

ASSESSMENT OF PSYCHOLOGICAL DISTRESS, OVERVIEW OF INSTRUMENTS AND STUDIES CONDUCTED IN SERBIA

PROCENA PSIHOLOŠKOG DISTRESA, PREGLED INSTUMENATA I ISTRAŽIVANJA U SRBIJI

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Abstract

Psychological distress is a term used to describe a range of symptoms that may include stress, anxiety, and depression. These symptoms are not specific and may vary from person to person. It is one of the key issues in public health and is used to measure the mental health of the population. However, further information is required when considering only the definition of psychological distress in the literature. This review will present the concept of psychological distress, domains of psychological distress research from relevant sources, and instruments for assessing psychological distress. Also, the emphasis will be on the domains of psychological distress research and the instruments used to assess psychological distress in studies conducted in the Republic of Serbia.

Keywords:

psychological distress,
concept,
instruments,
Serbia

Sažetak

Ključne reči:

psihološki distress,
koncept,
instrumenti,
Srbija

Psihološki distress je termin koji se koristi za opisivanje niza simptoma koji mogu uključivati stres, anksioznost i depresiju. Ovi simptomi nisu specifični i mogu se razlikovati od osobe do osobe. Psihološki distress je jedna od ključnih tema u javnom zdravlju i koristi se za merenje mentalnog zdravlja stanovništva. Međutim, kada se uzme u obzir samo definicija psihološkog distresa kroz literaturu, potrebna su dodatna razjašnjenja. U ovom preglednom radu biće predstavljeni koncept psihološkog distresa, domeni istraživanja psihološkog distresa iz relevantnih izvora i instrumenti za procenu psihološkog distresa. Naglasak će biti i na domenima istraživanja psihološkog distresa i instrumentima korišćenim za procenu psihološkog distresa u studijama sprovedenim u Republici Srbiji.

Introduction

Psychological distress is a term used to describe a range of symptoms that may include stress, anxiety, and depression (1). These symptoms are not specific and may vary from person to person. It is one of the key topics in public health and is used to measure the population's mental health (2). Scientific research indicates that "psychological distress" is frequently used to describe a mixed group of symptoms, such as depression, anxiety, personal traits, limitations in daily activities, and behaviour issues (2–4). Psychological distress is defined according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as "any range of symptoms and experiences related to a person's internal life; feelings of being troubled, confused, or out of the ordinary" (2–4), while the American Psychological Association defines psychological distress as a set of unpleasant physical and mental symptoms that are associated with natural mood changes, and in some cases may indicate the onset of various clinical conditions (4). Neither within psychiatric nosology nor in the stress-distress model, the concept of psychological distress is ambiguous (2–4). However, additional clarifications are needed when considering only the definition of psychological distress in the literature (2).

According to the WHO, in 2019, one in every eight people, or 970 million people worldwide, lived with a mental disorder, with anxiety and depressive disorders the most common (5). In national population-based surveys, the prevalence of psychological distress in 2017 in Australia was 7.4% (6), while the UK noted that the prevalence of psychological distress increased from 18.9% in 2018 – 2019 to 27.3% in 2020 (7). One study pointed out that the percentage of US adults who reported symptoms of serious psychological distress increased from 3.9% in 2018 to 13.6% in 2020 (8). In 2018, on average, one in nine adults (11%) across EU countries had symptoms of psychological distress (9).

Prevalence ranged from about 5% in Ireland, Poland, Estonia, the Slovak Republic and Finland to about 20% or over in Croatia and Portugal, based on the EU Survey on Statistics on Income and Living Conditions (EU-SILC) (9). The prevalence of a high risk of psychological distress in Serbia in 2018 was 5.2%, while a moderate risk of psychological distress was 15.2% (10).

The studies that examined the prevalence of

psychological distress have shown that the prevalence of psychological distress is difficult to precisely gauge due to the variation of the scales assessing psychological distress, various time frames involved in recording symptoms, and the cut-off values utilized to dichotomize the score of psychological distress and identify individuals with pathological distress (1, 2, 10).

