

Kolika je cijena usamljenosti kod studenata? Odnos usamljenosti, psihičkog i općeg zdravlja te akademske uspješnosti

/ What Is the Cost of Loneliness Among University Students? The Relationship Between Loneliness, Mental and General Health, and Academic Achievement

Tanja Jurin

Odsjek za psihologiju, Filozofski fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska

/ Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Zagreb, Croatia

ORCID: 0000-0002-6913-562X

Cilj ovog istraživanja bio je ispitati razinu usamljenosti studenata Sveučilišta u Zagrebu i odnos usamljenosti s različitim sociodemografskim obilježjima te psihičkim i općim zdravljem, kao i sa subjektivnom procjenom akademske uspješnosti, uključujući medijacijsku ulogu usamljenosti. Na prigodnom uzorku studenata ($N=879$; dob=18-35) primijenjeni su UCLA-3, CORE-10, DASS-21, SAAS i SRH te prikupljeni sociodemografski podatci. Provedene su deskriptivne analize, testiranje razlika, korelacijske analize i hijerarhijska regresija; medijacija je testirana nad odnosom SAAS i CORE-10. 76,9 % studenata iskazalo je visoku razinu usamljenosti. Usamljenost je značajno povezana s višim anksiozno-depresivnim simptomima i stresom, lošijom samoprocjenom zdravlja i nižom akademskom uspješnosti. U hijerarhijskoj regresijskoj analizi, nakon kontrole varijabli roda, godine studija i SES-a, i usamljenost ($\beta=.423, p<.001$) i niža akademska uspješnost ($\beta=-.318, p<.001$) značajno su predviđali lošije psihičko zdravlje. Utvrđena je djelomična medijacija usamljenosti u odnosu između akademske uspješnosti i psihičkog zdravlja (indirektni efekt $a \times b = -.103, p<.001$; omjer medijacije $\approx 23\%$). Ovim istraživanjem pokazano je da je usamljenost prevalentna i snažno povezana sa psihičkim zdravljem studenata te djelomično posreduje negativan učinak lošije akademske uspješnosti na psihološki distres. Potrebne su višerazinske intervencije (univerzalna, selektivna i indikativna prevencija) usmjerene na socijalnu povezanost, ranu identifikaciju i ciljanu podršku najrizičnijim skupinama.

/ The aim of this study was to examine the levels of loneliness among the students of the University of Zagreb, as well as the relationship between loneliness and various sociodemographic characteristics, mental and general health, and subjective academic achievement, including the mediating role of loneliness. A convenience sample of university students ($N = 879$; age = 18–35) completed the UCLA-3, CORE-10, DASS-21, SAAS and SRH, and provided sociodemographic information. Descriptive analyses, group difference testing, correlation analyses, and hierarchical regression were conducted; mediation was tested for the relationship between SAAS and CORE-10. High levels of loneliness were reported by 76.9% of the students. Loneliness was significantly associated with higher levels of anxiety and depressive symptoms and stress, poorer self-rated health, and lower academic achievement. In the hierarchical regression analysis, after controlling for gender, year of study, and socioeconomic status variables, both loneliness ($\beta = .423, p < .001$) and lower academic achievement ($\beta = -.318, p < .001$) proved to be significant predictors of poorer mental health. Partial mediation of loneliness was found in the relationship between academic achievement and mental health (indirect effect $a \times b = -.103, p < .001$; mediation proportion $\approx 23\%$). The findings of this study indicate that loneliness is highly prevalent among university students and strongly associated with their mental health, partially mediating the negative effect of poorer academic achievement on psychological distress. Multilevel interventions (universal, selective, and indicated prevention) aimed at social connectedness, early identification, and targeted support for the most at-risk groups are warranted.

ADRESA ZA DOPISIVANJE /**CORRESPONDENCE :**

Tanja Jurin

Filozofski fakultet

Odsjek za psihologiju

I.Lučića 3

10000 Zagreb, Hrvatska

E-pošta: tjurin@mffzg.hr

KLJUČNE RIJEČI / KEY WORDS:Usamljenost / *Loneliness*Studenti / *Students*Psihičko zdravlje / *Mental Health*Akademska uspješnost / *Academic Achievement*Medijacija / *Mediation***TO LINK TO THIS ARTICLE:** <https://doi.org/10.24869/spsih.2025.337>**UVOD**

Briga o psihičkom zdravlju u ranoj odrasloj dobi ima iznimnu važnost za javno zdravstvo, budući da se u tom razdoblju života bilježi nagli porast javljanja psihičkih poremećaja (1). Naime, prema istraživanjima otprilike polovica svih psihičkih poremećaja javlja se prvi put već od sredine adolescencije, a čak tri četvrtine do sredine dvadesetih godina života (2). Studentska populacija osobito je ranjiva zbog životnih promjena, preseljenja, izgradnje novih društvenih mreža i visokih akademskih zahtjeva (3). Podatci ukazuju da između 12 % i 46 % studenata pati zbog nekog psihičkog poremećaja (4-8). Tijekom posljednjih dvadeset godina broj studenata s problemima psihičkog zdravlja povećao se 2 do 5 puta prije pandemije (9), te se dodatno povećao tijekom i nakon pandemije COVID-19 (10). Unatoč dostupnosti efikasnih tretmana, istraživanja pokazuju da samo jedan od pet studenata dobiva minimalno adekvatan tretman (4), a prosječno vrijeme netretiranja psihičkih problema i poremećaja kreće se od 4 do 23 godine (11). S obzirom na to da su problemi s psihičkim zdravljem povezani s lošijim akademskim uspjehom (12,13), prestankom studiranja (14,15) i lošijim funkcioniranjem kasnije u životu (16,17) ne čudi da sve veći broj svjetskih sveučilišta razvija preventivne i intervencijske aktivnosti za unaprjeđenje psihičkog zdravlja studenata, a na popisu takvih aktivnosti jest i rad na smanjenju usamljenosti (18).

INTRODUCTION

Care for mental health in early adulthood is of particular importance for public health, as this period of life is marked by a sharp increase in the onset of mental disorders (1). In fact, studies indicate that approximately half of all mental disorders first appear by mid-adolescence, and as many as three-quarters by the mid-twenties (2). University students are a particularly vulnerable population due to major life transitions, relocation, establishment of new social networks, and high academic demands (3). Available data suggest that between 12% and 46% of students experience a mental disorder (4–8). Over the past two decades, the number of students reporting mental health problems increased two- to five-fold prior to the COVID-19 pandemic (9), and further increased during and after the pandemic (10). Despite the availability of effective treatments, studies have shown that only one in five students will receive minimally adequate treatment (4), while the average duration of untreated mental health problems and disorders ranges from 4 to 23 years (11). Given that mental health problems are associated with poorer academic achievement (12, 13), higher dropout rates (14, 15), and poorer functioning later in life (16, 17), it is not surprising that an increasing number of universities worldwide are developing preventive and intervention-based initiatives aimed at improving student mental health, which also includes efforts to reduce loneliness (18).

Usamljenost se definira kao subjektivno, negativno emocionalno iskustvo koje proizlazi iz percepcije da osoba ima manje društvenih kontakata nego što želi i/ili da ti odnosi ne pružaju očekivanu razinu intimnosti i podrške (19,20). Usamljenost ne mora odgovarati objektivnoj društvenoj izolaciji – moguće je imati malo društvenih kontakata, a ne osjećati se usamljeno, kao i imati bogat društveni život, ali i dalje doživljavati usamljenost (21). Kognitivni model objašnjava usamljenost kao nesklad između željene i stvarne razine društvene aktivnosti pri čemu je veći nesklad povezan s višom razinom usamljenosti (22). Radi se o složenom, višedimenzionalnom fenomenu koji može biti privremen, povremen ili kroničan, a najčešće se dijeli na socijalnu usamljenost (nedostatak osjećaja pripadnosti) i emocionalnu usamljenost (nedostatak bliskih, intimnih odnosa) (23). Važno je razlikovati i željenu samoću, koja može biti obnavljajuća, od neželjene usamljenosti koja se povezuje s emocionalnom patnjom, izolacijom i negativnim zdravstvenim ishodima (24).

