

THE SOCIAL CHARACTERISTICS OF PATIENTS WITH ALCOHOL USE DISORDER IN THE AREA OF THE TUZLA CANTON - BOSNIA AND HERZEGOVINA

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SUMMARY

Background: Researches to date had indicated that socioeconomic status is a strong predictor of health behavior but also it has two-way effect with alcohol use disorder. This study examines social factors and their impact on alcohol use disorder and places individual alcohol use in the context of the status and conditions in which people live. To determine the distribution and characteristics of social factor in patients with alcohol use disorder (AUD) in the area of the Tuzla Canton (TC) in the period 01.01.2011 - 31.12.2015, in relation to: age, sex, marital status, level of education, municipality of residence, home ownership status, family structure, employment status, and monthly monetary income.

Subject and methods: Retrospective research was conducted using a systematic sample of 1863 patients with AUD, using documentation from the Psychiatry clinic of the University Clinical Centre (UCC) and the protocols of Health Centres.

Results: The sample was composed 1808 (97.05%) men and 55 (2.95%) women; the ratio of men to women was 33:1. The ages of the patients in the sample were 54.4±9.79 years - men 54.49±9.74 years; women 51.45±10.94 years. Most of the men in the sample were married (71.1%) and most of the women were widowed (54.5%). The largest number of patients had elementary school education (66.5%), were unemployed (56.8%), with a monthly monetary income less than 300 convertible marks (KM) (62.2%), owned their own home (78.2%), and 36.1% of them lived with a partner or their own children.

Conclusions: There are significantly more men being treated for AUD; most of them are married, and most of the women are widowed. The largest number of patients treated for AUD have elementary school education, are unemployed, have monthly monetary income less than 300 km, own their own house, and a little more than one third of them lived with their partner or their own children.

Key words: social characteristics - alcohol use disorder - Bosnia and Herzegovina

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INTRODUCTION

In the world, about 3.3 million deaths were ascribed to alcohol abuse in 2012 (WHO 2014). Excessive use of alcohol is the third leading cause of death in the United States of America, accounting for 88,000 deaths a year (CDC 2014). The harmful effects of alcohol abuse are far-reaching, and range from accidents and injuries, to illness and death, as well as consequences for the family, friends and the wider society. A large proportion of the economic costs comprise the lost of productivity in the workplace, and the costs of health care, and participation in the criminal justice system and traffic accidents (Rehm et al. 2009). AUD and social factors show negative correlations with one another (Moro et al. 2009). Indicators of socio-economic status (SES) - education, income and occupation, are usually strong predictors of health behaviors and outcomes, so that people with higher SES have a tendency to drink more often, but people with low SES have a tendency to drink larger quantities of alcohol (Huckle et al. 2010), also men consume more alcohol and do so more often than

women (Mäkelä et al. 2006), and young people have a tendency to drink less often but in larger quantities than older people (WHO 2014). The use of alcohol may be linked to a complex series of factors which range from the individual level (that is, genetics), to characteristics on the level of the population (that is, cultural, social factors or religious and spiritual) (Berkman et al. 2000, Krieger 2001, Link & Phelan 1995, Hasanović & Pajević 2017). On the level of the population, research has documented a connection between social determinants and health (Berkman & Kawachi 2000, Berkman et al. 2000, Babić et al. 2010, Hasanović & Pajević 2010, Pavlović et al. 2012, Hasanović et al. 2017).

This study considers social factors and their effect on alcohol use disorder, and place individual alcohol use in the context of the status and conditions in which people live. This is not comprehensive research of a population, but its aim is to present a wide range of social factors which may lead to AUD. The incentive for this research was the fact that, from an analysis of the literature available, no research was found into social factors and AUD in the area of TC - BH.

