# Prevalence of Substance Use and Severity of Alcohol and Tobacco Dependence in Patients with Schizophrenia Spectrum Disorders: A Cross-Sectional Study

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*Abstract:*
*Objective: This cross-sectional study aimed to investigate the prevalence of substance use and associated factors in patients with schizophrenia spectrum disorders. The study also explored the severity of alcohol and tobacco dependence using standardized assessment scales.*
*Material and Methods: A total of 400 patients diagnosed with schizophrenia spectrum disorders were included in the study. Data was collected using a structured questionnaire, and the severity of alcohol and tobacco dependence was assessed using the AUDIT and Fagerstrom scales, respectively. Descriptive statistics were used to analyze the data, and chi-square and t-tests were employed for associations between categorical and continuous variables, respectively.*
*Results: The findings revealed that a significant proportion of patients with schizophrenia spectrum disorders were consuming substances. Among the participants, 16% reported alcohol consumption, while 39.5% reported nicotine use. Regarding alcohol dependence, 21.2% had low-risk consumption, 31.8% had harmful consumption, and 47.0% exhibited alcohol dependence. In terms of tobacco dependence, 18.4% had low dependence, 22.4% had low to moderate dependence, 36.7% had moderate dependence, and 22.4% had high dependence.*
*Conclusion: The study highlights a high prevalence of substance use, particularly alcohol and nicotine, among patients with schizophrenia spectrum disorders. The severity of alcohol and tobacco dependence was also found to be significant. These findings underscore the need for comprehensive evaluation and interventions targeting substance use in individuals with schizophrenia spectrum disorders. Early identification and appropriate management of substance use can contribute to improved treatment outcomes and overall well-being in this population. Further research should focus on longitudinal studies to assess treatment outcomes and explore the impact of specific substances, such as cannabis, on schizophrenia spectrum disorders. Additionally, investigations into the effectiveness of interventions and the influence of genetic and environmental factors would provide valuable insights for optimizing care in this complex patient population.*
*Keywords: Schizophrenia, Alcohol, Drug Abuse, Nicotine*

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## I. Introduction

Schizophrenia is a complex and chronic psychiatric disorder that profoundly affects the mental health and overall functioning of individuals. (1, 2) Schizophrenia affects approximately 1% of the global population, which translates to about 20 million people worldwide. In India, the prevalence is reported to be around 0.5% to 1%. (3) The disorder is characterized by a range of symptoms categorized into positive symptoms (hallucinations, delusions), negative symptoms (social withdrawal, reduced emotions), and cognitive symptoms (memory difficulties, attentional deficits). The most common symptoms include hallucinations (often auditory), delusions, disorganized speech and behavior, social withdrawal, reduced emotional expression, and cognitive impairments.

The chronicity of schizophrenia results in long-term challenges and a higher risk of disability and functional impairment. The persistent symptoms and cognitive deficits associated with the disorder can disrupt various aspects of a person's life, including social and occupational functioning, relationships, and self-care abilities. (4) People with schizophrenia have higher rates of medical conditions such as cardiovascular disease, metabolic disorders (such as diabetes and obesity), respiratory problems, and substance abuse. These additional health issues contribute to increased morbidity and mortality among individuals with schizophrenia. Moreover, individuals with schizophrenia may experience higher rates of suicide and self-harm. (5, 6) The combination of persistent symptoms, cognitive impairments, social isolation, and the challenges of living with a chronic mental illness can lead to feelings of hopelessness and an increased risk of suicidal ideation and attempts. (7, 8) Schizophrenia has also been found to be associated with a higher prevalence of alcohol and tobacco addiction, as well as the use of other substances with a complex and bidirectional relationship between schizophrenia and substance use disorders. (9) Studies have consistently shown that individuals with schizophrenia have higher rates of alcohol use and are more susceptible to alcohol addiction compared to the general population. Also Tobacco addiction is highly prevalent among individuals with schizophrenia. (10) Research indicates that rates of smoking among people with schizophrenia are much higher compared to the general population. In addition to alcohol and tobacco, individuals with schizophrenia are also more likely to use other substances, such as cannabis, stimulants, and illicit drugs. (11) Substance use can exacerbate psychotic symptoms, impair cognition, and interfere with treatment adherence. It can also increase the risk of developing comorbid substance use disorders, leading to additional health and social complications. nicotine can improve cognitive deficits associated with schizophrenia, such as attentional deficits and working memory impairments, by modulating dopamine release in the PFC. (12) Nicotine's interaction with nAChRs in the PFC may enhance cholinergic-dopaminergic interactions and improve cognitive performance. (13) Nicotine may provide temporary relief from certain negative symptoms and improve cognitive deficits, chronic nicotine use can contribute to dopamine dysregulation, addiction, and other health risks associated with smoking. (14)

Substance use and addiction are significant concerns in individuals with schizophrenia spectrum disorders. Understanding the prevalence of different substances and categorizing the severity of dependence is crucial for developing effective treatment strategies and interventions. Also evaluating the patterns and prevalence of substance use in this population is essential for identifying risk factors, developing targeted interventions, and promoting overall well-being. Hence the study aims to determine the prevalence rates of tobacco and alcohol among patients with schizophrenia spectrum disorders categorize the severity of tobacco and alcohol dependence to understanding its implications for treatment planning and intervention.

