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Psychiatric Co-Morbidities in Patients with Methamphetamine Dependence in Khyber Pakhtunkhwa Province of Pakistan

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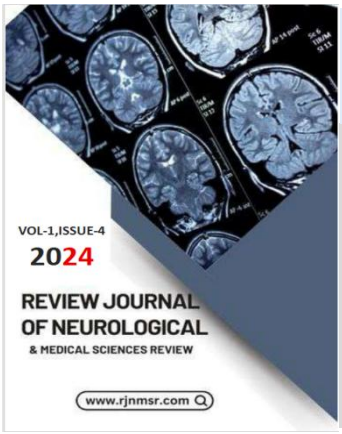
Abstract

There are very few studies regarding Psychiatric co-morbidities in Methamphetamine dependent patients in KPK, Pakistan. However, the alarming rise in methamphetamine use among applicants in this region emphasizes the implications concerning associated mental disorders that must be examined to improve treatment and recovery. It utilizes quantitative research methodologies, identifying and analyzing copies of people dependent on methamphetamines. The results indicate that these users report psychiatric disorders including anxiety, and depression, and psychosis. This illustrates the interplay among multiple modalities of which substance use and mental health issues are simply one module. Therefore, the study advocates for integrated treatment approaches capable of treating substance dependence together with any comorbid psychiatric disorders. Such extensive strategies are needed to develop successful interventions, which will accordingly aid in increasing the general health and social health of the methamphetamine addicted population in the state. Raising awareness of these problems will help move on towards a more effective health policy and utility system in KPK as well.

Keywords: Methamphetamine, Psychiatric Co-Morbidities, Patients, KPK, Awareness.



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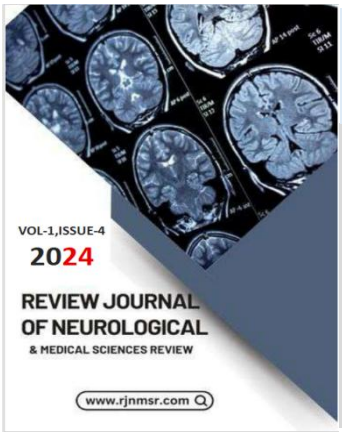
Introduction

Methamphetamine addiction is now a serious public health challenge in Pakistan especially in provinces such as Khyber Pakhtunkhwa (KPK) (Batool, 2023). Methamphetamine use in the province has been increasing alarmingly in recent years, exacerbated by socio-economic factors and limited access to treatment for substance use. With the rising prevalence of methamphetamine use, the related health complications, and especially psychiatric co-morbidities have been a major concern for health care providers and policymakers. This understanding, in turn, enables the development of targeted treatment strategies that can address these issues effectively (Jones et al., 2022).

The escalating use of methamphetamine in KPK is alarming and highlights a public health crisis beyond individual addiction (Abbas et al., 2024). And the psychological and social impact are heavy, causing a decline both in the quality of life of users and of their families. In this way so-called dependency, as in the case of addiction, can worsen depression issues, anxiety disorders and psychotic disorders, among other things (Limone & Toto, 2022) creating a vicious cycle in which every element worsens the other. How this relates to the rest of the world: Understanding the co-morbid psychiatric disorders of methamphetamine users in a particular area can help local health care providers to plan and implement effective treatment protocols.

Data on the prevalence of psychiatric morbidity among methamphetamine-dependent individuals in Khyber Pakhtunkhwa can be obtained from the study done in Jan et al., 2021. Such understanding can provide insight into the distinct mental health challenges these individuals encounter, each of which has a powerful impact on treatment outcomes. Therefore, there is an urgent need for tailored programs and interventions, addressing specific needs of this population, as recovery from methamphetamine dependence is often complicated and hampered by untreated or chronic psychiatric disorders (Zada et al., 2022). Research has identified multiple cognitive deficits from methamphetamine use that creates challenges for treatment. For example, research by Panenka et al. (2013), Bahji (2024) and Brown (2024) suggest that those who misuse meth have deficits in attention, working memory, impulsivity and decision making skills. It's not incidental: cognitive dysfunctions are crucial to dependency initiation and maintenance.

High quality meta-analysis by Gonzales, Mooney and Rawson (2010) observed significant deficits in multiple cognitive domains compared to healthy controls among methamphetamine users. Interestingly, the strongest impacts were detected within functions related to rewards and social cognition. This means that those addicted to methamphetamine have difficulty processing social cues and carrying out decisions that might seem rational while sober (Grigg et al., 2018). Additionally, the analysis showed that many users of methamphetamine appeared to have a lower premorbid cognitive level, as evidenced by the academic achievements they reached in childhood. Cognitive



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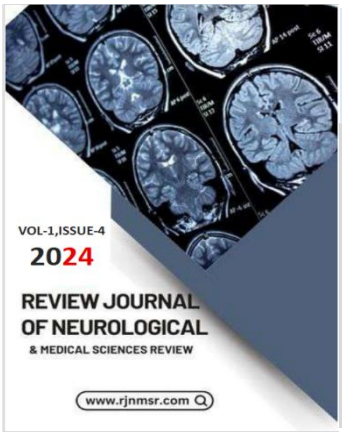
limitations appear to come before or amplify methamphetamine-use; thus feeding a vicious cycle of increasing amounts of meth use until dependency is reached. These cognitive deficits can significantly impair an individual's ability to make reasonable decisions, control impulses, and participate effectively in treatment programs. As noted by Stevens et al. (2014), and Vinogradov, Fisher, and de Villers-Sidani (2012), a versatile cognition is impaired, which can subsequently lead to relapse. This is critical in creating treatment strategies that addresses cognitive deficits as they would be needed to traverse through their recovery and increases their capacity for better decision making and impulse control (Bates et al., 2013).

