

Periodontal Status of Drug Abuser in Makassar

Nursyamsi Djamaluddin*, Bagus Setiawan

Department of Dental Public Health, Faculty of Dentistry, Hasanuddin University, Makassar, Indonesia

Corresponding Author: nursyamsi4874@gmail.com

ABSTRACT

In terms of health, many narcotics have a bad effect, including the oral cavity. Periodontal disease is often associated with drug abusers because of the impact of drug use on periodontal tissue in the form of gingival changes and bleeding. This study was a descriptive observational study with cross-sectional study design. The research sample in this study was drug abusers who are undergoing rehabilitation in a detoxification program, unit-entry, primary, and re-entry. The sampling method used simple random sampling with a total sample of 82 samples. Periodontal status assessment scores use the Community Periodontal Index (CPI). The periodontal status of drug abusers in the National Narcotics Agency Rehabilitation Center was poor. Refraining from drugs promptly, and the routine of maintaining oral hygiene can contribute to periodontal health in drug abusers who are undergoing rehabilitation.

Keywords: Attachment loss, Drug abusers, Gingival bleeding, Periodontal pockets

Correspondence:

Nursyamsi Djamaluddin

¹Department of Dental Public Health, Faculty of Dentistry, Hasanuddin University, Makassar, Indonesia

Corresponding Author: nursyamsi4874@gmail.com

INTRODUCTION

Drug abuse is a social and health problem both nationally and globally. The damage caused by the use of illegal drugs is a serious crime. Apart from death, drug abuse also causes pain to its users and is a huge burden on society.¹ The prevalence of drug abuse in the world from 2006 to 2013 has increased. The incidence of abuse in the world is estimated at 4.9% or 208 million users in 2006. In 2011, however, this case increased to 5.2% and remained stable until 2013. The United National Office on Drugs and Crime (UNODC), in the World Drug Report 2017, also reports that, based on estimation, four billion people or about 5% of the world's adult population, commit drug abuse at least once in 2015.²

In 2005, the National Finding Report with the United States National Survey on Drug Use and Health stated that nearly 10.4 million people aged and over 12 years (4.3%) had used meth at least once in their lives. On a national scale, according to the result of the survey National Narcotics Board (BNN), in collaboration with the University of Indonesia Research Center in 2014, it has given a prevalence of drug abuse in general of 2.18% in Indonesia. Based on the results of the survey, the projected prevalence rate calculation had been carried out, whereas a general prevalence of drug abuse is estimated at 2.21% or equivalent to 4173633 people in 2016. Therefore, a serious attention to eliminating the effects of drug abuse was needed. Oral health is an important part of general health. Poor oral health status will be associated with mortality, morbidity, coronary heart disease, poor nutrition, speech difficulties, reduced workability, and poor self-image. Oral health problem is one of the most common conditions that are also associated with drug abuse. Dental patients who abuse drugs will have poor oral hygiene, xerostomia, rampant caries, especially in methamphetamine abusers. A significant decrease in saliva levels is also shown in heroin abusers, with low salivary pH with stimulation and not stimulation. The development of dental caries and periodontal disease can also be associated with poor oral hygiene, changes in microbiome, dry mouth, and changes in the saliva electrolyte content.

Therefore, it is thought that an extremely high prevalence of caries and periodontal disease in drug users has a close relationship with hyposalivation, xerostomia, high

carbohydrate diet, poor oral hygiene, decreased immunity, and endocrine dysfunction. The weakening effect of the immune system from drug use might lead to an increase in the inflammatory process which will also involve periodontal tissue, especially during persistent drug abuse.^{1,3}

Periodontal disease in drug users is caused by the build-up of plaque and calculus, due to lack of attention to cleaning the oral cavity. Calculus is a build-up of dental plaque that is not cleaned, so that the plaque becomes hard and slowly mineralizes. Calculus is firmly attached to the crown and roots of teeth and tooth restorations.⁴ Periodontal disease is often associated with a population of drug abusers because of the effects of drug use on periodontal tissue. The 2013 survey of drug abusers for periodontal disease in Uruguay also showed a high prevalence of the periodontal disease in drug abusers of 65.3% of people with gingivitis and 18.1% of people with periodontitis from 72 people examined.