Earlier research indicates that times of ambiguity and difficulties not only impact the individual but also affect society. This is particularly observable during outbreaks of pandemics or civil unrest. These findings align with the abovementioned data, suggesting a rise in demand for preventative measures to address mental health issues (11, 12).

Formulating recommendations for creating promotion and prevention programs in mental health in different populations is crucial in understanding the factors associated with psychological distress. Considering the aetiology of psychological distress among studies that have provided a critical review of the clinical characteristics, assessment, and prevalence of psychological distress, and empirical evidence on risk and protective factors associated with psychological distress in the general population, highlights the working population (1, 10, 13). This population is an at-risk population that needs special attention due to exposure to specific risk factors (for example, physical conditions of the workplace, workplace stress, time-limited requirements for completing work tasks, and decision-making) (1, 2, 10). This review aims to present the concept of psychological distress, areas of research on psychological distress from relevant sources, and instruments for assessing psychological distress. Also, emphasis will be placed on areas of research on psychological distress and instruments used to assess psychological distress in studies conducted in the Republic of Serbia.

Assessment of psychological distress

Using a psychological distress measurement can serve several purposes, including identifying mental health conditions, assessing the efficacy of treatment, gauging the likelihood of clinical outcomes, or as a tool to evaluate the need for clinical intervention (14). Psychological distress measures have gained popularity in mental health research due to their brevity and accuracy, as more extensive clinical interviews and disorder-specific measures can

be burdensome to administer (14). There has been a significant increase in the recognition of the significance of psychological distress measures, especially the ones that comprehensively evaluate the severity of symptoms. Several national health surveys employ such measures to evaluate the intensity of non-specific psychological symptoms (14). Different understandings of the construct of psychological distress result in the creation of many different operational definitions and, therefore, the construction of many other instruments that can be used to measure this phenomenon. The validity of scales used to measure psychological distress has been questioned due to the variations in how distress is expressed across different cultures. (2). Standardized scales are used to evaluate psychological distress, and creating such a scale requires a complete understanding and definition of the measured construct (2).

Scales for measuring psychological distress could be divided according to those instruments that satisfy the most widely accepted definition of psychological distress, "a state of emotional suffering characterized by symptoms of depression and anxiety," and other scales that measure an unspecified construct or a related construct such as depression or anxiety. Also, they could be divided according to what they measure and for which population they are intended (2).

The most validated and popular instruments in the literature for the assessment of psychological distress are (2):

1. The General Health Questionnaire was developed to evaluate mental health problems in population surveys and studies, as well as to identify non-psychotic mental disorders in clinical settings. It includes questions about depression, anxiety, physical symptoms, and social difficulties, and is widely regarded as the best method for assessing psychological distress, as the Gold standard;

2. The Kessler scale, comprising K10 and K6, is a scale that evaluates psychological distress in population surveys and guarantees uniform sensitivity for both genders and all age groups. The scale measures the frequency of anxious and depressive symptoms that respondents have suffered in the last 30 days, such as nervousness, sadness, restlessness, hopelessness, and worthlessness. It identifies individuals who are prone to meet the official classifications for depression or anxiety disorders, as well as those suffering from subclinical ailments that do not meet official criteria (15);

3. The scales derived from the Hopkins Symptom Checklist-58 (The Brief Symptom Inventory (BSI) and the SCL-5 and Brief Symptom Inventory-18) - focus on anxious-depressive symptoms and somatic symptoms.

When choosing a measure, the problem remains that measures are not always selected based on their precision and efficiency; therefore, there is a need for consistency in choosing instruments in studies and clinical environments. Consequently, creating a common metric for distress measures provides an essential tool for clinicians and researchers (14). Using Item Response Theory (IRT) techniques, creating conversion tables or crosswalks

between multiple scales becomes simple, as scores can be standardized. This process involves equating and transforming scores from one scale to another, making it effortless. The gathered information can be utilized by researchers to effectively combine data from different studies that utilize various psychological distress measures or expedite the development of meta-analyses of individual patients. Limited research has compared scales to identify the best-performing tools. The previous study evaluated eight psychological distress scales and showed that the Distress Questionnaire-5 (DQ5) had optimal performance in identifying risk of mental health problems (14).

