

---

## Research Article

# Associated Risk Factors in Psychological Distress Among Individuals with Methamphetamine Abuse

Elmeida Effendy\*, Thomas Hendriko, Vita Camellia, Munawir Saragih, Fenny Aprilia Saragih

Department of Psychiatry, Faculty of Medicine, Universitas Sumatera Utara, Indonesia

\*Address Correspondence to Elmeida Effendy, [elmedia.effendi@usu.ac.id](mailto:elmedia.effendi@usu.ac.id)

Received 09 March 2021; Accepted 26 March 2021; Published 09 April 2021

Copyright © 2021 Effendy E, et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### Abstract

**Background:** Substance abuse has been a worldwide phenomenon related to various health and psychosocial burden. One of the substance that is most widely abused in recent year is methamphetamine. Methamphetamine (MA) which is also known as “sabu-sabu” in Indonesia is a very well-known and widely used substance. 52 million users varying from 15 to 64 years of age are estimated to have used amphetamine for non-medical purpose at least once a year. Among other prohibited stimulant drugs, such as cocaine, methamphetamine, 3,4-Methylenedioxymethamphetamin, and amphetamine has always been on the top of the selling chart in Europe. Methamphetamine selling has been shown to be increasing as well [1].

**Aims:** The study is intended to assess factors related to psychological distress in individuals with methamphetamine abuse.

**Method:** This cross sectional multivariate study is a predictive study which assesses both multiple independent and dependent variable by using the K-10 (The Kessler Psychological Distress-10) questionnaire, involving 45 individuals with methamphetamine abuse in Mahoni Mental Hospital in Medan. Statistical analysis was conducted by means of SPSS and dependent T test (only when data is normally distributed) or Wilcoxon (data is not normally distributed) is used to examine the relationship of both variables.

**Result:** We found that nuptial status, ethnicity, number of family members, working duration per day, length of work, back and neck pain, and DAT count are all related to psychological distress and that family burden as seen in number of dependent family member poses the highest correlation coefficient ( $r = 0.245$ ,  $p < 0.001$ ) which indicates that more number of dependent family member is correlated with higher psychological distress. In the other hand, nuptial status, ethnicity, length of work, and neck and backpain shows negative correlation to psychological distress, for example those who are not married have less psychological distress ( $r = -0.140$ ,  $p = 0.018$ ).

**Conclusion:** The result of this study may become important evidence to promote mental wellbeing support in the future.

### Keywords

Amphetamine, Methamphetamine, Abuse, Psychological distress, DAT

## 1. Introduction

Methamphetamine (MA) which is also known as “shisheh” in Iran is a very well-known and widely used substance. 52 million users varying from 15 to 64 years of age are estimated to have used amphetamine for non-medical purpose at least once a year. Among other prohibited stimulant drugs, such as cocaine, methamphetamine, and 3,4-Methylenedioxymetmphetamin, amphetamine has always been on the top of the pyramid in Europe. Methamphetamine selling has been shown to be increasing as well [1].

Psychological distress is defined as emotional problem that is characterized by varying degree of manifestations, such as depression (losing interest, sadness and despair), anxiety (agitation, nervousness), personality disorders, impaired functionality, behavioral problem and somatic symptoms (insomnia, lack of energy). Several studies view psychological distress as normal temporary emotional reaction, while the other views it as a core component contributing to the occurrence of anxiety and depression.

An extensive number of studies have already been conducted but unfortunately result in ambiguity, as in some cases individuals with psychological distress remain in relatively stable condition for decades [2-4].

Dopamine Transporter (DAT) is a symporter responsible to carry dopamine to pass through the cell membrane along with incorporating sodium ion into the cell. In order for DAT to function appropriately, two sodium ion and one chloride ion are required to be sequentially bound and co-transported with dopamine. A study conducted by German et.al. stated that methamphetamine alters the function of DAT. High dose methamphetamine which is administered for over 7 days is able to cause striatal dopaminergic activity which is characterized by loss of DAT immunoreactivity, decreased dopamine uptake, reduced dopamine content, loss of tyrosine hydroxylase activity and the formation of DAT oligomeric complexes.

