CORRELATION OF PSYCHOTIC DISORDERS WITH ALCOHOL AND OTHER PSYCHOACTIVE SUBSTANCES ABUSE

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Abstract: INTRODUCTION. Drug abuse can lead to substance-induced psychosis. Psychotic symptoms can, as well, appear as part of the abstinence syndrome, commonly in alcohol addiction. AIMS. Determining the prevalence of alcohol and other substance abuse by patients hospitalized for psychotic disorders; Determining whether there are differences in sociodemographic, psychiatric and somatoneurological parameters between those who used alcohol and drugs and those who did not. MATERIAL AND METHODS. The research was conducted as a retrospective study in which 181 patients hospitalized at the male ward for psychotic disorders of the Clinic for Psychiatry in Novi Sad were included. Medical documentation and clinical data grouped into 16 variables were analyzed. The results are presented using pictures, tables and graphs. The JMP 9 program was used for statistical data analysis, with t-test and χ^2 test. Significance level p=0.05. RESULTS. Alcohol was consumed by 41% of patients and drugs by as many as 32% of respondents. Of the drugs, the most prevalent was misuse of THC (13%), followed by polytoxicomania abuse (10%), stimulants (7%) and opioids (2%), while only one respondent was recorded as having misused hallucinogens. Abuse of THC, stimulants and polydrug abuse are associated with younger age. The most common somatoneurological comorbidity was hypertension. Compliance with therapy is statistically significantly worse in the group of alcoholics. CONLUSION. The use of alcohol and drugs is highly prevalent in the population of male patients. Comorbid abuse of these substances adversely affects the onset, course and treatment of psychosis.

Key words: psychosis; alcohol; psychoactive substances; opioids; hallucinogens

INTRODUCTION

Psychosis is a condition that disrupts mental functions, including thinking, perception, and mood, leading to a significant reduction in social and occupational functioning [1]. Symptoms are divided into positive (delusions, hallucinations, agitation) and negative (social withdrawal, emotional blunting) [2], interfering with a person's ability to think and communicate [3]. The etiology of psychosis encompasses genetic and environmental factors, with a significant role played by the dopaminergic and glutamatergic systems [1,2,4]. Psychotic disorders, including schizophrenia and schizoaffective disorder, frequently constitute the predominant clinical presentation; however, psychotic symptoms may also manifest in other conditions, such as those associated with substance abuse (SA)[5-6]. Substance abuse can induce psychotic symptoms during intoxication, particularly with hallucinogens and stimulants [8-9], while marijuana and alcohol increase the risk of psychosis with prolonged consumption [10-11]. Sometimes, substance-induced psychosis develops, and in cases of persistent symptoms, they are associated with a predisposition to psychosis [5-7]. Additionally, withdrawal syndromes, such as delirium tremens, often include psychotic manifestations [12]. Neurophysiological changes induced by SA, particularly in the dopaminergic and glutamatergic systems, explain the similarities in the pathophysiology and treatment of induced and endogenous psychoses [4,7,13,14]. Conversely, mental disorders often lead to substance abuse as a form of "self-medication" [1-3,7,14], while the use of alcohol and drugs negatively impacts the course and prognosis of psychosis [1-2,7].

The goals of this research are to determine the extent to which alcohol and/or other psychoactive substances (PAS) are present in

the population of adult psychotic patients hospitalized at the Psychiatry Clinic. Another objective is to establish whether there are differences in sociodemographic parameters between these patients and psychotic patients who have not abused alcohol and/or other PAS, as well as whether there are differences in psychiatric and somatoneurological characteristics between the two groups of patients (comorbidities, previous treatment, compliance, etc.).

MATERIAL AND METHODS

The study was conducted as a retrospective study, which included 181 patients hospitalized at the male ward for psychotic disorders at the Psychiatry Clinic in Novi Sad. Medical documentation and clinical data of patients treated from October 1st, 2020, to October 1st, 2021, were analyzed. Since we encountered patients who were hospitalized multiple times during this period, only the most recent hospitalization was considered for such cases.