Research in Cordoba, Argentina, also reported gingival and periodontal changes in 81.7% of 61 drug abusers examined. A study in Iran in 2016 said that there were around 63% of people who had gingivitis and 37% of people who experienced periodontitis out of 200 drug abusers examined. In a previous study conducted in Zhejiang, China, in 2014, 97.53% of drug abusers experienced gingival bleeding and calculus out of 162 drug abusers examined, and 51.23% of drug abusers experienced periodontal pockets, and mobile teeth from 162 abusers were examined.^{1,3,5} Meanwhile, for Makassar case, there is no data about periodontal status in drug abusers. Therefore, researchers are interested in investigating the description of periodontal status in drug abusers.

MATERIAL AND METHODS

This research is a descriptive observational study with cross-sectional study design. The study was conducted at the Rehabilitation Center Board of National Narcotics of the Republic of Indonesia in Makassar. The research was conducted on April 13th-23rd, 2018. The population in the study was drug abusers total 103 sufferers undergoing rehabilitation programs at the National Narcotics Agency (BNN) Rehabilitation Center. The research sample in this study is drug abusers who are undergoing rehabilitation

in a detoxification program, unit-entry, primary, and re-entry. The sampling method used simple random sampling with a total sample of 82 samples. The inclusion criteria of this study were to have abused drugs in the past six months and while undergoing treatment at the BNN Rehabilitation Center. Drug abusers who are uncooperative and do not have the approval of the BNN Rehabilitation Center are excluded in this study. The obtained data is presented in tables and charts. This study was approved by the ethics committee of the Hasanuddin University Dental Hospital.

RESULTS

The results of research on the description of the periodontal status of drug abusers in Makassar are shown in Table 1. Table 1 shows the distribution of subjects based on demographic characteristics, namely age, sex, education and duration of drug abuse, type of drug used, and length of rehabilitation. Based on the age category, drug abusers between the ages of 15 and 19 are the highest abusers, with a total of 26 people (31.7%). It is compared to drug users with other age ranges. Based on the gender category, drug abusers with males have a higher number, which is 76 (92.7%) of the total survey subjects. At the education level, drug abusers with a high school education level had the highest percentage of 63.4%. Based on the duration of drug use, a period of more than three years has a higher number of 51 people (62.2%), while on the category of drugs used, methamphetamine is the most widely used type of drug that is 52 people (63.4%). Based on the duration of rehabilitation, rehabilitation duration of less than or equal to 3 months had the highest percentage, at 76%.

Chart 1 shows the distribution of bleeding samples in each sextant. The number of samples that experienced the most bleeding was in sextant 4, which was 35% while the least was found in sextant 2, at 10%.

Chart 2 depicts the distribution of samples that have periodontal pockets in each sextant. The most samples that experienced 4-5 mm pocket were found in Sextant 5, which was 30%, while the least was found in sextant 2, which was as much as 10%. In addition, there were some samples that have more or equal to 6 mm pockets found in sextant 4, which was 2%.

Chart 3 shows the distribution of samples that experienced the loss of attachment in each sextant. The highest number of samples, which suffered the loss of attachment of 4-5 mm, was found in sextant 3, which was 13%, while the lowest was in sextant 5, which was as much as 5%. The number of samples that experienced then most loss of attachment (loss of attachment) 6-8 mm was found in sextant 1 by 4% while the least in sextant 5 was 1%.