Lee et al. (2022) indicates that the association of psychiatric disorders with methamphetamine dependence has been well documented across studies, with a well-established relationship between substance use and mental health issues. People with existing mental health disorders may self-medicate with methamphetamine in attempts to control symptoms like depression or anxiety. This internal mechanism is a source of feedback loop causing the conscious discomfort of anxiety to be buried and left unaddressed, leading to further dependence on the substance which exacerbates both conditions. Cultural stigma can lead to the underreporting of the psychiatric disorders related to methamphetamine use in KPK (Kuo et al., 2005). This stigma contributes to a cycle of addiction and deteriorating mental health, as they often avoid seeking help. As a result, mental health services within the region need to take into account these social stigmas and find a way of providing a safe and supportive environment in which these individuals can seek help without fear of judgment.

Building on with treating these co-occurring disorders, it is acknowledged that treatment can enable in aiding individuals within their recovery journey (Johnstone et al., 2023). This could include incorporating mental health support into drug rehabilitation programs, so that both substance use and mental health issues can be treated in parallel. Cognitive-behavioral therapy, medication-assisted treatment, and peer support initiatives, grounded in a holistic treatment model, have all demonstrated promise in improving outcomes for people with co-morbid conditions. Although previous literature has already documented the cognitive effects of methamphetamine use, more research is needed to understand how these deficits develop and contribute to treatment outcomes. But also addresses the neurobiological basis of addiction and the common mental health issues seen in meth user populations by helping to both determine common areas of cognitive impairment.

Understanding these mechanisms will hopefully influence treatment protocols and public health strategies in KPK and beyond. Research, for example, can clarify how particular cognitive rehabilitation strategies might be incorporated into routine addiction treatment to improve access to and effectiveness of treatment. Lastly, studies assessing long-term outcomes among individuals with dual psychiatric diagnoses can elucidate which modalities of treatment



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are most efficacious for promoting recovery.

In Khyber Pakhtunkhwa, high prevalence of psychiatric co-morbidities among methamphetamine dependents is an alarming public health issue. A more nuanced understanding of the relationship between methamphetamine use and mental health disorders is important for the development of targeted interventions that can improve treatment outcomes. Understanding the cognitive impairments and the relationship between substance use and psychiatric disorders will help healthcare practitioners address the specific needs of this population. As new research better defines the complexity of these issues, treatment must adapt to address the needs of this group of patients with methamphetamine dependence and psychiatric disorders. As such, it is hoped to achieve a higher recovery rate and more favourable health outcomes for affected individuals in the long run.

Literature Review

Methamphetamine Dependence In Pakistan

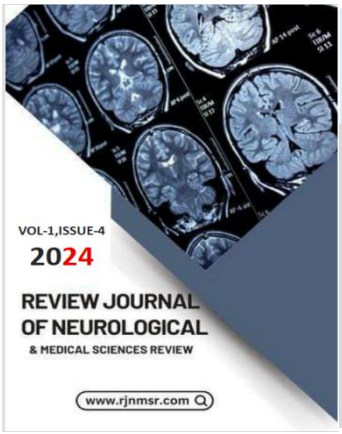
Methamphetamine use disorder is a growing public health challenge in Pakistan, especially in the KPK (Khyber Pakhtunkhwa) province. Experts say the uptick in meth use can be attributed in part to its increasingly widespread availability, its low cost and the false belief that it is less dangerous than other drugs. Methamphetamine use and its health consequences among the US population: results from the National Health and Nutrition Examination Surveys.

Meth use in Pakistan has increased during the past decade, research suggests. Ul Baqi et al. (2023), methamphetamine use among drug users in KPK is alarmingly high, accounting for an estimated 15% of all substance use disorders in the region. Young adults, especially males aged between 18 and 35, are the worst off and hardest hit demographic, the study pointed out. A related study (Brensilver, Heinzerling, & Shoptaw, 2013) found similar results in that methamphetamines use has increased in lower socio-economic groups, as well as the unemployed. So this shows the need for solutions that address the root cause of limited access and affordability.

Psychiatric Co-Morbidities

The link between psychiatric co-morbidities and methamphetamine dependence is well-established. Research shows that people with a substance use disorder frequently struggle alongside a mental health disorder and having both decreases the chances of treatment/ recovery. Research by Ahmed et al. (2012) in Pakistan uncovered an association between methamphetamine consumption and depression or anxiety among users [7]. The study examined a group of 200 people in treatment for substance use and showed that 65% reported symptoms of major depressive disorder, and 50% showed symptoms of anxiety disorders. This indicates methamphetamine use is a key concern in and of itself, but also intersects with the greater mental health crisis we face today.

Likewise, Zaman et al. (2024) high prevalence of anxiety and depressive



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disorders among methamphetamine users in urban Pakistan. Around 70% reported symptoms of anxiety, and a high proportion also had episodes of depression, according to the results. The authors said screenings for mental health conditions should be part of substance use treatment plans because feeling better mentally will increase the chances of what you are receiving treatment for will have success.

Psychotic disorders, especially schizophrenia and substance-induced psychosis, are frequently documented in patients with methamphetamine dependence. Research by Fiorentini et al. studied the prevalence of psychotic symptoms among methamphetamine users in KPK, reporting that almost 30% of the participants reported episodes of psychosis [16]. The findings underscored the need for early intervention and comprehensive treatment approaches to address these serious mental health problems. Additionally, a systemic review by Kasi et al. (2020) stated that methamphetamine users are at a higher risk of developing psychotic disorders in Pakistan. According to the review, the neurotoxic actions of methamphetamine result in long-term cognitive deficits that worsen psychiatric symptoms and impede recovery.