SUBJECTS AND METHODS

In this retrospective study, documentation was used from the Psychiatric Clinic of Tuzla UCC and health centres in the area of the TC. The aim of this study was to determine the distribution and characteristics of social factors in patients with AUD in the area of the Tuzla Canton (TC), Bosnia and Herzegovina, in the period from 01.01.2011 to 31.12.2015, in relation to: age, sex, marital status, level of education, municipality of residence, home ownership status, family structure, employment status and monthly monetary income. The research was conducted on a systematic sample of 1863 patients with AUD, from records in the health system in the area of the TC, BH. People of both sexes were included in the research, and all age groups, diagnosed according to the criteria of the International Classification of Diseases - 10th revision (ICD-10) with the codes numbers F 10.0 - F 10.9.

Statistical methods

The data collected were statistically processed using the computer program SPSS version 20.00. For comparison of values of the continuous variables between the groups, the Student T-test was used, and the Hi-square test was used for comparison of category variables. The statistical significance of the differences between results was set at the level of $p < 0.05$

RESULTS

The total sample consisted of 1863 patients – 1808 (97.05%) men and 55 (2.95%) women, where the youngest patient was 17.72 years old and the oldest was 69.44 years old; the ratio of men to women was 33:1; there was a statistically significant difference in the distribution of patients in terms of sex (χ^2 - 35.5; $p < 0.001$).

The average age of the patients in the sample was 54.43 ± 9.79 years. The men were slightly older (54.49 ± 9.74 years) than the women (51.45 ± 10.94 years), without any statistically significant difference in the distribution of patients in terms of age in relation to sex

(t -test=1616.0; $p=0.106$). In the total sample, a little over half the men were in the age group from 55-64.99 years, and a little less than half the women in the age group from 65-70 years. Amongst the men in the study there was a statistically significant difference in distribution according to age groups (χ^2 -1695.6; $p < 0.001$), and also with the women (χ^2 -test=35.5; $p < 0.05$), and between the sexes (χ^2 -1639.1; $p < 0.05$).

Most of the men in the sample were married, whilst slightly more than half the women were widowed. There was a statistically significant difference amongst the men in the study in the distribution related to marital status (χ^2 -2759.2; $p < 0.05$), and also amongst the women (χ^2 -30.1; $p < 0.05$). The difference in distribution between the sexes in relation to marital status showed statistical significance (χ^2 -2794.6; $p < 0.05$) (Table 1).

Two thirds of the patients in the sample had completed elementary school education. Two thirds of the men had completed elementary school, almost one third high school, and 4% had no education. About 2% of the patients had college or higher education, and there were statistically significant differences in the distribution of the level of education amongst the men (χ^2 -2897.5; $p < 0.05$). Slightly more than half the women had completed elementary school education, and the remainder had completed high school. There were no women in the sample with higher education, and there were no statistically significant differences in the distribution of the level of education (χ^2 -2.0; $p=0.083$). The distribution of the level of education showed a statistically significant difference between the sexes (χ^2 -2956.8; $p < 0.05$) (Table 2).

The largest number of patients, slightly more than one quarter of the sample, were from Tuzla. There were statistically significant differences in relation to the municipalities where the men lived (χ^2 -1068.8; $p < 0.05$), and also the women (χ^2 -31.4; $p < 0.05$), and between the sexes (χ^2 -1109.3; $p < 0.05$). The largest number of patients, in relation to the total population of the municipality where they live, came from the municipality of Kladanj (0.52%), and the municipalities of Teočak and Tuzla (0.47%).

Table 1. Distribution of patients treated for alcohol problems in the area of the Tuzla Canton according to marital status in relation to sex

Marital status	Men		Women		Total		χ^2 -test	p
	N	%	N	%	N	%		
Married	1286	71.10	23	41.80	1309	70.30	2794.6	<0.001
Re-married	31	1.70	-	-	31	1.70		
Divorced	183	10.10	2	3.60	185	9.90		
Widowed	73	4.00	30	54.50	103	5.50		
Single	235	13.00	-	-	235	12.60		
Total	1808	100	55	100	1863	100		

χ^2 - Chi square test; p – level of significance of differences between results

Table 2. Distribution of treated patients with alcohol problems in the area of the Tuzla Canton according to level of education in relation to sex

