

# Impact of Methamphetamine on the Psychological and Physiological Conditions of Addicts in Khyber Pakhtunkhwa, Pakistan

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Methamphetamine is a powerful stimulant drug which affects the user psychologically and physically by its toxicity. The aim of the present study was to assess the psychological and physiological effects of methamphetamine on its users. The data was collected from 180 methamphetamine users through a self-designed tool and each respondent was traced through a snowball sampling technique. Moreover, a Chi-square test was applied to test the association between independent and dependent variables. The data shows that majority of the respondents were youngsters with an age range between 21 to 30 years i.e. (n=93, 51.7%), male were (n=163, 90.6%) and single population (n=98, 54.4%). At bi-variate level, a significant (p=0.005) association was found between the frequency of methamphetamine use and psychological effects i.e. lack of interest in daily activities, easily irritated, violent behavior, maltreat family members, hallucinations/psychosis problem, feeling of scabs, decreased memory problem, insomnia, suicidal ideation, and restlessness/tiredness. In addition, a significant (p=0.005) relationship was found between the frequency of methamphetamine use and physiological effects i.e. weight loss, loss of appetite/anorexia, physical weakness, diarrhea or nausea, dilated pupils, erectile or sexual dysfunction, blotchy or scabby looking skin, feeling of tremors/twitching, tooth decay, jaw-clenching, chest pain, headache, nasal irritation, watery eyes and runny nose. The current study found that methamphetamine is a strong stimulant drug when used more than once can result in many psychological and physiological effects.

**Key words:** *Methamphetamine; frequent use; psychological; physiological effects.*



## 1. Introduction

Methamphetamine is a highly potent drug, commonly used across the globe. Its use is associated with serious long-term psychological and physical repercussions (Branko, 2015; Rose & Grant, 2008). It is a highly synthetic stimulant drug that speeds up the central nervous system (CNS) and is a high-class CNS and social stimulant suitable for those who want to keep awake and may better be described as “club drug” (Albertson, Derlet & Hoozen, 1999; National Institute on Drug Abuse, 2002; Saul, 2005). It is an odorless, white, bitter-tasting crystalline powder that can be easily melted in alcohol or water (National Institute on Drug Abuse, 2002). It is generally known by a wide-ranging variety of street names such as Ice, Speed, Crystals, Tik, tuk-tuk, Lolly, globes, Choef and Hitler’s drug (Maxwell, 2006). It comes in various forms and purities i.e. powder (called ‘speed’ ‘pure’ or ‘crank’), tablet (known as ‘ya ba’ or ‘shabu’), crystal (‘ice’, ‘Tina’ or ‘glass’) and base (‘putty’ or ‘base’) (Mehrjerdi, 2013). Though, the unadulterated forms of it are known as crystal, ice or Tina (Drabsch, 2006; McKetin, McLaren & Kelly, 2005).

Methamphetamine is a highly addictive drug. If a user administered it more than once or twice times, he/she would have a high probability by becoming an addict of it, and once a person becomes dependent on it, its body will go into withdrawal and will face various psychological and physical symptoms, when tries to quit it (Maxwell, 2006). It can be administered in many ways; like it can be smoked, snorted, swallowed and drunk in a liquid form, and, even could be injected. However, the most common route of ice administration is smoking (Klasser & Epstein, 2005). Like other psychoactive drugs, long-term use of ice can lead to tolerance, which requires an increase in the dose of methamphetamine to get the same level of satisfaction (Mancino, Gentry, Feldman, Mendelson, & Oliveto, 2011). The intake of methamphetamine causes the release of the neurotransmitters: dopamine, serotonin and norepinephrine that control feelings of pleasure—in the brain (Gabrovec, 2015). When the drug is stopped, dopamine drops below natural levels, and as a result loss of enjoyment and a feeling of a stress are caused. The long term use of methamphetamine can decline the number of dopamine receptors in the brain, and makes it difficult for the individual to enjoy pleasurable moments (Khazaie, Jalali, Jozani, Moradi, Heydarpour, & Khaledi-Paveh, 2016; Gabrovec, 2015).

The chronic use of methamphetamine may cause some deficiencies in neurocognitive functions such as verbal memory, sleep disorders, information processing, and executive function (Sadock & Sadock, 2009; Khazaie, et al., 2016). Some studies have found that there is a strong association between regular use of methamphetamine and high levels of psychiatric symptoms, particularly depression and attempted suicide, as well as anxiety and psychotic symptoms. They also reported that it became very difficult for the addicts to control their anger and violent behavior, with a correspondingly high frequency of assault and weapons charges (Gabrovec, 2015; Zweben, Cohen, Christian, Galloway, Salinardi, Parent & Iguchi, 2004). The regular users of methamphetamine when stopping the drug as a result they



face physical symptoms such as fatigue and lethargy, along with painful headaches. During initial withdrawal, people may spend most of their time catching up on food and sleep (Sadock & Sadock, 2009).

