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INFLUENCE OF ALCOHOL DRINKING FORMS ON DEVELOPMENT OF DEPRESSION, ANXIETY AND SOMATIC DISORDER IN THE AREA OF KRUPA NA UNI

Summary: Introduction: Alcohol consumption can lead to different psychiatric pathologies, both during maintenance of the addictive cycle and after abstinence is established.

Objective: The study aimed to examine the existence of a statistically significant association of drinking patterns alcohol with the intensity of anxiety, depression and somatic disorders in alcohol users.

Methods: The study was performed as a cross-sectional study at the Health Center Krupa na Uni in the period from 01.10.2018. to 01.06.2019. The sample consisted of 110 randomly selected patients consuming alcohol, 35 (31.8%) women and 75 (68.2%) men, with an average age of 51 ± 1.9 years. The survey used the following questionnaires: Alcohol Use Disorders Identification Test, Generalized Anxiety Disorder, Patient Health Questionnaire, Beck's Depression Inventory. The chi-square test was used in the data analysis.

Results: Low-risk drinking was verified in 36 (32.7%) of respondents, high-risk drinking in 50 (45.5%) of them. Harmful drinking was found in 20 (18.2%) of respondents, alcohol abuse in 4 (3.6%) of them. Symptoms of anxiety were 85 (77. 3%) of respondents. The same number of subjects had somatic problems. 66 (60.0%) of the study participants were depressed. There was a statistically significant association of drinking patterns with the intensity of anxiety and depression ($p < 0.05$). In the case of somatic disorders, the same was not verified ($p > 0.05$)

Conclusion: The pattern of drinking alcohol is consistent with the intensity of anxiety disorders. Harmful drinking alcohol results in intense somatic distress, while alcohol abuse is not statistically significantly associated with the same. The intensity of depression is correlated with

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the pattern of drinking alcohol. The obtained results are in accordance with researchers from other countries.

Keywords: alcohol, anxiety, depression, somatic disorders.

INTRODUCTION

About 90% of people consume alcohol at some point in their lives. Alcohol abuse develops in 5-10%, while 10% of men and 3-5% of women become addicted to alcohol [1,2]. About 3.3 million of deaths occur each year as a result of alcohol use worldwide. Only in the United States, the cost of excessive alcohol consumption is estimated at 223.5 billion dollars [3].

Alcohol use affects all spheres of an individual's life (family, work and wider social environment). Long-term alcohol consumption can lead to the manifestation of various psychiatric pathologies, both during the maintenance of the addictive cycle and after the establishment of abstinence. Mental disorders occur as a consequence of:

(1) Direct causality (alcohol use makes the development of mental disorders more likely);

(2) Indirect causality (alcohol consumption through a third, mediating, variable increases the likelihood of developing a mental disorder;

(3) Common factors that simultaneously increase the risk of developing both disorders [4,5].

OBJECTIVE OF THE RESEARCH

The aim of the study was to determine:

1) The existence of a statistically significant association of alcohol consumption patterns with the intensity of anxiety;

2) The existence of a statistically significant association of alcohol consumption patterns with the intensity of somatic disorders;

3) The existence of a statistically significant association of alcohol consumption patterns with depression intensity.

MATERIAL AND METHODS

A research - a cross-sectional study was conducted on a sample of 110 respondents from the region Krupa na Uni in the period from 1th October 2018 to 1th June 2019. The research was approved by the Ethics Committee of Health Center Krupa na Uni. Criteria for inclusion of respondents in the study were anamnestic data on

alcohol consumption for at least twelve months, age between 20 and 79 years, completed primary school. Excluded from the study were people age over 79 and under 20, with alcohol consumption for less than twelve months, as well as all people with malignant and advanced chronic diseases (chronic renal failure, heart decompensation, liver failure). Data were collected through specific questionnaires.