A study from Childs et.al. showed that stimulant psychotropic drugs impacts differently in experimental animals compared to human. In experimental animal, stimulants enhance the animals response to conditioned stimulus, while in human, stimulants results in enhanced self's positive image. Unfortunately, studies regarding the impact of stimulants in daily life are lacking. There are definitely numerous factors contributing to the mental health of any individuals. In Indonesia, mental health particularly in those with amphetamine/methamphetamine abuse is not a common concern and most likely to be neglected. In recent years, it is know that amphetamine abuse is responsible for increased morbidities [5-7].

## 2. Method

This cross sectional multivariate study is a predictive study which assesses both multiple independent and dependent variable by using the K-10 (The Kessler Psychological Distress-10) questionnaire, involving 45 individuals with amphetamine abuse in Mahoni Mental Hospital in Medan. This study has gained approval of Health and Medical Research committee (Number 906/TGL/KEPK FK USU-RSUPHAM/2019) before being proceeded further. Inclusion criteria are individuals 18 to 45 years of age, high school graduate, cooperative, and are willing to participate in the study as our respondents. In the other hand, exclusion criteria are individuals with history of any mental disorders or any medical diseases.

Eligible subjects were then given written informed consent and only those who gave the consent that will be required to fill the K-10 (*The Kessler Psychological Distress-10*) questionnaire. Total scores obtained from the questionnaires are then collected and analysed by means of SPSS (*Statistical Package for the Social Sciences*).

Dependent t test (only when data is normally distributed) or Wilcoxon (data is not normally distributed) is applied to examine the relationship of both variables. Each variables in this multivariate study have fulfilled the criteria of linear regression analysis which is based on bivariate analysis that results in  $p < 0.25$  for each variable. Backward analysis is used to find variables with highest determination coefficient and exclude those that are the least significant. By applying this method, we found that nuptial status, ethnicity, number of dependent family members, working duration per day, length of work, and neck and back pain can all be applied to multivariate analysis.

## 3. Result

We found that nuptial status, ethnicity, number of dependent family members, working duration per day, length of work, back and neck pain, are all related to psychological distress. Other factors such as age, becoming bread winner in the family, monthly wage, smoking, extremities discomfort, are not related to psychological distress among those with amphetamine abuse.

According to Table 1, majority of our respondents are already married (52.9%,  $n = 72$ ), most are Batakese (60.3%,  $n = 82$ ) and admitted of not becoming their families bread winner (50.7%,  $n = 69$ ). Most of our respondents are smokers (61.0%,  $n = 83$ ), complaining of back pain (56.6%,  $n = 77$ ). It is also shown that the youngest subject is 20 years of age, the oldest is 40 years of age and the median of our respondents age is 30 years. Most admit of having at least 1 to 5 dependent family members and that they have to work for at least 6 hours to 15 hours a day (median = 11 hours) to support their family. They have been working for at least a year to 10 years (median = 2 years) and earn at least IDR 2.5 million to IDR 7 million (median = IDR 3 million) per month.

**Table 1:** Demographic Characteristics

<b>Demographic Characteristics</b>	<b>Median (min-max)</b>	<b>N (%)</b>
Age (years)	30 (20 – 40)	
Nuptial Status		
- Married		72 (52.9)
- Not Married		63 (46.3)
Ethnicity		
- Bataknese		53 (39.0)
- Non Bataknese		82 (60.3)
Number of dependent family members	2 (1 – 5)	
Becoming bread winner in the family		
- Yes		66 (48.5)
- No		69 (50.7)
Montly wage (in IDR million)	3 (2,5 – 7,0)	
Length of work (years)	2 (1 – 10)	
Smoking		
- Yes		83 (61.0)
- No		52 (38.2)
Neck and back pain		
- Yes		77 (56.6)
- No		58 (42.6)

In order to examine the eligibility of independent variables, we performed two sets of different statistical analysis. Categorical variables were assessed by using t-independent test as the data showed normal distribution. Table 2 indicates that all categorical independent variables gained p value of less that 0.25, therefore these are eligible to be further involved in linear regression analysis. In the other hand, numerical variables were tested by using Pearson test as shown in Table 3.