### **Aim of the study:**

The aim of the current study is to highlight the psychological and physiological effects of a high stimulant drug methamphetamine. This kind of addiction has recently mixed up in Pakistani drug culture, and has become a major problem for the addicts themselves, generally their families as whole. The psychological and physiological effects of this type of drug use in Pakistan have not been properly addressed so far.

## **2. Material and Methods**

### ***2.1 Design of the study***

The current study is a cross-sectional research design. The data was collected from December 20, 2019, to March 12, 2020, in Peshawar and Mardan districts of Khyber Pakhtunkhwa, Pakistan.

### ***2.2. Sample size and sampling strategy***

Since, the population of methamphetamine users was unknown; therefore, a sequential sampling method was used and selected a total of 180 respondents who were currently the users of methamphetamine. Moreover, for interviewing each respondent a snowball sampling technique was used to trace the unknown respondents through known respondents.

### ***2.3. Tool of data collection and analysis***

A self-design tool was developed and verified from subject experts for the collection of data to examine the socio-demographics, psychological and physiological effects due to the frequent use of methamphetamine. A Cronbach alpha test was carried out for checking the reliability of the tool which stood 0.78. In addition, a Chi-square test was applied for testing the association between independent variable i.e. (frequency of methamphetamine use) and dependent variables i.e. (psychological and physiological effects) (Kothari, 2004).

### 3. Results

#### 3.1. Socio-demographic characteristics of the respondents

A sample of 180 methamphetamine users during the time of collection of data; of them (n=163, 90.6%) were male and (n=17, 9.4%) were female. In addition, majority of the respondents were single i.e. (n=98, 54.4%). The age range of the respondents was >20 to 60 years with a mean age of 26.28 years. Moreover, the major portion of the respondents was fell in the group range from 21 to 30 years i.e. (n=93, 51.7%) see (Table 3.1).

**Table 3.1.**  
**Socio-Demographic Characteristics of the Respondents (n=180)**

	N	%
<b>Gender</b>		
Male	163	90.6
Female	17	9.4
<b>Marital status</b>		
Single	98	54.4
Married	78	43.3
Divorced	04	2.2
<b>Age (in years)</b>		
<20	52	28.9
21-30	93	51.7
31-40	19	10.6
41-50	13	7.2
51-60	03	1.7

Mean age: 26.2889

#### 3.2. Psychological symptoms associated with frequency of methamphetamine use

Table 3.2 demonstrates the psychological effects associated with the frequency of methamphetamine. The result indicates that, a highly significant ( $p=0.001$ ) ( $p=0.001$ ) association between a lack of interest in daily activities and easily irritated with the frequent use of methamphetamine. Similarly, a significant i.e. ( $p=0.026$ ) ( $p=0.001$ ) association was found between violent behavior and maltreat family members with frequent use of methamphetamine. Moreover, a highly significant association ( $p=0.000$ ) was also found between the frequent use of methamphetamine and hallucinations/psychosis problem. However, a non-significant association ( $p=0.168$ ) ( $p=0.387$ ) was found between a feeling of helplessness and hopelessness and a feeling of guilty with the frequent use of methamphetamine. In addition, a significant association was found between frequent use of methamphetamine and feeling of scabs ( $p=0.001$ ), decreased memory problem ( $p=0.020$ ), insomnia ( $p=0.043$ ), suicidal ideation ( $p=0.016$ ), and restlessness/tiredness ( $p=0.011$ ).

**Table 3.2.**

**Association between methamphetamine use frequency and psychological effects**

<b>Psychological effects (Dependent variables)</b>	<b>Independent variable</b>	<b>Chi-square and P value</b>
Lack of interest in daily activities	Meth use frequency	26.520 (0.001)
Easily irritated	Meth use frequency	21.917 (0.001)
Violent behavior	Meth use frequency	17.408 (0.026)
Maltreat family members	Meth use frequency	25.679 (0.001)
Hallucinations/psychosis problem	Meth use frequency	29.318 (0.000)
Feeling of helplessness and hopelessness	Meth use frequency	11.642 (0.168)
Feeling of guilty	Meth use frequency	8.497 (0.387)
Feeling of scabs	Meth use frequency	26.470 (0.001)
Decreased memory problem	Meth use frequency	18.211 (0.020)
Insomnia	Meth use frequency	15.947 (0.043)
Suicidal ideation	Meth use frequency	18.792 (0.016)
Restlessness/tiredness	Meth use frequency	19.957 (0.011)

Note: values in each cell indicate Chi Square and parenthesis values show significance at 0.05 level of confidence.