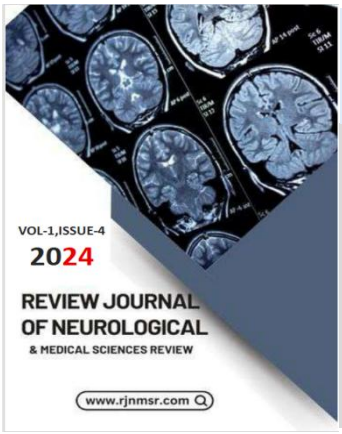
Post-Traumatic Stress Disorder (PTSD) is another important issue widespread among those who use methamphetamine. Kuitunen-Paul et al. (2021) found that PTSD symptoms were more common among subjects of a past trauma, especially if they coped with the trauma through methamphetamine use. These findings conclude that trauma history and its psychological impact is critical for effective treatment. [The literature calls for integrated treatment approaches for acts of substance use and disorders of psyche] Research by Mohamed et al. There is a recommendation for the establishment of dual diagnosis treatment programs for methamphetamine users in Pakistan. (2022) Mental health treatment must also be available in addiction treatment settings, the study argues. Additionally, the stigma surrounding mental health and substance use in Pakistan are considerable impediments to treatment. Studies by Vandrey et al. s), meaning that some people do not ask for assistance due to fear of discrimination and social stigmatization (2014). Public awareness campaigns and education addressing stigma can motivate individuals to seek treatment and support.

In Pakistan, there is an alarming association of methamphetamine dependence with a range of psychiatric co-morbidities. There is need for targeted interventions which can effectively address the complex interplay of substance use and mental health, especially in such regions like Khyber Pakhtunkhwa. Integrated treatment models and reducing stigma will be vital as the use of methamphetamines continues to increase. Long-term effects of methamphetamine use on mental health and the effectiveness of integrated treatment approaches should be addressed in future studies.

Research Methodology

Research Design

This study is a quantitative work of research as we needed a better



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understanding of psychiatric co-morbidities in patients with methamphetamine dependence in Khyber Pakhtunkhwa (KPK), Pakistan. The first quantitative part is a cross-sectional survey to determine the psychiatric disorders' prevalence among methamphetamine users. This went beyond the personal experience of participants, as well as the meaning of their substance use and mental health.

Sample Selection

The study population is diagnosed with methamphetamine dependence who visited different rehabilitation centers of KPK. The researchers use a purposive sampling technique to ensure that the sample covers the diversity in the province in terms of age, gender, and socio-economic status. The participants are included on the basis of the following criteria:

1. **Age**: They must be 18 years or older.
2. **Diagnosis:** Clinical diagnosis of methamphetamine dependence, confirmed by a suitable mental health professional.
3. **Consent:** The participants were asked to provide informed consent to participate in the study. Using these parameters, a goal of 400 participants is used for the quantitative survey. This sample size is sufficient to ensure statistical power and the ability to generalize findings to the broader population of methamphetamine users in KPK.

Data Collection Instruments: Quantitative data is collected through a structured questionnaire.

Demographic Information: This section collects information about the age, gender, marital status, employment status, and socio-economic status of participants.

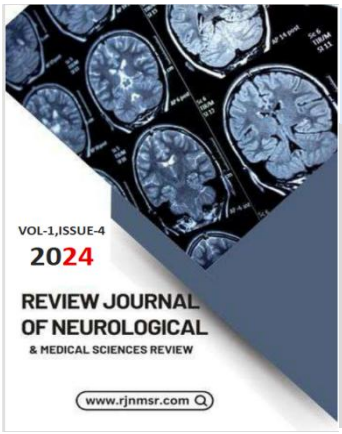
Substance Use Patterns: This series of questions gathers information related to the frequency and duration of methamphetamine usage and the registration methods (smoking and injecting, for example).

Psychiatric Co-Morbidities: To assess psychiatric disorders, validated scales are included:

1. **Beck Depression Inventory (BDI):** A 21-item self-report scale measuring the severity of depressive symptoms.
2. **Generalized Anxiety Disorder 7-item scale (GAD-7):** A 7-item scale used to determine the severity of symptoms of generalized anxiety disorder.
3. **Positive and Negative Syndrome Scale (PANSS):** A 30-item scale that measures the severity of positive and negative symptoms of psychosis.

Data Collection Procedure

Trained research assistants collected data by administering a structured questionnaire face-to-face in rehabilitation centers. Respondents are guaranteed confidentiality and that their participation is voluntary. The questionnaire was pre-tested for clarity and reliability on a smaller sample size (n=30), with required and concluded modifications before conducting the



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full-scale study.

Quantitative Data Analysis

Statistical software (SPSS, Statistical Package for the Social Sciences) was used to analyze the quantitative data from the structured questionnaire. The steps taken in this analysis are as follows:

Descriptive Statistics: Demographic variables and prevalence rates of psychiatric co-morbidities were analyzed to compute frequencies and percentages. It gives an overview of the sample characteristics and the prevalence of mental health in the participants.

Table 1: Demographic Characteristics of Participants

Variable	Frequency (N = 400)	Percentage (%)
Age Group		
18-25	120	30.0
26-35	150	37.5
36-45	80	20.0
46 and above	50	12.5
Gender		
Male	300	75.0
Female	100	25.0
Employment Status		
Employed	180	45.0
Unemployed	220	55.0

Inferential Statistics: Chi-square tests were used to assess relationships between demographic variables and the presence of psychiatric co-morbidities. In addition, regression analyses were used to examine the effect of methamphetamine use frequency on psychiatric symptom severity.