Drug abuse on individuals has many impacts, such as physical effects in the form of decreased functioning of individual organ systems, psychological effects in the way of changes in behaviour to be less productive and other social impacts.⁶⁻⁸ Drug abuse has direct and indirect consequences through its adverse effects on user behaviour and lifestyle. In addition, the presence of a higher prevalence of the oral disease in drug abusers is closely related to xerostomia, a high carbohydrate diet, poor oral hygiene, and decreased immunity and endocrine dysfunction.^{1,9-11}

DISCUSSION

Drug abuse has a cytotoxicity mechanism with the potential to produce IL-1 β induced by

lipopolysaccharides in cells. This will cause an increase in IL-1 β monocyte/macrophage production. With an increase in the production of monocytes/macrophages will be able to increase inflammation and inflammation of the gingiva until it can become periodontitis. This is especially true for methamphetamine abuse.¹²

Age is also one of the influences on gingival bleeding, pocket, and attachment loss. As with the research conducted by Kayal et al., which reported that there was a relationship between increasing age and periodontal disease. In the drug abuse population studied, there were differences in the amount of bleeding, pockets, and loss of attachment in the sexes of males and females, stating that in the male group, on average, a more dominant periodontal disease than females.¹³ Research in Iran on opium drug abuse populations shows that the value of the Community Periodontal Index (CPI) index in males was much higher when compared to females. This is due to the higher frequency of drug and cigarette consumption in male.^{6,8}

Periodontal disease is one of the most common conditions in adult individuals. This disease ranks second after dental caries as a cause of tooth loss in adults in developing countries. Periodontal disease is characterized by inflammation of the supporting tissues of the teeth. The primary etiological agent is dental plaque. Whenever there is an imbalance between potentially pathogenic microorganisms and the efficacy of the host response, the disease will occur. Dental caries and periodontal disease are more common in addicts than the general population. Addicts have more cervical plaques on one or more teeth. It has been reported that gingival bleeding often occurs in drug abusers. A high incidence of periodontal disease is observed with heavy calculus deposits and is diagnosed as adult periodontitis, which is characterized by loss of attachment. Most drug abusers have high rates of plaque and calculus accumulation due to negligence in oral hygiene, xerostomia, and changes in the microbial profile.^{14,15}

In this study, the level of education has a significant relationship to the occurrence of loss of attachment (Loss of Attachment) in drug abusers with the highest prevalence in tertiary institutions, which may be caused by the age of older drug abusers in abusers with education level high. However, this is not in line with studies in the general population conducted by Ramirez, et al. which states that individuals with less education or with basic education are potentially more at risk of experiencing periodontal disease due to difficulties in accessing health services.¹⁶

The influence of cannabis drug abuse on periodontal status is in line with research conducted by Thomson et al., which stated that regular exposure to cannabis smoke is closely related to the epidemiology of periodontal attachment loss. Marijuana has an effect or effect on the gingival enlargement that is similar to the induced enlargement in chronic cases and bone reduction. In a study conducted by Nugueria et al. regarding the effects of cannabis smoke on bone reduction in mice stated that inhalation of cannabis smoke could escalate bone reduction in mice with induced periodontitis.¹⁷ In this study, abusers with methamphetamine were the most research subjects than others, so that abusers of this type of methamphetamine were also at risk of having poor periodontal status. As with research conducted by Ye Tao et al., that caries and periodontal status in drug abusers were bad. That was caused by the misuse of methamphetamine; besides that, there is also a frequency

of maintaining low oral and dental hygiene, which can also be a risk factor for being found to be in poor periodontal status. Research conducted by Tipton et al. It has also been found that the influence of interleukin (IL) - 1 β production mediators were influenced by the use of methamphetamine that, in turn, weakens the immune system of methamphetamine transmission which results in an increase in the inflammatory process, especially during chronic methamphetamine use, which will then involve periodontal tissue. Therefore, usually in methamphetamine, abusers are not only periodontal tissue that may be disrupted, but it can also be commonly found with caries rampant, xerostomia, and poor dental and oral hygiene.^{1,13,17} For heroin abusers, they also show a significant reduction in saliva, with low salivary pH with stimulation and not stimulation. The development of oral health burdens and diseases also associated with bad oral hygiene, changes in microbiomes, dry mouth, and changes in the saliva electrolyte content. In addition, heroin users were also shown by the sensation of burning mouth, mucosal infections, and periodontal disease. This pattern is pathognomonic in heroin abuse. This study has limitations, namely, participants from the Detoxification Center, which means they are still under the influence of drug use.