Consistent with primary validation (15) and conducted studies (10,16,17), levels of psychological distress that can be measured: "no psychological distress", "mild to moderate psychological distress", and "serious psychological distress" (15).

Domains of psychological distress

Research conducted worldwide can be categorized based on the area of focus, such as the prevalence of psychological distress (2,11,12), risk factors that contribute to it (biological, psychological, cultural and social) (10,17), demographics or particular groups targeted (10,12,18–21), consequences such as emotional (22), physical (23), social and economic consequences (24), as well as the treatments and interventions implemented, e.g., psychotherapy (22), pharmacological treatment (25), physical activity (26), and comparative studies (27). Often, more than one aim was applied in studies (**figure 1**).

Previous research shows that measuring psychological distress can vary depending on the research objective and population group (10,13,17,28). It can be measured in the general population (10,13,17,28), working population (1,10), patients with specific diseases, such as cancer (29,30), diabetes (31,32), and heart disease (33), as well as socio-economically at-risk populations (28), to gain insights into the prevalence of psychological distress in the general population or evaluate the need for preventive or intervention programs (1,10,32). Additionally, some studies aim to assess workplace quality and identify interventions that promote employees' mental well-being (1,10,34), while others examine psychological distress symptoms in individuals with various disorders and evaluate the effectiveness of different treatments (29,32,33). Another key research objective could be to recognize the increasing need for assistance and support for vulnerable populations (28) (**figure 1**).

Psychological distress can be caused by various factors that affect individuals on several levels. Understanding these factors can help prevent and treat psychological distress (1,10). Biological factors, such as hormonal changes (1,10,28), diseases (18,21), and brain injuries (29), can also affect the development of psychological distress. Some individuals may be genetically predisposed to psychological distress due to various genes associated with certain mental disorders (30). Psychological factors like

