, primarily due to their effect on gastric pH and metabolism due to hepatic CYP enzymes (38). In a study conducted by Locniskar et al. (39), the subjects received 10 mg of intravenous diazepam concurrently with cimetidine four times a day. It was observed that cimetidine increases diazepam elimination half-life from 55 to 72 hours, reduces total diazepam clearance, and increases the area under the curve (AUC) for desmethyldiazepam (the active metabolite of diazepam), which could all result in enhanced and prolonged sedative effects (39) (Table 1). Cimetidine interactions with oxazepam and lorazepam were also studied. It was observed that this drug combination has no significant effect on any pharmacokinetic parameters, therefore oxazepam and lorazepam can safely be used with cimetidine (40). Omeprazole was shown to have similar interactions with diazepam as cimetidine, and leads to reduced diazepam clearance, and increased elimination half-life (41). The intensity of this interaction depends on how quickly a person metabolizes omeprazole: in rapid metabolizers of omeprazole, diazepam clearance can decrease by about 26%, and diazepam elimination half-life can increase by about 20%. In contrast, slow metabolizers show little to no interactions at all, therefore they can safely use combinations of the aforementioned drugs (42).

Antiepileptics

Antiepileptic drugs (AEDs) are primarily used in the treatment of epilepsy, often in combination with other medications. They are mostly metabolized in the liver by the CYP2C9, CYP2C19 and CYP3A4 enzymes, and by the uridine diphosphate glucuronosyltransferase. AEDs have the potential to act as inducers or inhibitors of these enzymes, which can affect their own metabolism and the metabolism of other concurrently administered drugs (43). Phenytoin and phenobarbital are known inducers of several types of CYP enzymes, and have been shown

njiti poluvijek eliminacije klonazepama za 31 %, povećati klirens za 46-58 % te smanjiti koncentraciju u plazmi za 28 %. Fenobarbital ima blaže učinke, smanjujući poluvijek eliminacije za 10 %, povećavajući klirens za 19-24 % i smanjujući koncentracije u plazmi za 11 %. Međutim, kliničko značenje ovih promjena još uvijek nije u potpunosti razjašnjeno (44). Tang i sur. (45) su u svom istraživanju pokazali da je 8 od 30 pacijenata imalo nuspojave poput pospanosti i vrtoglavice za vrijeme istovremenog uzimanja lorazepama i valproata. Smatra se kako su ovi simptomi rezultat inhibicije glukuronidacije lorazepama, vjerojatno zbog izravnog djelovanja valproata na glukuronidacijske enzime. Stoga se preporučuje primjena najniže učinkovite doze lorazepama uz praćenje pacijenata kada se koristi u kombinaciji s valproatom (45) (tablica 1.). Backman i sur. (46) su usporedili farmakokinetiku oralnog midazolama kod 6 pacijenata s epilepsijom koji su uzimali karbamazepin ili fenitoin sa 7 zdravih ljudi u kontrolnoj skupini. Utvrđeno je da je kod pacijenata s epilepsijom površina ispod krivulje (engl. *area under the curve*, AUC) koncentracije midazolama u plazmi bila tek 5,7 % od vrijednosti kod kontrolnih osoba, vršna koncentracija midazolama samo 7,4 % vrijednosti u kontrolnoj skupini, a poluvijek eliminacije je bio značajno kraći. Takvi rezultati su posljedica indukcije CYP3A enzima antiepilepticima, što ukazuje da su potrebne veće doze midazolama za postizanje željenih hipnotičkih učinaka ako se primjenjuje zajedno s karbamazepinom ili fenitoinom (46).