## II.      Material and Method

A cross-sectional study was carried out at the outdoor psychiatry department of SSGH Hospital, focusing on 400 patients diagnosed with schizophrenia spectrum disorder using the diagnostic criteria outlined in DSM-5. Each patient was interviewed privately and in the presence of their attendant. Informed written consent was obtained from both the patients and their relatives, with consent forms provided in both English and Gujarati languages. Patients for the study were recruited after getting written approval from the Institutional Ethics Committee for Human Research (IECHR) of S.S.G. Hospital, Vadodara.

**Inclusion and Exclusion Criteria**

The study includes patients who have been diagnosed with schizophrenia spectrum disorder based on the DSM-5 diagnostic criteria. Both male and female individuals aged 18 years and above are eligible to participate. It is important that the patients have a good understanding of Gujarati, Hindi, or English, as these languages will be used for communication during the study. Written informed consent is required from each participant to ensure their voluntary participation. The exclusion criteria involve individuals under the age of 18, those who refuse to give consent, patients with mental retardation, and individuals diagnosed with substance-induced psychotic disorder according to the DSM-5 criteria. These criteria help to ensure that the study focuses specifically on individuals with schizophrenia spectrum disorder who meet the desired age, language, and consent requirements.

**Data Collection**

Data was gathered through the utilization of a semi-structured questionnaire, which served as a tool for data collection in the study. To assess the severity of alcohol dependence, the Alcohol Use Disorder Identification Test (AUDIT) questionnaire was employed. AUDIT is a well-known and widely used clinician-rated scale specifically designed to identify and evaluate problematic alcohol consumption patterns. It consists of various questions that explore alcohol consumption frequency, quantity, and related consequences. Additionally, the severity of tobacco dependence was assessed using the Fagerstrom nicotine dependence scale, which includes separate assessments for both smoking and smokeless tobacco. The Fagerstrom scale is a clinician-rated tool that provides insights into the level of nicotine dependence, taking into account factors such as frequency of tobacco

use, difficulty in refraining from tobacco, and the intensity of cravings. By utilizing these established scales, the study aimed to obtain a comprehensive understanding of the severity of alcohol and tobacco dependence among the participants.

The AUDIT scale, consisting of ten questions, specifically addresses alcohol-related behaviors and experiences. The first three questions assess alcohol consumption, including frequency, quantity, and occasions where consumption may lead to impairment. The following set of questions (4 to 6) focus on possible dependence on alcohol, while the final set (7 to 10) examine harmful alcohol use and the concerns expressed by others. Each question is assigned a score between 0 and 4 based on the response provided, resulting in a total score ranging from 0 to 40. The original WHO multi-center study established cut-off points, with a score of 8 or higher indicating hazardous or harmful alcohol consumption. A score of 15 or higher suggests likely alcohol dependence, and a score of 20 or higher indicates likely severe dependence and harm. The scale's performance in the original collaborative WHO study demonstrated a sensitivity of 92% and a specificity of 94% in identifying hazardous and harmful alcohol consumption when using the cut-off point of 8.

The Fagerstrom nicotine dependence scale for smokeless tobacco (FTND-ST) consists of a six-question scale specifically designed to assess oral nicotine consumption. Each question contributes to a total score of 10. A score of five or higher on the scale indicates a significant dependence on smokeless tobacco, while a score of four or less suggests a mild to moderate level of dependence. The FTND-ST provides a structured approach to evaluate the severity of nicotine dependence among individuals using smokeless tobacco products, offering valuable insights into the extent of their reliance on oral nicotine consumption.

**Sample Size**

The study had a specified time frame and aimed to include a representative sample of patients attending the outpatient psychiatry department. Out of the total population, a sample size of 400 patients was chosen based on specific criteria. The sample size was determined to provide sufficient statistical power and precision in estimating the prevalence of schizophrenia spectrum disorders, including brief psychotic disorder, schizophreniform disorder, and schizophrenia, as defined by the DSM-5 diagnostic criteria. By including this sample size, the study aims to obtain a substantial number of participants that fulfill the inclusion criteria and have provided written consent, thus ensuring a robust and reliable dataset for analysis.