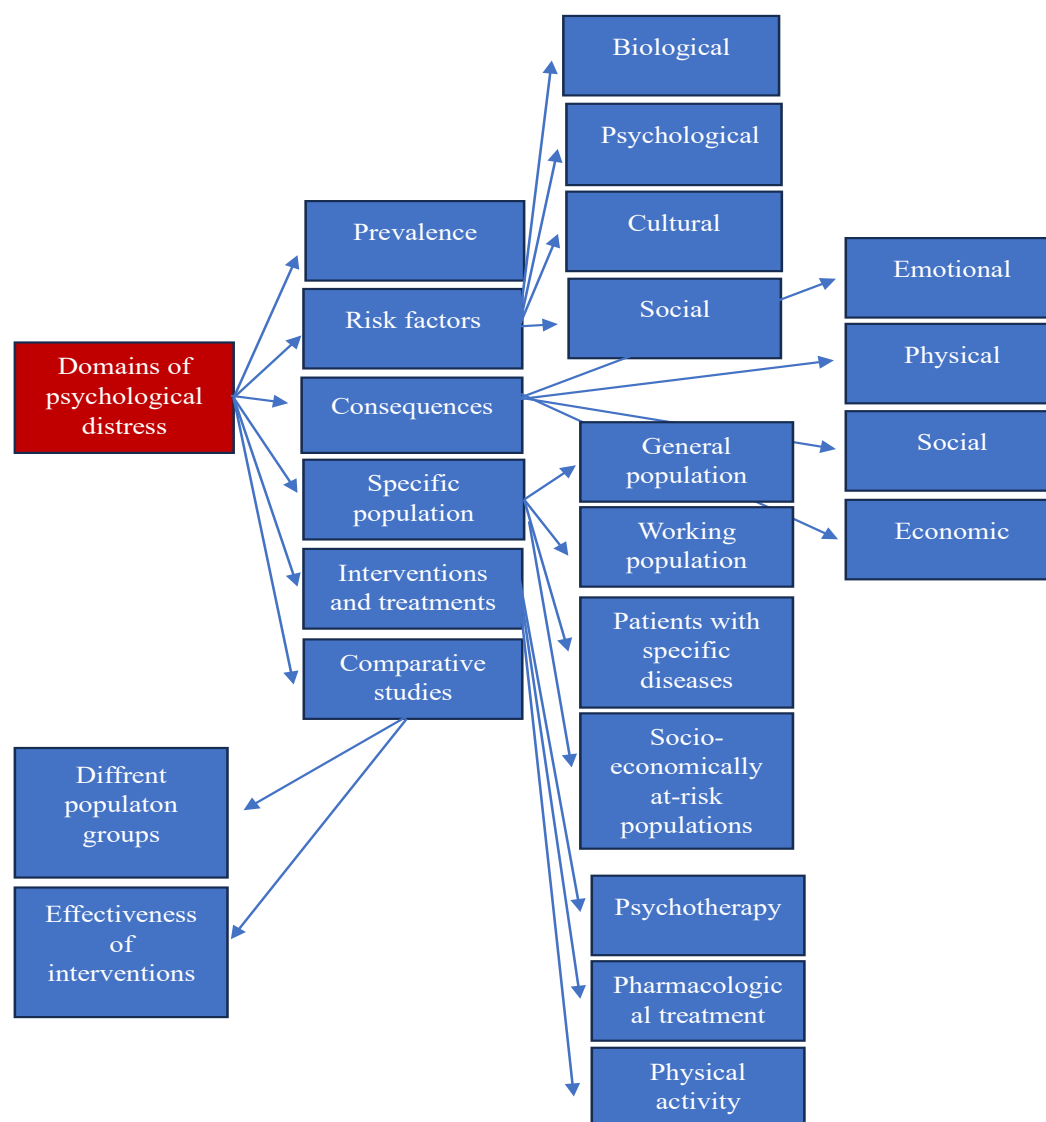


Figure 1. Domains of psychological distress.

worry (31), low self-confidence, and low self-esteem can contribute to psychological distress (32,33). Some social or cultural factors, such as a lack of support from family (1), friends or colleagues (1), poverty (1), discrimination (34), violence (35), and physical or sexual abuse (35) can have an impact on psychological distress. Traumatic experiences, including sudden loss or death of loved ones, physical or sexual trauma (35), war (36), natural disasters (11), accidents or other traumatic situations (11), can cause psychological distress in many people. Principal life changes, such as divorce (1), job loss (37), birth of children (38), and children leaving home (39) can lead to psychological distress. Also, lifestyle factors such as abuse of alcohol, drugs or other substances are associated with high psychological distress (40–42) (**figure 1**).

Research exploring the effects of psychological distress evaluates its emotional (21), physical (22), social (22), and economic consequences (23). Psychological distress may lead to emotional symptoms, such as anger, anxiety, and fear (21), that can interfere with everyday tasks and result in sleep problems (22). Additionally, it may cause physical issues, such as headaches, constipation, diarrhea, chronic pain, and other functional disorders (22) (**figure 1**).

Psychological distress can affect relationships with other people, such as friends, family and colleagues. For example, a person suffering from psychological distress may become withdrawn and avoid socializing, leading to loneliness and isolation (23). Psychological distress can affect financial stability. A person suffering from psychological distress can enter and prolong the stay in deficit net worth states, increasing the probability of re-entry into deficit, leading to lower income and financial uncertainty (24) (**figure 1**).

There are different studies looking at the effectiveness of various interventions to reduce psychological distress, such as psychotherapy (22), pharmacological treatment (25), physical activity (26) and others (**figure 1**).