CONCLUSION

The periodontal status of drug abusers in the National Narcotics Agency Rehabilitation Center is poor. Refraining from drugs promptly and the routine of maintaining oral hygiene can contribute to periodontal health in drug abusers who are undergoing rehabilitation.

ACKNOWLEDGMENTS

Thank you to the director of the Rehabilitation Center Board of National Narcotics of the Republic of Indonesia in Makassar, and all staff who gave permission and support to this study.

REFERENCES

- Ye, T., Sun, D., Dong, G., Xu, G., Wang, L., Du, J., ... & Yu, S. (2018). The effect of methamphetamine abuse on dental caries and periodontal diseases in an Eastern China city. *BMC oral health*, 18(1), 1-6. <https://doi.org/10.1186/s12903-017-0463-5>
- Jain, H. (2017). Summary, Conclusion and Policy Implications. In *Trade Liberalisation, Economic Growth and Environmental Externalities* (pp. 147-157). Palgrave Macmillan, Singapore. https://doi.org/10.1007/978-981-10-2887-8_8
- Owlia, F., Karbassi, M. H. A., Sadeghipour, M., & Behnia, A. (2017). Evaluating of Cervical Caries and Periodontitis among Drug Abusers in an Iranian Population. *Annual Research & Review in Biology*, 1-8. <https://doi.org/10.9734/ARRB/2017/31183>
- Enrique, R., Inés, S., Marcelo, K., Sylvia, P., S., Rocio, O., & Alicia, V. (2015). Dental and periodontal condition of a population in treatment for drug use. Pilot study. *ODONTOESTOMATOLOGÍA*, 17(25), 34-39.
- World Health Organization. (2013). *Oral health surveys: basic methods*. World Health Organization.
- Shekarchizadeh, H., Khami, M. R., Mohebbi, S. Z., Ekhtiari, H., & Virtanen, J. I. (2013). Oral health of drug abusers: a review of health effects and care. *Iranian journal of public health*, 42(9), 929.
- Kayal, R. A., Elias, W. Y., Alharthi, K. J., Demyati, A. K., & Mandurah, J. M. (2014). Illicit drug abuse affects periodontal health status. *Saudi Med J*, 35(7), 724-8.
- Mohammadi, T. M., Hasheminejad, N., Salari, H. R., Rostamizadeh, M. R., & Najafipour, H. (2017). Association between tooth loss and opium addiction: Results of a community-based study on 5900 adult individuals in South East of Iran in 2015. *Journal of International Society of Preventive & Community Dentistry*, 7(4), 186. https://dx.doi.org/10.4103%2Fjispd.JISPCD_189_17
- Saini, G. K., Gupta, N. D., & Prabhat, K. C. (2013). Drug addiction and periodontal diseases. *Journal of Indian Society of Periodontology*, 17(5), 587. <https://dx.doi.org/10.4103%2F0972-124X.119277>
- Ramírez JCM, Lopera NS, López AP, Agudelo-Suárez AA, Botero JE. (2017). Periodontal disease and its relationship with clinical and sociodemographic variables in adult patients treated in a service/teaching institution. *Rev Odontológica Mex*. 21(3):165-72.
- López, R., & Baelum, V. (2009). Cannabis use and destructive periodontal diseases among adolescents. *Journal of clinical periodontology*, 36(3), 185-189. <https://doi.org/10.1111/j.1600-051X.2008.01364.x>
- Rommel, N., Rohleder, N. H., Wagenpfeil, S., Härtel-Petri, R., Jacob, F., Wolff, K. D., & Kesting, M. R. (2016). The impact of the new scene drug "crystal meth" on oral health: a case-control study. *Clinical oral investigations*, 20(3), 469-475. <https://doi.org/10.1007/s00784-015-1527-z>
- Spolsky, V. W., Clague, J., Murphy, D. A., Vitero, S., Dye, B. A., Belin, T. R., & Shetty, V. (2018). Periodontal status of current methamphetamine users. *The Journal of the American Dental Association*, 149(3), 174-183. <https://doi.org/10.1016/j.adaj.2017.10.017>
- Riemer, L., & Holmes, R. (2014). Under the influence: informing oral health care providers about substance abuse. *Journal of Evidence Based Dental Practice*, 14, 127-135. <https://doi.org/10.1016/j.jebdp.2014.04.007>
- Grippaudo, C., Paolantonio, E. G., Antonini, G., Saulle, R., La Torre, G., & Deli, R. (2016). Association between oral habits, mouth breathing and malocclusion. *Acta Otorhinolaryngologica Italica*, 36(5), 386. <https://dx.doi.org/10.14639%2F0392-100X-770>
- Versteeg, P. A., Slot, D. E., Van Der Velden, U., & Van Der Weijden, G. A. (2008). Effect of cannabis usage on the oral environment: a review. *International journal of dental hygiene*, 6(4), 315-320. <https://doi.org/10.1111/j.1601-5037.2008.00301.x>
- Maloney, W. (2010). The significance of illicit drug use to dental practice. <https://doi.org/10.9754/journal.wmc.2010.00455>