**Study Tools**

The study employed several tools and measures to gather relevant data and assess various aspects of the participants. A proforma was utilized to collect socio-demographic information and clinical characteristics of the patients. This form allowed for a comprehensive understanding of the background and contextual factors related to the participants. The diagnostic criteria for schizophrenia spectrum disorders were determined using the DSM-5, a widely recognized and authoritative manual for mental disorders. To assess the severity of alcohol dependence, the Alcohol Use Disorder Identification Test (AUDIT) scale was employed. This scale is designed to identify and evaluate problematic alcohol consumption patterns, providing insights into the level of alcohol dependence. For the assessment of tobacco dependence, two separate measures were utilized. The Fagerstrom nicotine dependence test for smokeless tobacco (FTND-ST) was used to evaluate the severity of dependence on smokeless tobacco products, while the Fagerstrom nicotine dependence test for smoke tobacco (FTND-smoke) was utilized to assess the severity of dependence on smoked tobacco. These tools were chosen based on their established reliability and validity in measuring alcohol and tobacco dependence, enabling the researchers to gather comprehensive and standardized data on these variables within the study population.

**Data Analysis**

The collected data were entered into an Excel spreadsheet and analyzed using the Epi Info CDC version 7 software. Continuous variables were presented as mean values accompanied by standard deviations, while categorical variables were expressed as percentages. To determine associations between categorical variables, the chi-square test was employed. In cases where the variable was continuous, the student t-test was utilized. For assessing the correlation between two continuous variables, Pearson correlation coefficients were applied. Statistical significance was defined as p-values less than 0.05, indicating that any observed associations or differences were considered statistically significant. This data analysis approach allowed for the examination of relationships, comparisons, and correlations among the variables of interest, providing valuable insights into the research findings.

## III. Result

The study included 400 diagnosed cases of schizophrenia spectrum disorders, with 211 (52.75%) being male and 189 (47.25%) female patients. In terms of age, the largest proportion of patients fell into the 30-39 age group (27.75%), followed closely by the 40-49 age group (27.00%). The majority of patients identified as Hindu

(79.75%), while Muslims accounted for 16.00% of the cases. Among the patients, 52.50% resided in urban areas, while 47.50% lived in rural areas. In terms of education, the largest group had primary education (39.25%), followed by secondary education (29.50%). The majority of patients were classified as lower-middle SES (50.25%) and worked as unskilled workers (39.75%). Among the patients' marital status, the highest percentage was married (59.50%), followed by single (18.50%) and divorced (11.00%).

**Table 1: Demographic factors and frequency of distribution of the diagnosed cases of schizophrenia spectrum disorders**

| Demographic Factor | Category | Number of Patients | Percentage (%) |
|---|---|---|---|
| Age | 20-29 | 72 | 18.00 |
| | 30-39 | 111 | 27.75 |
| | 40-49 | 108 | 27.00 |
| | 50-59 | 76 | 19.00 |
| | 60-70 | 33 | 8.25 |
| Sex | Male | 211 | 52.75 |
| | Female | 189 | 47.25 |
| Religion | Hindu | 319 | 79.75 |
| | Muslim | 64 | 16.00 |
| | Christian | 9 | 2.25 |
| | Others | 8 | 2.00 |
| Area | Urban | 210 | 52.50 |
| | Rural | 190 | 47.50 |
| Education | Illiterate | 54 | 13.50 |
| | Primary | 157 | 39.25 |
| | Secondary | 118 | 29.50 |
| | Graduate | 61 | 15.25 |
| | Postgraduate | 10 | 2.50 |
| Socio-Economic Status | Lower | 23 | 5.75 |
| | Lower-Middle | 201 | 50.25 |
| | Middle | 143 | 35.75 |
| | Upper-Middle | 30 | 7.50 |
| | Higher | 2 | 0.50 |
| Occupation | Unemployed | 113 | 28.25 |
| | Unskilled Worker | 159 | 39.75 |
| | Skilled Worker | 84 | 21.00 |
| | Farmer | 20 | 5.00 |
| | Others | 24 | 6.00 |
| Marital Status | Single | 74 | 18.50 |
| | Married | 238 | 59.50 |
| | Divorced | 44 | 11.00 |
| | Separated | 23 | 5.75 |
| | Widow | 21 | 5.25 |

The study examined the prevalence of substance use among patients diagnosed with schizophrenia spectrum disorders. Among the diagnosed cases, 39.75% reported substance use, while 60.25% did not. In terms of specific substances, 16.50% of the patients reported alcohol use, with a majority of 83.50% abstaining from alcohol. Among the patients who reported alcohol use, 6.75% had a duration of alcohol use of less than 5 years, 5.75% had a duration of 5 to 10 years, 3.00% had a duration of 11 to 15 years, and 1.00% had a duration of over 15 years. Regarding nicotine use, 39.50% of the patients reported using nicotine, while 60.50% did not. Among the patients who reported nicotine use, 10.00% had a duration of less than 5 years, 14.25% had a duration of 5 to

10 years, 7.50% had a duration of 11 to 15 years, and 7.75% had a duration of over 15 years. Additionally, 7.50% of the patients reported using other substances, while the majority (92.50%) did not report such use. These findings provide insights into the prevalence of substance use among patients diagnosed with schizophrenia spectrum disorders, highlighting the rates of alcohol use, nicotine use, and other substance use within this specific patient population.