The collected data were organized into variables that corresponded to the research domain:

1. Primary diagnosis for which the patient was hospitalized
2. Age
3. Educational level (elementary school, high school, university)
4. Marital status (married, single, divorced)
5. With whom the patient lives/ Living arrangements (alone, in a care facility, with parents, with close relatives, in a family setting, other – with a partner, with one child)
6. Presence of other psychiatric comorbidities
7. Previous psychiatric treatment
8. Presence of somatoneurological comorbidities
9. History of previous hospitalizations
10. Compliance with therapy (absent, poor, regular, questionable)
11. Alcohol consumption
12. THC consumption (marijuana, hashish)
13. Opioid consumption (heroin)
14. Psychostimulant consumption (cocaine, amphetamine, speed/methamphetamine)
15. Hallucinogen use (LSD, PCP, ecstasy)
16. Polysubstance abuse

For all patients data were obtained from medical histories. The use of materials for research purposes was approved by the Ethics Committee of the Clinical Center of Vojvodina. Given that we were unable to obtain all 16 variables for every patient, the research was based solely on the available data. Thus, out of the 181 hospitalized patients, complete data on alcohol and other psychoactive substances (PAS) use were obtained for 165 of them, and only these patients were included in the observation and analysis. The results initially presented the prevalence of alcohol, THC, opioid, stimulant, hallucinogen use and polysubstance abuse among the participants, expressed as percentages. Responses were recorded exclusively on two levels:as positive (yes) or negative (no) predictive values. Next, differences in sociodemographic parameters were examined between those who did and did not abuse alcohol and/or other PAS. The use of each substance individually, as well as the presence of polysubstance abuse, was compared in relation to the following parameters: age, with whom the patient lives, educational level and marital status. In this part of the results, the most frequent results recorded within individual parameters were summarized and presented as percentages (e.g., with whom they live – with parents 59%).

For the third research objective, the results examined differences in psychiatric and somatoneurological characteristics between the two groups of patients. The analysis focused on the presence of previous psychiatric treatment, prior hospitalizations, compliance with therapyand the presence of somatoneurological and psychiatric comorbidities. The results were presented in tablesand for all parameters except compliance with therapy, a positive predictive value was used as the starting point (e.g., the existence of previous hospitalizations was assumed). The results were presented using images, tables, and graphs. For statistical data analysis, JMP 9 software was used, employing t-test and X^2 test. The significance level was set at p=0.05.

RESULTS

Out of 181 participants, data regarding the consumption of alcohol and other psychoactive substances (PAS) were collected for 165 individuals. The most commonly consumed substance was alcohol, reported by 41% of patients. THC, in the form of marijuana and hashish, was used by 13% of participants. Opioids were abused by 2% and stimulants by 7% of the participants. Among all psychoactive substances, hallucinogens had the lowest

consumption rate, with only 1% of participants using them. Polysubstance abuse was identified in 17 patients, constituting 10% of the total sample of hospitalized individuals. A statistically significant difference (p<0.05) was observed between the number of patients who consumed alcohol and those who did not. Furthermore, a highly statistically significant difference (p<0.01) was found among patients who abused THC, opioids, stimulants and hallucinogens within their respective groups. A significance level of p<0.01 was also observed in polysubstance abuse.

Based on the obtained data, no statistically significant difference was found in sociodemographic parameters between those who did and did not consume alcohol. The majority of participants in both groups lived with their parents, had a high school education and were single(Table 1).

Table 1. Alcohol and Sociodemographic Parameters

	Alcohol consumers	Non-consumers of alcohol	p value
Age	36-40 years	35-40 years	p>0,05
With whom they live	with parents (45.2%)	with parents (63.4%)	
Educational level	high school (69.5%)	high school (60.8%)	
Marital status	single(80.3%)	single(83.5%)	

A statistically significant difference (p < 0.05) was observed with regard to THC use in the younger age group.95% of those who consumed THC were aged 19-30 years. Analysis of other parameters revealed that patients in both groups most commonly lived with their parents, were single, and had a high school education (Table 2).