Prevalencija usamljenosti varira među zemljama i populacijama, no istraživanja pokazuju da su mladi i stariji odrasli najrizičnije skupine (25). U Španjolskoj 22 % mladih od 16 do 24 godina izvještava o osjećaju neželjene usamljenosti (26), dok u UK-u 6,3 % osoba mladih od 30 godina prijavljuje učestalu usamljenost (27). U Njemačkoj je 32,4 % studenata navelo umjerenu, a 3,2 % ozbiljnu usamljenost (28). U Ujedinjenom Kraljevstvu je 2018. godine 9,8 % mladih u dobi od 16 do 24 godine izvještavalo da se često osjeća usamljeno (29), dok je više od 15 % studenata navelo da svakodnevno doživljava usamljenost. Povećan rizik pritom je utvrđen među studentima pripadnicima etničkih manjina, osobama s invaliditetom, međunarodnim studentima i onima koji žive kod kuće (30). Studenti su posebno ranjivi tijekom prve akademske godine kada se suočavaju s povećanim akademskim pritiscima, izazovima preseljenja i potrebom

Loneliness is defined as a subjective, negative emotional experience arising from the perception that one has fewer social contacts than desired, and/or that these relationships do not provide the expected level of intimacy and support (19, 20). Loneliness does not necessarily correspond to objective social isolation – individuals may have few social contacts without feeling lonely, or conversely, may maintain an active social life while still experiencing loneliness (21). The cognitive model conceptualizes loneliness as a discrepancy between desired and actual levels of social interaction, with greater discrepancies associated with higher levels of loneliness (22). Loneliness is a complex, multidimensional phenomenon that may be transient, episodic or chronic, and is most commonly distinguished into social loneliness (lack of a sense of belonging) and emotional loneliness (lack of close, intimate relationships) (23). It is also important to distinguish desired solitude, which can be restorative, from unwanted loneliness which is associated with emotional distress, isolation, and adverse health outcomes (24).

The prevalence of loneliness varies across countries and populations, however, studies consistently indicate that the young and older adults represent the most at-risk groups (25). In Spain, 22% of young people between 16 and 24 years of age reported experiencing unwanted loneliness (26), while in the United Kingdom 6.3% of individuals under the age of 30 reported frequent loneliness (27). In Germany, 32.4% of students reported moderate loneliness and 3.2% reported severe loneliness (28). In 2018, a total of 9.8% of young people aged 16-24 in the United Kingdom reported often feeling lonely (29), while more than 15% of students reported experiencing loneliness on a daily basis. Increased risk was also identified among students belonging to ethnic minorities, individuals with disabilities, international students, and those living at home (30). Students are particularly vulnerable during their first academic year, when they face increased academic

za uspostavljanjem novih društvenih mreža (3).

Iako se adolescenti smatraju najmanje usamljenima među svim dobnim skupinama, tijekom studija većina studenata bilježi najviše stope usamljenosti (28,31,32). Usamljenost je najizraženija kod brucoša i studenata poslijediplomskih studija, ali na različite načine (33). Ovo stajalište podržavaju studije koje potvrđuju dva jasna vrhunca pojave usamljenosti – kod mlađih i starijih studenata (34,35). Njihova su istraživanja također pokazala da mlađi studenti češće osjećaju usamljenost od starijih, a taj obrazac postupno opada s dobi.

Istraživanja ukazuju na povezanost usamljenosti s tjelesnim i psihičkim zdravljem. Povezana je s depresijom, anksioznošću, stresom, fobijama, opsesivno-kompulzivnim poremećajem, problemima sa spavanjem, nižim životnim zadovoljstvom, suicidalnom ideacijom, kognitivnim deficitima i oštećenjem funkcionalnosti mozga (25,36-39). Kronična usamljenost može mijenjati obrasce socijalnog ponašanja i smanjivati vjerojatnost budućih društvenih interakcija (40). Utvrđena je i povezanost socioekonomskog statusa (SES) s usamljenošću. Mladi iz obitelji nižeg SES-a izvještavaju o višim razinama usamljenosti od onih iz obitelji višeg SES-a (41,42). Na fiziološkoj razini usamljenost je povezana s povišenim razinama kortizola, upalnim procesima, oslabljenim imunološkim sustavom, lošim životnim navikama te povećanim rizikom od kardiovaskularnih bolesti i smrtnosti (43,44). Usamljenost kod studenata također je povezana s maladaptivnim stilovima suočavanja, nižim akademskim postignućem i smanjenom motivacijom (45). Istraživanja o povezanosti usamljenosti s negativnim posljedicama za zdravlje, ali i akademsko funkcioniranje, ne daju jasan uvid u uzročno posljedične mehanizme. Prema dosada dostupnim podacima jedina provedena longitudinalna studija utvrdila je da viša razina usamljenosti predviđa pogoršanje psihičkog

pressures, relocation-related challenges, and the need to establish new social networks (3).

Although adolescents are generally considered the least lonely age group, most university students report some of the highest levels of loneliness during their studies (28, 31, 32). Loneliness is most pronounced among first-year and postgraduate students, albeit in different ways (33). This view is supported by studies identifying two distinct peaks in loneliness – among younger and older students (34, 35). These studies also indicated that younger students experience loneliness more frequently than older students, with loneliness gradually decreasing with age.

Studies have shown evidence of a connection between loneliness and both physical and mental health. Loneliness has been linked to depression, anxiety, stress, phobias, obsessive-compulsive disorder, sleep disturbances, lower life satisfaction, suicidal ideation, cognitive deficits, and impaired brain functioning (25, 36–39). Chronic loneliness may alter patterns of social behavior and reduce the likelihood of future social interactions (40). It has also been observed that socioeconomic status (SES) is associated with loneliness. Young people from lower SES backgrounds reported higher levels of loneliness than those from higher SES backgrounds (41, 42). At the physiological level, loneliness has been associated with elevated cortisol levels, inflammatory processes, weakened immune functioning, unhealthy lifestyle behaviors, and increased risk of cardiovascular disease and mortality (43, 44). Among students, loneliness has also been linked to maladaptive coping styles, poorer academic achievement, and reduced motivation (45). Studies addressing the association of loneliness with adverse health consequences and poorer academic outcomes do not provide a clear insight into the underlying causal mechanisms. According to currently available data, the only longitudinal study conducted to date found that higher levels of loneliness predicted subsequent deterioration in mental health, whereas earlier mental health

zdravlja, dok ranije narušeno psihičko zdravlje ne predviđa naknadno povećanje usamljenosti. Iako teorijski modeli često polaze od pretpostavke da usamljenost prethodi nepovoljnim zdravstvenim ishodima, valja uzeti u obzir i mogućnost obrnutog procesa, prema kojem osobe s narušenim zdravstvenim stanjem mogu dodatno reducirati društvene kontakte, što rezultira povećanom usamljenosti. Ovakav obrazac upućuje na potencijalno dvosmjerno i dinamičko međudjelovanje navedenih varijabli. Kada je riječ o akademskom uspjehu, i dalje ostaje nejasno u kojoj mjeri studenti svjesno ili nesvjesno reduciraju društvene interakcije. Iako su dosadašnje empirijske studije polazile su od pretpostavke da usamljenost djeluje kao rizični čimbenik koji može doprinijeti slabijem akademskom funkcioniranju, valja uzeti u obzir različite dvosmjerne i dinamične odnose među navedenim konstruktima. Model u ovom radu ispituje upravo drugačiji odnos varijabli polazeći od preventivne perspektive da su akademski zahtjevi i neuspjeh jasno prepoznatljivi, situacijski stresori unutar studentskog konteksta, dok se usamljenost u tom okviru može promatrati kao psihosocijalni proces osjetljiv na promjene u okolini. Ovaj pristup omogućuje istraživanje mehanizma kojim akademski stres ima indirektan efekt na mentalno zdravlje putem socijalne izolacije što je u skladu s prethodnim teorijskim razmatranjima o usamljenosti kao posredniku između vanjskih izazova i dobrobiti studenata. Zbog snažne povezanosti usamljenosti, psihičkog zdravlja, općeg zdravlja i akademske uspješnosti nužno je razumjeti mehanizme koji ih povezuju te razviti učinkovite intervencije za prevenciju i smanjenje usamljenosti među studentima.

CILJ

Cilj ovog rada bio je istražiti razinu percipirane usamljenosti među studentima zagrebačkog sveučilišta s obzirom na različita socio-

problems did not predict later increases in loneliness. Although theoretical models often start with the assumption that loneliness precedes adverse health outcomes, the possibility of reverse processes must also be considered, whereby individuals with compromised health may further reduce social interactions, resulting in increased loneliness. Such findings suggest potentially bidirectional and dynamic interaction among these variables. With regard to academic achievement, it also remains unclear to what extent students consciously or unconsciously reduce social interactions. Although previous empirical studies have typically assumed that loneliness functions as a risk factor potentially contributing to poorer academic functioning, it is important to consider alternative bidirectional and dynamic relationships among these constructs. The model in the present study examined a different relationship between variables, grounded in a preventive framework that conceptualizes academic demands and failure as clearly identifiable situational stressors within the student context, while loneliness can be viewed in this framework as a psychosocial process sensitive to environmental changes. This approach enables the examination of the mechanism through which academic stress may exert an indirect effect on mental health via social isolation, which is consistent with previous theoretical considerations of loneliness as a mediator between external challenges and student well-being. Given the strong connection between loneliness, mental health, general health, and academic achievement, it is essential to understand the mechanisms linking these domains, and to develop effective interventions aimed at preventing and reducing loneliness among university students.