Farmakodinamske interakcije benzodiazepina

Benzodiazepini djeluju modulirajući aktivnost GABA-A receptora, unutar glavnog inhibicijskog sustava u SŽS-u. Vežući se za specifična mjesta na GABA-A receptorima, povećavaju učestalost otvaranja kloridnih kanala, čime pojačavaju inhibiciju i smanjuju neuronsku ekscitaciju. To ima za posljedicu sedativne, anksiolitičke i antikonvulzivne učinke (3,4). Kada se benzodiazepini

to affect the pharmacokinetics of clonazepam. Phenytoin can decrease the elimination half-life of clonazepam by 31%, increase clearance by 46-58 %, and lower plasma concentrations by 28%. Phenobarbital has milder effects, decreasing the elimination half-life by 10%, increasing clearance by 19-24 %, and lowering the plasma concentrations by 11%. However, the direct clinical impact of these changes has still not been fully clarified (44). In their study, Tang et al. (45) found that 8 out of 30 patients experienced side effects such as drowsiness and dizziness when taking lorazepam and valproic acid at the same time. These symptoms are considered to be the result of inhibition of lorazepam glucuronidation, presumably due to the direct effects of valproic acid on glucuronidation enzymes. It is, therefore, recommended to use the lowest effective doses of lorazepam when combined with valproic acid, with close patient monitoring (45) (Table 1). Backman et al. (46) compared the pharmacokinetics of oral midazolam in six epilepsy patients taking carbamazepine or phenytoin to seven healthy control subjects. It was determined that the area under the curve (AUC) of midazolam plasma concentration in the epilepsy patients amounted to only 5.7% of the control subjects' value, the peak midazolam concentration amounted to only 7.4% of the control subjects' value, while the elimination half-life was significantly shorter. These results were likely caused by the induction of CYP3A enzymes due to the antiepileptics, which indicates that higher doses of midazolam are required in order to produce the desired hypnotic effects if it is administered together with carbamazepine or phenytoin (46).

Pharmacodynamic interactions of benzodiazepines

Benzodiazepines act by modulating the activity of GABA-A receptors, within the main inhibitory system in the CNS. By binding to specific sites on GABA-A receptors, they increase the frequency of chloride channel openings, thus enhancing

zepini koriste s drugim depresorima središnjeg živčanog sustava,mogu imati ozbiljne posljedice poput pojačane sedacije i respiratorne depresije, čime se povećava rizik od smrti (47).

Etanol

Benzodiazepini i alkohol u kombinaciji djeluju aditivno zbog svojih zajedničkih učinaka na GABA sustav, pojačavajući sedaciju, kognitivne smetnje i psihomotornu depresiju (tablica 2.). Ova kombinacija pokazala je povećan rizik od nuspojava i predoziranja (48). Morland i sur. (49) usporedili su kombinirane učinke diazepama i etanola s učincima svake tvari pojedinačno te su primijetili da ispitanici doživljavaju pojačane subjektivne smetnje smanjene koncentracije, motivacije i pažnje, kao i lošije rezultate na testovima složene koordinacije (49). Triazolam je također pokazao aditivne farmakodinamske učinke s etanolom koji su se očitovali u povećanoj posturalnoj nestabilnosti te oštećenju vizualno-motoričke koordinacije i pamćenja (50). Triazolam, kao i temazepam, može dovesti do značajnih kliničkih oštećenja čak i ako se kombiniraju samo s umjerenim dozama etanola (51). Linnoila i sur. (52) pokazali su da je verbalno procesuiranje informacija posebno osjetljivo na kombinirane učinke alprazolama i alkohola. Njihova istraživanja pokazala su izraženo oštećenje u navedenom kognitivnom području prilikom primjene alprazolama u kombinaciji s alkoholom ističući time specifičnu interakciju koja nije uočena s drugim benzodiazepinima (52). U svakom slučaju, zbog značajnog povećanja rizika od ozbiljnih nuspojava i oštećenja, izuzetno je važno izbjegavati konzumaciju alkohola istovremeno s uzimanjem benzodiazepina.

Opioidi i anestetici

Istraživanja su pokazale da opioidi mogu modulirati GABA-ergičku aktivnost i obratno. Povećano provođenje kloridnih iona zbog djelovanja benzodiazepina i smanjeno otpuštanje ekscitatornih neurotransmitera zbog djelovanja opioi-

inhibition and reducing neuronal excitability. This produces sedative, anxiolytic and anticonvulsant effects (3, 4). When used with other central nervous system depressants, benzodiazepines can have serious consequences such as enhanced sedation and respiratory depression, consequently increasing the risk of death (47).