A test to identify disorders caused by alcohol (Alcohol Use Disorders Identification Test-AUDIT) was developed and recommended by World Health Organization (WHO) for early identification of risky and harmful drinking as well as alcohol dependence. The test consists of three questions in the area of risky alcohol use (frequency of drinking, typical amount, frequency of heavy drinking), four questions in the area of harmful use of alcohol (guilt after drinking, amnesia, injuries due to alcohol consumption, environmental concerns) and three questions symptoms of addiction (decreased control over drinking, increased desire to drink, morning drinking) which we score 0 - 4. A score of 0 - 7 speaks in favor of low-risk drinking. The result in the interval 8 - 15 corresponds to risky drinking. Harmful drinking is present in patients with a score of 16 - 19. The sum of 20 - 40 reveals alcohol abuse [1,6].

The Generalized Anxiety Disorder (GAD-7) self-assessment questionnaire is used in primary health care to assess the presence and intensity of generalized anxiety disorder. It consists of seven questions that measure the severity of the symptoms of generalized anxiety disorder in the last two weeks. Depending on the patient's answer to the question, we score from 0 to 3. A score 0 - 4 is characteristic of healthy people without symptoms of anxiety. A score 5 - 9 speaks in favor of mildly pronounced symptoms of anxiety. If the score is between 10 and 14, the symptoms of anxiety are moderate. Severe symptoms of anxiety are present in patients with a score ≥ 15 [7,8,9].

The Patient Health Questionnaire (PHQ-15) contains 15 somatic problems that were rated 0 - 2 by patients depending on how much each of them interfered with their daily activities. The total score of the questionnaire for women was 0 - 30, while for men the score was 0 - 28. A score 0 - 4 indicated minimal somatic discomfort. Respondents with a score 5 - 9 had low somatic problems. The average intensity of somatic disorders is characterized by a score 10 - 14, while a score of 15 or more indicated serious somatic disorders [9,10].

Beck's Depression Inventory (BDI) is used as an indicator of the existence and intensity of depressive symptoms that are in line with the current Diagnostic and Statistical Manual of Mental Disorders (DSM). The second revised version is recommended by the American Psychiatric Association (APA)and is used today. It consists of 21 statements (each statement is a list of four statements ranked according to the intensity of a particular symptom of depression), which we score from 0 to 3. Depending on the total score, the questionnaire excludes the existence of depression (0 - 13), confirm mild depression (14 – 19), moderate (20 – 28), or severe depression (29–63) [11,12].

RESULTS

The study included 110 patients. Among them, there were 35 (31.8%) women and 75 (68.2%) men (Chart 1). The largest number of respondents who consume alcohol 75 (68.2%) are aged 40-59 years. The mean age of the examined population was 51 ± 1.9 years (Chart 2). Low-risk drinking was verified in 36 (37.2%) respondents, risky drinking in 50 (45.5%). Harmful drinking was found in 20 (18.2%) respondents, alcohol abuse in 4 of them (3.6%). Anxiety symptoms experienced 85 (77.3%) participants in the study (18.2% mildly pronounced symptoms of anxiety, 47.3% moderately pronounced symptoms of anxiety, 11.8% severely expressed symptoms of anxiety). Somatic ailments had 85 (77.3%) respondents (30.0% mild somatic ailments, 39.1% moderate somatic ailments, 8.2% severe somatic ailments). Depression symptoms were found in 66 (60.0%) respondents (36.4% mild depressive symptoms, 18.2% moderate depressive symptoms and 5.4% severe depressive symptoms). Severe symptoms of anxiety had 75.0% respondents who abused alcohol, 40.0% of respondents with harmful drinking, 2.0% respondents with risky drinking and 2.8% respondents with low-risk drinking. The study verified the existence of a statistically significant effect of drinking patterns on the intensity of anxiety disorders in study ($p < 0.05$). Severe somatic problems had 11.1% respondents with low-risk drinking, 8.0% respondents with risky drinking and 5.0% of respondents with harmful drinking had. The study did not verify the existence of a statistically significant effect of drinking patterns on the intensity of somatic disorders in study participants ($p > 0.05$). Severe anxiety symptoms had 50.0% respondents who abused alcohol, 15.0% of respondents with harmful drinking and 2.0% of respondents with risky drinking. The study verified statistically significant effect of drinking patterns on the intensity of depressive disorders in study ($p < 0.05$).

