International Journal of Research and Review
Vol. 11; Issue: 1; January 2024
Website: www.ijrrjournal.com
Original Research Article *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Analysis of Cognitive Impairment Risk Factors for Drug Inmates

Muhamad Asra[1], Ramadhan Tosepu[1], Adius Kusnan[2]

[1]Nursing Department, Medicine Faculty of Halu Oleo University, Kendari, Indonesia
[2]Public Health Faculty of Halu Oleo University, Kendari, Indonesia

Corresponding Author: Adius Kusnan

DOI: https://doi.org/10.52403/ijrr.20240182

ABSTRACT

Cognitive impairment is defined as a decrease in cognitive function which is characterized by difficulty in learning new things, remembering, concentrating, mental disorders, behavioral disorders and making decisions. Cognitive disorders in drug abusers will have an impact on impaired cognitive function. Drug abusers are increasing every year, so researchers are interested in analyzing the risk factors for cognitive impairment in drug inmates at the Southeast Sulawesi Regional Police detention center. The research design used is quantitative research with a cross sectional approach. The research location is at the Southeast Sulawesi Regional Police detention center with a population of 2023 drug convicts for the period from May to December, totaling 112 people and the sample is the entire population because it uses total sampling. The variables studied were knowledge, length of use, age at first use and type of drug used. The results of statistical tests using chi-square are that there is a relationship between the risk factor variables knowledge, duration of drug use, and the type of drug used and cognitive disorders with a p value <α (0.05). Meanwhile, the risk factor variable, age of first using drugs, has no relationship with cognitive impairment in drug convicts at the Southeast Sulawesi Regional Police detention center. The results of the chi-square statistical test obtained a value of p=0.594, where the value of p>α (0.05). The knowledge risk factor is the risk factor that has the most dominant influence, causing cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police Detention Center as proven by the results of the logistic regression test, which obtained the highest Odd Ratio (OR) value among the other risk factor variables tested, namely 79.414 and the significance value (sig.) is 0.019 < 0.025. Based on the results of research conducted by researchers, there is a relationship between the risk factors of knowledge, duration of drug use, and the type of drug used and cognitive disorders in drug inmates.

Keywords: Cognitive impairment, Drug Abuse, Knowledge, Duration of Drug Use

INTRODUCTION

Cognitive impairment in drug abusers has been researched extensively, especially since the emergence of cognitive and computational neuroscience and neuroimaging methods in the last 20 years [1]. Disorders of the use of narcotics, psychotropic substances and addictive substances in adolescents have consequences, namely cognitive disorders [2]. On the other hand, continuing to use drugs will also have many other impacts such as lack of self-control, impaired cognitive function, memory loss, causing depressive disorders and worsening mental illness [3].

Drug abuse throughout the world is increasing, in 2018, more than a quarter of a billion people worldwide used drugs [4]. It was recorded that around 269 million people in the world abuse drugs. This number is 30% more than in 2019 when the number of drug addicts was recorded at more than 35 million people [5].

On the world drug trafficking map, Indonesia's position has shifted from a 'transit country' to a 'destination country' for illegal drug

trafficking. Geographically, Indonesia's location is very favorable because it is between two continents, Asia and Australia as well as two Pacific Oceans and the Indonesian Ocean. Its nature as the largest archipelagic country (17,508 islands) with the longest coastline and borders makes it very likely to be the target area for the largest opium producers in Asia [6]. The drug problem is an important agenda in Indonesia. Currently, Indonesia is one of the potential drug trafficking markets [7].

The prevalence of drug abusers in Indonesia reached 1.8% or the equivalent of 3.4 million Indonesians aged 15-64 years [8]. The Provincial National Narcotics Agency (BNN) reported that there were 851 cases of narcotics and drug abuse in Indonesia in 2022. This number increased by 11.1% compared to the previous year which was 766 cases. Meanwhile, the number of suspects in drug cases reached 1,350 people last year. This number also increased by 14.02% compared to 2021 which was 1,184 people [6].

Drug abuse is almost evenly distributed throughout Indonesia. This condition is reflected in the prevalence rate of drug abuse in the last year in 2019 based on a survey conducted by the National Narcotics Agency (BNN) in collaboration with the LIPI Society and Culture Research Center (PMB) in 34 Provinces. in Indonesia, it ranges from 0.10% for East Nusa Tenggara Province to 6.50% for Sumatra Province [9]. It is recorded that at least 3.8 to 4.1 million Indonesians are drug users or the equivalent of 2.18% of the population aged 10 to 59 years [6].