AIM

The aim of this study was to examine the levels of perceived loneliness among the students at the University of Zagreb with regard to various

demografska obilježja te istražiti povezanost usamljenosti s psihičkim zdravljem i općim zdravljem te akademskom uspješnošću. Nadalje ovim istraživanjem se nastoji istražiti relativni doprinos usamljenosti na psihičko zdravlje u odnosu na ulogu usamljenosti kao medijatora između akademske uspješnosti i psihičkog zdravlja. Pretpostavka je da kod usamljenijih studenata akademska neuspješnost ima snažniji efekt na lošije psihičko zdravlje.

METODE

Sudionici

Za potrebe ovog istraživanja prikupljeni su podatci na prigodnom uzorku od 879 studenata Sveučilišta u Zagrebu. Dob sudionika kretala se u rasponu od 18 do 35 godina, s prosječnom dobi od 21,9 godine ($SD = 2,57$). Većinu sudionika činile su studentice (76,9 %), dok je udio studenata iznosio 20,7 %. Dodatno, 2,4 % studenata izjasnilo se u nebinarnim rodnim terminima. Najveći broj sudionika bili su studenti prve godine i treće godine preddiplomskog studija (22,9 % i 22,2 %), dok je najmanje bilo apsolvenata i 6. godine Medicinskog fakulteta (9 %). Uzorak je bio zastupljen studentima iz svih područja: biotehničko 10 %, društveno 25 %, humanističko 18 %, interdisciplinarno 3,5 %, prirodno 4,7 %, tehničko 14 %, umjetničko 12 % i zdravstveno 13,5 %. Većina sudionika procijenila je svoje socioekonomsko stanje osrednjim (77 %), 3,3 % sudionika vrlo niskim i niskim, dok je 8,4 % sudionika procijenilo visokim i vrlo visokim. Većina sudionika (50,3 %) se doselila u Zagreb na studij. S obitelji živi 47,7 % studenata, 31,6 % živi s cimerom/icom, dok ih 13,8 % živi samo. a 6,9 % živi s partnerom/icom. Većina sudionika bila je isključivo i pretežno heteroseksualne orijentacije (62,9 %), dok je ostalih s neheteroseksualnom orijen-

sociodemographic characteristics, and to investigate the association between loneliness and mental health, general health, and academic achievement. Furthermore, this study aimed to examine the relative contribution of loneliness to mental health in comparison to the role of loneliness as a mediator in the relationship between academic achievement and mental health. It was hypothesized that among lonelier students, poorer academic achievement would have a stronger negative effect on mental health.

METHODS

Participants

For the purposes of this study, data were collected from a convenience sample of 879 students at the University of Zagreb. The age range of the participants was between 18 and 35 years, with a mean age of 21.9 ($SD = 2.57$). The majority of the participants were female students (76.9%), while male students accounted for 20.7% of the sample. An additional 2.4% of the students identified as non-binary. The largest number of participants were first-year and third-year undergraduate students (22.9% and 22.2%, respectively), while final-year students and sixth-year medical students were least represented (9%). The sample included students from all study fields: biotechnical sciences (10%), social sciences (25%), humanities (18%), interdisciplinary studies (3.5%), natural sciences (4.7%), technical sciences (14%), arts (12%), and health sciences (13.5%). Most participants rated their socioeconomic status as average (77%), while 3.3% rated it as very low or low, and 8.4% rated it as high or very high. Most of the participants (50.3%) had relocated to Zagreb for their studies. In terms of living arrangements, 47.7% lived with their families, 31.6% lived with roommates, 13.8% lived alone, and 6.9% lived with a partner. The majority identified as exclusively or predominantly heterosexual (62.9%), while

tacijom bilo 37,1 %. U vrijeme ispunjavanja ankete većina sudionika (55,2 %) nije bila u vezi, dok ih je nešto manje od polovine 44,8 % bilo u vezi.

Mjerni instrumenti

Prikupljeni su sociodemografski podatci koji obuhvaćaju pitanja o rodu (muškarac, žena, *queer*/rodno fluidni, nebinarni, transrodni, ne želim se izjasniti i preferiram opisati, a za obradu su kategorije odgovora grupirane u muškarac, žena te svi drugi osim onih koji se ne žele izjasniti da su drugog rodnog identiteta), dobi, seksualnoj orijentaciji (6 stupnjeva od isključivo heteroseksualna do isključivo homoseksualna i dodatni odgovor aseksualna, a u daljnjim analizama prva dva odgovora su tretirana kao heteroseksualna orijentacija, a svi ostali kao neheteroseksualne orijentacije), područja studiranja (biotehničko, društveno, humanističko, interdisciplinarno, prirodno, tehničko, umjetničko, zdravstveno), fakultet i godini studiranja, je li se osoba doselila u Zagreb na studij (da ili ne), s kim živi (sam/a, s obitelji, s cimerom/ima, s partnerom/icom), status o vezi (1 – nisam u vezi, 2 – u vezi, ali živimo odvojeno; 3 – u vezi, braku, izvanbračnoj zajednici, životnom partnerstvu i živimo zajedno) i socioekonomskom statusu procijenjenom u odnosu na druge (od 1 vrlo nisko do 7 vrlo visoko).

Percipirana usamljenost mjerena je Ljestvicom usamljenosti (engl. *UCLA 3 Item Loneliness Scale*) (46). Zadatak sudionika je da na tri čestice odgovori koliko često se osjećaju usamljeno, koliko im nedostaje društvo i koliko često se osjećaju isključeno. Ukupni rezultat formira se kao zbroj odgovora na svaku česticu i kreće se od 3 do 9. Veći rezultat znači veći doživljaj usamljenosti, a granični rezultati od 6 na više označava visoku razinu usamljenosti. Ovo je često korištena ljestvica u epidemiološkim istraživanjima i istraživanjima psihičkog zdravlja te ima zadovoljavajuće metrijske karakteristike uz

37.1% identified as non-heterosexual. At the time of data collection, the majority (55.2%) of the participants were not involved in a romantic relationship, whereas somewhat less than a half (44.8%) reported being in a relationship.

Measurement Instruments

The sociodemographic data collected included items on gender (male, female, *queer*/gender-fluid, non-binary, transgender, prefer not to say, and prefer to self-describe; while for analytical purposes, responses were grouped into male, female, and other gender identities, excluding those who chose not to disclose), age, sexual orientation (rated on a six-point scale from exclusively heterosexual to exclusively homosexual, with an additional asexual option; and for subsequent analyses, the first two categories were classified as heterosexual orientation and all others as non-heterosexual orientation), field of study (biotechnical, social sciences, humanities, interdisciplinary, natural sciences, technical sciences, arts, health sciences), faculty and year of study, relocation to Zagreb for study purposes (yes/no), living arrangements (alone, with family, with roommates, with a partner), relationship status (1 – not in a relationship; 2 – in a relationship, but living separately; 3 – in a relationship/marriage/cohabitation/life partnership and living together), and perceived socioeconomic status relative to others (rated from 1 as very low to 7 as very high).

Perceived loneliness was measured using the UCLA 3-Item Loneliness Scale (46). The participants were asked to provide answers on three items, indicating how often they felt lonely, how much they lacked companionship, and how often they felt excluded. The total score was calculated as the sum of responses to each item, yielding a range from 3 to 9. Higher scores indicated greater perceived loneliness, with borderline scores of 6 or higher indicating a high level of loneliness. This scale is widely

unutarnju pouzdanost. Cronbachov α u ovom istraživanju iznosi ,80.

Kao mjera akademske uspješnosti korištena je Ljestvica subjektivne akademske uspješnosti (engl. *SAAS Subjective Academic Achievement Scale*). SAAS je kratka ljestvica od pet čestica osmišljena za procjenu studentske percepcije vlastite akademske uspješnosti (47). Ljestvica se koristi u obrazovnim istraživanjima kako bi se dobio cjelovitiji uvid u akademsku uspješnost, osobito u kontekstu subjektivnih kriterija uspjeha. Studenti na ljestvici od 1 uopće se ne slažem do 5 u potpunosti se slažem procjenjuju: (1) *Zadovoljan/a sam svojim ocjenama na studiju.*; (2) *Uspješan/a sam u učenju za svoj studij.*; (3) *Moje ocjene odgovaraju trudu koji ulažem.*; (4) *Napredujem dovoljno brzo u svom studiju.* i (5) *Moji kolege/ice na studiju uče uspješnije od mene.* Ukupan rezultat računa se kao zbroj bodova (raspon približno 5–25), gdje viša vrijednost označava veći doživljaj akademske uspješnosti. Ova ljestvica pokazuje zadovoljavajuću pouzdanost (Cronbachov alfa koeficijenti $\alpha = ,84$).