DISCUSSION

The comorbidity of alcohol use and mental disorders is complex and still insufficiently researched. Consumption of alcohol disrupts neurohumoral and psychological homeostasis and encourages the development of mental disorders. It affects the concentration of tryptophan, N-methyl-D aspartate, homovalic acid, γ-amino butyric acid and endogenous opioids. It has a negative effect on cognitive functions, contributes to feelings of inferiority, guilt and hopelessness, disrupts interpersonal relationships, induces delinquency [11,13].

On the other hand, alcohol abuse is often the results of self-medication for mental disorders. People with mental disorders consume alcohol in an attempt to alleviate discomfort, reduce tension and dampen a stress response. Genetic factors and vulnerability of a person play a significant role in the comorbidity of alcoholism and mental

disorders. Literature data indicate a statistically significantly more frequent presence of this comorbidity in certain families or twin populations [11,13]. The research detected a high degree of comorbidity of alcohol use and anxiety disorder. Anxiety symptoms were present in 77.3% of participants (18.2% mild pronounced symptoms of anxiety, 47.3% moderate pronounced symptoms of anxiety, 11.8% sever symptoms of anxiety). The intensity of the anxiety was in line with the drinking pattern. A study in India found mild anxiety in 60% of patients hospitalized due to excessive alcohol consumption [14]. A multicenter study in Germany verified the existence of anxiety in 42.3% of patients hospitalized in 25 alcoholism treatment centers [15].

Studies conducted in Brazil have detected axiosis in 23 - 70% of alcohol-dependent patients. According to studies, drug therapy for anxiety significantly prolongs the time required to develop alcohol dependence [16]. Research by a group of authors from the United Kingdom has detected anxiety as an independent risk factor in the development of alcohol use disorders. It also indicates that drug therapy for anxiety leads to a significant reduction in drinking [17]. Studies conducted in the United States have found anxiety in 60% of patients who consume alcohol. They found that the presence of intense anxiety increased the risk of alcohol dependence by 20 times [18,19]. A study by a group of authors from the Netherlands detected alcohol dependence in 20.3% of patients with anxiety disorder (compared to 5.5% in the control group). In contrast, the prevalence of alcohol abuse in anxious patients was not statistically significantly higher compared to the control group [20]. In this study, 77.3% of participants had somatic ailments (30.0% mild somatic ailments, 39.1% moderate somatic ailments and 8.2% severe somatic ailments). The highest intensity of somatic problems was verified in subjects with harmful alcohol consumption. Subjects with alcohol abuse had moderate somatic distress. Research by European and American authors has reached similar conclusions. A study by authors from Germany found somatic ailments in 13.8% of men and 33.3% of women who consumed alcohol. According to the same study, daily consumption of 30 g of ethanol for men and 20 g of ethanol for women carried a statistically significantly higher risk of developing somatic problems compared to drinking smaller amounts of alcohol. A group of authors from the United States detected a low rate of somatic disorders, only 7.4%, in people with alcohol abuse. Similar results were obtained in studies conducted in Canada which did not verify a statistically significant association between alcohol abuse and somatic ailments. On the other hand, they found that consuming 7 alcoholic beverages a day for 2 weeks carried a statistically significantly higher risk of developing somatic ailments compared to drinking moderate amounts of alcohol [21,22]. The study found the presence of depressive symptoms in 60.0% of people who consumed alcohol (36.4% mild depressive depressive symptoms, 18.2% moderate depressive symptoms, and 5.4% severe depressive symptoms). The pattern of alcohol consumption is closely related to the intensity of depressive disorders. A study by a