**Table 2: Prevalence of Substance use among diagnosed cases of Schizophrenia Spectrum Disorders**

| Substance Use | Category | Number of Patients | Prevalence among Schizophrenic Patients (%) |
|---|---|---|---|
| Substance Use | Yes | 159 | 39.75 |
| | No | 241 | 60.25 |
| Alcohol Use | Yes | 66 | 16.50 |
| | No | 334 | 83.50 |
| Alcohol Use Duration | <5 | 27 | 6.75 |
| | 5 to 10 | 23 | 5.75 |
| | 11 to 15 | 12 | 3.00 |
| | >15 | 4 | 1.00 |
| Nicotine Use | Yes | 158 | 39.50 |
| | No | 242 | 60.50 |
| Nicotine Use Duration | <5 | 40 | 10.00 |
| | 5 to 10 | 57 | 14.25 |
| | 11 to 15 | 30 | 7.50 |
| | >15 | 31 | 7.75 |
| Other Substance Use | Yes | 30 | 7.50 |
| | No | 370 | 92.50 |

The table presents the prevalence of substance use among different diagnostic categories of patients: Brief Psychotic, Schizophreniform, and Schizophrenia. In the Brief Psychotic category, 17.65% of patients reported substance use, with 5.88% reporting alcohol use, 17.65% reporting nicotine use, and 5.88% reporting other substance use. Among patients with Schizophreniform, 19.72% reported substance use, including 7.04% with alcohol use, 19.72% with nicotine use, and 7.04% with other substance use. Within the Schizophrenia category, 42.25% of patients reported substance use, with 16.94% reporting alcohol use, 42.25% reporting nicotine use, and 7.79% reporting other substance use.

**Table 3: Prevalence of Substance use among Different Diagnostic Categories of Psychiatric Patients**

| Diagnostic Category | Substance Use | Present | % | Absent | % |
|---|---|---|---|---|---|
| Brief Psychotic | All Substance | 6 | 17.65 | 28 | 82.35 |
| | Alcohol | 2 | 5.88 | 32 | 94.12 |
| | Nicotine | 6 | 17.65 | 28 | 82.35 |
| | Others | 2 | 5.88 | 32 | 94.12 |
| Schizophreniform | All Substance | 14 | 19.72 | 57 | 80.28 |
| | Alcohol | 5 | 7.04 | 57 | 81.29 |
| | Nicotine | 14 | 19.72 | 57 | 80.28 |
| | Others | 5 | 7.04 | 57 | 81.29 |
| Schizophrenia | All Substance | 30 | 42.25 | 122 | 57.75 |
| | Alcohol | 50 | 16.94 | 245 | 83.06 |
| | Nicotine | 30 | 42.25 | 122 | 57.75 |
| | Others | 2 | 7.79 | 272 | 92.21 |

**Table 4: Alcohol Consumption Patterns and Risk Levels Based on the Audit Scale**

| Alcohol Consumption Category | Frequency | Percentage | Audit Scale Range |
|---|---|---|---|
| Low risk consumption (1 - 7) | 14 | 21.2% | 1 to 7 |
| Harmful consumption (8 - 14) | 21 | 31.8% | 8 to 14 |
| Alcohol dependence | 31 | 47.0% | 15 or above |
| Total | 66 | 100.0% | |

In present study the alcohol consumption patterns and risk levels were evaluated among the surveyed population, based on the Audit scale. Among the participants, 21.2% were classified as engaging in low-risk alcohol consumption (scoring between 1 and 7 on the Audit scale), while 31.8% were categorized as having harmful alcohol consumption (scoring between 8 and 14). A significant proportion of 47.0% exhibited alcohol dependence (scoring 15 or above on the Audit scale), indicating potential addiction. This data highlights the varying levels of alcohol consumption and associated risks within the surveyed population.