Ethanol

Benzodiazepines and alcohol interact additively due to their shared effects on the GABA system, enhancing sedation, cognitive impairment and psychomotor depression (Table 2). This combination has been shown to increase the risk of side effects and overdose (48). Morland et al. (49) compared the combined effects of diazepam and ethanol to the effects of each substance alone, and observed that subjects experienced increased subjective impairments of reduced concentration, motivation and attention, as well as worse performance on complex coordination tests (49). Triazolam also showed additive pharmacodynamic effects in combination with ethanol, which manifested in increased postural instability, and impaired visual-motor coordination and memory (50). Triazolam, as well as temazepam, could produce significant clinical impairments even when combined with only moderate doses of ethanol (51). Linnoila et al. (52) demonstrated that verbal information processing is particularly vulnerable to the combined effects of alprazolam and alcohol. Their findings revealed a pronounced impairment in this specific cognitive domain when alprazolam was administered in conjunction with alcohol, thus highlighting a unique interaction which was not observed with other benzodiazepines (52). In any case, due to a significant increase in the risk of serious side effects and impairments, it is crucial to avoid consuming alcohol while taking benzodiazepines.

Opioids and anesthetics

Studies have shown that opioids can modulate GABAergic activity and vice versa. An increased conduction of chloride ions due to benzodiaze-

da može rezultirati sinergističkim depresivnim učinkom na SŽS (53). Prilikom primjene pojedinačne doze diazepama kod pacijenata koji se liječe metadonom i buprenorfinom primijećena je intenzivnija sedacija te porast jačine učinaka lijekova za obje skupine pri čemu je skupina korisnika metadona također pokazala povećanu euforiju, a skupina korisnika buprenorfina posebno povećanu sedaciju (54) (tablica 2.). Kombinirano korištenje benzodiazepina povezano je sa slučajevima predoziranja buprenorfinom. Reynaud i sur. (55) zabilježili su značajan broj kliničkih slučajeva respiratorne depresije izazvane buprenorfinom u terapijskim dozama pri čemu su u većini slučajeva bili prisutni i benzodiazepini (55). Bailey i sur. (56) su istražili respiratorne učinke midazolama i fentanila, sintetičkog opioida, u slučajevima kada se koriste samostalno te u kombinaciji. Pokazali su da kombinacija tih dvaju lijekova značajno povećava učestalost hipoksemije i apneje. Budući da se midazolam, kao i drugi benzodiazepini,

pines and reduced excitatory neurotransmitter release due to opioids can result in a synergistic depressant effect on the CNS (53). When single doses of diazepam are administered to patients treated with methadone and buprenorphine, increased sedation and stronger drug effects for both groups were observed. The methadone group also showed increased euphoria and the buprenorphine group showed particularly increased sedation (54) (Table 2). Concomitant use of benzodiazepines is connected with cases of buprenorphine overdose. Reynaud et al. (55) recorded a significant number of clinical cases of respiratory depression caused by buprenorphine at therapeutic doses, wherein the majority of cases involved benzodiazepines as well (55). Bailey et al. (56) investigated the respiratory effects of midazolam and fentanyl, a synthetic opioid, in cases when used alone and in combination. They showed that the combination of the two drugs significantly increases the incidence of hypoxemia and apnea. Since midazolam, as well as other benzodiazepines, can be used during an-

TABLICA 2. Klinički značajne farmakodinamske interakcije benzodiazepina s lijekovima
TABLE 2. Clinically significant pharmacodynamic interactions of benzodiazepines with drugs