group of authors from Kenya verified secondary depression in 68.3% of people who consume alcohol [23]. A study by a group of authors in Nepal found depression in 41.7% of people hospitalized for alcohol use [24]. Studies conducted in England have confirmed the existence of moderate depression in 47% of people diagnosed with alcoholism, while 34% had severe depressive disorders [25]. American authors found that men who drank 14 - 27 alcoholic beverages per week and women who drank 7 - 13 alcoholic beverages per week had a significantly higher presence of depression compared to those who drank less alcohol [26].

The obtained results of the research are in accordance with the mentioned researches from other countries, which confirms the fact that alcoholism and comorbid mental disorders are a global public health problem. There is a consensus of the authors that the presence of mental disorders can significantly affect the course and outcome of treatment of alcoholics, and therefore their screening should become a routine part of clinical practice.

CONCLUSION

The pattern of drinking alcohol is in accordance with the intensity of anxiety problems. Harmful drinking of alcohol results in intense somatic problems, while alcohol abuse is not statistically significantly associated with it. The intensity of depressive disorders is in accordance with the pattern of drinking alcohol.

Literature

1. Republička stručna komisija za izradu i implementaciju vodiča dobre kliničke prakse. Nacionalni vodič dobre kliničke prakse Alkoholizam. Ministarstvo zdravlja Republike Srbije. 2013. Available from: http://www.batut.org.rs/download/nacionalni%20vodici/vodicZaDijagnostikovanjeILecenjeAlkoholizma.pdf.
2. Sher L. Depression and alcoholism. QJM: An International Journal of Medicine.2004; 97 (4): 237–240. Available from: https://doi.org/10.1093/qjmed/hch04.
3. Sudhinaraset M, Wigglesworth C, Takeuchi DT. Social and Cultural Contexts of Alcohol Use: Influences in a Social-Ecological Framework. Alcohol Res. 2016;38(1):35–45. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4872611/.
4. Vuković O, Cvetić T, Zebić M. Komorbiditet bolesti zavisnosti i mentalnih poremećaja. Engrami 2007; 29 (1-2): 87-105. Available from: https://scindeks-clanci.ceon.rs/data/pdf/0351-2665/2007/0351-26650702087V.pdf.
5. Toković S, Bivolarević S; Đurišić Lj, Arsić A, Čeković J, Srećkov M, Ružić B, Dimitrijević I, Radivojević V, Bivolarević S. Alkoholizam i psihijatrijski komorbiditet u primarnoj zdravstvenoj zaštiti. Sanamed. 2010; 5: 35-38. Available from: http://www.sanamed.rs/sanamed_pdf/sanamed_5/Snjezana_Tokovic.pdf.