Level of education	Men		Women		Total		χ^2 -test	p
	N	%	N	%	N	%		
No education	73	4.00	-	-	73	3.90	2956.8	<0.001
Elementary School	1209	66.90	30	54.50	1239	66.50		
High School	492	27.20	25	45.50	517	27.80		
College	10	0.60	-	-	10	0.50		
Higher Education	24	1.30	-	-	24	1.30		
Total	1808	100	55	100	1863	100		

χ^2 - Chi square test; p – level of significance of differences between results

Table 3. Distribution of patients treated for alcohol problems in the area of the Tuzla Canton according to home ownership in relation to sex

Home ownership	Men		Women		Total		χ^2 -test	p
	N	%	N	%	N	%		
Own house	1436	79.40	20	36.40	1456	78.20	2960.25	<0.001
Own flat	146	8.10	3	5.50	149	8.00		
Family house/flat	183	10.10	5	9.10	188	10.10		
Subtenant	43	2.40	27	49.10	70	3.80		
Total	1808	100	55	100	1863	100		

χ^2 - Chi square test; p – level of significance of differences between results

Table 4. Distribution of patients treated for alcohol problems in the area of the Tuzla Canton according to family structure in relation to sex

Family structure/living with	Men		Women		Total		χ^2 -test	p
	N	%	N	%	N	%		
Partner	641	35.50	2	3.60	643	34.50	2820.40	<0.001
Partner and their own children	653	36.10	19	34.50	672	36.10		
Partner and adopted children	7	0.40	-	-	7	0.40		
Own children	17	0.90	1	1.80	18	1.00		
Partner, parents and own children	19	1.10	1	1.80	20	1.10		
Parents	104	5.80	2	3.60	106	5.70		
Parents, brothers and/or sisters	8	0.40	-	-	8	0.40		
Brothers and/or sisters	5	0.30	1	1.80	6	0.30		
Alone	354	19.60	29	52.70	383	20.60		
Total	1808	100	55	100	1863	100		

χ^2 - Chi square test; p – level of significance of differences between results

The largest number of patients, a little less than fourth fifths, lived in their own house. A little less than fourth fifths of the men lived in their own house, one tenth in a family house or flat, and 2.4% were subtenants. Half of the women lived as subtenants, one third lived in their own house, one tenth in a family house or flat, and 5.5% in their own flat. There was a statistically significant difference in relation to the ownership of their homes amongst the men (χ^2 -3071.1; $p<0.001$), and women (χ^2 -53.0; $p<0.001$). The distribution of subjects in relation to home ownership showed a statistically significant difference between the sexes (χ^2 -2960.2; $p<0.05$) (Table 3).

The largest number of patients in the sample, more than one third of them, lived with a partner and their own

children. One third of the men lived with their partner and their own children, and one third with their partner alone. More than half the women in the sample lived alone, one third with a partner and their own children. There were statistically significant differences amongst the men in the study in relation to their family structure (χ^2 -2737.3; $p<0.05$), and amongst the women (χ^2 -125.2; $p<0.05$), and also between the sexes (χ^2 -2820.4; $p<0.05$) (Table 4).

The largest number of patients, a little over half, were unemployed. More than half the men in the sample were unemployed, one quarter were retired, and the smallest number (16%) were employed. Half the women were employed, whilst 40.0% of them were unemployed. There were statistically significant differences

Table 5. Distribution of patients treated for alcohol problems in the area of the Tuzla Canton according to employment status in relation to sex

Employment status	Men		Women		Total		χ^2 -test	p
	N	%	N	%	N	%		
Unemployed	1038	57.40	22	40.00	1060	56.80	2465.08	<0.001
Retired	481	26.60	5	9.10	486	26.10		
Employed	289	16.00	28	50.90	317	17.00		
Total	1808	100	55	100	1863	100		

χ^2 - Chi square test; p – level of significance of differences between results

amongst the men in the study in relation to their employment status (χ^2 -1880.8; $p < 0.05$), and also amongst the women (χ^2 -54.8; $p < 0.05$), and between the sexes (χ^2 -2465.1; $p < 0.05$) (Table 5).