LIJEK / DRUG	Mehanizam interakcije / Mechanism of interaction	Benzodiazepini koji ulaze u interakcije i kliničko značenje / Benzodiazepines that interact and clinical significance
Etanol / Ethanol	intenziviranje učinaka GABA-ergičkog sustava / intensification of GABAergic system effects	• diazepam: subjektivne smetnje smanjene koncentracije, motivacije i pažnje / diazepam: subjective disturbances such as reduced concentration, motivation and attention • triazolam: posturalna nestabilnost / triazolam: postural instability • temazepam: klinička oštećenja čak i pri umjerenim dozama etanola • / temazepam: clinical impairments even at moderate doses of ethanol • alprazolam: oštećenje verbalnog procesuiranja informacija • / alprazolam: impairment of verbal information processing
Metadon / Methadone Buprenorfin / Buprenorphine	modulacija GABA-ergičkog sustava / modulation of GABAergic system	diazepam: intenzivnija sedacija; rizik od respiratorne depresije / diazepam: intensified sedation; risk of respiratory depression
Fentanil / Fentanyl	modulacija GABA-ergičkog sustava / modulation of GABAergic system	midazolam: povećanje učestalosti hipoksemije i apneje / midazolam: increased incidence of hypoxemia and apnea
Naltrekson / Naltrexone	antagonist opioidnih receptora – modifikacija učinaka benzodiazepina / opioid receptor antagonist – benzodiazepine effects modification	diazepam: ↑ negativnih emocionalnih stanja ↓ pozitivnih emocionalnih stanja / diazepam: ↑ negative emotional states ↓ positive emotional states
Barbiturati / Barbiturates	povećanje provodljivosti kloridnih iona GABA receptora / increased chloride ion conductivity of GABA receptors	većina benzodiazepina: pojačano vezanje benzodiazepina na receptore – sinergističke interakcije / most benzodiazepines: increased binding of benzodiazepines to receptors – synergistic interactions
Propofol / Propofol	pojačan učinak GABA-ergičkog sustava / enhanced GABAergic system effect	midazolam: sinergističko djelovanje u postizanju hipnotičkog učinka / midazolam: synergistic action in achieving hypnotic effect

može koristiti tijekom anestezije u kombinaciji s opioidima, preporučuje se oprezna primjena i praćenje (56). Naltrekson je antagonist opioida za koji je pokazano da modificira subjektivne i objektivne učinke intoksikacije diazepamom. Naltrekson može povećati negativna emocionalna stanja (sedaciju, umor, anksioznost) i smanjiti pozitivna emocionalna stanja (druželjubivost, energiju, osjećaj euforije), što ukazuje da naltrekson može pomoći u smanjenju zloupotrebe benzodiazepina smanjujući pozitivne učinke povezane s intoksikacijom (57) (tablica 2).

Barbiturati se koriste kao anestetici, hipnotici, anksiolitici te antikonvulzivni lijekovi. Izravno povećavaju provođenje kloridnih iona posredovano GABA-om te mogu pojačati vezanje benzodiazepina na njihove receptore (58) (tablica 2.). Midazolam i tiopental pokazali su sinergističke interakcije prilikom istovremenog korištenja za indukciju anestezije (59). Midazolam je također pokazao, čak i u dozama koje nisu dovoljne za postizanje anestezije samostalno, da pojačava učinkovitost tiopentona uspješno inducirajući hipnozu i anesteziju (60). Propofol je ne-barbituratni anestetik koji se koristi za indukciju i održavanje anestezije. McClune i sur. (61) istraživali su način na koji midazolam i propofol međusobno djeluju u postizanju hipnotičkih učinaka kada se koriste u kombinaciji. Pokazali su da ova dva lijeka ispoljavaju sinergističko djelovanje u postizanju hipnotičkog učinka. Kada se primjenjuju kombinirano, niže doze svakog lijeka mogu postići jednaku razinu anestezije kao i više doze pojedinačnih lijekova. Ovakav pristup omogućuje stabilniju indukciju anestezije uz potencijalno smanjenje nuspojava (61).

ZAKLJUČAK

Benzodiazepini su često korišteni lijekovi za liječenje anksioznosti i drugih psihičkih poremećaja. Iako se općenito smatraju lijekovima s dobrim sigurnosnim profilom, napretkom u razumijevanju njihovih metaboličkih puteva iden-

esthesia in combination with opioids, cautious administration and close monitoring are recommended (56). Naltrexone is an opiate antagonist and it was found to modify the subjective and objective effects of diazepam intoxication. Naltrexone can increase negative emotional states (sedation, fatigue, anxiety) and decrease positive emotional states (friendliness, vigor, sense of euphoria), which indicates that naltrexone may help reduce benzodiazepine abuse by diminishing the positive effects associated with intoxication (57) (Table 2).