6. Williams N. The AUDIT questionnaire. Occupational Medicine. 2014: 64 (4): 308. Available from: https://doi.org/10.1093/occmed/kqu011.
7. Löwe B, Decker O, Müller S, Brähler E, Schellberg D, Herzog W, Herzberg PY. Validation and Standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the General Population. Medical Care. 2008; 46 (3): 266-274 Available from: https://insights.ovid.com/crossref?an=00005650-200803000-00006.
8. Latas M, Perović S, Janjić V, Radmanović B. Pregabalin u terapiji pacijenata sa generalizovanim anksioznim poremećajem – pilot istraživanje: prikaz serije pacijenata. Engrami. 2016. 38 (2): 99-106. Available from: https://scindeks-clanci.ceon.rs/data/pdf/0351-2665/2016/0351-26651602099L.pdf.
9. Jandrić-Kočić MC. Komorbiditeti i funkcionalna onesposobljenost hroničnog bola u donjem dijelu leđa. Opšta medicina. 2019; 25(3-4):43-57. Available from: https://scindeks.ceon.rs/article.aspx?query=ISSID%26and%2614668&page=0&sort=8&stype=0&backurl=%2fissue.aspx%3fissue%3d14668.
10. Kocalevent RD, Hinz A, Brähler E. Standardization of a screening instrument (PHQ-15) for somatization syndromes in the general population. BMC Psychiatry. 2013; 13:91. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3606198/.
11. Stanojević D, Jaredić B, Mandić S. Depresivnost kod adolescenata na Kosovu i Metohiji. Timočki medicinski glasnik 2012; 40(3): 187-220. dostupno na: http://www.tmg.org.rs/v370406.htm.
12. Jackson-Koku G. Questionnaire review. Beck Depression Inventory. Occupational Medicine 2016;66:174–175. Available from: https://watermark.silverchair.com/kqv087.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAAl4wggJaBgkqhkiG9w0BBwagggJLMIICRwIBADCCAkAGCSqGSIb3
13. Mandić-Gajić G. Sekundarna depresija kod alkoholičara – klinički značaj. Vojnosanit Pregl 2005; 62(9): 671−677. Available from: http://www.doiserbia.nb.rs/img/doi/0042-8450/2005/0042-84500509671M.pdf..
14. Nair SM, Sharma PA, Das R. A descriptive study to assess the level of anxiety and depression among alcohol use disorder patient in a tertiary care hospital of Western Maharashtra. 2019; 16 (1): 11-14. Available from: http://www.ijpn.in/article.asp?issn=2231-1505;year=2019;volume=16;issue=1;spage=11;epage=14;aulast=Nair.
15. Schneider U, Altmann A, Baumann M, Bernzen J, Bertz B, Bimber U, Broese T, Broocks A, Burtscheidt W, Cimander KF et al. Comorbid anxiety and affective disorder in alcohol-dependent patients seeking treatment: the first Multicentre Study in Germany. Alcohol and Alcoholism. 2001. 36 (3): 219–223. Available from: https://doi.org/10.1093/alcalc/36.3.219.
16. Hamer A, Felix K, Lilian R, Caldas R. Comorbidity: alcohol use and other psychiatric disorders. Rev. Bras. Psiquiatr. 2004 ; 26(Suppl 1): 51-53. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-44462004000500013&lng=en.
17. Sloan TB, Roache JD, Johnson BA. The role of anxiety in predicting drinking behaviour. Alcohol and Alcoholism. 2003. 38 (4): 360–363. Available from: https://doi.org/10.1093/alcalc/agg090.

18. Smith JP, Randall CL. Anxiety and alcohol use disorders: comorbidity and treatment considerations. Alcohol Res. 2012;34(4):414–431. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3860396/
19. Carter M, Fisher C, Isaac M. Recovery From Comorbidity: Depression or Anxiety With Alcohol Misuse—A Systematic and Integrative Supradisciplinary Review and Critical Appraisal. SAGE Open.2013. Available from: https://doi.org/10.1177/2158244013512133
20. Boschloo L, Vogelzangs N, Smit JH, Brink W, Veltman DJ. Beekman ATF, Brenda W.J.H. Penninx BWJH. Comorbidity and risk indicators for alcohol use disorders among persons with anxiety and/or depressive disorders. Findings from the Netherlands Study of Depression and Anxiety (NESDA). Journal of Affective Disorders.2011. 131 (1–3): 233-242. Available from: https://www.sciencedirect.com/science/article/pii/S0165032710007494?via%3Dihub
21. Hasin D, Katz H. Somatoform and Substance Use Disorders. 2007; Psychosomatic Medicine 69: 870 – 875. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.483.914&rep=rep1&type=pdf.
22. Tien AY, Schlaepfer TE, Fisch HU. Self-reported somatization symptoms associated with risk for extreme alcohol use. Arch Fam Med. 1998;7(1):33-7. Available from: Psychosom Med. 2007 Dec;69(9):870-5.
23. Kuria MW, Ndetei DM, Obot IS, Khasakhala LI, Bagaka BM, Mbugua MN, Kamau J. The Association between Alcohol Dependence and Depression before and after Treatment for Alcohol Dependence. ISRN Psychiatry. 2012: 482802. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3658562/#__ffn_sectitle.
24. Khalid A, Kunwar AR, Rajbhandari KC, Sharma VD, Regmi SK. A study of prevalence and comorbidity of depression in alcohol dependence. Indian J Psychiatry. 2000;42(4):434–438. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2962747/pdf/IJPsy-42-434.pdf.
25. Republička stručna komisija za izradu i implementaciju vodiča dobre kliničke prakse. Nacionalni vodič dobre kliničke prakse Alkoholizam. Ministarstvo zdravlja Republike Srbije. 2013. Available from: http://www.batut.org.rs/download/nacionalni%20vodici/vodicZaDijagnostikovanjeILecenjeAlkoholizma.pdf
26. Ramsey SE, Engler PA, Stein MD. Alcohol Use Among Depressed Patients: The Need for Assessment and Intervention. Prof Psychol Res Pr. 2005. 1; 36(2):203-207. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2874911.