Kao mjera koja obuhvaća ključne aspekte psihičkog zdravlja i dobrobiti, a mjeri opću razinu psihičke uznemirenosti korišten je ukupni rezultat na CORE-10. CORE-10 je skraćena verzija CORE-OM (*Clinical Outcomes in Routine Evaluation – Outcome Measure*) i ove su dvije verzije u visokoj korelaciji koja iznosi ,94 u kliničkom uzorku te ,92 u nekliničkom uzorku (48). U istraživanju je korištena hrvatska verzija CORE-10 koja se sastoji od 10 tvrdnji od čega su dvije pozitivno formulirane (npr. *Znao/la sam da se mogu osloniti na nekoga ako mi zatreba* i *Mogao/la sam se nositi s poteškoćama*), a osam ih je negativnog karaktera (npr. *Osjećao/la sam se napeto, tjeskobno ili nervozno*). Sudionici su zamoljeni da procijene i odgovore na 10 tvrdnji o tome kako su se osjećali u proteklih tjedan dana. Odgovori su ponuđeni na ljestvici od 5 stupnjeva, pri čemu 0 označava nikada, 1 vrlo rijetko, 2 ponekad, 3 često, dok 4 označava gotovo uvijek. U ovom istraživanju se uku-

used in epidemiological and mental health research, and demonstrates satisfactory metric characteristics, with internal reliability. In this study, Cronbach's alpha amounted to .80.

Academic achievement was assessed using the Subjective Academic Achievement Scale (SAAS) (47). The SAAS is a brief five-item scale designed to assess students' perceptions of their own academic achievement (47). It is commonly used in educational studies in order to obtain a more comprehensive overview of academic achievement, particularly in terms of subjective success criteria. The students rated their agreement on a five-point scale, ranging from 1 – strongly disagree to 5 – completely agree, addressing the following statements: (1) *I am satisfied with my grades*; (2) *I am successful in studying for my study program*; (3) *My grades reflect the effort I put into my studies*; (4) *I am progressing fast enough in my studies*; and (5) *My peers perform better academically than I do*. The total score was calculated as the sum of item scores (approximate range 5–25), with higher scores indicating higher perceived academic achievement. This scale showed good internal reliability (Cronbach's alpha coefficient amounted to .84).

The CORE-10 total score was used as a measure that encompasses the key aspects of mental health and well-being, measuring the total level of psychological distress. The CORE-10 is a shortened version of the CORE-OM (Clinical Outcomes in Routine Evaluation – Outcome Measure), with the two versions showing a high correlation in clinical ($r = .94$) and non-clinical samples ($r = .92$) (48). The Croatian version of the CORE-10, consisting of 10 items, was used in this study, wherein two items were positively worded (e.g. *I knew I could rely on someone if I needed to* and *I was able to cope with difficulties*), and eight were negatively worded (e.g. *I felt tense, anxious, or nervous*). The participants were asked to rate and respond to 10 items addressing how they had felt over the past week. The responses were provided on a five-point scale, rating as fol-

pni CORE-10 rezultat računao kao zbroj svih odgovora pri čemu je mogući raspon bodova od 0 do 40. Veći rezultat na CORE-u ukazuje na višu psihološku uznemirenost, a u daljnjoj analizi koristit ćemo ju kao narušeno psihičkog zdravlje. CORE-10 pokazuje dobru pouzdanost, s Cronbachovim alfa koeficijentom na ovom uzorku od ,87.

Kao dodatna mjera psihičkog zdravlja korištena je Skraćena ljestvica depresivnosti, anksioznosti i stresa (engl. *DASS-21 Depression, Anxiety and Stress Scale – Short Form*). Riječ je o ljestvici samoprocjene namijenjenoj mjerenju prisutnosti neugodnih emocionalnih stanja u proteklih tjedan dana (49). Ljestvica je nastala skraćivanjem originalnog upitnika DASS-42 na 21 česticu. Sastoji se od tri podljestvice (depresivnost, anksioznost i stres), a svaka od njih ima po sedam čestica. Za svaku česticu sudionici procjenjuju svoje slaganje na ljestvici od 0 (uopće se nije odnosilo na mene) do 3 (gotovo u potpunosti ili većinu vremena se odnosilo na mene). Primjer čestice za podljestvicu depresivnosti jest „*Osjetio/la sam kao da se nemam čemu radovati*“, za podljestvicu anksioznosti „*Bio/la sam uplašen/a bez opravdanog razloga*“ te za podljestvicu stresa „*Bilo mi je teško opustiti se*“. Nakon udvostručavanja rezultata na svim česticama (radi lakše usporedbe s DASS-42) rezultat se za svaku podljestvicu dobiva zbrajanjem odgovora na 7 čestica te se proteže u rasponu od 0 do 42 pri čemu veći rezultat znači veću izraženost konstrukta, a u daljnjoj analizi rezultata bit će korištena s terminom narušenog psihičkog zdravlja. Također su definirane granične vrijednosti izraženosti simptoma na pojedinoj podljestvici (od normalne do ekstremno ozbiljne izraženosti). Cronbachovi α koeficijenti pouzdanosti iznose ,89 za depresivnost; ,85 za anksioznost; ,90 za stres.

Procjena zdravstvenog stanja ispitana je Ljestvicom subjektivnog zdravstvenog stanja (engl. *SRH, Self-rated Health Scale*) ocijenjena je jednim pitanjem *Svoje zdravstveno stanje pro-*

lows: 0 – never, 1 – very rarely, 2 – sometimes, 3 – often, 4 – almost always. The total CORE-10 score in this study was calculated as the sum of all responses, yielding a possible score range from 0 to 40. Higher CORE scores indicated greater psychological distress, and in subsequent analyses, this variable was treated as an indicator of impaired mental health. The CORE-10 showed good reliability, and Cronbach's alpha coefficient in this sample amounted to .87.

As an additional measure of mental health, we used the Depression, Anxiety and Stress Scale – Short Form (DASS-21). This a self-report instrument designed to assess negative emotional states experienced during the past week (49). The DASS-21 was formed by shortening the original DASS-42 questionnaire to a total of 21 items. It consists of three subscales (depression, anxiety, and stress), each comprising seven items. Participants rated the extent to which they agreed with each item, from 0 (did not apply to me at all) to 3 (applied to me almost completely or most of the time). Example items included the following: *I felt like I had nothing to look forward to* for the depression subscale, *I felt scared without any good reason* for the anxiety subscale, and *I found it difficult to relax* for the stress subscale. After doubling all of the item scores (to facilitate comparability with the DASS-42), the scores for each item were obtained by summing the responses to the 7 items, ranging from 0 to 42, with higher scores indicating greater symptom severity, and in subsequent analyses these scores were treated as indicators of impaired mental health. Furthermore, the threshold values for symptom severity were calculated on each subscale (from normal to extremely severe). Cronbach's alpha reliability coefficients amounted to .89 for depression, .85 for anxiety, and .90 for stress.

Self-rated health was assessed using the Self-Rated Health Scale (SRH), measured by a single item, *"I would rate my health as"*, ranging from 1 (*very poor*) to 5 (*very good*) (50). This simple and widely used measure is used in epidemiological

cijenio/la bih od 1 (izrazito loše) do 5 (izrazito dobro)' (50). Ova jednostavna i uobičajena mjera koristi se u epidemiološkoj i psihološkoj praksi te se pokazala snažnim prediktorom mortaliteta, morbiditeta i korištenja zdravstvenih usluga. U analizi je varijabla tretirana kao ordinalna (1-5) pri čemu viši rezultat signalizira bolji subjektivni osjećaj vlastitog zdravlja.

Uz ovu mjeru sudionici su o svom zdravlju izvijestili i dvama pitanja o prisutnosti ili odsutnosti psihičkih bolesti ili problema te fizičkih bolesti (1) *Patite li od neke psihičke bolesti ili emocionalnih problema (npr. anksioznost, depresija, ADHD)?* te (2) *Patite li od neke fizičke bolesti (npr. visok krvni tlak, dijabetes, rak...)*. Na oba pitanja sudionici su mogli dati odgovor da (0) ili ne (1).

Postupak

Podatci potrebni za ovo korelacijsko istraživanje prikupljeni su putem online platforme *SurveyMonkey* tijekom veljače, ožujka i travnja 2025. godine, u razdoblju koje je obuhvaćalo završetak ispitnih rokova i početak ljetnog semestra. Za prikupljanje sudionika korištena je metoda snježne grude pri čemu je poveznica na upitnik dijeljena u grupnim razgovorima studenata različitih područja i godina studija. Dodatno, upitnik je prosljeđen e-mail adresama prodekana svih fakulteta Sveučilišta u Zagrebu koji su ga distribuirali svojim studentima. U svrhu širenja dosega poziv na sudjelovanje objavljen je i putem studentskih udruga te na društvenim mrežama (*Facebook* i *Instagram*). Ukupno je ispitivanju upitnika pristupilo 1250 sudionika od čega je 879 (70 %) studenata dovršilo ispunjavanje upitnika.

U informiranom pristanku bilo je jasno naznačeno da se traže studenti Sveučilišta u Zagrebu, da je sudjelovanje anonimno i dobrovoljno, te da će se rezultati obrađivati isključivo na grupnoj razini. Sudionicima je objašnjeno da mogu u bilo kojem trenutku prekinuti

and psychological practice, and has proved to be a strong predictor of mortality, morbidity, and healthcare utilization. In the analysis, this variable was treated as ordinal (1–5), with higher scores indicating better perceived health.