Barbiturates are used as anesthetics, hypnotics, anxiolytics, and anticonvulsants. They directly increase GABA-mediated conduction of chloride ions and have the potential to enhance the binding of benzodiazepines to their receptors (58) (Table 2). Midazolam and thiopental were shown to have synergistic interactions when used in combination for anesthesia induction (59). It was also shown that, even at doses not sufficient to produce anesthesia on its own, midazolam enhances the potency of thiopentone by successfully inducing hypnosis and anesthesia (60). Propofol is a non-barbiturate anesthetic used for the induction and maintenance of anesthesia. McClune et al. (61) investigated the manner in which midazolam and propofol interact in achieving hypnotic effects when used in combination. They showed that these two drugs have a synergistic interaction in achieving their hypnotic effects. When administered together, lower doses of each drug can produce the same level of anesthesia as higher doses of either drug alone. This approach could allow for a more stable induction of anesthesia, potentially with fewer side effects (61).

CONCLUSION

Benzodiazepines are medications commonly used for the treatment of anxiety and other mental disorders. While they are generally considered to have a favorable safety profile, numerous drug-drug interactions have been identified

tificirane su brojna uzajamna djelovanja s drugim lijekovima. Ključne interakcije zabilježene su s antidepresivima, antibioticima i antimikoticima, oralnim kontraceptivima, antisekretornim lijekovima, antiepilepticima te depresorima središnjeg živčanog sustava uključujući alkohol, opioide i anestetike. Takve interakcije mogu dovesti do promjena koncentracije benzodiazepina u plazmi, produljenog poluvijeka eliminacije te pojačanih ili umanjenih terapijskih učinaka kao i brojnih neočekivanih nuspojava. Međutim, kliničko značenje mnogih od ovih interakcija još nije u potpunosti utvrđeno pa su potrebna daljnja istraživanja kako bi se razjasnila relevantnost opaženih farmakokinetičkih i farmakodinamičkih promjena. Nužno je poznavati potencijalne farmakološke interakcije, razmotriti alternativne opcije, ako se identificiraju visokorizične kombinacije lijekova, te prilagoditi doze prema potrebi na temelju individualnih odgovora pacijenata, kako bi se optimizirala sigurna i učinkovita uporaba benzodiazepina u kliničkoj praksi.

as an understanding of their metabolic pathways has improved. Key interactions have been observed with antidepressants, antibiotics and antimycotics, oral contraceptives, antisecretory drugs, antiepileptic medications, and central nervous system depressants, including alcohol, opioids and anesthetics. These interactions can lead to altered benzodiazepine plasma concentrations, prolonged elimination half-lives and enhanced or diminished therapeutic effects, as well as many unexpected side effects. However, the clinical significance of many of these interactions has not yet been fully established, so further research is still necessary in order to clarify the relevance of the observed pharmacokinetic and pharmacodynamic changes. Clinicians should know the potential pharmacological interactions, consider alternative options if high-risk drug combinations are identified, and adjust dosages when necessary, based on the individual patient responses, in order to optimize the safe and effective use of benzodiazepines in clinical practice.

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Jasminka Despot Lučanin

Psihologija starenja: izazovi i prilagodba

/ Psychology of Aging: Challenges and Adaptation

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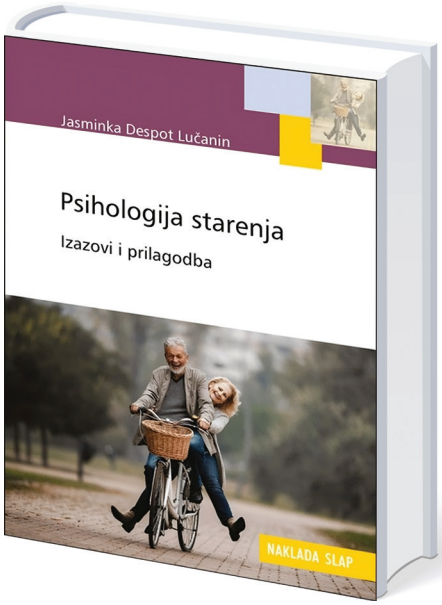