Figure 1. Participants gender
N = 110

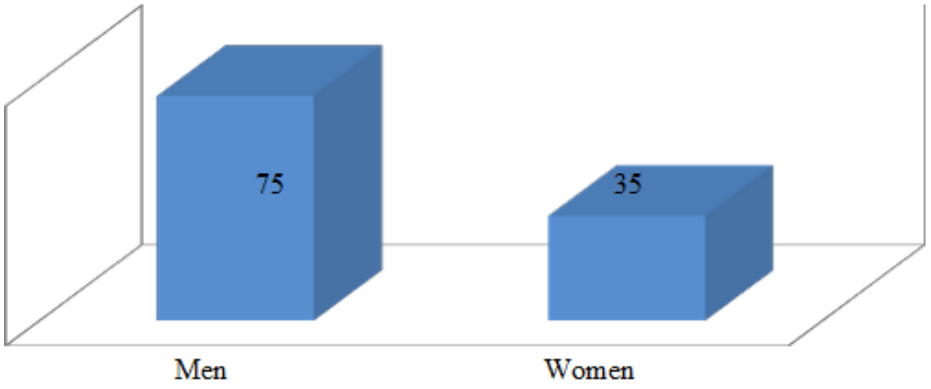

Figure 2. Participants years
N = 110

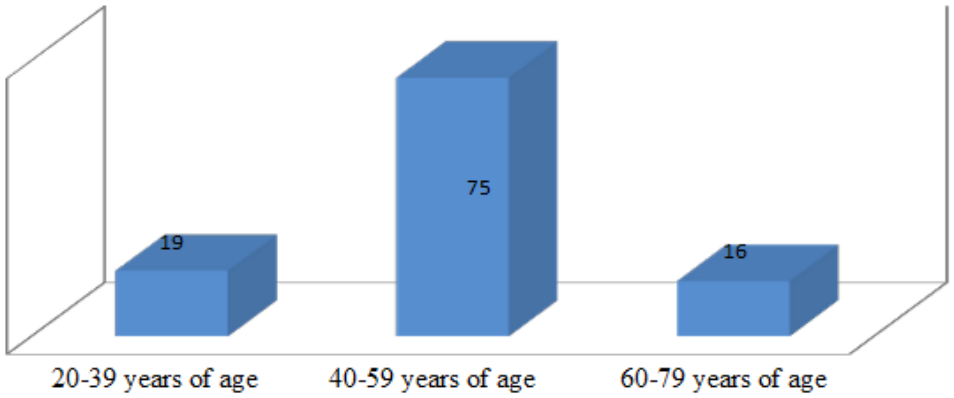

Figure 3. Alcohol drinking pattern of participants in the study according to AUDIT Questionnaire