Periodontal Status of Drug Abuser in Makassar

Table 1. Overview of subjects based on demographic characteristics

Characteristics	n	%
Age		
< 15 years	4	4,9%
15-19 years	26	31,7%
20-24 years	22	26,8%
25-29 years	19	23,2%
30-34 years	3	3,7%
> 34 years	8	9,8%
Sex		
Male	76	92,7%
Female	6	7,3%
Education level		
Elementry School	4	4,9%
Junior School	12	14,6%
High School	53	64,6%
University	13	15,9%
Duration of drug abuse		
≤3 years	31	37,8%
>3 years	51	62,2%
Type of drug used		
Shabu (Metaphetamin)	50	60,98%
Cannabis	1	1,22%
Heroin	3	3,66%
Multipel drugs	28	34,15%
Duration of		
≤ 3 months	63	76,8%
>3 months	19	23,2%
Total	82	100%

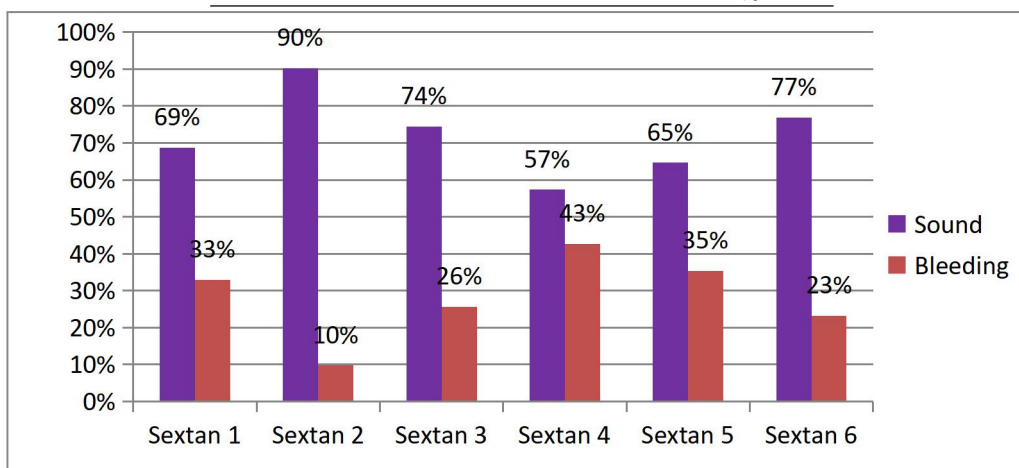


Figure 1. Distribution of bleeding samples in each sextant

Periodontal Status of Drug Abuser in Makassar

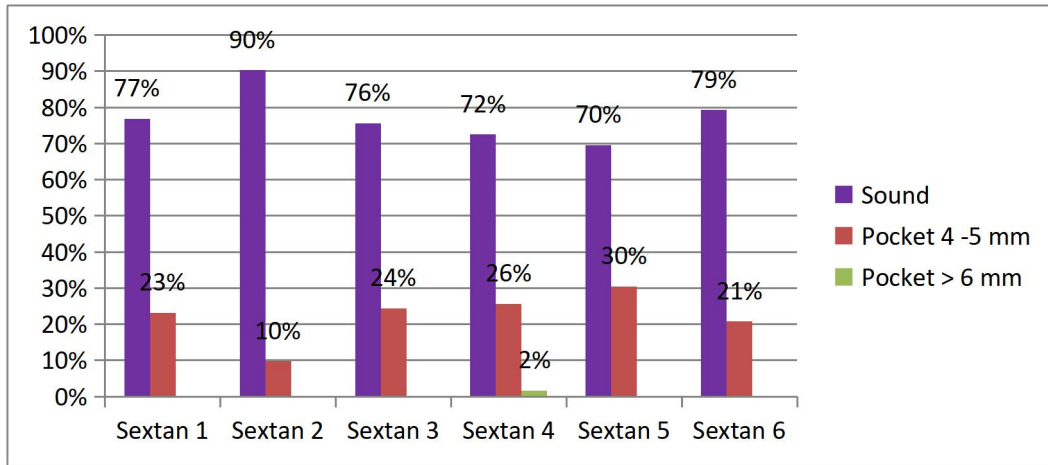


Figure 2. Distribution of periodontal pocket samples in each sextant

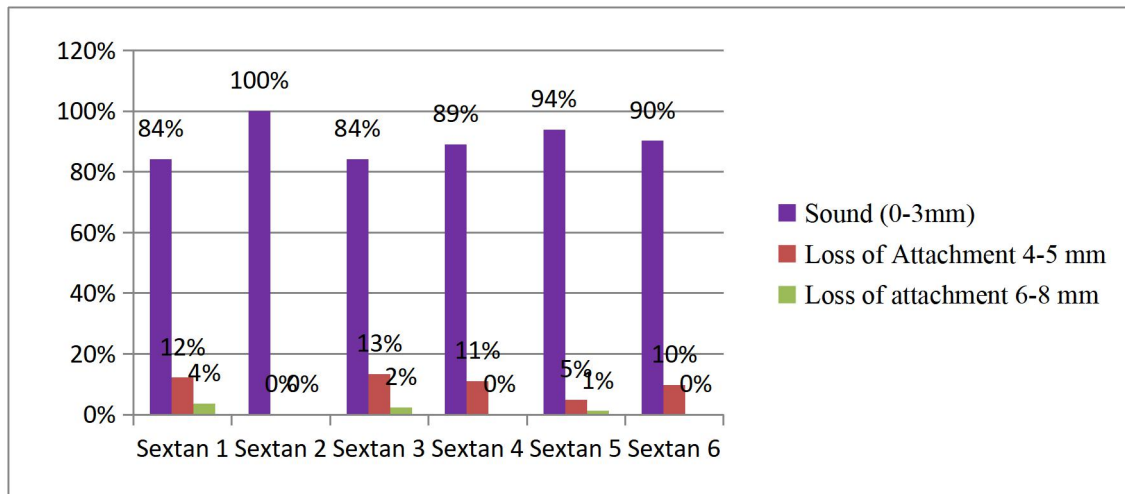


Figure 3. Distribution of loss attachment samples in each sextant