Knjiga „Psihologija starenja: izazovi i prilagodba“ autorice Jasminke Despot Lučanin temeljito se bavi temama iz područja psihologije i gerontologije. Cilj ovog djela je uspostaviti snažnu poveznicu između psihologije i procesa starenja, istražujući strategije koje promiču zdravo i kvalitetno starenje produbljujući razumijevanje iskustva starenja.

Brzo starenje stanovništva postaje globalni fenomen zbog dužeg životnog vijeka i opadanja nataliteta što uzrokuje rast udjela starije populacije. Ovaj demografski pomak potiče porast istraživanja usredotočenih na razumijevanje psiholoških aspekata starenja te njihov utjecaj na pojedince i društvo u cjelini. Postizanje psihološkog blagostanja tijekom starenja postavlja se kao važan cilj ekonomske i zdravstvene politike, budući da može imati zaštitnu ulogu u održavanju zdravlja, s dokazima koji upućuju na povezanost s duljim životom. U tom kontekstu prepoznaje se da integracija gerontoloških kompetencija u zdravstveno i socijalno obrazovanje postaje imperativ zbog sve većeg starenja populacije. Psihologija starenja istražuje mentalno zdravlje, emocionalno blagostanje i promjene povezane sa starenjem. Psihološki

The book “*Psihologija starenja: Izazovi i prilagodba*” (“Psychology of Aging: Challenges and Adaptation”) by Jasminka Despot Lučanin thoroughly addresses topics in the fields of psychology and gerontology. The aim of this work is to establish a strong link between psychology and the aging process, by exploring strategies that promote healthy and quality aging, all the while deepening the understanding of the aging experience.

Rapid population aging is becoming a global phenomenon due to longer life expectancy and declining birth rates, which is causing an increase in the share of the elderly population. This demographic shift is fueling an increase in research focused on understanding the psychological aspects of aging and their impact on individuals and the society as a whole. Achieving psychological well-being in the course of aging is set as an important goal of economic and health policies, as it can have a protective role in maintaining health, with emerging evidence indicating its link to a longer life. In this context, it is recognized that the integration of gerontological competencies into health and social education is becoming imperative due to the increasing aging of the population. The psychology of aging explores mental health, emotional well-being, and changes associated with aging.

aspekti starenja i doprinosi psihologije gerontologiji ključni su u izgradnji znanja i praksi povezanih sa specifičnostima i općim karakteristikama starosti i starenja, što koristi psihološkoj znanosti i gerontologiji općenito.

Sadržaj knjige obuhvaća tri ključne tematske cjeline s ukupno 17 poglavlja i 384 stranice. Prva cjelina, „O starenju i starosti“, razmatra osnovna pitanja starenja, važnost psihologije u očuvanju kvalitete života starijih, te stereotipe i predrasude uključujući „ageizam”. Naglašava se potreba razbijanja predrasuda i osvještavanja društva. Analiziraju se demografski trendovi, čimbenici dugovječnosti i teorije starenja, kao i izazovi u istraživanju starenja. Druga cjelina, „Promjene u sposobnostima starijih osoba“, bavi se prirodnim padom tjelesnih, motoričkih i kognitivnih sposobnosti s godinama, ali i načinima na koje ove promjene utječu na kvalitetu života starijih. Naglašava se važnost dobrog sna, kognitivne rezerve i socijalne aktivacije koja pomaže u održavanju mentalnih funkcija. Razmatraju se i emocionalne i socijalne promjene te psihološki utjecaj umirovljenja, gubitka bližnjih i promjena u obiteljskim odnosima. Autorica ukazuje na to da kvaliteta života starijih osoba nije samo povezana sa zdravljem već i s njihovim subjektivnim doživljajem života i zadovoljstvom. U trećoj cjelini, „Primijenjena psihologija starenja“, istražuju se prilagodbe u komunikaciji sa starijim osobama naglašavajući važnost razumijevanja njihovih potreba i specifičnosti. Razmatraju se izazovi u savjetovanju starijih i različite vrste skrbi uključujući život u domovima i odnose između osoblja i stanara. Autorica također razmatra ulogu tehnologije u životima starijih s posebnim naglaskom na njezine prednosti u očuvanju mentalnog zdravlja. Cjelina završava razmišljanjem o procesu umiranja i prijelazu u posljednje životne faze, te prilagodbi na taj neizbježni dio života.