Table 3 shows that all numerical variables are in linearity with dependent variable, that is psychological distress score with p value less than 0.25. This finding suggests that these variables are allowed to be further analysed with linear regression analysis.

Table 4 shows the correlation between each dependent variables with psychological distress scores in individuals with methamphetamine abuse. We found that nuptial status, ethnicity, number of family members, working duration per day, length of work, back and neck pain, and DAT count are all related to psychological distress and that family burden as seen in number of dependent family poses the highest correlation coefficient to psychological distress score which indicates that more number of dependent family member is positively correlated to higher psychological distress score. In the other hand, nuptial status, ethnicity, length of work, and neck and back pain shows negative correlation to psychological distress, for example those who are not married have less psychological distress.

**Table 2:** Bivariate analysis of categorical variables.

Independent Variables	Psychological distress score	
	Mean $\pm$ SD	p
Nuptial Status		
- Married	22.08 $\pm$ 4.90	0.001*
- Not Married	11.90 $\pm$ 3.75	
Ethnicity		
- Bataknese	23.15 $\pm$ 3.88	0.001*
- Non Bataknese	13.57 $\pm$ 5.35	
Becoming bread winner in the family		
- Yes	22.48 $\pm$ 3.90	0.001*
- No	12.41 $\pm$ 4.91	
Smoking		
- Yes	20.82 $\pm$ 5.50	0.001*
- No	11.77 $\pm$ 4.34	
Muscle and back pain		
- Yes	21.66 $\pm$ 4.77	0.001*
- No	11.59 $\pm$ 4.11	
Muscle and neck pain		
- Yes	22.02 $\pm$ 4.91	0.001*
- No	12.86 $\pm$ 4.93	
Extremity pain		
- Yes	21.38 $\pm$ 5.66	0.001*
- No	13.22 $\pm$ 5.02	

\*t-independent test

**Table 3:** Bivariate analysis of numerical variables

Independent variables	Psychological distress score	
	r	p
Age (years)	-0.57	0.001*
Number of dependent family members	0.75	0.001*
Working duration per day (in hours)	0.57	0.001*
Monthly wage (in IDR million)	-0.53	0.001*
Length of work (in years)	-0.61	0.001*

\*Pearson test

**Table 4:** Multivariate analysis on factors related to psychological distress among individuals with methamphetamine abuse

Dependent Variables	Psychological distress scores		
	Correlation Coefficients	Multivariate $\beta$ Regression	P
Constancy		16.8	<0,001
Number of dependent family members	0.245	1.1	<0,001
Working duration/day	0.118	0.41	0.006
Length of work	-0.197	-0.54	<0.001
Nuptial status	-0.14	-1.88	0.018
Neck and back pain	-0.23	-3.16	<0.001
Ethnicity	-0.135	-1.85	0.004
DAT	0.561	2.15	<0.001

Adjusted R2 = 85.2%

#### 4. Discussion

Nuptial status, ethnicity, number of dependent family member, working duration, length of work, back and neck pain are related to psychological distress among individuals with methamphetamine abuse. Number of dependent family members and working duration per day is positively correlated with K-10 scores. In the other hand, nuptial status, length of work, back and neck pain, are all negatively related to the K-10 score. Thus, married individuals showed less K-10 score that translates into less psychological distress compared to those who are not married. This may be explained by the fact that marriage allows individuals to gain more care and attention from their spouse that leads into emotional satisfaction. In the other hand ethnicity is related to someone's value and identity that reflect in self-esteem and behaviour. Minor ethnicity is particularly stigmatized and lacking of accessible social resource. Furthermore, cultures plays a role in shaping individuals response or emotional reactions towards particular situation. DAT count is also significantly related to psychological distress which contributes to intensifying pain perception. Therefore individuals with methamphetamine abuse are tend to experience more discomfort or pain, such as pain in the back and neck [8].