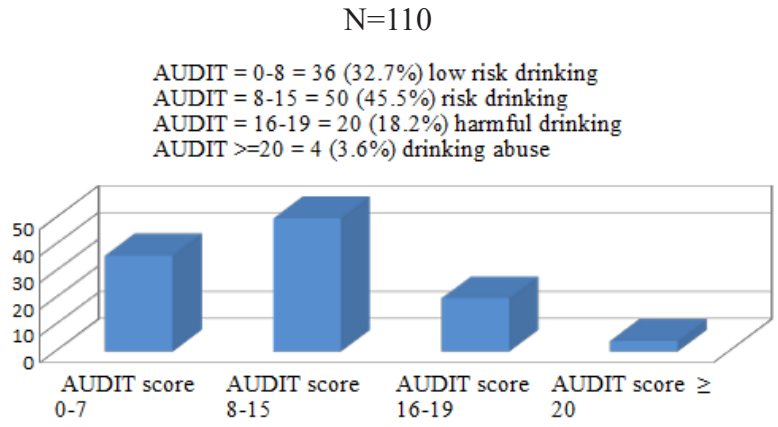

Figure 4. Intensity of anxiety of participants in the study according to questionnaire GAD-7

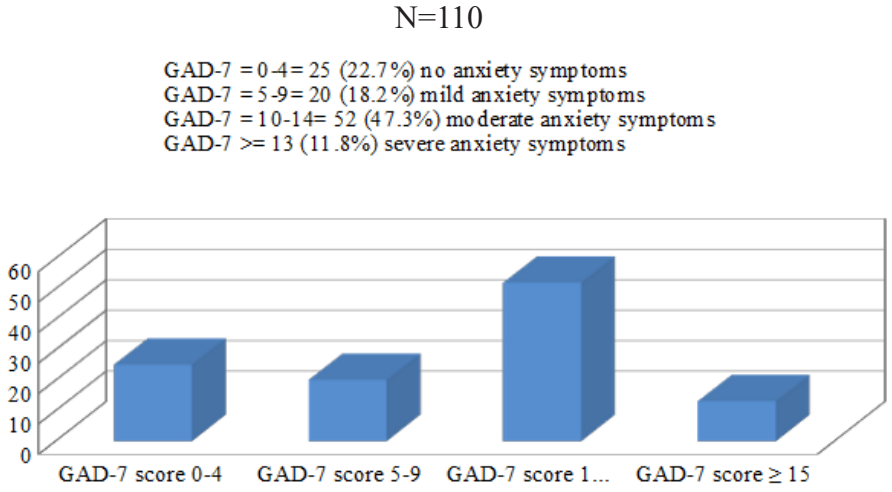

Figure 4. Intensity of somatic difficulties of the participants in the study according to the PHQ-15 questionnaire

N=110

PHQ-15 = 0-4 = 25 (22.7%) no somatic ailments
PHQ-15 =5- 9= 33 (30.0%) mild somatic ailments
PHQ-15 = 10-14 = 43 (39.1%) moderate somatic ailments
PHQ-15 > =15 = 9 (8.2%) severe somatic aliments

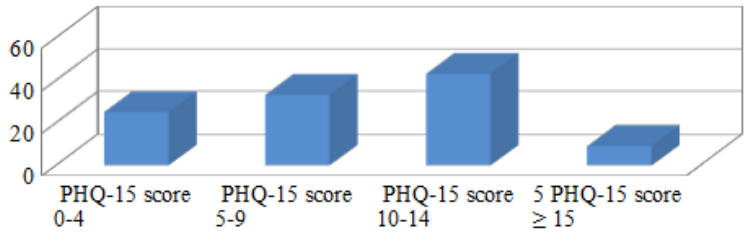

Figure 4. Intensity of depressive disorders of participants i n the the study according to BDI Questionnaire