Ova knjiga, iako koncipirana kao udžbenik za studente, nudi izuzetno koristan resurs svima, kako je naglasila i sama autorica, preporučuju-

Psychological aspects of aging and the contributions of psychology to gerontology are crucial in building knowledge and practices related to the specificities and general characteristics of old age and aging, which benefits psychological science and gerontology in general.

The book contents include three key thematic units, with a total of 17 chapters and 384 pages. The first unit, entitled “On Aging and Old Age”, discusses the basic issues of aging, the importance of psychology in preserving the quality of life of the elderly, and the related stereotypes and prejudices, including “ageism”. The need to overcome prejudice and raise awareness in the society is emphasized. Demographic trends, longevity factors, and theories of aging, as well as challenges in aging research, are analyzed. The second unit, entitled “Changes in the Abilities of the Elderly”, deals with the natural decline in physical, motor, and cognitive abilities that come with age, but also with the ways in which these changes affect the quality of life of the elderly. The importance of good sleep, cognitive reserve, and social activation, which helps maintain mental functions, is emphasized. Emotional and social changes are also discussed, as well as the psychological impact of retirement, loss of loved ones, and changes in family relationships. The author points out that the quality of life of the elderly relates not only to health, but also to their subjective experience of life and satisfaction. The third unit, entitled “Applied Psychology of Aging”, explores the adaptations in communicating with older persons, emphasizing the importance of understanding their needs and specificities. The challenges in counseling the elderly and the different types of care are discussed, including living in retirement homes and relationships between the staff and the residents. The author also discusses the role of technology in the lives of the elderly, with particular emphasis on its benefits in preserving mental health. The chapter ends with reflections on the process of dying and the transition to the last stages of life, as well as the adaptation to this inevitable part of life.

As the author herself emphasized, although it is conceived as a textbook for students, this book is

ći je za čitanje svim odraslim osobama. Pristup knjizi obuhvaća raznolik raspon teorija, metodologija i znanstvenih izvora relevantnih za proučavanje psihologije starenja. Svako poglavlje započinje zanimljivim razgovorom ili odgovorima starijih osoba na postavljeno pitanje stvarajući angažirajuće iskustvo za čitatelja i uvid u stvarna iskustva starijih osoba. Scenariji s pitanjima povezani s temom dodatno potiču čitateljevu znatiželju. Posebna pažnja obraćena je interaktivnosti s vježbama na kraju svakog poglavlja, prilagođenima obrađenim temama što potiče dublje razumijevanje gradiva. Fotografije starijih osoba dodatno obogaćuju svako poglavlje, pružajući vizualni prikaz obrađenih tema. Važni pojmovi su naglašeni podebljanim tekstom, olakšavajući čitateljima prepoznavanje ključnih informacija. Autoričina predanost tome da knjigu učini jednostavnom, ali istovremeno stručnom, rezultirala je iznimnom čitljivošću koja odgovara i stručnjacima i laicima. Knjiga ne samo da educira već potiče i aktivno učenje i razumijevanje kompleksnosti psihologije starenja.