In the total sample, the largest number of patients had a monthly monetary income of less than 300 convertible marks (KM). Slightly less than two thirds of the men had a monthly monetary income of less than 300 KM; slightly more than half the women had a monthly monetary income of between 300 and 500 KM. There were statistically significant differences in the distribution of monthly monetary income amongst the men (χ^2 -3269.8; $p < 0.05$), the women (χ^2 -29.6; $p < 0.05$), and also between the sexes (χ^2 -3418.89; $p < 0.05$).

DISCUSSION

In this research it was established that men consumed alcoholic beverages significant more than women, where the ratio of men to women was 33:1. These results showing the higher proportion of men with AUD are in line with the results of studies involving adults in the USA (Chan 2006) and Europe (European Commission 2010); but they are not in line with the ratio of sexes in Croatia, which was much lower at 10:1, with a tendency to change to 3.6:1 (Thaller 2002). Research so far on adolescents and students in the area of the Tuzla Canton (Omerović 2005) and also five-year research into alcoholism in the Tuzla region in the period from 1975 to 1979, also showed that men consume more alcohol (Mijatov 1980). The deviation in the ratio of sexes in the results in this research may be explained by the post-war period, that is, the destruction of the social structure by the war resulted in the absence of adequate social and health care support, especially for men who had participated in the events of the war (Hasanović et al. 2005, 2017, Babić et al. 2010, Hasanović & Pajević 2010, Pavlović et al. 2012), and there is a general perception that women do not have and stigma attached to women who have AUD, so they avoid treatment in order to avoid moral condemnation, scorn and being marked as morally fallen (Barker & Taylor 2019).

The research showed that the largest number of men with AUD were aged between 55 and 65 years, which is in line with research conducted in 2011 in Croatia, where 83.1% of subjects with AUD were aged between

55 and 64 years was (Institut društvenih znanosti “Ivo Pilar” 2012). Research into alcoholism in the European Union by the European Commission (2010) confirmed the results of research in Croatia, that is, that AUD is present in people aged over 55 years. Our research showed that most alcoholics are middle-aged, which is to be expected since alcoholism is a chronic disease, which develops as a result of long-term consumption of excessive quantities of alcohol. It is estimated that an average of 15 years is necessary for a person's health to be affected and for that person to become incapable of fulfilling their family or work duties (Prekratić 2016). A national epidemiological study of the presence of alcoholism in the population of the USA, on a sample of 42,706 men and women aged more than 18 years, showed a sharp rise in drinking alcohol at younger ages, after which there is a linear reduction followed by then a gradual rise, right up to the age of retirement (Chan et al. 2006). In France research was conducted on the effect of retirement on alcohol consumption. The research was undertaken on 12,384 subjects (10023 men and 2361 women) with a gap of ten years, five years before retirement and five years after. The results of the research showed a rise in excessive alcohol consumption after retirement in both sexes. However, in the next five years after retirement, in both sexes, consumption of alcohol fell to the level at which it had been before retirement (Zins et al. 2011). A study conducted in Finland on a sample of 5805 subjects who retired during 2010 and 2011, showed that there was an increase in alcohol consumption in 12% of the subjects, where male sex, smoking, depression and work in an urban area were correlated with a higher probability of increased alcohol consumption (Halonen et al. 2017). Some of the possible reasons for the rise in excessive alcohol consumption after retirement lie in the fact that the person suddenly has an excess of free time, and the need to limit alcohol consumption due to fear of losing one's job is reduced. Moreover, having completed their working life, people no longer have such a feeling of responsibility and obligation which could limit their alcohol consumption (Zins et al. 2011). In this research, the largest number of women were aged between 45 and 55 years, which is in line with research conducted by the Institute for Alcoholism and Other Toxicomanias of the Sarajevo Canton in the period from 2007 to 2011, on

a sample of 40 patients. It was established that the largest number of female patients were aged 46-55 years, with an average length of alcohol consumption of 15 years (Okić et al. 2012), which indirectly indicated this at-risk age group of women, who have not realized or who have lost their social and family roles (Tošanović-Janković et al. 2013). Five-year research in the Tuzla region in the period from 1975-1979 (Mijatov 1980) showed that almost all alcoholics were in the age group between 40 and 60 years.