In addition to this measure, the participants reported on their health status by responding to two items assessing the presence or absence of mental health conditions and physical illnesses: (1) *Do you suffer from any mental illness or emotional problems (e.g. anxiety, depression, ADHD)?* and (2) *Do you suffer from any physical illness (e.g. high blood pressure, diabetes, cancer...)?*. Both items could be answered by selecting yes (0) or no (1).

Procedure

Data for this correlational study were collected via the online platform *SurveyMonkey* during February, March and April of 2025, in a period encompassing the end of examination sessions and the beginning of the summer semester. Participants were recruited using the snowball sampling method, whereby the survey link was shared within group chats of students from different fields and years of study. In addition, the questionnaire was distributed via email to the vice-deans of all faculties at the University of Zagreb, who subsequently forwarded it to their students. In order to further increase the reach, invitations to participate were also published through student associations and on social media platforms (*Facebook* and *Instagram*). A total of 1250 individuals accessed the questionnaire, of whom 879 students (70%) completed it in full.

The informed consent form clearly stated that participation was limited to students of the University of Zagreb, that participation was anonymous and voluntary, and that data would be analyzed exclusively at group level. The participants were informed that they could withdraw from participation at any point without any consequences. The study was approved by

ispunjavanje bez posljedica. Istraživanje je odobrilo Etičko povjerenstvo Filozofskog fakulteta Sveučilišta u Zagrebu (broj odobrenja: EPOP_2024_25_15_HR), što je bilo navedeno u pozivnici i u obrascu pristanka.

Sve primijenjene ljestvice sadržavale su jasne upute za ispunjavanje, a procijenjeno vrijeme ispunjavanja bilo je između 15 i 20 minuta. Svi sudionici su ispunjavali upitnik istim redoslijedom pri čemu je svaka ljestvica bila prikazana na zasebnoj stranici kako bi se smanjio efekt zamora i povećala usredotočenost. Na dnu svake stranice, kao i na završetku upitnika, nalazio se kontakt Savjetovaništa za studente u slučaju da je sudionik tijekom ispunjavanja osjetio nelagodnu ili potrebu za psihološkom podrškom.

REZULTATI

Rezultati istraživanja obrađivani su u statističkom programu Jamovi, verzija 2.6.26.

Postotak studenata koji su se izjasnili o tome da pate od neke psihičke bolesti ili emocionalnih problema je 31,5 % dok ih je 36 % izvijestilo o tome da pate od neke tjelesne bolesti. Testiranje normaliteta distribucija Shapiro–Wilkovim testom pokazalo je da sve distribucije varijabli značajno odstupaju od

the Ethics Committee of the Faculty of Humanities and Social Sciences, University of Zagreb (approval number: EPOP_2024_25_15_HR), which was explicitly stated in both the invitation to participate and the consent form.

All of the applied scales provided clear instructions, and the estimated completion time ranged from 15 to 20 minutes. All the participants completed the questionnaire in the same order, with each scale presented on a separate page so as to reduce fatigue effects and enhance focus. At the bottom of each page, as well as at the end of the questionnaire, contact information for the Student Counseling Centre was provided in case any of the participants experienced distress or felt the need for psychological support while completing the questionnaire.

RESULTS

The study results were analyzed using the statistical software program Jamovi, version 2.6.26.

The percentage of students who reported suffering from a mental illness or emotional problems was 31.5%, while 36% reported having a physical illness. Testing the normality of distributions using the Shapiro–Wilk test indicated that all variable distributions significantly

TABLICA 1. Deskriptivna analiza i rezultati testiranja normalnosti distribucija kontinuiranih varijabli (N = 879)
TABLE 1. Descriptive analysis and results of testing the normality of distributions of continuous variables (N = 879)

				Asimetričnost / Skewness		Spljoštenost / Kurtosis		
	M	SD	Min-Max	A	SE	S	SE	W
UCLA	6,22	1,44	3-9	,11	,08	,09	,17	,91**
DASS21D	13,84	10,66	0-42	,82	,08	-,25	,17	,92**
DASS21A	11,65	9,62	0-42	,88	,08	,17	,17	,92**
DASS21S	18,19	10,76	0-42	,35	,08	-,77	,17	,97**
CORE-10	13,63	7,67	0-40	,44	,08	-,31	,17	,98**
SAAS	16,84	5,07	5-25	-,37	,08	-,68	,17	,97**
SRH	3,61	,84	1-5	-,38	,08	-,23	,17	,87**

Legenda: A – indeks asimetričnosti distribucije, S – indeks spljoštenosti distribucije, SE – standardna pogreška, W – Shapiro-Wilkov test normalnosti distribucija; UCLA – usamljenost, DASS21D – depresivnost, DASS21A – anksioznost, DASS21S – stres, CORE-10 – narušeno psihičko zdravlje, SAAS – akademska uspješnost, SRH – samoprocjena zdravlja ** $p < ,01$

/ Legend: A – distribution skewness index, S – distribution kurtosis index, SE – standard error, W – Shapiro–Wilk test of distribution normality; UCLA – loneliness, DASS-21D – depression, DASS-21A – anxiety, DASS-21S – stress, CORE-10 – impaired mental health, SAAS – academic achievement, SRH – self-rated health; ** - $p < .01$

normalne. S obzirom da je Shapiro–Wilkov test izrazito osjetljiv na veliku veličinu uzorka ($n > 50$), preporučeno je oslanjanje na indekse asimetričnosti i spljoštenosti radi provjere oblika distribucija (51). Indeksi asimetričnosti i spljoštenosti bili su unutar granica ± 1 za sve varijable, što označava umjerene devijacije koje se smatraju prihvatljivima (52,53). Ljestvica usamljenosti, procjene akademske uspješnosti te zdravstvenog stanja su negativno asimetrične, što ukazuje na više prosječne razine usamljenosti, procijenjene bolje akademske uspješnosti te bolje zdravstveno stanje. Očekivano, ljestvice narušenog psihičkog zdravlja (DASS-21 i CORE-10) distribuiraju se pozitivno asimetrično s prosječnim nižim vrijednostima sugerirajući da najveći broj sudionika ima nešto malo do umjereno izražene psihičke smetnje, a manji broj izražene psihičke tegobe. Rezultati na ljestvici usamljenosti pokazuju da prema sugeriranom graničnom rezultatu koji ukazuje na izraženu razinu usamljenosti svega 23,1 % sudionika osjeća manju do umjerenu razinu usamljenosti, dok 76,9 % studenata iskazuje značajno izraženu razinu usamljenosti.

Kako bi se odgovorilo na prvi istraživački problem i procijenila razina usamljenosti s obzirom na sociodemografske karakteristike provedene su statističke analize razlika te prikazane njihove značajnosti između pojedinih skupina sudionika.

Rezultati pokazuju da se razine usamljenosti studenata ovisno o tome s kim žive razlikuju no uz mali efekt ($\eta^2 = 0,012$). *Post hoc* analize upućuju na to da studenti koji žive s partnerom/icom iskazuju najniže razine usamljenosti ($M = 5,74$; $SD = 1,37$), značajno niže u odnosu na studente koji žive sami ($M = 6,43$; $SD = 1,41$) ili s cimerima ($M = 6,28$; $SD = 1,38$), dok između ostalih skupina nisu utvrđene statistički značajne razlike. Status veze također se pokazao statistički značajnim čimbenikom usamljenosti pri čemu studenti koji nisu

deviated from normality. Given that the Shapiro–Wilk test is highly sensitive to large sample sizes ($n > 50$), reliance on indices of skewness and kurtosis is recommended for the purpose of assessing the distribution shape (51). The skewness and kurtosis indices were within the ± 1 range for all variables, indicating moderate deviations that are considered acceptable (52, 53). The scales of loneliness, subjective academic achievement, and self-rated health were negatively skewed, indicating above-average levels of loneliness, higher perceived academic achievement, and better perceived health. As expected, measures of impaired mental health (DASS-21 and CORE-10) showed positive skewness with lower mean values, suggesting that the majority of the participants experienced mild to moderate psychological symptoms, while a smaller proportion reported pronounced psychological difficulties. The results on the loneliness scale indicate that, according to the suggested cut-off score for elevated loneliness, only 23.1% of the participants reported low to moderate loneliness levels, whereas 76.9% of the students reported a markedly high level of loneliness.

In order to address the first research question and assess levels of loneliness in relation to sociodemographic characteristics, statistical analyses of differences were conducted, and the significance of these differences between individual participant groups is presented.