Knjiga je sveobuhvatan prikaz kompleksnih aspekata psihologije starenja. Prožeta je znanstvenim spoznajama i praktičnim pristupom, a pruža izuzetno koristan izvor svima koji žele razumjeti proces starenja. Osim toga, stilske karakteristike knjige, poput interaktivnosti, scenarija i fotografija, dodaju osobnu dimenziju čitanju čineći ju pristupačnom i zanimljivom širem auditoriju. Bez obzira na čitateljevo predznanje ili struku, knjiga pruža vrijedan uvid u dinamiku starenja te potiče razmišljanje o važnim pitanjima koja prožimaju tu fazu života. Tekst odražava stručnost autorice u području psihologije starenja, ali i njenu posvećenost raznolikoj publici. Knjiga motivira čitatelje na razumijevanje, suosjećanje i aktivno sudjelovanje u stvaranju pozitivnog starenja, čime postaje iznimno korisna literatura.

Autorica ove knjige, Jasminka Despot Lučanin, psihologinja i redovita profesorica,. zaposlena

an extremely useful resource for everyone, and is recommended to all adults. The approach taken in the book encompasses a diverse range of theories, methodologies, and scientific sources relevant to the study of the psychology of aging. Each chapter begins with an interesting conversation or answers provided by older people to a particular question, creating an engaging experience for the reader and providing insight into the real experiences of the elderly. Scenarios that involve questions relating to a topic further stimulate the reader's curiosity. Special attention is paid to interactivity, with exercises at the end of each chapter adapted to the topics covered, thus encouraging a deeper understanding of the material. Photographs of older people further enrich each chapter, providing a visual representation of the topics covered. Important terms are emphasized in bold text, making it easier for the readers to recognize key information. The author's commitment to making the book simple, yet professional, has resulted in exceptional readability that suits both experts and laypeople. The book not only educates, but also encourages active learning and understanding of the complexities of the psychology of aging.

The book is a comprehensive overview of the complex aspects of the psychology of aging. It is imbued with scientific knowledge and practical approach, and provides an extremely useful resource for anyone who wants to understand the aging process. In addition, the book's stylistic features, such as interactivity, scenarios, and photographs, add a personal dimension to the reading, making it accessible and interesting to a wider audience. Regardless of the reader's prior knowledge or profession, the book provides valuable insight into the dynamics of aging and encourages reflection on the important issues that permeate this phase of life. The book reflects the author's expertise in the field of aging psychology, but also her dedication to a diverse audience. The book motivates its readers to understand, empathize, and actively participate in the creation of a notion of positive aging, making it an extremely useful piece of literature.

Jasminka Despot Lučanin, a psychologist and full professor, is the author of this book. She is

je iu Odsjeku za psihologiju Fakulteta hrvatskih studija, a surađuje s nekoliko zagrebačkih i riječkih fakulteta. Njezino istraživanje fokusira se na psihologiju starenja, a objavila je više od 50 znanstvenih radova.

Ivan Jurišić

employed at the Department of Psychology at the Faculty of Croatian Studies, and collaborates with several faculties in Zagreb and Rijeka. Her research focuses on the psychology of aging, and she has published more than 50 scientific papers.

Ivan Jurišić

Upute autorima

O časopisu

Socijalna psihijatrija je recenzirani časopis koji je namijenjen objavljivanju radova iz područja socijalne psihijatrije, ali i iz kliničke psihijatrije i psihologije, biologijske psihijatrije, psihoterapije, forenzičke psihijatrije, ratne psihijatrije, alkohologije i drugih ovisnosti, zaštite mentalnog zdravlja osoba s intelektualnim teškoćama i razvojnim poremećajima, epidemiologije, deontologije, organizacije psihijatrijske službe. Praktički nema područja psihijatrije iz kojeg do sada nije objavljen pregledni ili stručni rad.

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Instructions to authors

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Editors at the *Socijalna psihijatrija* journal pay close attention to the integrity and visibility of scholarly publications as stated in Sarajevo Declaration (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5209927/).

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Metode se prikazuju tako da se čitatelju omogući ponavljanje opisanog istraživanja. Metode poznate iz literature ne opisuju se, već se navode izvorni literaturni podatci. Ako se navode lijekovi, rabe se njihova generička imena (u zagradi se može navesti njihovo tvorničko ime).

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