While the National Narcotics Agency (BNN) of Southeast Sulawesi Province carried out rehabilitation for 102 addicts. drugs in the moderate to heavy category during 2020 [10]. The prevalence figures for drug abuse were obtained from drug abusers who live in urban and rural areas. Based on the prevalence figures in each province, it is concluded that not a single province in Indonesia is free from the threat of drug abuse or illicit trafficking [11]. The high level of drug use will have an impact on impaired cognitive function, including mental disorders, difficulty concentrating, behavioral disorders through brain neotransmitters which cause changes in feelings, impaired consciousness and perception [12].

This cognitive disorder is a disorder of the brain's higher functions in the form of orientation, attention, concentration, memory and language, thus affecting the brain's ability to think. Cognitive impairment can be influenced by several risk factors, namely age, education, cigarette consumption, alcohol consumption, type of substance used, as well as the length of time undergoing rehabilitation in rehabilitation institutions [13]. The average age range for first using drugs is 17 to 19 years old. Adolescents are the largest age range for drug users until they reach the age of 35 to 44 years and this dependence can become endless [14].

Narcotics abuse by high school students ranks highest, namely (61.9%) of all levels of education [15]. Drug abuse among students can occur in various cities and regions. So, it is a necessity for us as health workers to provide appropriate understanding and knowledge to students about the dangers of drugs [12].

Based on initial data collection carried out on October 24 2023, data revealed narcotics cases in 2022, the combined results revealed by the Directorate of Narcotics Research at the Regional Police of Southeast Sulawesi and the Regional Police were 438 cases, with a total of 529 suspects and a total of 17 kilograms of crystal methamphetamine found, 1.56 kilograms of organic marijuana, 4.3 kilograms of synthetic marijuana (gorilla tobacco), 90 PCCs and 22 ecstasy pills. This result has increased significantly compared to last year. For 2023, which has only just arrived in October, data revealed on special cases from the Directorate of Drug Research at the Southeast Sulawesi Regional Police includes 91 police reports with a total of 126 suspects.

MATERIALS & METHODS

This research method uses a quantitative analytical approach with a cross-sectional study design because this research took place at the same time for the dependent variable and the independent variable. The aim of this quantitative research is to analyze the risk factors for cognitive impairment in drug inmates at the Southeast Sulawesi Regional Police detention center.

The target population in this study was drug convicts who were entrusted to the Southeast Sulawesi Regional Police Detention Center in 2023 for the period from May to December, totaling 112 people. The sampling technique used in this research is total sampling where the number of samples is the same as the population. The independent variables in this study are knowledge, age of first drug use, duration of drug use and type of drug used. The dependent variable is cognitive impairment.

Data collection techniques, primary data is obtained using data collection techniques directly in the field by researchers. Primary data is also referred to as original data or new data, taken using data collection techniques using questionnaires and direct interviews at the source during research activities. The sources chosen were drug convicts at the Southeast Sulawesi Regional Police Detention Center. Data collected or obtained from pre-existing sources. Secondary data is the acquisition of data obtained from related data provider agencies, namely from information relating to risk factors for cognitive disorders obtained via the internet, scientific articles, etc. The research instrument used was a questionnaire sheet, while the research tools used were writing instruments, a camera as a documentation tool and the SPSS application.

The data obtained were analyzed statistically using univariate, bivariate and multivariate analysis. The results of univariate analysis aim to explain the characteristics of respondents using categorical data. Bivariate analysis in this study used the chi square test and multivariate analysis used the binary logistic regression test with a confidence level of 95% to determine the most dominant factors influencing cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police Detention Center.

RESULT

Table 1. Frequency Distribution of Participant Characteristics

Characteristics	Total (n)	Percentage (%)
Age of Respondents		
<=25 years	46	41.1
>25 years	66	58.9
Gender		
Man	103	92.0
Woman	9	8.0
Education		
College	13	11.6
High School/Equivalent	92	82.1
Junior High School / Equivalent	6	5.4
SD/equivalent	1	0.9
Work		
Civil servants	3	2.7
Self employed	89	79.5
Student	16	14.3
Does not work	4	3.6

Based on Table 1 shows that from 112 respondents, it is known that the age percentage of drug prisoners > 25 years old is 66 respondents, the majority of drug prisoners were male, 103 with a percentage (92%), High school education as many as 92 with a percentage (82.1%), Self-employed as many as 89 with a percentage (79.5%).