The results show that students' loneliness levels differ depending on whom they live with, although the effect is small ($\eta^2 = 0.012$). *Post hoc* analyses indicate that students living with a partner reported the lowest levels of loneliness ($M = 5.74$; $SD = 1.37$), significantly lower than those of students living alone ($M = 6.43$; $SD = 1.41$) or with roommates ($M = 6.28$; $SD = 1.38$), while no statistically significant differences were found between the other groups. The relationship status also proved to be a statistically significant factor for loneliness, with

TABLICA 2. Prikaz izraženosti usamljenosti obzirom na sociodemografske karakteristike (N=879)
TABLE 2. Overview of the severity of loneliness in relation to sociodemographic characteristics (N = 879)

		UCLA-3					
		n	%	M	SD	F ili t (df)	
Rod / Gender	muškarac / man	181	20,7	6,09	1,49	F (2,876)=1,244 p>,05; $\eta^2 = ,003$	
	žena / woman	657	76,9	6,24	1,43		
	neki drugi rodni identitet / other gender identity	20	2,4	6,55	1,50		
Seksualna orijentacija / Sexual orientation	heteroseksualna / heterosexual	689	62,9	6,13	1,41	t(875)=-3,628 p<,001; d = ,25	
	neheteroseksualna / non-heterosexual	187	37,1	6,55	1,51		
S kime žive / Living	sam/a / alone	121	13,8	6,43	1,41	F(3,875)=3,544 p<,05; $\eta^2 = ,012$	
	s obitelji / with family	419	47,7	6,17	1,48		
	s cimerom/icom / with roommate	278	31,6	6,28	1,38		
	s partnerom/icom / with partner	61	6,9	5,74	1,37		
Status veze / Relationship status	u vezi / in a relationship	394	44,8	6,02	1,46	t(874)=3,596 p<,001; d = ,24	
	nije u vezi / not in a relationship	485	55,2	6,37	1,41		
Preseljenje u Zg na studij / Moving to Zagreb to study	da / yes	442	22,9	6,30	1,39	t(877)=1,874 p<,01; d = ,13	
	ne / no	437	17,2	6,12	1,48		
Područje studija / Field of study	biotehničko / biotechnical	89	22,2	6,66	1,39	F(7,871)= 1.852 p>,05; $\eta^2 = ,015$	
	društveno / social	217	16,4	6,05	1,48		
	humanističko / humanities	158	12,4	6,26	1,43		
	interdisciplinarno / interdisciplinary	31	9,0	6,16	1,34		
	prirodno / natural sciences	41	0,3	6,37	1,71		
	tehničko / technical/engineering	120	3,0	6,10	1,46		
	umjetničko / art	104	11,7	6,21	1,31		
	zdravstveno / health sciences	119	39,7	6,18	1,39		
Prisutnost psihičke bolesti / Presence of mental illness	da / yes	277	36,9	6,65	1,50	t (877)= 6,23 p<,001; d = ,42	
	ne / no	602	7,7	6,01	1,37		
Prisutnost fizičke bolesti / Presence of physical illness	da / yes	316	0,7	6,37	1,47	t(877)=2,53 p<,01; d = ,17	
	ne / no	536	50,3	6,12	1,42		

Legenda: aritmetičke sredine (M) i standardne devijacije (SD) rezultata na ljestvici usamljenosti UCLA-3; t – t-test; F- F vrednosti; df – stupnjevi slobode; p – razina statističke značajnosti, η^2 - eta veličina efekta iskazana eta na kvadrat, d - veličina efekta iskazana Chohenovim d / Legend: arithmetic means (M) and standard deviations (SD) of the results on the UCLA-3 Loneliness Scale; t – t-test; F – F values; df – degrees of freedom; p – statistical significance level; η^2 – eta effect size expressed as eta squared; d – effect size expressed as Cohen's d.

u vezi iskazuju nešto više razine (mali efekt $d=,24$) usamljenosti u odnosu na one koji su u vezi, uz mali efekt ($d = ,24$). Slično tome, neheteroseksualni studenti iskazuju nešto više razine usamljenosti ($d = ,25$) od heteroseksualnih studenata. Iako je razlika vezana uz preseljenje u Zagreb radi studija statistički značajna, dobiven je vrlo mali efekt ($d = ,13$), što upućuje na ograničenu praktičnu važnost tog nalaza. Razlike u razinama usamljenosti s

students who are not in a relationship reporting slightly higher levels (small effect, $d = 0.24$) of loneliness compared to those who are in a relationship (small effect, $d = 0.24$). Similarly, non-heterosexual students reported slightly higher levels of loneliness ($d = 0.25$) compared to heterosexual students. Although the difference related to moving to Zagreb for studies is statistically significant, the obtained effect was very small ($d = 0.13$), indicating limited prac-

obzirom na rod i područje studija nisu bile statistički značajne. Najizraženiji nalaz odnosi se na prisutnost psihičkih bolesti ili problema pri čemu studenti koji ih navode iskazuju znatno više razine usamljenosti, uz srednju veličinu efekta ($d = 0,42$). Studenti s tjelesnim bolestima također iskazuju više razine usamljenosti, no uz mali efekt ($d = 0,17$). Ovi rezultati upućuju na važnu povezanost usamljenosti s mentalnim, a u manjoj mjeri i tjelesnim zdravljem studenata.

Tablica 3 prikazuje korelacijsku matricu ispitivanih varijabli. Usamljenost se pokazala značajno povezanom s mjerom akademske uspješnosti te pokazateljima psihičkog zdravlja te općeg zdravlja. Rezultati pokazuju da su studenti koji doživljavaju veću razinu usamljenosti lošijeg psihičkog zdravlja na svim mjerama psihičkog zdravlja, lošijeg generalnog zdravlja te da ostvaruju slabiju akademsku uspješnost. Najveće korelacije (srednje velike povezanosti) nalaze se između usamljenosti i mjera psihičkog zdravlja (posebno depresivnosti i općeg psihičkog zdravlja).

U svrhu ispitivanja relativnog doprinosa usamljenosti na narušeno psihičko zdravlje (CORE-10) provedena je hijerarhijska regresijska analiza u dva koraka. U prvom koraku u

tical significance of the result. Differences in loneliness levels in terms of gender and field of study were not statistically significant. The most pronounced finding referred to the presence of mental illness or problems, wherein students reporting such issues exhibited substantially higher levels of loneliness, with a medium effect size ($d = 0.42$). Students with physical illnesses also reported higher levels of loneliness, but with a small effect ($d = 0.17$). These results point to an important association between loneliness and students' mental health, and to a lesser extent, their physical health.

Table 3 presents the correlation matrix of the examined variables. A significant association was found between loneliness and academic achievement, as well as indicators of mental and general health. The results indicate that students who experience higher levels of loneliness have poorer mental health across all mental health measures, poorer general health, and lower academic achievement. The strongest correlations (moderate associations) were observed between loneliness and measures of mental health (particularly depression and general mental health).

In order to examine the relative contribution of loneliness to impaired mental health (CORE-10), a two-step hierarchical regression analysis

TABLICA 3. Korelacijska matrica mjerenih varijabli (N=879)
TABLE 3. The correlation matrix of measured variables (N = 879)

	1	2	3	4	5	6	7	8	9
1. SES	-								
2. god. studija / year of study	-,03	-							
3. UCLA	-,15*	-,08*	-						
4. SAAS	-,24**	,17**	-,26**	-					
5. DASS21-D	-,16**	-,05	,48**	-,43**	-				
6. DASS21-A	-,14**	-,14**	,35**	-,40**	,63**	-			
7. DASS21-S	,13**	-,06	,39**	-,38**	,73**	,77**	-		
8. CORE-10	-,20**	-,07*	,51**	-,44**	,84**	,72**	,78**	-	
9. SRH	,23**	,02	-,22**	-,33**	-,41**	-,41**	-,40**	-,45**	-

Legenda: SES – socioekonomski status; UCLA – usamljenost; SAAS – akademska uspješnost; DASS21D – depresivnost; DASS21A – anksioznost; DASS21S – stres; CORE-10 – narušeno psihičko zdravlje; SRH – samoprocjena zdravlja * $p < 0,05$; ** $p < 0,01$
/ Legend: SES – socioeconomic status; UCLA – loneliness; SAAS – academic achievement; DASS21D – depression; DASS21A – anxiety; DASS21S – stress; CORE-10 – impaired mental health; SRH – self-rated health; * $p < 0.05$; ** $p < 0.01$

model su uključene sociodemografske varijable: rod (muški i ženski), godina studija te percipirani socioekonomski status. Ovaj inicijalni model bio je statistički značajan, $F(3,875) = 14,93, p < ,001$, te je objasnio 4,9 % varijance kriterijske varijable. Od uključenih prediktora značajan doprinos imala je varijabla percipiranog socioekonomskog statusa ($\beta = -,198, p < ,001$) pri čemu niži percipirani status predviđa više teškoća sa psihičkim zdravljem. Rod se pokazao statistički značajno prediktivnim ($\beta = ,086, p < ,01$) pri čemu su žene imale narušenije psihičko zdravlje, dok se godine studija nisu pokazale prediktivnima za psihičko zdravlje ($\beta = -,037, p > ,05$). U drugom koraku u model su dodatno uključene varijable akademske uspješnosti u obliku samoprocjene akademske uspješnosti te usamljenost. Ovim korakom statistički značajno se povećao postotak objašnjene varijance psihičkog zdravlja $\Delta R^2 = ,326, \Delta F(2,873) = 227,49, p < ,001$ pri čemu je ukupno objašnjeno 37,5 % varijance ($R^2 = ,375$). Obje varijable imaju svoj značajan relativan doprinos u objašnjenju psihičkog zdravlja. Studenti koji su lošije akademske uspješnosti imaju lošije psihičko zdravlje ($\beta = -,318, p < ,001$) dok viša razina usamljenosti