Comparative research is an essential way of monitoring the effectiveness of interventions for the prevention, treatment and identification practices of psychological distress and comparing psychological distress in different population groups (27). This can help understand risk and protective factors. Comparing psychological symptoms in women and men, older and younger people can provide valuable insights into the effectiveness of therapy (27) (**figure 1**). One particular study highlights the advantages of expressive writing in managing varied conditions,

particularly in those who suffer from severe depression and anxiety (44). However, the study also advises that the application of expressive writing or similar self-guided interventions should not be done without prior evidence of their effectiveness in stressful and unpredictable situations, such as a pandemic (44).

Psychological Distress in Serbia

Studies conducted in Serbia show a range of characteristics, including research objectives, methodologies, and measures of psychological distress. In a few studies, psychological distress was examined as the primary objective (10, 18, 43, 44), while only a few studies defined the psychological distress construct (10, 18, 21, 43, 45). Some studies were secondary analyses (10, 17), one was a randomized controlled trial (44), some were cross-sectional studies (18, 20, 21, 43, 45–51), and one was an observational study (52), while some of them were conducted online (20, 44).

These studies often use standardized questionnaires to assess psychological distress. The most commonly used scale for measuring psychological distress in studies conducted in Serbia was the Depression, Anxiety and Stress Scale-21 (DASS-21) (43, 44, 46–50, 52). This scale is suitable for clinical settings for diagnosis and outcome monitoring, e.g., psychiatric patients and non-clinical settings, as a mental health screener for mentally healthy samples, students, athletes, and the general adult population. Two studies used the Kessler 6 scale to assess psychological distress in a nationally representative sample of adults (10, 17). Also, the other studies used different scales such as the Intolerance of Uncertainty Scale (IUS) (47), Four-dimensional symptoms questionnaire- 4DSQ Distress subscale (20), Cervical Dysplasia Distress Questionnaire (CDDQ) (18, 21), Counseling Center Assessment of Psychological Symptoms 62 (CCAPS-62) (45), and Mental Health Inventory – 38 (MHI-38) (51). These scales measured distress in women with delayed IVF treatment due to the COVID-19 pandemic, in pharmacy practitioners, in women with abnormal Pap smear results, in Serbian students, and employees, respectively. In certain studies, psychological distress was analyzed as an independent variable (17, 46, 48, 51) but also as a dependent variable (10, 18, 48, 50, 52). Almost all studies presented scores of psychological distress or scores of all elements of the construct (20, 21, 43–45, 47, 49, 50). The intervention was conducted in only one study (44).

In a study conducted on a nationally representative sample of adults with a high response rate, the objective was to examine the association between social characteristics, substance use, and psychological distress (10). Kessler 6 questionnaire was used to assess psychological distress. The study results highlighted that „being male and perceiving one's own financial status as bad, having poor self-rated health, binge drinking in the past year, and lifetime use of any illicit drug were associated with a high risk of psychological distress“ and suggest the necessity for

directing more attention towards these particular subsets of the population (10). Another study aimed to assess psychological distress and its correlates among women who obtained an abnormal Pap screening test result (18). This study used the Cervical Dysplasia Distress Questionnaire (CDDQ) to assess psychological distress (18). According to their analyses, the authors recommended that providing targeted information to these women before diagnostic procedures may assist in controlling the indicators of psychological distress in this group (18). Also, another study in which psychological distress was the primary goal examined variations in the prevalence of psychological distress among elite sambo athletes and recreational athletes (43), pointed out that all tested differences between elite sambo athletes and recreational athletes were statistically significant and that women who engage in recreational activities have stood out as a vulnerable subsample in psychological distress. Depression, Anxiety and Stress Scale-21 (DASS-21) was used to assess psychological distress in this study (43).

In addition, many of these conducted studies highlight the need for further research to fully understand, address, and minimize the risk of adverse consequences of psychological distress in different populations and contexts.

Conclusion

As psychological distress becomes a concerning public health issue, there is a need for scalable interventions that can effectively reduce psychological distress. Nevertheless, additional research and inquiry are necessary to thoroughly comprehend the implications of the data. These findings could lead to a better understanding and provide a solid foundation for future work.