Table 2. THC and Sociodemographic Parameters

	THC consumers	Non-consumers of THC	p value
Age	19-30 years	38-42 years	p<0,05*
With whom they live	with parents (66.7%)	with parents (53.7%)	p>0,05
Educational level	high school (53.3%)	high school (66.7%)	
Marital status	single(95.2%)	single(79.4%)	

While the distribution of opioid use is associated with both adolescence and middle adulthood (95% of patients who consumed them were in the 19-46 age range), the highest percentage of those without opioid comorbidity belongs to the middle adulthood group (36-41 years). This difference was marked as statistically significant (p<0.05) (Table 3).

Table 3. Opioids and Sociodemographic Parameters

	Opioids consumers	Non-consumers of opioids	p value
Age	19-46 years	36-41 years	p<0,05*
With whom they live	with close relatives (30%) with parents (30%) other (30%)	with parents (55.9%)	p>0,05
Educational level	high school (50%) unfinished elementary school(50%)	high school (64.4%)	
Marital status	single(100%)	single(81.2%)	

Participants in both groups are predominantly singleand live with their parents. A statistically significant difference (p<0.05) was observed in the use of stimulants, which is more common in younger age groups. Additionally, a strong statistical significance (p<0.01) was noted in the parameter 'educational level,' where the majority of consumers have not completed primary education (Table 4).

Table 4. Stimulants and Sociodemographic Parameters

	Stimulants consumers	Non-consumers of simulants	p value
Age	19-35 years	37-42 years	p<0,05*
With whom they live	with parents (63.6%)	with parents (54.9%)	p>0,05
Educational level	unfinished elementary school (66.7%)	high school (65.3%)	p<0,01*
Marital status	single (90.9%)	single (80.9%)	p>0,05

Among all the participants, the presence of hallucinogen abuse was confirmed in only one male, aged 22. His medical history indicated that he lived with close relatives, was single and had not completed primary education yet (Table 5).

Table 5. Hallucinogens and Sociodemographic Parameters

	Hallucinogens consumers	Non-consumers od hallucinogens	p value
Age (average value)	22 years	45,5 years	
With whom they live	with close relatives (100%)	with parents (55.8%)	p>0,05
Educational level	unfinished elementary school (100%)	high school (64.9%)	p<0,01*
Marital status	single (100%)	single (81.5%)	p>0,05

Polysubstance abuse as a comorbidity in patients with schizophrenia was predominantly recorded in the age group of 20-33 years. Participants with polysubstance abuse most commonly lived with their parents (62.5%), had incomplete primary education (50%) and were single (93.8%) (Table 6).

Table 6. Polysubstance Abuse and Sociodemographic Parameters

	The Presence of Polysubstance Abuse	The Absence of Polysubstance Abuse	p value
Age	20-33 years	38-42 years	p<0,05*
With whom they live	with parents (62.5%)	with parents (54.7%)	p>0,05
Educational level	unfinished elementary school (51%)	high school (66.7%)	p<0,01*
Marital status	single (93.8%)	single (80.1%)	p>0,05

A statistically significant higher percentage of patients with a history of psychiatric treatment was observed in the groups of non-consumers of THCand individuals with polysubstance abuse (Table 7).

Table 7. Percentage of Patients with a History of Psychiatric Treatment

	Consumed (%)	Didn't consume (%)	p value
Alcohol	85	80.6	p>0,05
THC	57.1	86.1	p<0,01*
Opioids	75	82.6	p>0,05
Stimulants	58.3	41.6	p<0,05*
Hallucinogens	0	82.9	p<0,05*
Polysubstance Abuse	58.8	41.2	p<0,01*

The presence of prior hospitalizations in patients was more commonly observed in the groups of those who did not consume stimulants and THC and those without polysubstance abuse (Table 8).