Table 2. Variable of Study

Variable	Total (n)	Percentage (%)
Knowledge		
Less	101	90.2
Good	11	9.8
Age of first drug use		
≤ 18 years old	94	83.9
> 18 years old	18	16.1
Duration of drug use		
≤ 5 years	66	58.9
> 5 years	46	41.1
Types of Drugs		
Methamphetamine	79	70.5
Organic cannabis	4	3.6
Synthetic marijuana	29	25.9
Cognitive Impairment		
Definite (definite)	44	39.3
Probable (possible)	68	60.7

Table 2 shows that the dominant knowledge is at a level of less than 101 (90.2%), the age of first use of dominant drugs is ≤ 18

years old, 94 (83.9%), the duration of dominant drug use ≤ 5 years is 66 (58.9%), Types of Drugs dominantly Methamphetamine as much as 79 (70.5%), Cognitive Impairment dominant as Probable (possible) as much as 68 (60.7%).

Table 3. The Relationship Of Knowledge Risk Factors To Cognitive Impairment In Drug Inmates

Knowledge	Cognitive Impairment				p
	Definite		*Probable*		
	n	%	n	%	
Less	43	38.4	58	51.8	0.027
Good	1	0.9	10	8.9	
Age of first use					
≤ 18 years old	37	33.0	57	50.9	0.594
> 18 years old	7	6.3	11	9.8	
Duration of use					0.001
≤ 5 years	3	2.7	63	56.3	
> 5 years	41	36.6	5	4.5	
Types of drugs used					0.014
Methamphetamine	25	22.3	54	48.2	
Organic cannabis	1	0.9	3	2.7	
Synthetic cannabis	18	16.1	11	9.8	

Significant if p ≤ 0.05

Table 3 shows that the Cognitive Impairment variable has a significant relationship with knowledge, Duration of use and Types of drugs used, while the Age of first use variable is not significantly related.

Table 4. Selection of model candidate variables in logistic regression tests based on bivariate analysis

Variable	p-Value	Information
Knowledge	0,027	Candidate
Age of first use	0,594	Not a candidate
Duration of drug use	0,000	Candidate
Types of drugs used	0,014	Candidate

Table 4 that the variables that are candidates for logistic regression tests are knowledge variables, age of first using drugs, length of drug use and type of drugs used.

Table 5. Results of Logistic Regression Test Stages

Variable	B	Sig.	OR	95% CI
Knowledge	4,375	0,019	79,414	2,063 – 3056,299
Duration of use	-6,969	0,000	0,001	0,000 - 0,021
Types of drugs	1,152	0,146	3,166	0.669 – 14.988
Age of first use	1,783	0,130	5,950	0,590 – 59,993

Table 5 Based on logistic regression analysis, it is known that there are several variables that influence cognitive disorders in drug convicts, namely the knowledge variable, duration of drug use and type of drug, while the variable as the risk factor that most dominantly influences cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police Detention Center is the Knowledge variable. with a significance value (Sig) of 0.019, less than p<α (0.025) and an Odd Ratio (OR) = 79.414 which is the largest value among the other variables.

DISCUSSION

The knowledge factor is a very influential factor in a person's life. Knowledge is also directly proportional to the level of education taken. The better a person's level of knowledge, the more likely they are to avoid negative activities that can damage their personality, for example as a drug abuser [16,17].

The level of knowledge is more or less strong as a risk factor that causes cognitive impairment either definite or probable compared to the results of the test scores of prisoner respondents who have a good level of knowledge. The results of statistical tests with chi-square on knowledge risk factors obtained a value of p = 0.027 where the value of p <α (0.05) means that there is a relationship between knowledge and cognitive impairment.

This study is in line with the research of Albert et al [18] who used the Test for Severe Impairment (TSI) technique which is a valid and reliable cognitive function test in patients with severe cognitive impairment as an integrated scale of TSI correlated significantly with mini mental exam results (r = 0.83, P 5 0.0001). And the reliability of the retest was high (r = 0.96, P <0.0001). The internal reliability of the test results was also good (alpha = 0.90). Preliminary results of the factor analysis showed that knowledge factor scores significantly influenced cognitive impairment.

Research conducted by Kumalasari [15] said that based on the results of the pre and posttests carried out, it was found that there was an increase in student knowledge,

before the counseling (pretest) the percentage of knowledge that was lacking was 33.33% with an average score of 3.5 after counseling, an increase in percentage was obtained by 6.06%. What this means is that the knowledge factor is very influential on the thought process that increases cognitive value.

The targets for the spread and abuse of drugs are generally all age groups, but are most dominated by teenagers and adults who are people of productive age. On average, the target age for drug users is the student age group.

In the risk factor of age of first using drugs, respondents with the age of first using drugs ≤ 18 years were stronger as risk factors that cause cognitive impairment either definite or probable compared to the results of the test scores of respondents prisoners who first used drugs > 18 years. However, from the results of statistical tests with chi-square, a value of p = 0.594 was obtained, where the value of p >α (0.05) means that there is no relationship between age of first using drugs with cognitive impairment.