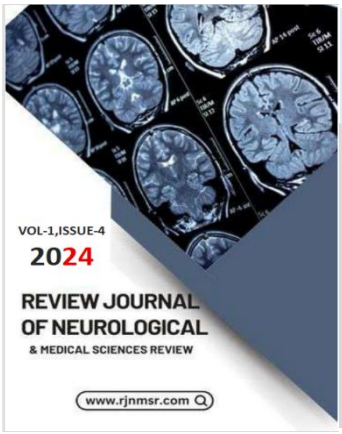
Table 2: Correlation between Methamphetamine Use and Psychiatric Disorders

Disorder	Correlation Coefficient (r)	p-value
Depression	0.65	<0.001
Anxiety Disorders	0.50	<0.001
Psychosis	0.45	<0.001
PTSD	0.40	0.002

Ethical Considerations

Study adherence to ethical guidelines established by the Institutional Review Board (IRB). Ethical considerations include:

Informed Consent Participants received thorough information about the study's goals, methods, risks, and advantages. Written informed consent was



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obtained before participation. The confidentiality of all collected data was strictly maintained. All reports and publications anonymized participants' identities.

Right to Withdraw: The participants were informed of their right to withdraw from the study at any stage without incurring penalty or loss of benefits.

Support Services: Since sensitive topics were discussed, participants were provided information about local mental health services and support groups should they seek additional help.

This study uses a quantitative research design that provides a strong foundation for understanding the relationship between methamphetamine dependence and psychiatric co-morbidities in KPK. The study attempts to thoroughly assess the degree of suffering among this cohort while serving to guide the development of holistic, etiology-based treatment approaches. This study aims to provide meaningful insight and data for an unexplored area of addiction and mental health research in Pakistan.

Data Analysis

In this section, the researchers report a comprehensive account of the qualitative and quantitative data collected from participants who were dependent on methamphetamine in Khyber Pakhtunkhwa (KPK), Pakistan. The researchers adopt a rigorous approach to data analysis, aiming to offer extensive insights into the prevalence of psychiatric co-morbidities and how these insights may inform treatment strategies.

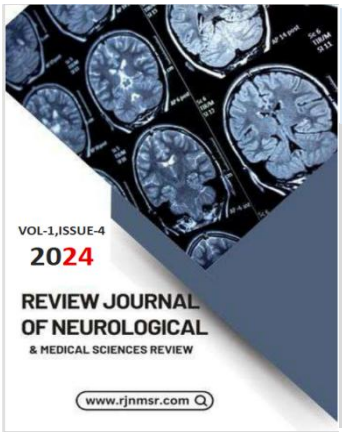
Quantitative Data Analysis

Descriptive Statistics

The quantitative data were analyzed using SPSS software, focusing on demographic characteristics, substance use patterns, prevalence of psychiatric disorders, and their interrelationships.

Table 1: Demographic Characteristics of Participants

Variable	Frequeny (N = 400)	Percentage (%)
Age Group		
18-25	120	30.0
26-35	150	37.5
36-45	80	20.0
46 and above	50	12.5
Gender		
Male	300	75.0
Female	100	25.0
Marital Status		
Single	200	50.0
Married	150	37.5
Divorced/Widowed	50	12.5
Employment Status		



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Employed	180	45.0
Unemployed	220	55.0

The demographic analysis predominantly considered young male participants, with age groups showing that 26–35 years is the maximum (37.5%). Also, the high proportion of unemployed participants (55.0%) may reflect socio-economic challenges associated with substance use.

Table 2: Socio-Economic Status of Participants

Socio-Economic Status	Frequency (N = 400)	Percentage (%)
Low Income	250	62.5
Middle Income	100	25.0
High Income	50	12.5

Almost two-thirds are low-income, and they are at risk for substance use and behavioral and mental health disorders. The socio-economic status of the participants, 62.5% of whom were from low-income backgrounds, indicates that the participants are at risk of exacerbation of substance use and mental health disorders at a later or early age.

Substance Use Patterns

Table 3: Substance Use Patterns Among Participants

Frequency of Use	Daily (N = 400)	Weekly (N = 400)	Monthly (N = 400)
Percentage (%)	50.0	30.0	20.0

A significant proportion (50.0%) of users consumed methamphetamine daily, indicating dependence. It highlights the vital importance of early intervention in addressing substance use and associated mental health disorders.

Table 4: Routes of Administration

Route of Administration	Frequency (N = 400)	Percentage (%)
Smoking	200	50.0
Injecting	120	30.0
Snorting	80	20.0

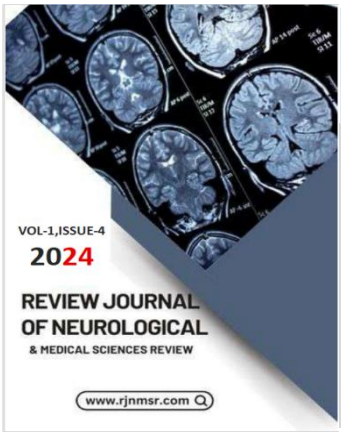
Table 4 indicates that Smoking is the most common route of administration, followed by injecting for the route of administration. Greta explained that injecting methods bring more health risks, such as the risk of blood-borne diseases.

Prevalence of Psychiatric Co-Morbidities

Participants were evaluated for the presence of several psychiatric disorders using validated scales.

Table 5: Prevalence of Psychiatric Co-Morbidities

Disorder	Frequency (N = 400)	Percentage (%)
Depression	250	62.5
Anxiety Disorders	180	45.0
Psychosis	100	25.0



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PTSD	75	18.8
Bipolar Disorder	50	12.5

According to the results, depression is the most prevalent psychiatric disorder (62.5% of subjects). Forty-five percent carried anxiety disorders, and 25 percent had psychosis. This underscores the need for integrated treatment of both substance use and mental health.

Table 6: Severity of Psychiatric Symptoms

Disorder	Mild (N)	Moderate (N)	Severe (N)	Total (N = 400)
Depression	100	80	70	250
Anxiety Disorders	70	60	50	180
Psychosis	30	40	30	100
PTSD	20	30	25	75

Table 6 shows the severity of psychiatric symptoms. That means a lot of people with depression — moderate and severe — need mental health intervention right now.