#### 5. Conclusion

From this study, we found that independent risk factors positively related to psychological distress among individuals with amphetamine abuse are number of dependent family members, working duration, and DAT. By knowing these factors, it is hoped that clinicians and public policy regulators are able to give more attention and set up more appropriate psychotherapy or support toward these people.

#### 6. Study Limitation

This study uses K-10 questionnaire which is a self-reporting questionnaire that unfortunately allows subject to probably not to report the most accurate information.

#### 7. Conflict of Interest

Authors declare no conflict of interest.

#### References

1. K. E. Courtney, L. A. Ray, Methamphetamine: An update on epidemiology, pharmacology, clinical phenomenology, and treatment literature, *Drug Alcohol Depend*, 14 (2014), 11-21.
2. United Nations Office on Drugs and Crime, *International Standards for the Treatment of Drug Use Disorders*, (2017), 1-11.
3. Health Department of Republic of Indonesia, *Indonesia's Manual of Classification and Diagnosis of Mental Disorders - III (PPDGJ-III)*, Jakarta, (1993), 87- 95.
4. S. Kevin, Substance Abuse: Amphetamine use disorders, In A. Tasman, J. Kay, J. A. Lieberman, M. B. First, M. Maj, *Psychiatry* 3rd Edition, 1 (2008), 1059- 1072.
5. R. A. Rawson, G. Rachel, L. Walter, Metamphetamine abuse and dependence: An update, *J Subst Abuse Treat*, 23 (2002), 145-150.
6. R. R. Seyed, A. R. Richard, Current research on methamphetamine: epidemiology, medical and psychiatric effects, treatment, and harm reduction efforts, *Addict Health*, 6 (2014), 147-154.
7. A. J. Sadock, V. A. Sadock, P. Ruis, Substance use and addictive disorders. in kaplan & sadock's synopsis of psychiatry behavioral science/clinical psychiatry, 11th edtn, Philadelphia; Lippincott Williams & Wilkins, (2015), 1444- 1464.
8. D. Matsumoto, L. Juang, *Culture and Psychology*, 6th Edition, USA: Cengage Learning, (2017).

## ***Journal of Drug and Alcohol Research***

The Journal of Drug and Alcohol Research is a scholarly, open access, and peer-reviewed journal dedicated to publishing original research papers, reviews, protocols, news and views, and commentaries in the field of drug, nicotine and alcohol abuse, both basic and clinical. All papers submitted to the Journal of Drug and Alcohol Research will be subjected to peer review by the editorial board of the journal as well as by at least two outside experts. In case of conflicting opinions, the editor may review the manuscript himself or forward it to another expert for a final review. Manuscripts will be published online as soon as they are accepted which will reduce the time of publication. Because there are no space limitations or favored topics, all papers, within the scope of the journal, judged to be sound by the reviewers, will be published. Everyone will have equal and open access to the journal via the Internet. While the authors may retain the copyright for their article, they will allow anyone to download, reproduce, publish, modify or copy and distribute the article so long as the authors and the source are cited. Permission is not required from the journal or authors.

ISSN: 2090-8334 (print version)

ISSN: 2090-8342 (electronic version)

---

### **Journal Policies**

The Journal of Drug and Alcohol Research agrees to the ethical guidelines of the Farmington Consensus developed by the International Society of Addiction Journal Editors (ISAJE), the policies of the International Committee of Medical Journal editors (ICMJE), and the editorial guidelines of the Council of Science Editors (CSE).

The corresponding author should submit the manuscript through the online Manuscript Online Submission using only Word (.doc, .docx, .rtf) files.

### **Aims and scope**

The Journal of Drug and Alcohol Research (JDAR) is a scholarly open access, peer-reviewed, and fully refereed journal dedicated to publishing sound papers on advances in the field of drug, opiate, nicotine and alcohol abuse, social science for impact use, drugs, smoke and alcohol both basic and clinical. The journal will consider papers from all sub-disciplines and aspects of drug abuse, dependence and addiction research. Manuscripts will be published online as soon as they are accepted, which will reduce the time of publication. Because there are no space limitations or favored topics, all papers, within the scope of the journal, judged to be sound by the reviewers, will be published.