From several survey results conducted at various drug rehabilitation institutions in Indonesia, the average length of time for drug use in Indonesia is not significant. Because it depends on the area where the drug abusers live. In Indonesia, there are several areas that are red zones for illicit drug trafficking and some that are not. So the frequency of drug use is also greatly influenced by whether or not the amount of drugs is easy to obtain.

In the risk factor for long use, respondents who used drugs for > 5 years had a stronger effect as a risk factor causing cognitive impairment compared to the results of the test scores of prisoners who used for ≤ 5 years. The results of statistical tests with chi-square obtained a value of p = 0.000 where the value of p <α (0.05) means that there is a long relationship between drug use and cognitive impairment.

This study is in line with research conducted by Sari Wahyu Ningrum on street adolescents in Yogyakarta in 2016 said that the results of bivariate analysis of risk factors for cognitive impairment in street adolescents drug abusers with variables of length of abuse (OR = 8.25; 95%CI 1.63-41.54; p = 0.005) and the number of drugs abused (OR = 9.33; 95%CI 1.60- 54.5; p = 0.005) are risk factors for cognitive impairment in street adolescents who abuse drugs.

The type of drug that is most widely circulated in Indonesia is crystal methamphetamine (amphetamine). This is followed by other types of drugs, which have many divisions and names, but all of them are narcotics and psychotropics which can cause dependency effects and can affect the cognitive function of the abuser.

In drug risk factors, methamphetamine is stronger as a risk factor that causes cognitive impairment both definite and probable compared to the results of the test scores of inmate respondents who use synthetic marijuana and organic marijuana. The results of statistical tests with chi-square obtained a value of p = 0.014 which is because the value of p <α (0.05) means that there is a relationship between risk factors for the type of drugs used with cognitive impairment in drug inmates at the Sultra Regional Police detention center.

This study is in line with the research of Antasari et al [19] which states that the variable type of drug studied is the type of drug that has the result that, marijuana use (p = 0.000; PR = 3.02), the use of synthetic marijuana (p = 0.039) which means that the type of drug used by drug abusers affects cognitive impairment. The results of a systematic review and meta-analysis of 13 studies in the United States, Europe and Australia with 1,382 participants consisting of 499 chronic marijuana users and 883 non-marijuana control people who found that chronic marijuana users had difficulty recognizing and remembering information presented directly or abbreviated compared to non-users. While related to long-term memory, marijuana users are worse at retaining implicit and explicit information for long periods of time compared to the

control group (non-marijuana users) [4,20].
Another researcher, Antasari et al [19] said that narcotics and psychotropics that are used above therapeutic doses can cause dependence and typical changes in mental activity, cognitive function and behavior. For the type of hallucinogenic drugs included in the research questionnaire, it did not appear in the test results because of the 112 respondents of drug inmates at the Sultra Regional Police detention center, no one filled in the choice of the type of hallucinogenic drug so that the data processing using the SPSS application was not readable so it was not attached.
In the multivariate analysis carried out by the researchers, the variables included as risk factors that were candidates for the logistic regression test were the risk factor variables knowledge, age of first drug use, duration of drug use and type of drug used. For the risk factor variable, age of first use, although the results of the bivariate statistical test with chi-square obtained a p value = 0.594, which is a p value <α (0.05) and this means that there is no relationship between age of first use of drugs and cognitive impairment, but still included as a candidate in the logistic regression test to see which risk factor variable is the most dominant in causing cognitive impairment. Based on the logistic regression analysis test carried out by the researcher, it is known that there is a variable that has the most dominant influence on cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police detention center, namely the knowledge risk factor variable because the Odd Ratio (OR) value is the largest, namely 79.414 and the significance value (sig.) is 0.019 < 0.025. These results indicate that the knowledge variable is a very dominant risk factor, causing cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police Detention Center.

CONCLUSION

Based on the results of research conducted by researchers, there is a relationship between the risk factors of knowledge, duration of drug use, and the type of drug used and cognitive disorders in drug inmates at the Southeast Sulawesi Regional Police Detention Center. There is no relationship between the risk factor of age at first using drugs, which is a risk factor that causes cognitive impairment in drug convicts. The knowledge risk factor is the risk factor that has the most dominant influence, causing cognitive disorders in drug convicts at the Southeast Sulawesi Regional Police Detention Center as proven by the results of the logistic regression test, which obtained the largest Odd Ratio (OR) value among the other risk factor variables tested.