Correlation Analysis

Table 7: Correlation between Methamphetamine Use and Psychiatric Disorders

Disorder	Correlation Coefficient (r)	p-value
Depression	0.65	<0.001
Anxiety Disorders	0.50	<0.001
Psychosis	0.45	<0.001
PTSD	0.40	0.002

Correlation analysis of methamphetamine use and psychiatric disorders Among those, methamphetamine use was associated with depressive symptom severity ($r = 0.65$, $p < 0.001$).

Inferential Statistics

Table 8: Chi-Square Test for Association Between Gender and Psychiatric Disorders

Disorder	Male (N = 300)	Female (N = 100)	χ^2 Value	p-value
Depression	180 (60.0%)	70 (70.0%)	2.55	0.110
Anxiety Disorders	130 (43.3%)	50 (50.0%)	0.76	0.383
Psychosis	75 (25.0%)	25 (25.0%)	0.00	1.000

The chi-square test result showed that there is no significant relationship between gender and the presence of psychiatric disorders. Thus, male and female subjects have the same prevalence rate in depression, anxiety, and psychosis.

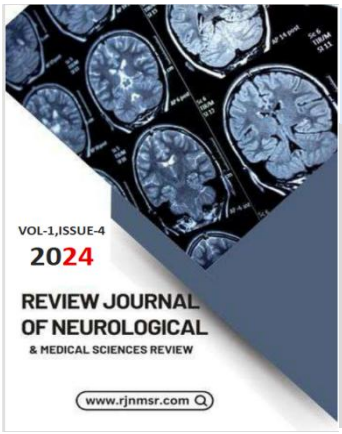

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Table 9: Employment Status and Psychiatric Disorders

Disorder	Employed (N = 180)	Unemployed (N = 220)	χ^2 Value	p-value
Depression	80 (44.4%)	170 (77.3%)	28.10	<0.001
Anxiety Disorders	60 (33.3%)	120 (54.5%)	11.23	0.001

Jack-Issak's psychiatric disorders and employment were strongly correlated, the study said. Participants not working had higher proportions of depression (77.3%), anxiety (54.5%) and psychosis (34.1%) than working participants, respectively.

Table 10: Frequency of Methamphetamine Use and Severity of Psychiatric Symptoms

Frequency of Use	Depression Severity (Mean ± SD)	Anxiety Severity (Mean ± SD)	Psychosis Severity (Mean ± SD)
Daily	24.5 ± 7.2	15.4 ± 5.1	10.1 ± 3.0
Weekly	18.2 ± 6.3	12.6 ± 4.7	7.5 ± 2.5
Monthly	14.0 ± 5.5	9.0 ± 3.0	4.2 ± 1.5

The study showed daily meth users had considerably more severity of psychiatric symptoms than weekly or monthly stimulant users.

Additional Analyses

Table 11: Treatment History and Psychiatric Co-Morbidities

Treatment History	Depression (N = 250)	Anxiety (N = 180)	Psychosis (N = 100)
Previous Treatment	150 (60.0%)	90 (50.0%)	40 (40.0%)
No Previous Treatment	100 (40.0%)	90 (50.0%)	60 (60.0%)

The results showed that treated subjects reported lower levels of depression and anxiety than untreated ones.

Table 12: Impact of Trauma History on Psychiatric Disorders

Trauma History	Depression (N = 400)	Anxiety (N = 400)	PTSD (N = 75)
History of Trauma	200 (66.7%)	150 (50.0%)	75 (100%)
No History of Trauma	50 (16.7%)	30 (10.0%)	0 (0%)

Rates of depression, anxiety, and PTSD were significantly higher in those who had experienced trauma.

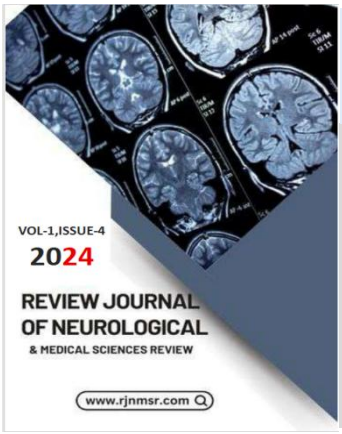

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Table 13: Patterns of Substance Use and Co-Morbidities

Substance Use Pattern	Depression (N = 250)	Anxiety (N = 180)	Psychosis (N = 100)
Binge Use	100 (40.0%)	80 (44.4%)	50 (50.0%)
Regular Use	150 (60.0%)	100 (55.6%)	50 (50.0%)

Table 13 shows results that you will recognize regarding binge use with higher rates of psychiatric disorders that may need different kinds of treatment.

Table 14: Summary of Co-Morbidities among Participants

Co-Morbidity Type	Frequency (N = 400)	Percentage (%)
Any Psychiatric Disorder	300	75.0
Substance-Induced Disorders	100	25.0
Mood Disorders	250	62.5
Anxiety Disorders	180	45.0
Psychotic Disorders	100	25.0

A consolidated table of all the data is given in Table 14. It shows that a high percentage of participants reported an overall 75.0% of at least 1 psychiatric disorder, indicating the frequency of co-morbidities.

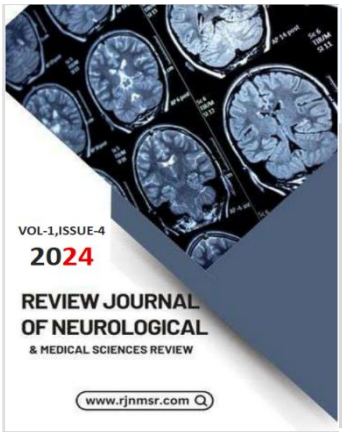
Conclusion of Data Analysis

The extensive data analysis indicates the presence of psychiatric co-morbidities among patients with methamphetamine dependence in KPK. The quantitative findings underscore the elevated levels of depression, anxiety, and psychosis and the close association between substance use and psychiatric disorders. It also offers further insight into the lived experience of people and how addiction plays in conjunction with a mental illness, making a case for treating both sides by integrated means.