was conducted. In the first step, the following sociodemographic variables were included in the model: gender (male and female), year of study, and perceived socioeconomic status. This initial model was statistically significant, $F(3.875) = 14.93, p < .001$, and explained 4.9% of the criterion variable variance. Among the included predictors, perceived socioeconomic status had a significant contribution ($\beta = -0.198, p < .001$), with lower perceived status predicting greater difficulties in terms of mental health. Gender was also a statistically significant predictor ($\beta = 0.086, p < .01$), with women reporting poorer mental health, whereas the year of study was not a significant predictor of mental health ($\beta = -0.037, p > .05$). In the second step, variables representing academic achievement (in the form of self-rated academic achievement) and loneliness were additionally included. This step resulted in a statistically significant increase in the explained variance of mental health, $\Delta R^2 = 0.326, \Delta F(2.873) = 227.49, p < .001$, with a total of 37.5% of the variance explained ($R^2 = 0.375$). Both variables made significant relative contributions to explaining mental health. The students with lower academic achievement had poorer mental health ($\beta = -0.318, p < .001$),

TABLICA 4. Rezultati hijerarhijske regresijske analize za kriterijsku varijablu narušeno psihičko zdravlje (CORE-10).
TABLE 4. Results of the hierarchical regression analysis for the criterion variable of impaired mental health (CORE-10).

	β	β
	1.	2.
Korak / Step		
Rod / Gender	,086**	,044
God. studija / Year of study	-,037	,013
SES	-,198**	-,059*
Korak / Step		
Akademska uspješnost / Academic achievement		-,318**
Usamljenost / Loneliness		,423**
R	,22	,61
R²	,045	,37
F(df;p)	14,93 (3,875; ,00)	104,59 (5,873; ,00)

Legenda: rod (1-M, 2-Ž); SES – socioekonomski status; R – koeficijent multiple korelacije; R² – udio objašnjene varijance kriterijske varijable; F(df; p) – test značajnosti regresijskog modela, β – standardizirani regresijski koeficijent, * $p < ,05$; ** $p < ,01$.
 / Legend: gender (1-M, 2-F); SES – socioeconomic status; R – multiple correlation coefficient; R² – proportion of explained criterion variable variance; F(df; p) – significance test of the regression model; β – standardized regression coefficient; * $p < .05$; ** $p < .01$.

predviđa lošije psihičkog zdravlje ($\beta = ,423, p < ,001$).

Kako bismo dodatno istražili ulogu usamljenosti u kontekstu psihičkog zdravlja i akademske uspješnosti, pretpostavili smo da bi usamljenost mogla imati posredničku ulogu između akademske uspješnosti i psihičkog zdravlja. Izračunali smo medijacijski efekt usamljenosti te nam rezultati prikazani na slici 1. pokazuju djelomičnu medijaciju. Dobiven je indirektni efekt ($a \times b$) koji iznosi $-,103$ ($p < ,001$) što sugerira da se studenti lošije akademske uspješnosti osamljuju (put „a“), a da veća usamljenosti doprinosi pogoršanju psihičkog zdravlja (put „b“). Ovaj put pokazuje da određeni dio ukupnog odnosa između akademske uspješnosti i psihičkog zdravlja može biti objašnjena putem veće usamljenosti. Ukupni efekt ($c + a \times b$) iznosi $-,447$ ($p < ,001$) što ukazuje da sveukupno, lošija akademska uspješnost značajno predviđa lošiji rezultat na mjeri psihičkog zdravlja. Omjer medijacije iznosi 23,1 % što znači da je približno četvrtina odnosa između akademske uspješnosti i psihičkog zdravlja objašnjena upravo posredno putem usamljenosti.

RASPRAVA

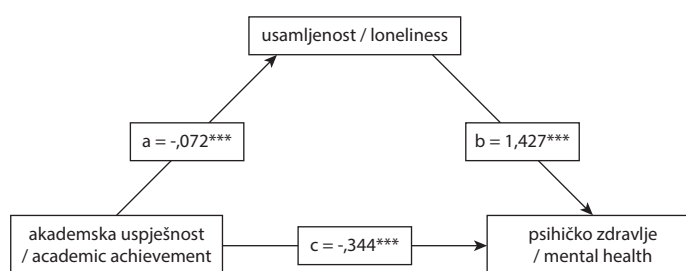
Nalazi ovog istraživanja upućuju na visoku razinu percipirane usamljenosti među studentima Sveučilišta u Zagrebu te na srednje jaku povezanost usamljenosti s mjerama psihičkog i općeg zdravlja te subjektivnom procjenom aka-

while higher levels of loneliness predicted poorer mental health ($\beta = 0.423, p < .001$).

In order to further investigate the role of loneliness in the context of mental health and academic achievement, we hypothesized that loneliness might mediate the relationship between academic achievement and mental health. We calculated the mediation effect of loneliness, and the results, presented in Figure 1, indicate partial mediation. An indirect effect ($a \times b$) was achieved, amounting to -0.103 ($p < .001$), suggesting that students with lower academic achievement experience higher loneliness (path “a”), with higher loneliness contributing to poorer mental health (path “b”). This pathway indicates that a portion of the total relationship between academic achievement and mental health can be explained through increased loneliness. The total effect ($c + a \times b$) amounted to -0.447 ($p < .001$), indicating that overall, lower academic achievement significantly predicts poorer scores on the mental health measure. The mediation ratio was 23.1%, meaning that approximately one-quarter of the relationship between academic achievement and mental health is explained indirectly through loneliness.

DISCUSSION

The findings of this study indicate a high level of perceived loneliness among the students of the University of Zagreb, and a moderate-to-strong association between loneliness and measures of mental and general health, as well as self-re-



SLIKA 1. Medijacija 1: akademska uspješnost - usamljenost - psihičko zdravlje
FIGURE 1. Mediation 1: Academic achievement – Loneliness – Mental health

demske uspješnosti. Pokazano je da više razine usamljenosti prate lošije psihičko zdravlje, slabiji osjećaj općeg zdravlja i doživljaj slabije akademske uspješnosti. Ovi su nalazi u skladu s brojnim istraživanjima koja potvrđuju da je studentska populacija izrazito ranjiva na doživljaj usamljenosti, posebice u razdobljima prilagodbe na akademske zahtjeve i nove socijalne okolnosti (3,28). Istraživanja provedena u nizu zemalja bilježe različite prevalencije usamljenosti u studentskoj populaciji, a jedna od viših zabilježena je u SAD-u i doseže razinu od gotovo 65 % (54). Naši rezultati, prema kojima više od tri četvrtine studenata doživljava visoku usamljenost, ukazuju na još izraženiji problem u hrvatskom kontekstu te potvrđuju da je usamljenost važan prediktor psihičkog zdravlja u studentskoj populaciji, kao i značajan javnozdravstveni izazov. Nadalje, ovi se nalazi uklapaju u zaključke Svjetske zdravstvene organizacije koja je usamljenost proglasila globalnim prioritetom javnog zdravlja, s procjenom da 1 od 6 osoba u svijetu doživljava značajnu društvenu izoliranost pri čemu su mladi među najpogođenijima (24). Kada govorimo o razlikama u razinama usamljenosti s obzirom na status veze, vrstu stanovanja, socioekonomski status i seksualnu orijentaciju, naši rezultati potvrđuju ranije dobivene nalaze o ranjivosti specifičnih podskupina studentske populacije. Studenti koji žive sami i studenti koji nisu u vezi u pravilu pokazuju veću usamljenost (34). Isto tako, studenti nižeg socioekonomskog statusa i neheteroseksualne orijentacije također iskazuju povišenu usamljenost (55,56). Ono što je važno naglasiti jest da se u hijerarhijskom regresijskom modelu u ovom istraživanju usamljenost pokazala kao snažan prediktor psihičkog distresa, iznad samih sociodemografskih varijabli, što je u skladu s rezultatima meta-analize koja je potvrdila da usamljenost značajno doprinosi razvoju depresivnosti, anksioznosti i stresa (59). Osim toga, longitudinalna istraživanja potvrđuju da viša usamljenost tijekom vremena predviđa