Declaration by Authors

Ethical Approval: Approved
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Amanda MP, Humaedi S, Santoso MB. Penyalahgunaan narkoba di kalangan remaja (Adolescent Substance Abuse). Prosiding Penelitian Dan Pengabdian Kepada Masyarakat 2017;4(2).
2. Bashirian S, Hidarnia A, Allahverdipour H, Hajizadeh E. Application of the theory of planned behavior to predict drug abuse related behaviors among adolescents. 2012;
3. Adius K, Amirudin E, Asriati A, La Ode A, Ruslan R. Penyuluhan terhadap peningkatan pengetahuan dan sikap remaja tentang bahaya narkotika. Holistik: Jurnal Kesehatan 2020;14(2):195–201.
4. Chakravarthy B, Shah S, Lotfipour S. Adolescent drug abuse-Awareness & prevention. The Indian journal of medical research 2013;137(6):1021.
5. The United Nations. World Drug Report 2023 [Internet]. Januari 20232023;Available from: https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2023.html
6. Nawi AM, Ismail R, Ibrahim F, Hassan MR, Manaf MRA, Amit N, et al. Risk and protective factors of drug abuse among adolescents: a systematic review. BMC public health 2021;21(1):1–15.

7. Simatupang N, Faisal F. Narcotics Abuse by Children and its Prevention. DE LEGA LATA: Jurnal Ilmu Hukum 2022;7(2):252–9.
8. Kementerian Kesehatan. Profil Kesehatan Indonesia [Internet]. Jakarta: Depkes RI; 2021. Available from: https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf. Last accessed: 19 July 2022.
9. Kemenkes RI. Hasil utama RISKESDAS 2018 [Internet]. Jakarta: 2018. Available from: https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesdas-2018_1274.pdf. Last accessed: 20 June 2022.
10. Rifiana AJ, Afrizal A, Machmud R, Edwin A, Mallongi A. Development of Family-Based Narcotics Abuse Model Rehabilitation among Adolescents with EVIE Method in DKI Jakarta in 2017-2019. Open Access Macedonian Journal of Medical Sciences 2020;8(E):434–8.
11. Schwinn TM, Schinke SP, Di Noia J. Preventing drug abuse among adolescent girls: outcome data from an internet-based intervention. Prevention Science 2010;11:24–32.
12. Wulandari S, Hartati S. Community role in the prevention of narcotics abuse among teenagers. In: International Conference on Law, Economics and Health (ICLEH 2020). Atlantis Press; 2020. page 411–6.
13. Namadi MM. Drug abuse among adolescents in Kano metropolis, Nigeria. IJASS 2016;2(1):195–206.
14. Greydanus DE, Kukreti P, Pemde HK. Substance use and abuse in adolescents: An overview. International Journal of Child and Adolescent Health 2023;16(1):21–51.
15. Kumalasari Y, Ramon A, Febriawati H, Oktarianita O. Perilaku Pencegahan COVID-19 pada Pegawai Badan Narkotika Nasional Provinsi Bengkulu. Jurnal Ilmu Kedokteran dan Kesehatan 2022;9(1).
16. Pusnita I. Pengetahuan Siswa tentang Penyalahgunaan Narkoba. Jurnal Manajemen dan Ilmu Administrasi Publik (JMIAP) 2021;3(3):234–40.
17. Pranawa S, Humsona R, Yuliani S. Meningkatkan Pengetahuan Remaja Tentang Bahaya Penyalahgunaan Narkoba Dengan Peer Education Strategy. Habitus: Jurnal Pendidikan, Sosiologi, & Antropologi 2018;2(2):183–94.
18. Albert M, Cohen C. The Test for Severe Impairment: an instrument for the assessment of patients with severe cognitive dysfunction. Journal of the American geriatrics society 1992;40(5):449–53.
19. Antasari E, Sudaryo MK. Faktor Risiko Gangguan Kognitif pada Penyalahguna Narkoba di Enam Balai Rehabilitasi Badan Narkotika Nasional Tahun 2019. Media Penelitian dan Pengembangan Kesehatan 2021;31(4):267–80.
20. Wanjek B, Rosendahl J, Strauss B, Gabriel HH. Doping, drugs and drug abuse among adolescents in the State of Thuringia (Germany): prevalence, knowledge and attitudes. International journal of sports medicine 2007;28(04):346–53.

How to cite this article: Muhamad Asra, Ramadhan Tosepu, Adius Kusnan. Analysis of cognitive impairment risk factors for drug inmates. *International Journal of Research and Review*. 2024; 11(1): 720-726. DOI: *https://doi.org/10.52403/ijrr.20240182*

******