N=110

BDI 0-13 = 44 (40.0%) no depression symptoms
BDI 14-19 = 40 (36.4%) mild depression symptoms
BDI 20-28= 20 (18.2%) moderate depression symptoms
BDI > = 29 = 6 (5.4%) severe depression symptoms

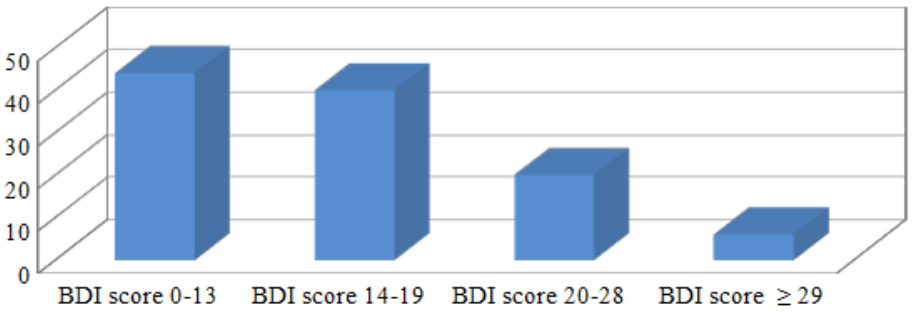

Table 1. Intensity Relationship between Depression, Anxiety, and Somatic Disorders by Beck's Depression Inventory Index, Generalized Anxiety Disorder Index, and Patient Health Questionnaire Index and alcohol drinking form by Alcohol Use Disorders Drinking Identification Test Index

Characteristics	[1]AUDIT score 0-8	[2]AUDIT score 8-15	[3]AUDIT score	[4]AUDIT score ≥ 20	*p value
[5] GAD score 0-4	12 (33.3%)	12 (24.0%)	1(5.0%)	0 (0.0%)	
[6] GAD -7 score 5-9	12 (33.3%)	6 (12.0%)	2 (10.0%)	0 (0.0%)	< 0.05
[7] GAD -7score 10-14	11 (30.6%)	31 (62.0%)	9 (45.0%)	1 (25.0%)	
[8] GAD score ≥ 15	1 (2.8%)	1 (2.0%)	8 (40.0%)	3 (75.0%)	
[9] PHQ-15 score 0-4	8 (22.2%)	16 (32.0%)	1 (5.0%)	0 (0.0%)	
[10] PHQ-15 score 5-9	18 (50.0%)	13 (26.0%)	12 (60.0%)	0 (0.0%)	
[11] PHQ-15 score 10-14	6 (16.7%)	17 (34.0%)	6 (30.0%)	4 (100%)	> 0.05
[12] PHQ-15 score ≥ 15	4 (11.1%)	4 (8.0%)	1 (5.0%)	0 (0.0%)	
[13] BDI score 0-13	20 (55.6%)	22 (44.0%)	2 (10.0%)	0 (0.0%)	
[14] BDI score 14-19	13 (36.1%)	20 (40.0%)	7 (35.0%)	0 (0.0%)	
[15] BDI score 20-28	3 (8.3%)	7 (14.0%)	8 (40.0%)	2 (50.0%)	< 0.05
[16] BDI score ≥29	0 (0.0%)	1 (2.0%)	3 (15.0%)	2 (50.0%)	

* According to hi square test or Fisher test;

[1] Low Risk Drinking
[2] Risky Drinking
[3] Harmful Drinking
[4] Alcohol Abuse
[5] Absence of depressive problems
[6] Mild depressive problems
[7] Moderate depressive problems
[8] Severe depressive problems
[9] Absence of anxiety problems
[10] Mild anxiety problems
[11] Moderate anxiety problems
[12] Severe anxiety problems
[13] Absence of somatic problems
[14] Mild somatic problems
[15] Moderate somatic problems
[16] Severe somatic problems