Our research showed that AUD is more common in married men, which is in line with the results of the research conducted by Mijatov (1980) in the Tuzla region in the period from 1975 to 1979. The results of our research may be explained by the large percentage of married men in the general population, which according to the population census of 2013 amounted to 65% in the Tuzla Canton, and 60% in Bosnia and Herzegovina (BHAS 2013). Research into alcoholism in women established that the use of alcohol is more common in women after their marital partner has died, which is in line with research conducted in Sweden, showing that the loss of a marital partner through divorce or death is strongly correlated with the development of AUD (Kendler et al. 2017). The results of our research showed that when we quadruple the number in the sample, since only every fourth person seeks help and is registered in the health care system (Thaller 2002), and multiply it by 2.95 (the average number of household members in the Tuzla Canton, according to data from the population census for Bosnia and Herzegovina from 2013 (BHAS 2013), we reach the total number of those endangered by alcoholism in the Tuzla Canton of 20,000 or 4.5%, which is in line with the results obtained in 1980 by Mijatov. Research conducted in the USA, dealing with the connection between alcohol dependency and marital status, found lower consumption of alcohol and a smaller number of problems amongst married men in comparison with unmarried, separated and divorced men. The effect of marriage is seen in three processes: the reduced consumption of alcohol prompted by entering marriage, the harmful effect of strong drinks on the quality of the marriage and marital stability, and increased consumption as a response to transition to divorce (Leonard & Rothbard 1999, Vladimirov et al. 2016). The problem of excessive alcohol consumption, becomes less noticeable with the beginning of marriage, which is the result of several factors, such as the reduction in free time, the increase in a feeling of responsibility, and the perception of oneself as a mature person, whilst after divorce alcohol may represent a means to ease stress and facing loss (Prekrtić 2016). In simple models of research conducted on the general population in the USA, which examined only marital status, married individuals drank significantly less than those who were not married. However, when these models included individual predisposition, the severity of the

problem and social predisposition, marital status was no longer significant in predicting alcoholism (Matzger et al. 2004). A study conducted in the USA found a racial difference in the effect of marital status on the frequency of severe dependency on alcohol. It showed a reduction in severe alcohol dependency in the early years of marriage in white subjects, whilst in black subjects there was no reduction and over time a rise was recorded in the problem of severe alcohol dependency (Mudar et al. 2002).

Analysing the results of this research it was established that the use of alcohol is most present in people who have elementary education, which is in line with the results of research undertaken in the USA, which found that alcohol is consumed more by people who have less than high school education (Karlomagla et al. 2006). Moreover, research in Canada found that alcohol is consumed less by people with higher education (Hwang et al. 2005), and that higher education and income are predictors that are responsible for lower alcohol use (Elliot & Lowman 2015). Research undertaken in Hungary showed that a lower level of education has a negative effect on AUD and increases the risk of cyrosis of the liver (Petrovski et al. 2011). The largest number of people in the Tuzla Canton, according to the census of Bosnia and Herzegovina of 2013, have high school education (42.92%) and 19.33% have elementary school education (Kendler et al. 2017), so that the greater presence of alcoholism in people with elementary and high school education may be explained their their significant presence in the general population. No research has yet been undertaken on the subject of the correlation between the level of education and alcoholism in the general population in the area of Bosnia and Herzegovina.

Analysis of the results obtained showed that the largest number of patients with AUD live in the town of Tuzla, which in terms of its demographic, functional and spatial characteristics is mainly urban in terms of residential areas, in contrast to other municipalities, which are mainly rural (Bjelajac & Vrdoljak 2009), whilst the highest percentage of AUD in relation to the total population was found in the municipality of Kladanj. The results of this research are not in line with research in the USA, which found greater alcohol use in young people aged 18 to 26 who live in urban residential areas, which provide greater availability of alcohol (Slutske et al. 2016). A study undertaken in Peru found that there was increased use of alcohol amongst migrants from rural to urban residential areas, due to the high level of stress they experienced (Taype-Rondan et al. 2017). The results of a study undertaken on adolescents aged from 12 to 17 years, with an equal distribution between rural and urban areas of larger cities in Bosnia and Herzegovina, are in line with the results of our study, showing that 15.55% abused alcohol (urban 62.4%, rural 37.6%); 6.69%

tobacco (urban 67.5%, rural 32.5%); 3.34% cannabis (urban 70.0%, rural 30.0%) (Ličanin & Redžić 2005).