References

1. Viertiö S, Kiviruusu O, Piirtola M, Kaprio J, Korhonen T, Marttunen M, et al. Factors contributing to psychological distress in the working population, with a special reference to gender difference. *BMC Public Health*. 2021; 21(1):611.
2. Drapeau A, Marchand A, Beaulieu-Prevost D. Epidemiology of Psychological Distress. In: *Mental Illnesses - Understanding, Prediction and Control*. InTech; 2012.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. American Psychiatric Association; 5th ed. Arlington (VA): American Psychiatric Association; 2013.
4. American Psychological Association. *APA dictionary of psychology*. Washington (DC): American Psychological Association.
5. World Health Organization. *Mental disorders*. Geneva: World Health Organization; 2022 [cited 2023 Aug 23]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-disorders>.
6. Butterworth P, Watson N, Wooden M. Trends in the Prevalence of Psychological Distress Over Time: Comparing Results From Longitudinal and Repeated Cross-Sectional Surveys. *Front Psychiatry*. 2020; 11:595696.
7. Pierce M, Hope H, Ford T, Hatch S, Hotopf M, John A, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *Lancet Psychiatry*. 2020; 7(10):883–92.

8. McGinty EE, Presskreischer R, Han H, Barry CL. Psychological Distress and Loneliness Reported by US Adults in 2018 and April 2020. *JAMA*. 2020; 324(1):93-4.
9. OECD. Adult mental health. In: *Health at a Glance: Europe 2020: State of Health in the EU Cycle*. Paris: OECD Publishing; 2020.
10. Tadić M, Terzić-Supić Z, Todorović J, Kilibarda B, Santrich-Milicević M, Dusanović-Pjević M, et al. Psychological Distress in the Republic of Serbia, the Association of Social Characteristics and Substance Use on a National Representative Sample of Serbia. *Int J Environ Res Public Health*. 2023; 20(7):5321.
11. Wu T, Jia X, Shi H, Niu J, Yin X, Xie J, et al. Prevalence of mental health problems during the COVID-19 pandemic: A systematic review and meta-analysis. *J Affect Disord*. 2021; 281:91-98.
12. Cénat JM, Blais-Rochette C, Kokou-Kpolou CK, Noorishad PG, Mukunzi JN, McIntee SE, et al. Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Res*. 2021; 295:113599.
13. Duchaine CS, Ndjaboué R, Levesque M, Vézina M, Trudel X, Gilbert-Ouimet M, et al. Psychosocial work factors and social inequalities in psychological distress: A population-based study. *BMC Public Health*. 2017; 17(1):91.
14. Batterham PJ, Sunderland M, Slade T, Caele AL, Carragher N. Assessing distress in the community: psychometric properties and crosswalk comparison of eight measures of psychological distress. *Psychol Med*. 2018; 48(8):1316-24.
15. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SLT, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med*. 2002; 32(6):959-76.
16. Kilibarda B, Nikolić N. Istraživanje o stilovima života stanovništva Srbije 2018. godine. Belgrade: Institute of Public Health of Serbia „Dr Milan Jovanović Batut“; 2018 [cited 2023 Mar 19]. Available from: <https://www.batut.org.rs/download/StiloviZivotaSrbiji2018.pdf>.
17. Kilibarda B, Mravčik V, Oechsler H, Martens MS. Association of smoking status with substance use and psychological distress in Serbia. *Public Health*. 2017; 152:95-8.
18. Ilić I, Babić G, Dimitrijević A, Sipetić Grujić S, Ilić M. Psychological Distress in Women With Abnormal Pap Smear Results Attending Cervical Cancer Screening. *J Low Genit Tract Dis*. 2023 Aug 3;
19. Marić DM, Jovanović DM, Golubović I V, Nagorni-Obradović LJ, Stojčić JM, Pekmezović TD. Psychological well-being in advanced NSCLC patients in Serbia: impact of sociodemographic and clinical factors. *Neoplasma*. 2010;57(1):1-7.
20. Živanović D, Javorac J, Stojkov S, Jevtić M, Knežević J, Blanuša J, et al. The COVID-19 pandemic - related psychological distress and job burnout among Serbian pharmacy practitioners: a cross-sectional online study. *Eur Rev Med Pharmacol Sci*. 2022 Apr;26(7):2639-45.
21. Ilić I, Babić G, Dimitrijević A, Ilić M, Sipetić Grujić S. Psychological distress among women with abnormal pap smear results in Serbia: Validity and reliability of the Cervical Dysplasia Distress Questionnaire. *PLoS One*. 2019; 14(6):e0218070.
22. Bright KS, Charrois EM, Mughal MK, Wajid A, McNeil D, Stuart S, et al. Interpersonal Psychotherapy to Reduce Psychological Distress in Perinatal Women: A Systematic Review. *Int J Environ Res Public Health*. 2020; 17(22):8421.
23. Belay AS, Guangul MM, Asmare WN, Mesafint G. Prevalence and Associated Factors of Psychological Distress among Nurses in Public Hospitals, Southwest, Ethiopia: A cross-sectional Study. *Ethiop J Health Sci*. 2021; 31(6):1247-56.