**3.3. Physiological symptoms associated with frequency of methamphetamine use**

Table 3.3 demonstrates the physiological effects associated with the frequency of methamphetamine. The result points out that, a significant ( $p=0.012$ ) ( $p=0.001$ ) ( $p=0.002$ ) association between weight loss, loss of appetite/anorexia and physical weakness with the frequent use of methamphetamine. However, a non-significant ( $p=0.118$ ) ( $p=0.217$ ) association was found between body temperature rise and cardiac arrhythmia with frequent use of methamphetamine. Moreover, a significant association was found between frequent use of methamphetamine and diarrhea or nausea ( $p=0.009$ ), dilated pupils ( $p=0.001$ ), erectile or sexual dysfunction ( $p=0.003$ ), blotchy or scabby looking skin ( $p=0.004$ ), a feeling of tremors/twitching ( $p=0.004$ ), tooth decay ( $p=0.018$ ), jaw-clenching ( $p=0.026$ ), chest pain ( $p=0.000$ ), headache ( $p=0.013$ ), nasal irritation ( $p=0.034$ ) problem, watery eyes ( $p=0.000$ ) and runny nose ( $p=0.023$ ).

**Table 3.3.**  
**Association between methamphetamine use frequency and physiological effects**

Physiological effects (dependent variables)	Independent variable	Chi-square and P value
Weight loss	Meth use frequency	19.684 (0.012)
Loss of appetite/anorexia	Meth use frequency	25.155 (0.001)
Physical weakness	Meth use frequency	24.717 (0.002)
Body temperature rise	Meth use frequency	12.827 (0.118)
Cardiac arrhythmia	Meth use frequency	10.730 (0.217)
Diarrhea or nausea	Meth use frequency	20.239 (0.009)
Dilated pupils	Meth use frequency	25.229 (0.001)
Erectile or sexual dysfunction	Meth use frequency	23.752 (0.003)
Blotchy or scabby looking skin	Meth use frequency	22.755 (0.004)
Feeling tremors/twitching	Meth use frequency	22.747 (0.004)
Tooth decay	Meth use frequency	18.525 (0.018)
Jaw-clenching	Meth use frequency	17.400 (0.026)
Chest pain	Meth use frequency	31.752 (0.000)
Headache	Meth use frequency	19.323 (0.013)
Nasal irritation problem	Meth use frequency	16.664 (0.034)
Watery eyes	Meth use frequency	28.050 (0.000)
Runny nose	Meth use frequency	17.802 (0.023)

Note: values in each cell indicate Chi Square and parenthesis values show significance at 0.05 level of confidence.

#### 4. Discussion

Prolonged use of methamphetamine has many negative psychological and physiological consequences, including addiction; however, its effects become more serious when taken it frequently (Courtney & Ray, 2014). The main purpose of the current study was to explore the impact of methamphetamine on the psychological and physiological conditions of the addicts. The results of this study showed that youngsters with an age range between 21 to 30 years were more found i.e. (n=93, 51.7%), the male was (n=163, 90.6%) and single population (n=98, 54.4%) were more exposed to the current drug.

#### **4.1. Psychological effects associated with methamphetamine use**

The present study investigates about the psychological effects associated with frequent use of methamphetamine (Table 3.3). The participants of the study reported that they faced several psychological problems associated with the use of methamphetamine. The analysis of the current study gives the idea that once a person starts the use of methamphetamine; he/she may be stuck between “The blue deep sea and the devil”. If continuous, he/she will have psychological effects, or if withdraws, he/she will have psychological problems.

The current study found a significant association between feeling helplessness and hopelessness, violent behavior with family and maltreats family members with the frequency of ice use. These results are in line with other studies that the use of methamphetamine causes, multiple psychological effects include; depression, anxiety, maltreating family members, violent behavior with severe dysphoria/feeling of hopelessness and irritability Darke, Kaye, McKetin & Dufrou, (2008). The severity of these symptoms seems to be related to the ice use frequency and intensity (Henry, et al., 2010; McKetin, Kelly & McLaren, 2006). In addition, a highly significant association was found between the frequency of ice use and hallucinations/psychosis. Similarly, a highly significant association was also found with a feeling of scabs resulting from scratching at imaginary insects. Some studies found that the frequent users of methamphetamine were more suffered from hallucinations and thus they scabs resulting from scratching at imaginary insects (Brecht & Herbeck, 2014; McKetin, McLaren & Kelly, 2005).