Table 8. Percentage of Participants with a History of Prior Hospitalizations

	Consumed (%)	Didn't consume (%)	p value
Alcohol	76.1	74.5	p>0,05
THC	47.6	79.2	p<0,01*
Opioids	75	75.2	p>0,05
Stimulants	50	77.1	p<0,05*
Hallucinogens	0	75.6	p>0,05
Polysubstance Abuse	47.05	78.4	p<0,01*

Regular compliance with medication intake was most frequently observed among hospitalized patients with THC comorbidity (38.46%) (Table 9).

Table 9. Compliance with Medication and Its Association with Alcohol and Other Substance Abuse

	regular		poor		absent		p value
	c(%)	nc(%)	c(%)	nc(%)	c(%)	nc(%)	
alcohol	12.5	35.9	39.3	29.5	45.4	33.3	p<0,05*
THC	38.46	24.8	38.46	32.2	23.07	41.3	p>0,05
opioids	33.3	26	0	33.6	66.7	38.9	
stimulants	14.3	26.8	14.3	33.9	71.4	37.8	
hallucinogens	/	26.1	/	32.8	/	39.5	
polysubstance abuse	10	27.4	30	33.1	60	37.9	

Legend: c-consumed, nc-didn't consume, /-without data

Among individuals who consumed alcohol, 52 patients (78.78%) had no somatoneurological comorbidities, with hypertension being the most prevalent comorbid condition (observed in 5 patients, or 7.6%). In the group of THC users, hypertension, type 2 diabetes mellitus and intestinal candidiasis were equally frequent. In the opioid user group, as well as in those with polysubstance abuse, the prevalence of HIV+ status and intestinal candidiasis was identical. An analysis of participants who abused stimulants revealed the presence of HIV+ status only. No data on the presence of somatoneurological comorbidities were found for patients using hallucinogens. The majority (49.2%) of patients exhibited no psychiatric comorbidities. In the stimulant group, psychiatric comorbidities included anxiety and personality disorders.

DISCUSSION

The global prevalence of psychotic disorders is relatively low, ranging from 0.2% to 3.5%. However, these disorders are more frequently observed in impoverished areas of large cities, where increased substance availability and consumption coincide with a lack of adequate management due to insufficient medical oversight. Consequently, investigating the bidirectional correlation between psychotic disorders and substance abuse is of significant importance. Unfortunately, it is not feasible to establish a direct causal relationship between a specific harmful substance and the mental state of already affected individuals, as these patients often combine various impure chemical compounds. Substance abuse is often driven by a variety of motivations, sometimes even simply to mitigate the adverse effects of antipsychotic medications. Harmful substances exert their effects by temporarily alleviating the deficit in the dysregulated dopaminergic system, which is associated with motivational processes and the reward system [14, 15].

Numerous studies conducted in 2019, 2008, and as far back as 1994, place alcohol, alongside cannabis and cocaine, at the apex of the comorbidity pyramid for patients with schizophrenia. This is consistent with our own research, which indicates that 41% of participants consumed alcohol, 13% used THC, and 7% used stimulants [14, 16, 17]. A comprehensive, multi-decade study conducted in Israel between 1963 and 2016 revealed that one-third of hospitalized patients with chronic psychotic disorders had a dual diagnosis, with the concurrent abuse of harmful psychoactive substances [18]. The initial analysis of our study's results similarly aligns with these findings. Specifically, 13% of participants reported using THC, 2% used opioids, 7% used

stimulants and 10% exhibited polysubstance abuse, leading to a total of 32% of individuals with a dual diagnosis, which approximates one-third of the entire sample. Furthermore, a Spanish retrospective study indicated that 22% of psychoactive substance users also had a psychotic disorder [19], while another publication demonstrated that 30% of PAS users transitioned to schizophrenia [20].