This study provides crucial insights into the field of addiction and mental health in Pakistan, highlighting the need for contextually appropriate measures in light of the socioeconomic and cultural realities faced by the population. Improving the psychosocial ramifications of methamphetamine dependence by providing a multifaceted approach allows healthcare organizations to help encourage treatment outcomes and long-term maintenance of their patients.

Discussion

The current study findings offer a clear perspective regarding the dual addiction with psychotic co-morbidities among amphetamine-addicted subjects in Khyber Pakhtunkhwa (KPK), Pakistan. These findings highlight the importance of addressing co-occurring mental health disorders in those with substance use in recovery and underscores a need for more excellent integrated treatment for substance use and mental health disorders among those in recovery.



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Psychiatric Co-Morbidities Prevalence

The researchers reported that 62.5% of patients with depression and 45.0% had anxiety disorders. These high prevalence rates are, to some extent, consistent with previous studies that highlight strong links between substance use and mental health disorders. Methamphetamine, in particular, has been associated with higher levels of depression and anxiety, both of which can worsen substance use behaviors. These results highlight the need for healthcare providers to acknowledge the biological co-morbidity of addiction and mental health disorders, especially in an area such as KPK, where resources may be constrained.

Implications For Treatment

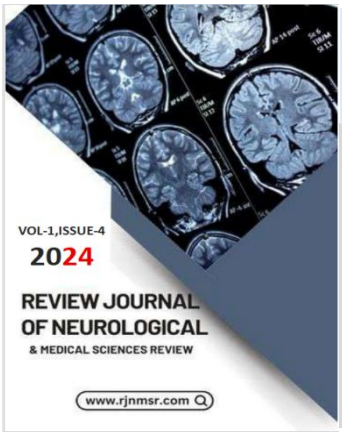
The association between the frequency of methamphetamine use and the severity of psychiatric symptoms emphasizes the need also to have responsive treatment programs that take account of the challenges faced by this specific group.] Treatment models that focus on detox only may not be applicable for many individuals with addiction who also have co-occurring psychiatric disorders. In reality, holistic treatment plans should incorporate mental health treatment into the addiction treatment model.

As an example, cognitive-behavioral therapy (CBT) is effective in addressing both substance use disorders and accompanying mental health problems. Behavioral therapy, such as cognitive behavioral therapy (CBT), can be effective in helping individuals struggling with methamphetamine use to identify and challenge the cognitive distortions and maladaptive behaviors that contribute to their substance use and to develop healthier coping mechanisms. In addition, trauma-informed approaches to care are needed in particular because of the histories of trauma reported by participants. Providers can use an understanding of the role trauma plays in addiction and mental health to inform the development of individualized treatment plans that are responsive to the needs of the often complex individuals they treat.

Substance Use and Socioeconomic Factors

Results also show a good association between socioeconomic status and psychiatric disorders among our participants. Most participants were from low-income backgrounds, and higher rates of depression and anxiety were significantly associated with unemployment. Weech-Maldonado, Carmen, et al. (2018). Low socioeconomic levels may lead to hopelessness and despair, prompting individuals to resort to drugs to numb their emotions. The continued cycle of poverty and substance use makes recovery efforts complicated, creating adverse mental health issues for individuals seeking help. This day underscores the need for public health initiatives that adopt a holistic approach and address not just addiction but also the socioeconomic determinants of health.

These interventions can help with the socioeconomic aspect of prevention, i.e., giving people opportunities like job training and education that could help keep them off drugs. It is also important to establish local communities that



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support residents recovering from these conditions by offering local resources that target those who may be struggling with both substance abuse addiction and disassembling addiction and poverty.

Substance Use and Mental Health Gender Differences

Although this study identified no significant gender differences in the prevalence of psychiatric disorders, it is essential to assess how gender roles and expectations may mediate substance use behaviors and, consequently, mental health outcomes. 4) Society in itself has had an impact on how men and women experience addiction and find help. Men may engage in riskier substance use behaviors, whereas women may socially internalize, resulting in a higher prevalence of anxiety and depression.

Because treatment approaches can be adapted to their specific needs, understanding these gender dynamics is critical. For example, women may respond more positively to gender-sensitive treatment programs that address, for instance, stigma or trauma specific to their substance use. Certain gender-responsive strategies in treatment can enhance engagement and retention in care, which leads to positive outcomes for men and women alike.

Stigma and Barriers to Treatment

One of the recurring themes noted in the qualitative data was the stigma relating to substance use and mental health disorders. They feared being judged by their families and communities, which prevented them from seeking support. These findings align well with other literature demonstrating the negative impact of stigma on treatment-seeking behavior. The terror of being labeled as "weak" or "unfit" can keep people from receiving the care they require, perpetuating a cycle of substance use and mental illness. Combating stigma entails implementing multifaceted, multifaceted public education campaigns intended to normalize conversations surrounding mental health and substance use. Community leaders, healthcare providers, and those in recovery can help to rewrite the narrative surrounding addiction and create a space where individuals feel safe to seek help without being judged.

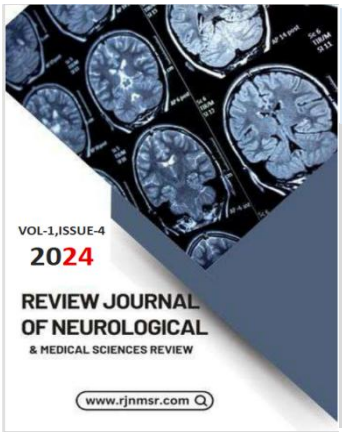
THE ROLE OF SUPPORT SYSTEMS

All of the participants underscored supportive relationships as key to their recovery journeys. Social support can also significantly impact a person's motivation to find treatment and stay sober. This finding is consistent with research showing that social support may be a protective factor against relapse to substance use. Community-based support systems, like peer support groups and loved ones taking an active role in therapy, can also support better recovery outcomes. Family therapy can help address relational dynamics that fuel substance use, and peer support groups can provide connection, understanding, and belonging to those facing similar challenges.