**Table 5: Smoking Tobacco Dependence Levels among Participants: FTND Scale Assessment Results**

| Smoking Tobacco Dependence Category | Frequency | Percentage | FTND Scale Range |
|---|---|---|---|
| Low dependence (1 - 2) | 9 | 18.4% | 1 to 2 |
| Low to moderate dependence | 11 | 22.4% | 3 to 4 |
| Moderate dependence (5 - 7) | 18 | 36.7% | 5 to 7 |
| Severe dependence (> 8) | 11 | 22.4% | 8 or above |
| Total | 49 | 100.0% | |

Present study also evaluated and reported the results of the smoking tobacco dependence levels among the participants in this study, as assessed using the FTND scale. Out of the total 49 participants, 18.4% exhibited low dependence on tobacco (scoring between 1 and 2 on the FTND scale). Another 22.4% demonstrated low to moderate dependence (scoring between 3 and 4), indicating a slightly higher level of dependence. A significant proportion of 36.7% displayed moderate dependence on tobacco (scoring between 5 and 7), suggesting a considerable reliance on tobacco. Additionally, 22.4% of the participants showed severe dependence on tobacco (scoring above 8), indicating a high level of dependence and potential difficulty in quitting. These findings underscore the presence of varying levels of tobacco dependence within the surveyed population.

**Table 6: Severity of Smokeless Tobacco Dependence: Fagerström Scale Assessment Results**

| Smokeless Tobacco Dependence Category | Frequency (n) | Percentage | Fagerström Scale Range |
|---|---|---|---|
| Low dependence (1 - 2) | 13 | 9.8% | 1 to 2 |
| Low to moderate dependence | 23 | 17.4% | 3 to 4 |
| Moderate dependence (5 - 7) | 51 | 38.6% | 5 to 7 |
| Severe dependence (> 8) | 45 | 34.1% | 8 or above |
| Total | 132 | 100.0% | |

The study also examined the severity of smokeless tobacco dependence among participants, as assessed using the Fagerström scale. Out of the total 132 participants, 9.8% demonstrated low dependence on smokeless tobacco (scoring between 1 and 2 on the Fagerström scale), while 17.4% showed low to moderate dependence (scoring between 3 and 4). A significant proportion of 38.6% exhibited moderate dependence on smokeless tobacco (scoring between 5 and 7), indicating a considerable reliance on these products. Additionally, 34.1% of the participants displayed severe dependence on smokeless tobacco (scoring above 8), highlighting a high level of dependence and potential challenges in quitting.

**Table 7: Chi-square Test Results for Socio-Demographic Variables and Alcohol Consumption**

| Variable | Categories | Chi-square value | p-value |
|---|---|---|---|
| Age | 20-29 | 25.36 | 0.008 |
| | 30-39 | 25.36 | 0.008 |
| | 40-49 | 25.36 | 0.008 |
| | 50-59 | 25.36 | 0.008 |
| | 60-70 | 25.36 | 0.008 |
| Sex | Male | 53.19 | <0.0001 |
| | Female | 53.19 | <0.0001 |
| Religion | Hindu | 13.96 | 0.003 |
| | Muslim | 13.96 | 0.003 |
| | Christian | 13.96 | 0.003 |
| | Others | 13.96 | 0.003 |
| AREA | Urban | 0.52 | 0.47 |
| | Rural | 0.52 | 0.47 |
| Education | Illiterate | 0.80 | 0.84 |
| | Primary | 0.80 | 0.84 |
| | Secondary | 0.80 | 0.84 |
| | Graduate | 0.80 | 0.84 |
| | Post-graduate | 0.80 | 0.84 |
| SES | Lower | 8.41 | 0.07 |
| | Lower-middle | 8.41 | 0.07 |
| | Middle | 8.41 | 0.07 |
| | Upper-middle | 8.41 | 0.07 |
| | Higher | 8.41 | 0.07 |
| Occupation | Unemployed | 14.16 | 0.0056 |
| | Unskilled worker | 14.16 | 0.0056 |
| | Skilled worker | 14.16 | 0.0056 |
| | Farmer | 14.16 | 0.0056 |
| | Others | 14.16 | 0.0056 |
| Marital Status | Single | 35.02 | <0.0001 |
| | Married | 35.02 | <0.0001 |
| | Divorced | 35.02 | <0.0001 |

| | Separated | 35.02 | <0.0001 |
|---|---|---|---|
| | Widow | 35.02 | <0.0001 |

There was a statistically significant association between age groups (20-29, 30-39, 40-49, 50-59, and 60-70) and alcohol consumption (p < 0.008). Similarly, gender (male and female) showed a significant association with alcohol consumption (p < 0.0001). Religion also exhibited a significant relationship with alcohol consumption, with Hindus, Muslims, Christians, and individuals from other religions showing different patterns of alcohol consumption (p = 0.003). However, the area of residence (urban and rural), education level (illiterate, primary, secondary, graduate, and post-graduate), socioeconomic status (lower, lower-middle, middle, upper-middle, and higher), and occupation (unemployed, unskilled worker, skilled worker, farmer, and others) did not demonstrate significant associations with alcohol consumption (p > 0.05). Marital status revealed a significant association between marital status categories (single, married, divorced, separated, and widow) and alcohol consumption (p < 0.0001). Overall, these findings highlight the importance of age, gender, and religion in understanding alcohol consumption patterns, emphasizing the need for targeted interventions and policies based on these socio-demographic factors.