Furthermore, a significant relationship was also found between low memory and insomnia/sleep disorder problem with the frequency of ice use. These results are in support of the other studies that the frequent use of methamphetamine is associated with poor memory, poor daily functioning and insomnia (Henry, et al., 2010; McKetin, et al., 2005; Bagheri Mokri, Khosravi & Kabir, 2015). Moreover, a significant association was also found between suicidal ideation and the frequency of ice use (Dişsiz, 2019). Dependency on methamphetamine is common in among regular users as compared to occasional users which lead to multiple psychological disturbances i.e. suicides and homicides (Cruickshank & Dyer, 2009; McKetin, et al., 2005). Similarly, a significant relationship was also found between restlessness/tiredness and frequency of ice use. The use of a stimulant drug like methamphetamine creates alertness and energy last up to some hours depending on purity, quantity and previous drug history of the person. But when come down, it creates a feeling of restlessness and tiredness, however, the severity of this situation is associated with the frequency and mood of administration (Henry, et al., 2010; Pluddemann, Myers, & Parry, 2007).

#### **4.2. Physiological effects associated with methamphetamine use**

It is a common observation that when illicit drugs take more frequently its dependency and effects will be increased. A study conducted on methamphetamine in Australia found that those users who took ice frequently and twice time a day were highly dependent on methamphetamine compared to people who used ice occasionally (McKetin, et al., 2005). Most of the methamphetamine users mostly complaints about the physical effects and its adverse effects at high doses or following long term use (Degenhard, Coffey, Moran, Carlin, & Patton, 2007).

The present study also investigates the physiological effects associated with methamphetamine use. The participants of the current study recorded multiple physiological effects due to the frequent use of methamphetamine. A significant relationship was found between weight loss, loss of appetite/anorexia, physical weakness and frequency of ice use. These results are in line with other studies that there are many negative health outcomes associated with repeated methamphetamine use, including weight loss, anorexia, physical weakness seizures (National Institute of Drug Abuse, 2009). However, the study found a non-significant relationship with temperature and cardiac arrhythmia problem. Furthermore, a highly significant association was found between the frequency of ice use and physical effects (i.e. diarrhea or nausea, dilated pupils, erectile or sexual dysfunction, blotchy or scabby looking skin/skin and feeling of tremors/twitching). These results are in line with other studies and have found a significant association with prolonging and frequent use of methamphetamine. The users reported physical complaints such as blotchy/scabby skin, weakness, sexual dysfunction, upset stomach, stomach cramps and tremors (McKetin, et al., 2005; Scott, Woods, Matt, Meyer, Heaton, Atkinson, & Grant, 2007). Similarly, a significant relationship was also found with tooth decay and jaw-clenching habit. Other studies also claimed that the frequent use of methamphetamine leads to common dental health complaints included gum disease, rotten teeth, tooth loss, jaw clenching and teeth grinding (Brecht & Herbeck, 2014; Shetty, Mooney, Zigler, Belin, Murphy & Rawson, 2010).

Moreover, a highly significant association was found between the frequency of ice use and chest pain and headache. These results are also in support of other studies that those people who used methamphetamine in high frequency are more suffered from a number of physical health problems, such as; tremors or twitching, general body aches, headaches and chest pain (Marshall & Werb, 2010; McKetin, et al., 2005). In addition, a significant relationship was found between frequency of ice use and physical effects (i.e. nasal irritation problem, watery eyes and runny nose). Methamphetamine addicts complaints of several physical effects. Most of these complaints relate specifically to the physical effects includes; sore throat, respiratory problems runny nose, watery eyes and nasal irritation and these adverse effects are highly associated with high doses, long term and frequent use of methamphetamine (Rose & Grant, 2008; Sommers, Baskin & Baskin-Sommers, 2006).



## 5. Conclusions

After having the scientific study on the psychological and physiological effects of methamphetamine, the researcher left with the deep impression that the frequent use of the powerful stimulant drug methamphetamine had long term psychological and physiological toxic effects on the users. The present study recommends that law-enforcement agencies of the country may take notice of combating the drugs (both demand and supply), awareness by religious scholars, awareness through media and family may play a role in drug prevention and rehabilitation of addicts. In addition, the components which are using in the preparation of methamphetamine may take into considerations.

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