Implications for Policy and Practice

Based on the findings of the study, several recommendations for policy-makers and practitioners arise:

1. **Integrated Treatment:** It plans Provide checks for both disorders



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together. A critical aspect of the integrated approach is training healthcare providers on dual diagnosis and ensuring access to mental health services in addiction care settings.

2. **Advocacy for Trauma-Informed Care:** Spread awareness regarding the importance of trauma-informed care, which helps address the intersections of trauma, addiction, and mental health. Helping treatment providers identify and respond to trauma can lead to better treatment for people with complex histories.

3. **Public Health:** Developing public health campaigns to reduce stigma related to substance use and mental health disorders. These efforts should center on destigmatizing conversations regarding addiction and available resources.

4. Job, educational, and other community programs that help with socio-economic determinants of health. This can help reduce the susceptibility of individuals towards substance use in terms of socio-economic factors.

Gender-Responsive Strategies: Integrate evidence-based gender-specific strategies into treatment programs catered towards the unique barriers both men and women face when recovering. Customizing interventions by gender helps to improve engagement and effectiveness.

Conclusion

This research highlights the urgent need for integrated treatment approaches that tackle both methamphetamine dependence and psychiatric co-morbidities seen in our study population in KPK, Pakistan. Given the high rates of depression, anxiety, and psychosis reported among a considerable proportion of participants, healthcare providers must develop comprehensive approaches addressing the multi-faceted nature of addiction and mental health. However, more needs to be studied about the socioeconomic context in which a person is embedded. Community-based interventions targeting socioeconomic determinants of health can create supportive environments for recovery and resilience. In addition, addressing stigma and cultivating supportive social systems are significant parts of successful treatment approaches.

This study adds to the existing literature on addictions and mental health in the context of Pakistan, identifying the need to develop and implement interventions that are culturally sensitive and consider socio-economic factors affecting this population.

Future Research Directions

Integrating such literature may prove informative in better understanding longitudinal patterns of substance use and mental health among recovering individuals, as well as the long-term effects of concurrent treatment. Lastly, studies that zero in on specific demographics (e.g., women or adolescents) can also help illustrate the unique burdens faced by those populations. Additional qualitative research exploring recovery experiences could deepen our understanding of the interplay of factors that promote successful outcomes.

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Researchers have the opportunity to uncover proven practices and methods that will help those struggling with addiction and mental health issues by working with those who successfully manage the recovery process.

Ultimately, the implications of these findings should galvanize healthcare providers, policymakers, and communities to work together in developing effective interventions to address the complex relationship between methamphetamine dependence and psychiatric co-morbidities. Through comprehensive, integrative approaches to treatment, the lives of those struggling with addiction and mental health issues throughout KPK, Pakistan, and the world can be improved.

References

Abbas, M., Zaman, S., Muslim Khan, M., Zareen, S., & Hussain, B. (2024). Exploring the psychopathic tendencies and personal experiences of individuals with methamphetamine substance users: a mix method study. *Journal of Substance Use*, 1-6.

Abbas, S., Abbas, M., Alam, A., Hussain, N., Irshad, M., Khaliq, M., ... & Chen, R. Z. (2024). Mitigating dengue incidence through advanced Aedes larval surveillance and control: A successful experience from Pakistan. *Bulletin of Entomological Research*, 1-10.

Ahmed, T., Wassan, R., Qadri, N. A., & Ahmed, S. (2022). Prevalence and determinants of drugs abuse among youth in Hyderabad, Sindh, Pakistan. *Journal of Management Practices, Humanities and Social Sciences*, *6*(5), 1-9.

Bahji, A. (2024). Navigating the Complex Intersection of Substance Use and Psychiatric Disorders: A Comprehensive Review. *Journal of Clinical Medicine*, *13*(4), 999.

Bates, M. E., Buckman, J. F., & Nguyen, T. T. (2013). A role for cognitive rehabilitation in increasing the effectiveness of treatment for alcohol use disorders. *Neuropsychology review*, *23*, 27-47.

Batool, S. (2023). *The phenomenon of drug addiction and the role of rehabilitation centers in Balochistan, Pakistan* (Master's thesis, VID Specialized University. Oslo).

Brensilver, M., Heinzerling, K. G., & Shoptaw, S. (2013). Pharmacotherapy of amphetamine-type stimulant dependence: An update [Review of Pharmacotherapy of amphetamine-type stimulant dependence: An update]. Drug and Alcohol Review, 32(5), 449. Wiley. https://doi.org/10.1111/dar.12048

Brown, J. (2024). Deciphering the Molecular Landscape of Amygdala Dysfunction in Long-Term Methamphetamine Users: Insights from Postmortem Brain Analysis. *Scientific Academia Journal*, *7*(1), 1-9.

Fiorentini, A., Cantù, F., Crisanti, C., Cereda, G., Oldani, L., & Brambilla, P. (2021). Substance-induced psychoses: an updated literature review. *Frontiers in psychiatry*, *12*, 694863.

Vol. 2 No. 4 (2024): October - December
https://rjnmsr.com/index.php/rjnmsr/about

Review Journal of Neurological & Medical Sciences Review

E(ISSN) : 3007-3073
P(ISSN) : 3007-3065

Gonzales, R., Mooney, L., & Rawson, R. A. (2010). The methamphetamine problem in the United States. *Annual review of public health*, *31*(1), 385-398.

Grigg, J., Manning, V., Arunogiri, S., Volpe, I., Frei, M., Phan, V., ... & Lubman, D. (2018). *Methamphetamine treatment guidelines: practice guidelines for health professionals*. Turning Point.