24. Balloch A, Engels C, Philip D. When It Rains It Drains: Psychological Distress and Household Net Worth. *J Bank Financ*. 2022; 143:106620.
25. Tran L, Sharrad K, Kopsaftis Z, Stallman HM, Tai A, Spurrier N, et al. Pharmacological interventions for the treatment of psychological distress in patients with asthma: a systematic review and meta-analysis. *J Asthma*. 2021; 58(6):759-69.
26. Singh B, Olds T, Curtis R, Dumuid D, Virgara R, Watson A, et al. Effectiveness of physical activity interventions for improving depression, anxiety and distress: an overview of systematic reviews. *Br J Sports Med*. 2023; 57(18):1203-9.
27. Alshahrani KM, Johnson J, Prudenzi A, O'Connor DB. The effectiveness of psychological interventions for reducing PTSD and psychological distress in first responders: A systematic review and meta-analysis. *PLoS One*. 2022; 17(8):e0272732.
28. Hagen EH, Rosenström T. Explaining the sex difference in depression with a unified bargaining model of anger and depression. *Evol Med Public Health*. 2016; 2016(1):117-32.
29. Khoury S, Benavides R. Pain with traumatic brain injury and psychological disorders. *Prog Neuropsychopharmacol Biol Psychiatry*. 2018; 87(Pt B):224-33.
30. Rijdsdijk F V, Snieder H, Ormel J, Sham P, Goldberg DP, Spector TD. Genetic and environmental influences on psychological distress in the population: General Health Questionnaire analyses in UK twins. *Psychol Med*. 2003; 33(5):793-801.
31. Moore EWG, Petrie TA, Slavin LE. College Student-athletes' COVID-19 Worry and Psychological Distress Differed by Gender, Race, and Exposure to COVID-19-related Events. *J Adolesc Health*. 2022; 70(4):559-66.
32. Hagen R, Havnen A, Hjemdal O, Kennair LEO, Ryum T, Solem S. Protective and Vulnerability Factors in Self-Esteem: The Role of Metacognitions, Brooding, and Resilience. *Front Psychol*. 2020; 11:1447.
33. Tay CT, Teede HJ, Hill B, Loxton D, Joham AE. Increased prevalence of eating disorders, low self-esteem, and psychological distress in women with polycystic ovary syndrome: a community-based cohort study. *Fertil Steril*. 2019; 112(2):353-61.
34. Assari S, Lankarani MM. Discrimination and Psychological Distress: Gender Differences among Arab Americans. *Front Psychiatry*. 2017; 8:23.
35. Hisasue T, Kruse M, Raitanen J, Paavilainen E, Rissanen P. Quality of life, psychological distress and violence among women in close relationships: a population-based study in Finland. *BMC Womens Health*. 2020; 20(1):85.
36. Comtesse H, Powell S, Soldo A, Hagl M, Rosner R. Long-term psychological distress of Bosnian war survivors: an 11-year follow-up of former displaced persons, returnees, and stayers. *BMC Psychiatry*. 2019; 19(1):1.
37. Wörn J, Reme BA, Skirbekk V. Job loss and psychological distress during the COVID-19 pandemic: a national prospective cohort study. *BMC Public Health*. 2023; 23(1):1447.
38. Obrochta CA, Chambers C, Bandoli G. Psychological distress in pregnancy and postpartum. *Women Birth*. 2020; 33(6):583-91.
39. Bougea A, Despoti A, Vasilopoulos E. Empty-nest-related psychosocial stress: Conceptual issues, future directions in economic crisis. *Psychiatriki*. 2019; 30(4):329-38.
40. Ranjit A, Korhonen T, Buchwald J, Heikkilä K, Tuulio-Henriksson A, Rose RJ, et al. Testing the reciprocal association between smoking and depressive symptoms from adolescence to adulthood: A longitudinal twin study. *Drug Alcohol Depend*. 2019; 200:64-70.
41. Li J, Wang H, Li M, Shen Q, Li X, Zhang Y, et al. Effect of alcohol use disorders and alcohol intake on the risk of subsequent depressive symptoms: a systematic review and meta-analysis of cohort studies. *Addiction*. 2020; 115(7):1224-43.
42. Poudel A, Sharma C, Gautam S, Poudel A. Psychosocial problems among individuals with substance use disorders in drug rehabilitation centers, Nepal. *Subst Abuse Treat Prev Policy*. 2016; 11(1):28.
43. Tubić T, Živanović B, Lakićević N, Zenić N, Gilić B, Rudas E, et al. Psychological Distress in Elite Sambo and Recreational Athletes. *Front Psychol*. 2022; 13:781880.
44. Vukčević Marković M, Bjekić J, Priebe S. Effectiveness of Expressive Writing in the Reduction of Psychological Distress During the COVID-19 Pandemic: A Randomized Controlled Trial. *Front Psychol*. 2020; 11:587282.
45. Cvjetković S, Bjegović-Mikanović V, Langher V. Cross-cultural validation and psychometric testing of the counseling center assessment of psychological symptoms: experience of Serbia. *Health*