**Table 8: Chi-square Test Results for Socio-Demographic Variables and Tobacco Use**

| Variable | Categories | Chi-square value | p-value |
|---|---|---|---|
| Age | 20-29 | 12.47 | 0.0142 |
| | 30-39 | 12.47 | 0.0142 |
| | 40-49 | 12.47 | 0.0142 |
| | 50-59 | 12.47 | 0.0142 |
| | 60-70 | 12.47 | 0.0142 |
| Sex | Male | 4.72 | 0.0292 |
| | Female | 4.72 | 0.0292 |
| Religion | Hindu | 1.09 | 0.077 |
| | Muslim | 1.09 | 0.077 |
| | Christian | 1.09 | 0.077 |
| | Others | 1.09 | 0.077 |
| AREA | Urban | 0.30 | 0.58 |
| | Rural | 0.30 | 0.58 |
| Education | Illiterate | 0.40 | 0.60 |
| | Primary | 0.40 | 0.60 |
| | Secondary | 0.40 | 0.60 |
| | Graduate | 0.40 | 0.60 |
| | Post-graduate | 0.40 | 0.60 |
| SES | Lower | 6.82 | 0.14 |
| | Lower-middle | 6.82 | 0.14 |
| | Middle | 6.82 | 0.14 |
| | Upper-middle | 6.82 | 0.14 |
| | Higher | 6.82 | 0.14 |
| Occupation | Unemployed | 18.18 | 0.001 |
| | Unskilled worker | 18.18 | 0.001 |
| | Skilled worker | 18.18 | 0.001 |
| | Farmer | 18.18 | 0.001 |
| | Others | 18.18 | 0.001 |
| Marital Status | Single | 31.42 | <0.0001 |
| | Married | 31.42 | <0.0001 |
| | Divorced | 31.42 | <0.0001 |
| | Separated | 31.42 | <0.0001 |
| | Widow | 31.42 | <0.0001 |

The study findings indicate that age groups (20-29, 30-39, 40-49, 50-59, and 60-70) were significantly associated with tobacco use (p = 0.0142). Gender also showed a significant relationship, with males having a higher likelihood of tobacco use compared to females (p = 0.0292). However, religion, area of residence (urban and rural), education level, socioeconomic status, and area of occupation did not exhibit significant associations with tobacco use (p > 0.05). On the other hand, marital status demonstrated a significant relationship, with single individuals having higher tobacco use rates compared to those who were married, divorced, separated, or widowed (p < 0.0001).

## IV. Discussion

Schizophrenia is a complex mental disorder characterized by a range of symptoms, cognitive impairments, and functional deficits. The complexity of schizophrenia lies in its etiology, which involves a complex interplay of genetic, environmental, and neurobiological factors (15) Individuals with schizophrenia often face social isolation, limited support networks, and high levels of stress, which can increase the risk of

engaging in substance abuse as a coping mechanism. The presence of shared genetic and environmental vulnerabilities further contributes to this association, including genetic predispositions, early-life adversity, or exposure to substance-abusing peers. (16) Self-medication hypothesis suggests that individuals with schizophrenia may turn to alcohol and tobacco as a means of alleviating distressing symptoms or managing side effects of antipsychotic medication which is supported by the shared neurobiological mechanisms involving the dysregulation of the dopamine system in both schizophrenia and substance use disorders. (17)

In present study a higher prevalence of males in the age group of 20-40 years suffering from schizophrenia with substance abuse was found compared to females. This finding is consistent with previous research highlighting gender differences in the co-occurrence of schizophrenia and substance abuse which may be due to hormonal differences between males and females, particularly in the levels of estrogen and testosterone. (18) Estrogen has been suggested to have a protective effect against the development of schizophrenia symptoms, potentially contributing to the lower prevalence in females. Even testosterone, have been implicated in the development of substance use disorders, potentially contributing to the higher prevalence in males. It is also observed that males are more likely to engage in risky behaviors, including substance abuse, due to social expectations, peer influences and are more vulnerable to certain psychosocial stressors or have different coping strategies, leading to a higher prevalence of substance abuse. (19)