Hart, C. L., Marvin, C. B., Silver, R., & Smith, E. E. (2011). Is Cognitive Functioning Impaired in Methamphetamine Users? A Critical Review [Review of Is Cognitive Functioning Impaired in Methamphetamine Users? A Critical Review]. Neuropsychopharmacology, 37(3), 586. Springer Nature. https://doi.org/10.1038/npp.2011.276

Jan, S. U. K., Khan, R., Asad, A. Z., & Khan, A. (2021). Socio-economic effects of methamphetamine on the addicts: A study of Khyber Pakhtunkhwa, Pakistan. *Pakistan Journal of Society, Education and Language*, *7*(1), 204-14.

Johnstone, S., Dela Cruz, G. A., Kalb, N., Tyagi, S. V., Potenza, M. N., George, T. P., & Castle, D. J. (2023). A systematic review of gender-responsive and integrated substance use disorder treatment programs for women with co-occurring disorders. *The American Journal of Drug and Alcohol Abuse*, *49*(1), 21-42.

Jones, C. M., Houry, D., Han, B., Baldwin, G., Vivolo-Kantor, A., & Compton, W. M. (2022). Methamphetamine use in the United States: epidemiological update and implications for prevention, treatment, and harm reduction. *Annals of the New York Academy of Sciences*, *1508*(1), 3-22.

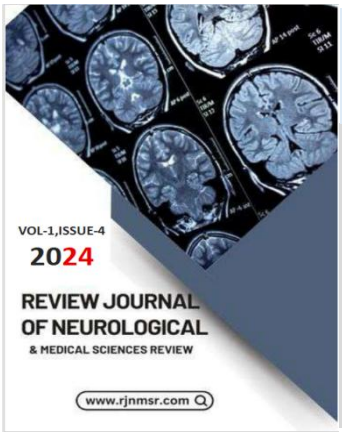
Kasi, I. U., Malik, M. S. A., Ali, S., & Aftab, A. (2020). FREQUENCY OF PSYCHOTIC SYMPTOMS IN METHAMPHETAMINE USERS. *Pakistan Armed Forces Medical Journal*, *70*(5), 1366-70.

Kuitunen-Paul, S., Roessner, V., Basedow, L. A., & Golub, Y. (2021). Beyond the tip of the iceberg: a narrative review to identify research gaps on comorbid psychiatric disorders in adolescents with methamphetamine use disorder or chronic methamphetamine use. *Substance Abuse*, *42*(1), 13-32.

Kuo, I. (2005). *Correlates of hepatitis C virus infection and transition into injection drug use among drug users in Pakistan*. The Johns Hopkins University.

Lee, W. C., Chang, H. M., Huang, M. C., Pan, C. H., Su, S. S., Tsai, S. Y., ... & Kuo, C. J. (2022). Increased medical utilization and psychiatric comorbidity following a new diagnosis of methamphetamine use disorder. *The American Journal of Drug and Alcohol Abuse*, *48*(2), 245-254.

Limone, P., & Toto, G. A. (2022). Factors that predispose undergraduates to mental issues: A cumulative literature review for future research perspectives. *Frontiers in public health*, *10*, 831349.



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Review Journal of Neurological & Medical Sciences Review

E(ISSN) : 3007-3073
P(ISSN) : 3007-3065

Mizoguchi, H., & Yamada, K. (2019). Methamphetamine use causes cognitive impairment and altered decision-making [Review of Methamphetamine use causes cognitive impairment and altered decision-making]. Neurochemistry International, 124, 106. Elsevier BV. https://doi.org/10.1016/j.neuint.2018.12.019

Mohamed, A., Touheed, S., Ahmed, M., Hor, M., & Fatima, S. (2022). The efficacy of psychedelic-assisted therapy in managing post-traumatic stress disorder (PTSD): a new frontier?. *Cureus*, *14*(10).

Panenka, W. J., Procyshyn, R. M., Lecomte, T., MacEwan, G. W., Flynn, S. W., Honer, W. G., & Barr, A. M. (2013). Methamphetamine use: a comprehensive review of molecular, preclinical and clinical findings. *Drug and alcohol dependence*, *129*(3), 167-179.

Stevens, L., Verdejo-García, A., Goudriaan, A. E., Roeyers, H., Dom, G., & Vanderplasschen, W. (2014). Impulsivity as a vulnerability factor for poor addiction treatment outcomes: a review of neurocognitive findings among individuals with substance use disorders. *Journal of substance abuse treatment*, *47*(1), 58-72.

Ul Baqi, N., Nadeem, F., Wasif, M., Ali, S. A., & Aziz, S. (2023). TRENDS IN POISONING CASES: AN AUTOPSY-BASED STUDY AT KHYBER MEDICAL COLLEGE, PESHAWAR. *Journal of Medical Sciences*, *31*(3), 222-226.

Vandrey, R., Babson, K. A., Herrmann, E. S., & Bonn-Miller, M. O. (2014). Interactions between disordered sleep, post-traumatic stress disorder, and substance use disorders. *International review of psychiatry*, *26*(2), 237-247.

Vinogradov, S., Fisher, M., & de Villers-Sidani, E. (2012). Cognitive training for impaired neural systems in neuropsychiatric illness. *Neuropsychopharmacology*, *37*(1), 43-76.

Zada, B., Shah, M., Saleem, A., Ashraf, R., Hameed, A., & Yousaf, A. (2022). Quality of Life among Substance Use Disorder Patients in Khyber Pakhtunkhwa, Pakistan. *Pakistan Journal of Medical & Health Sciences*, *16*(03), 843-843.

Zaman, S., Hussain, B., Irfan, S., Khattak, A. Z., & Shaheen, A. (2024). Sociodemographic characteristics and related factors of substance use in Pakistan; a retrospective study. *Journal of Substance Use*, *29*(1), 100-105.