Analysis of the results showed that the largest number of patients with AUD had housing, that is, they live in their own home. The results of research related to home ownership and AUD are not in line with many other studies, which indicate that AUD is much more frequent in homeless people in the general population of the USA (Fischer & Breakey 1991). Alcohol consumption and problems related to alcohol use in Spain are greater in homeless people than those threatened by social exclusion (Panadero et al. 2016). Alcohol dependency is present in 78.55% homeless people in Poland (Romaszko et al. 2017). In former homeless people in the USA, the prevalence of alcohol use in comorbidity with one or more psychiatric disorders amounted to 15.1% and was five times more than in people who have never been homeless (Reardon et al. 2003). The well-organized system of social and health care, based on good legislation on social and health care, in Bosnia and Herzegovina may be the reason for the different results obtained in this research from those in previous research.

The results of our research showed that the highest number of men with AUD live with their partner and their own children, but the highest number of women are widowed. No research into the structure and composition of families of people with AUD in Bosnia and Herzegovina has been researched to date. However, in the USA research was undertaken on the inter-relationship and effects of members of families with AUD, which found that older brothers and/or sisters have a significant effect on younger family members, whilst the influence of a younger brother and/or sister on older members of the family is weaker (Samek et al. 2018). In the USA research was conducted which showed that the success of treatment of alcoholism is related to the foundation of a family and higher social and economic status, in contrast to repeated failure in treatment which is related to being single, poor social-economic status, and previous hospitalization for alcohol abuse (Crawford 1976). A study in Holland showed that life in the community and family support have a significant effect on the success of treatment of AUD even in people with less social support and with mental difficulties (de Vet et al. 2017).

The results of this research showed that AUD is more evident in unemployed men and employed women. Research related to employment status of patients with AUD is contradictory - some studies indicate that employed persons more often consume alcohol and are treated (Chan et al. 2006, Hwang et al. 2005), whilst others found that AUD is more common in the unemployed, that unemployment is a significant risk factor for use and the later development of AUD, and that unemployment increases the risk of relapse after treatment for alcoholism (Henkel 2011).

Analysis of the results showed that the largest number of patients with AUD has a monthly income of less than 300 convertible marks (KM). The results of the research are in line with research so far, which indicates that AUD is more present in people with lower monthly income and poorer social and economic status (Anderson et al. 2017) and that the harmful effects related to alcohol are more strongly expressed in them (Katiki-reddi et al. 2017). A study conducted in Canada on patients treated in hospital, aged between 40 and 64 years, found that the costs of hospitalization of patients with the primary diagnosis of conditions related to alcohol are inversely related to their monetary incomes, in both sexes (Hwang et al. 2005).

Limitations

This study has certain limitations because we used medical records from different medical institutions and there are heterogeneousness of the type of approaches in history taking and keeping records. In addition to the above mentioned, there is missing of different data so the final picture of the problem is not so clear as it could be if these medical records were more completed and collected in the unique approach.

CONCLUSIONS

In this study, there are significantly more men being treated for AUD; most of them are married, and most of the women are widowed. The largest number of patients treated for AUD have elementary school education, are unemployed, have monthly monetary income less than 300 km, own their own house, and a little more than one third of them lived with their partner or their own children.

Contribution of individual authors:

Miralem Mešanović: conception and design of the manuscript, collecting data and statistical procedures, literature searches, analyses and interpretation of data, manuscript preparation and writing the paper;

Izet Pajević: made substantial contributions to conception and design, participated in revising the article and gave final approval of the version to be submitted.

Mevludin Hasanović: made substantial contributions to conception and design, literature searches, statistical analyses and interpretation of data, participated in revising the article and gave final approval of the version to be submitted.

Dragan Babić: made substantial contributions to conception and design, participated in revising the article and gave final approval of the version to be submitted.

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