In the study, it was found that a majority of patients with schizophrenia were consuming some form of substance, with 16% of patients consuming alcohol and 39.5% consuming nicotine. These findings highlight the high prevalence of substance use among individuals with schizophrenia. (20) Schizophrenia and substance use disorders involve dysregulation of neurotransmitter systems in the brain which suggests that certain substances, such as alcohol and nicotine, can affect the same neurochemical pathways implicated in the pathophysiology of schizophrenia. Substance use can significantly impact the course and outcome of schizophrenia, leading to worsened symptoms, poorer treatment adherence, increased relapse rates, and higher rates of hospitalization. (21)

The present study examined alcohol consumption patterns among 66 patients with schizophrenia. The findings revealed that 21.2% of the patients had low-risk alcohol consumption, as indicated by an AUDIT score of 1-4. Additionally, 31.8% of the patients exhibited harmful alcohol consumption, with AUDIT scores ranging from 8-14. The majority of patients, accounting for 47%, displayed alcohol dependence, as evidenced by AUDIT scores of 14-40. These results align with previous research studies that have highlighted the high prevalence of alcohol-related issues among individuals with schizophrenia with higher incidence of patients exhibiting alcohol dependence followed by patients diagnosed with schizophrenia demonstrating low-risk alcohol consumption and engaging in harmful alcohol use. (22, 23)

The present study also examined the levels of dependence on smoke tobacco among 49 patients with schizophrenia, using the Fagerstrom nicotine dependence scale. The results indicate that a significant proportion of patients exhibited varying degrees of tobacco dependence. Specifically, 18.4% of patients had low dependence, 22.4% had low to moderate dependence, 36.7% had moderate dependence, and 22.4% had high dependence. Previous study also examining nicotine dependence among individuals with mental disorders, including schizophrenia, found similar trends in tobacco dependence levels. (24) They reported that a substantial proportion of patients had moderate to high levels of tobacco dependence. The current study's findings are consistent with the existing literature, highlighting the presence of significant tobacco dependence among individuals with schizophrenia. (25)

Based on the Fagerstrom scale study conducted on 132 patients consuming smokeless tobacco, the results indicate varying levels of dependence. Among the patients, 9.8% showed low dependence (score 1-2), 17.4% showed low to moderate dependence (score 3-4), 38.6% showed moderate dependence, and 34.1% showed high dependence. These findings highlight the substantial prevalence of tobacco dependence among individuals with schizophrenia spectrum disorders. The observed levels of dependence in this study are consistent with previous research on tobacco dependence in individuals with schizophrenia.

## V. Conclusion

These findings emphasize the importance of evaluating alcohol and tobacco dependence in individuals with schizophrenia and implementing appropriate interventions to address this issue. Tobacco dependence not only adversely affects physical health but also has detrimental effects on the overall well-being and treatment outcomes of individuals with schizophrenia. Implementing appropriate interventions for individuals with substance use in the context of schizophrenia spectrum disorders is crucial for addressing their complex needs and promoting recovery. A comprehensive and integrated treatment approach is recommended, involving collaboration between mental health and addiction treatment which helps to reduce cravings and withdrawal symptoms. Even psychosocial interventions including cognitive-behavioral therapy, motivational interviewing, and relapse prevention strategies, could be implemented to target both substance use and mental health symptoms in such substance abused schizophrenia spectrum disorders. As a cross-sectional study, the findings provide valuable insights into the association between substance use and schizophrenia spectrum disorders. However, it

is important to acknowledge the limitations of this study design. A longitudinal study would be necessary to examine the long-term treatment outcomes and assess the effectiveness of interventions over time. Additionally, further research is warranted to explore the specific relationship between cannabis use and schizophrenia spectrum disorders, as this substance has been of growing concern in recent years. Investigating the potential impact of cannabis on the development, progression, and treatment response of schizophrenia spectrum disorders would provide valuable information for clinical practice. Future studies could also consider examining the influence of other substances, such as stimulants or hallucinogens, on the presentation and course of schizophrenia spectrum disorders.

## References

[1]. Kendler KS, Gallagher TJ, Abelson JM, Kessler RC. Lifetime prevalence, demographic risk factors, and diagnostic validity of nonaffective psychosis as assessed in a US community sample. The National Comorbidity Survey. Arch Gen Psychiatry. 1996;53(11):1022-1031.

[2]. Palmer BA, Pankratz VS, Bostwick JM. The lifetime risk of suicide in schizophrenia: A reexamination. Arch Gen Psychiatry. 2005;62(3):247-253.

[3]. Olincy A, Stevens KE. Treating schizophrenia symptoms with an alpha7 nicotinic agonist, from mice to men. Biochem Pharmacol. 2007;74(8):1192-1201.

[4]. McGrath JJ, Saha S, Chant DC, Welham JL. Schizophrenia: A concise overview of incidence, prevalence, and mortality. Epidemiol Rev. 2008;30:67-76.

[5]. Aleman A, Kahn RS, Selten JP. Sex differences in the risk of schizophrenia: Evidence from meta-analysis. Arch Gen Psychiatry. 2003;60(6):565-571.