Since studies focusing on the sociodemographic characteristics of patients with dual diagnoses have not received the attention they deserve, it was challenging to find adequate results and hypotheses for comparing these parameters. Nevertheless, a study conducted at the Psychiatry Clinic in a small town in southern India yielded results that correlate with ours. Specifically, no statistically significant difference was found in sociodemographic parameters between individuals who consumed alcohol and those who did not. Additionally, the average age of consumers was 39 years, whereas in our study, 95% of participants were within the age range of 36-40 years [21].

The prevalence of psychotic disorders in the general population was most prominent among younger individuals, those who were single or divorced, and those with a high school education [22]. The abuse of cannabinoids in patients with psychotic disorders was most commonly observed in the age group of 17-22 years. This aligns with our study, in which a statistically significant distribution was also noted among younger individuals (ages 19-30) in the group of THC users [23]. The use of cannabinoids has been linked to lower levels of education in one study [24]. However, since the term 'lower educational level' is not clearly defined, it is not possible to compare results with certainty. The majority of participants in our study who used cannabinoids had a high school education (53.3%).Regarding the acquired level of education and the parameter 'educational level,' a statistically significant difference was observed between the groups of opioid users, hallucinogen users, stimulant users, polysubstance abusers and those who did not consume any of these substances. Specifically, 50% of opioid users, 66.7% of stimulant users, 100% of hallucinogen users and 51% of polysubstance users had not completed primary education.

The global prevalence of schizophrenia is approximately 1%, and the potential complications of substance abuse in patients with schizophrenia include: reduced medication adherence, increased frequency and number of hospitalizations and an elevated risk of violent behavior and suicide [15]. In our study, a significant lack of adherence was observed among schizophrenic patients who consumed alcohol (45.4%), opioids (66.7%), stimulants (71.4%), as well as those with polysubstance abuse (60%). The occurrence of prior hospitalizations in our study was more frequently observed in the group of participants who did not consume stimulants or THC as well as in those without polysubstance abuse. This finding deviates from the previously mentioned research. In the analysis of the presence of somatoneurological comorbidities, hypertension was identified as the most common among patients who abused alcohol and psychoactive substances. According to one study, the prevalence of hypertension was found to be 39% among patients with schizophrenia. The causal relationship follows a logical sequence. Specifically, schizophrenia is treated with antipsychotics, which often have the undesirable side effect of weight gain and obesity places a strain on the entire cardiovascular system, consequently leading to increased blood pressure [25].

While the abuse of alcohol and other psychoactive substances in patients with schizophrenia is generally harmful, it has also been associated with several potentially positive effects. One study observed that individuals with schizophrenia who had used cannabis and alcohol during the premorbid period were significantly more sociable and subjectively better able to cope with stress. The beneficial effects of benzodiazepines were also confirmed, as their well-known action temporarily suppressed psychotic symptoms. Additionally, psychostimulants were found to slightly lessen apathy, which is a negative symptom of the psychotic disorder. [15].

CONCLUSION

The study revealed that harmful use of psychoactive substances is present in 73% of patients hospitalized in psychiatry, with alcohol being the most prevalent (41%), which may be linked to cultural factors and its legal availability. Drug abuse (32%) significantly

exceeds data from the general population, and the results indicate the adverse effects of drugs, particularly THC, on the early onset and severe course of psychotic disorders. Patients who abuse THC more frequently experience severe psychotic exacerbations, despite better medication adherence, which contradicts pseudoscientific claims about the "beneficial" effects of "soft" drugs. Common characteristics among patients include lower levels of education, living with parents and being single, which correlate with socio-occupational

dysfunctions. The most common somatic comorbidity was hypertension, while personality and anxiety disorders were more frequent among stimulant abusers. The limitations of the study, such as the small sample size and focus on male patients with psychotic disorders, highlight the need for broader studies that would include diverse patient groups to provide a more comprehensive understanding of the relationship between psychoactive substances and psychosis.

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