- Promot Int. 2021; 36(6):1530–8.
46. Kolak V, Pavlovic M, Aleksic E, Biocanin V, Gajic M, Nikitovic A, et al. Probable Bruxism and Psychological Issues among Dental Students in Serbia during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2022; 19(13):7729.
47. Mitrović M, Kostić JO, Ristić M. Intolerance of uncertainty and distress in women with delayed IVF treatment due to the COVID-19 pandemic: The mediating role of situation appraisal and coping strategies. *J Health Psychol*. 2022; 27(11):2515–28.
48. Šakan D, Žuljević D, Rokvić N. The Role of Basic Psychological Needs in Well-Being During the COVID-19 Outbreak: A Self-Determination Theory Perspective. *Front Public Health*. 2020; 8:583181.
49. Topalovic N, Mazic S, Nesic D, Vukovic O, Cumic J, Laketic D, et al. Association between Chromatin Structural Organization of Peripheral Blood Neutrophils and Self-Perceived Mental Stress: Gray-Level Co-occurrence Matrix Analysis. *Microsc Microanal*. 2021; 1–7.
50. Sokić J, Popov S, Dinić BM, Rastović J. Effects of Physical Activity and Training Routine on Mental Health During the COVID-19 Pandemic and Curfew. *Front Psychol*. 2021; 12:624035.
51. Sitarevic A, Nesic-Tomasevic A, Nikolic D, Sofic A. Occupational health: the role of demographic factors in the condition of increased risk. *Int J Occup Med Environ Health*. 2023; 36(2):250–62.
52. Ljubisavljevic M, Ignjatovic A, Ljubisavljevic S. The Ruminative Thought Style with Associated Anxiety Influences the Occurrence of Medication-Overuse Headache. *J Clin Neurol*. 2021; 17(3):419–27.