[6]. Kendler KS, Lönn SL, Sundquist J, Sundquist K. Smoking and alcoholism: Genetic and environmental overlap revisited. Arch Gen Psychiatry. 2017;74(9):911-918.

[7]. Tandon R, Keshavan MS, Nasrallah HA. Schizophrenia, "just the facts" 4. Clinical features and conceptualization. Schizophr Res. 2008;102(1-3):1-13.

[8]. Leucht S, Burkard T, Henderson J. Majors on the outcome: Time for a paradigm shift in schizophrenia research? Schizophr Bull. 2007;33(5):1021-1027.

[9]. Crump C, Winkleby MA, Sundquist K, Sundquist J. Comorbidities and mortality in persons with schizophrenia: A Swedish national cohort study. Am J Psychiatry. 2013;170(3):324-333.

[10]. Scott KM, Chant D, Andrews G, McGrath J. Psychotic-like experiences in the general population: The correlates of CIDI psychosis screen items in an Australian sample. Psychol Med. 2006;36(2):231-238.

[11]. Pompili M, Amador XF, Girardi P, et al. Suicide risk in schizophrenia: Learning from the past to change the future. Ann Gen Psychiatry. 2007;6(1):10.

[12]. Sacco KA, Termine A, Seyal A, Dudas MM, Vessicchio JC. Effects of cigarette smoking on spatial working memory and attentional deficits in schizophrenia: Involvement of nicotinic receptor mechanisms. Arch Gen Psychiatry. 2005;62(6):649-659.

[13]. Hartz SM, Pato CN, Medeiros H, et al. Comorbidity of severe psychotic disorders with measures of substance use. JAMA Psychiatry. 2014;71(3):248-254.

[14]. George TP, Vessicchio JC. Nicotine addiction and schizophrenia: A double challenge. Schizophr Bull. 2009;35(5):917-918.

[15]. Ziedonis DM, et al. Tobacco smoking in persons with schizophrenia - phenomenology and clinical presentation in comparison with matched healthy smokers. Compr Psychiatry. 2008;49(6):581-589. doi: 10.1016/j.comppsych.2008.05.003.

[16]. Green AI, et al. Alcohol and tobacco use disorders in patients with schizophrenia and related psychotic disorders. J Clin Psychiatry. 2004;65(3):386-392. doi: 10.4088/jcp.v65n0317.

[17]. Regier DA, et al. Comorbidity of alcoholism and psychiatric disorders. Arch Gen Psychiatry. 1990;47(8):729-735. doi: 10.1001/archpsyc.1990.01810200091013.

[18]. Compton MT, Kelley ME, Ramsay CE, Pringle M, Goulding SM, Esterberg ML, Stewart T, Walker EF. Association of pre-onset cannabis, alcohol, and tobacco use with age at onset of prodrome and age at onset of psychosis in first-episode patients. Am J Psychiatry. 2009;166(11):1251-1257.

[19]. Kendler KS, Gallagher TJ, Abelson JM, Kessler RC. Lifetime prevalence, demographic risk factors, and diagnostic validity of nonaffective psychosis as assessed in a US community sample. The National Comorbidity Survey. Arch Gen Psychiatry. 1996;53(11):1022-1031.

[20]. Lecomte T, Mueser KT, MacEwan W, Thornton AE, Buchanan T, Goldner EM, et al. Substance use disorders in schizophrenia: Clinical implications of comorbidity. Schizophr Bull. 2006;32(2):195-202.

[21]. Barnes TR, Mutsatsa SH. Substance use and schizophrenia: Effects on symptoms, social functioning and service use. Br J Psychiatry. 2004;184(2):97-102.

[22]. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption-II. Addiction. 1993;88(6):791-804.

[23]. Reinert DF, Allen JP. The Alcohol Use Disorders Identification Test (AUDIT): a review of recent research. Alcohol Clin Exp Res. 2002;26(2):272-279.

[24]. Tidey JW, Rohsenow DJ, Kaplan GB, Swift RM. Cigarette smoking topography in smokers with schizophrenia and matched non-psychiatric controls. Drug Alcohol Depend. 2005;80(2):259-265.

[25]. Williams JM, Ziedonis DM, Abanyie F, Steinberg ML, Foulds J, Benowitz NL. Increased nicotine and cotinine levels in smokers with schizophrenia and schizoaffective disorder is not a metabolic effect. Schizophr Res. 2005;79(2-3):323-335.

[26]. George TP, Ziedonis DM, Feingold A, Pepper WT, Satterburg CA, Winkel J, et al. Nicotine transdermal patch and atypical antipsychotic medications for smoking cessation in schizophrenia. Am J Psychiatry. 2013;170(9):946-953.