ported academic achievement. Higher levels of loneliness were associated with poorer mental health, lower perceived general health, and lower perceived academic achievement. These findings are consistent with numerous studies confirming that the student population is particularly vulnerable to experiences of loneliness, especially during periods of adjustment to academic demands and new social environments (3, 28). Studies conducted in various countries reported different prevalence rates of loneliness among students, with one of the highest rates observed in the USA, reaching nearly 65% (54). According to our results, more than three-quarters of students experience high levels of loneliness, indicating an even more pronounced problem in the Croatian context, and confirming that loneliness is an important predictor of mental health in the student population, as well as a significant public health challenge. Furthermore, these findings align with the conclusions of the World Health Organization, which has identified loneliness as a global public health priority, estimating that one in six people worldwide experiences significant social isolation, with young people being among the most affected (24). In terms of the differences in loneliness levels based on the relationship status, type of housing, socioeconomic status, and sexual orientation, our results confirmed the previous findings regarding the vulnerability of specific subgroups of students. Students living alone and those who are not in a relationship generally reported higher loneliness levels (34). Similarly, students with lower socioeconomic status and those of non-heterosexual orientation also reported elevated loneliness levels (55,56). Importantly, in the hierarchical regression model of this study, loneliness emerged as a strong predictor of psychological distress, beyond the sociodemographic variables, and this is consistent with the meta-analytic findings which confirmed that loneliness significantly contributes to the development of depression, anxiety, and stress (59). In addition, longitudinal studies

pogoršanje psihičkog zdravlja (33). Nadalje, u ovom je istraživanju promatrana i mediatorska uloga usamljenosti u odnosu između akademske uspješnosti i psihičkog zdravlja. Dobivena djelomična medijacija ukazuje da se dio negativnog učinka lošije percipirane akademske uspješnosti na psihičko zdravlje može objasniti povećanim osjećajem usamljenosti. Drugim riječima, studenti koji se suočavaju s akademskim teškoćama češće razvijaju osjećaj nepovezanosti i isključenosti, što dodatno pogoršava njihovo psihičko stanje. Ovakvi su rezultati u skladu s istraživanjima koja pokazuju da manjak akademske uspješnosti i osjećaja pripadnosti doprinosi negativnim obrascima mišljenja, sniženom samopoštovanju i porastu emocionalne patnje među studentima (47). Navedeno dodatno potvrđuje važnost promatranja akademske uspješnosti ne samo kognitivnom i izvedbenom dimenzijom, već i njegovom socioemocionalnom komponentom, koja može imati ključnu ulogu u zaštiti psihičkog zdravlja studenata.

S obzirom na visoku prevalenciju usamljenosti među hrvatskim studentima i njezinu značajnu povezanost s psihičkim zdravljem, nalazi ovog istraživanja imaju važne praktične implikacije za visokoobrazovni sustav. Naši rezultati naglašavaju potrebu za djelovanjem na više razina prevencije i institucionalne podrške. Na razini univerzalne prevencije, moguće je razvijati razne programe na sveučilištima koji su usmjereni na jačanje socijalne povezanosti i osjećaja pripadnosti, poput sustava mentorstva/tutorstva za bruce, manjih skupina za učenje, studentskih klubova te kampanja koje destigmatiziraju traženje psihološke pomoći i podižu svijest o problematici usamljenosti (57). Selektivna prevencija uključivala bi rano prepoznavanje putem redovnog i brzog ispitivanja razina usamljenosti kratkim instrumentima (primjerice UCLA-3 ljestvica) u studentskim savjetovalištim te upućivanje studenata na psihološku podršku kada se prepoznaju ri-

have confirmed that higher loneliness predicts worsening mental health over time (33). Moreover, this study also examined the mediating role of loneliness in the relationship between academic achievement and mental health. The observed partial mediation indicates that part of the negative effect of lower perceived academic achievement on mental health can be explained by increased feelings of loneliness. In other words, students facing academic difficulties are more likely to develop feelings of disconnection and social exclusion, which further worsens their mental state. These findings are consistent with research results showing that low academic achievement and reduced sense of belonging contribute to negative thought patterns, lower self-esteem, and increased emotional distress among students (47). Such observations further highlight the importance of considering academic achievement not only in terms of cognitive and achievement dimensions, but also in terms of its socioemotional component, which can play a key role in protecting the mental health of students.

Given the high prevalence of loneliness among Croatian students and its significant association with mental health, the findings of this study have important practical implications for the higher education system. Our results emphasize the need for multi-level prevention and institutional support. At the level of universal prevention, universities could develop various programs aimed at strengthening social connectedness and a sense of belonging, such as mentoring/tutoring systems for first-year students, small study groups, student clubs, and campaigns that destigmatize seeking psychological help and raise awareness about the issue of loneliness (57). Selective prevention would involve early identification through regular and rapid assessment of loneliness levels using brief instruments (e.g. the UCLA-3 scale) in student counseling centers, and referral to psychological support for students identified as at risk. At the indicated preven-

zični obrasci. Na razini indikativne prevencije, bilo bi potrebno osigurati ciljane psihološke intervencije za najrizičnije skupine (neheteroseksualne studente, studente nižeg socioekonomskog statusa i one koji žive sami), uz jačanje dostupnosti grupa podrške i zajedničkih aktivnosti koje potiču socijalnu uključenost (18). Ovakve inicijative mogle bi doprinijeti stvaranju poticajnijeg akademskog okruženja u kojem se osjećaj pripadnosti prepoznaje kao važna komponenta psihičkog zdravlja i uspješnosti u studiju.

Neka od metodoloških ograničenja kao i smjerovi budućih istraživanja odnose se ponajprije na prigodan uzorak i korelacijsko istraživanje, što onemogućuje donošenje uzročnih zaključaka. Nadalje, metode samoprocjene također mogu dovesti do određenih razina pristranosti u procjenama, a rodna neravnoteža uzorka (76,9 % studentica) dodatno ograničava generalizaciju nalaza. Buduća istraživanja trebala bi uključiti longitudinalne pristupe kako bi se još jasnije razjasnio smjer odnosa između usamljenosti, psihičkog zdravlja i akademske uspješnosti te uvesti i neke objektivnije pokazatelje jačine socijalne mreže, poput broja i kvalitete interpersonalnih kontakata.

ZAKLJUČAK

Rezultati ovog istraživanja pokazuju da je usamljenost izrazito raširena i konzistentno povezana s lošijim psihičkim zdravljem, slabijim općim zdravljem i nižom procjenom akademske uspješnosti. Nakon kontrole sociodemografskih varijabli, usamljenost ostaje robustan prediktor psihološkog distresa, a djelomična medijacija pokazuje da dio negativnog učinka lošeg akademskog funkcioniranja na psihičko zdravlje djeluje putem povišene razine usamljenosti. Ovi nalazi nadopunjuju nalaze međunarodnih studija i podupiru aktualne preporuke stručnjaka koji socijalnu povezanost postavljaju kao prioritet. Potrebno je sustavno jačati inicijative

tion level, targeted psychological interventions should be provided for the highest-risk groups (non-heterosexual students, students of lower socioeconomic status, and those living alone), along with increasing the availability of support groups and shared activities that promote social inclusion (18). Such initiatives could contribute to creating a more supportive academic environment, where a sense of belonging is recognized as an important component of both mental health and academic success.

Some methodological limitations and directions for future studies primarily relate to the convenience sample and correlational design, which preclude causal conclusions. Furthermore, self-report measures may introduce certain amounts of bias in assessments, while the gender imbalance in the sample (76.9% female) further limits the generalizability of the results. Future studies should include longitudinal designs so as to further clarify the directionality of the relationships between loneliness, mental health and academic achievement, as well as incorporate some more objective indicators of social network strength, such as the number and quality of interpersonal contacts.

CONCLUSION

The results of this study indicate that loneliness is highly prevalent and consistently associated with poorer mental health, lower general health, and lower perceived academic achievement. After controlling for sociodemographic variables, loneliness remained a robust predictor of psychological distress, and partial mediation showed that part of the negative effect that poor academic functioning has on mental health operates through increased loneliness. These findings complement those obtained in international studies, and support current expert recommendations prioritizing social connectedness. It is necessary to systematically strengthen university-based initiatives

na bazi sveučilišta koje potiču osjećaje pripadnosti i podrške (mentorski i tutorski programi, grupe za učenje, studentske zajednice), uvoditi brzu detekciju usamljenosti u studentskim savjetovalištim (npr. putem UCLA-3) i razvijati ciljne intervencije za najrizičnije skupine (neheteroseksualne studente, studente nižeg SES-a, one koji žive sami). Sveučilišni sustavi koji prate i bave se pitanjem usamljenosti mogu očekivati bolje psihičko zdravlje i veću akademsku uspješnost studenata.

that foster the sense of belonging and support (mentoring and tutoring programs, study groups, student communities), implement rapid detection of loneliness in student counseling centers (e.g. via the UCLA-3), and develop targeted interventions for the most at-risk groups (non-heterosexual students, students of lower SES, and those living alone). University systems that monitor and address the issue of loneliness can expect improvements in the mental health and academic achievements of their students.

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