

## RELATIONSHIP BETWEEN DURATION OF USING ANTIPSYCHOTICS DRUGS WITH CARIES STATUS ON SKIZOFRENIA PATIENTS IN SPECIAL HOSPITAL PROVINCE SOUTH SULAWESI, 2017

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### ABSTRACT

**Objective:** To provide an overview of the use of antipsychotic drugs with caries status in schizophrenic patients in Makassar.

**Methods:** This was an analytic observational with cross-sectional study design. Sampling method was done with non-probability sampling with 74 samples. This research was conducted at the Regional Special Hospital of South Sulawesi Province on 19-23 April 2017. The data is presented in a table and analyzed by Spearman's correlation test.

**Results:** The study showed that the distribution of the average value of DMF-T in each sex group, age, and the duration of medicine use with  $8.61 \pm 5.51$ . There is a significant relationship between the duration of antipsychotic medicine use and dental caries status and is also found  $r$ -value at 0.359 which denotes a positive correlation.

**Conclusion:** There is a relationship between the duration of using antipsychotic drugs with dental caries status of schizophrenic patients as a result of the side effects of antipsychotic drugs.

**Keywords:** Caries status, Duration of using antipsychotic drugs, Schizophrenia

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### INTRODUCTION

The problem of mental disorder does not only appear in psychotic side but also in the form of anxiety, depression, and abusing drugs [1]. Mental disorder prevalence is quite high and could affect health problems, family circumstances, social-culture, and even the world's economy. The burden of disease is still remarkable [2].

Virtually 450 million people in the world suffer from a mental disorder, and one-third of this fig. is in developing countries. According to World Health Organization (WHO), 8 of 10 mental disorder sufferers do not have access to suitable healthcare, and it is expected that approximately 26 million people around the world will suffer from schizophrenia in their lifetime [2].

The Result of Basic Health Research (RISKESDAS) in 2013 denoted that emotional mental disorder prevalence shown by anxiety and depression symptoms is 6% for the age of 15 and more or about 14 million people. Schizophrenia is one of the most severe mental disorders and the development of this disease happens chronically. The prevalence of such severe mental disorders, such as schizophrenia, occurring in 1.7 of 1,000 residences or around 400,000 people in Indonesia [2].

Schizophrenia has an especial distinction compared with people in general, which makes them vulnerable towards oral health [3, 5]. The diseases frequently associated with schizophrenia are caries and periodontal diseases. This is shown by research conducted on schizophrenics at the University of Sevilla, which found that their dental and oral health was a serious condition. Its conclusion is the DMF-T score of a schizophrenic is  $17.74 \pm 8.54$ . This number illustrates that schizophrenia sufferers in Sevilla, Spain, had 8 teeth undergoing considerable damage category caused by caries.

Another study on the dental and oral health of psychiatric patients in several countries showed that mental problems and medicines used to treat the patients could improve the prevalence and severity of dental and oral, like caries [2]. A decreasing saliva rate is the side effect of certain drugs, which is often reported by patients and clinicians. Psychotropic medicines can make hypo-function happened in the gland of saliva and xerostomia to schizophrenics [6]. Schizophrenics experiencing diminished

saliva rate had an increasing incidence of caries [7]. Hypo-saliva affects the intensification of microflora cariogenic and intensifies the happening of the caries process [8, 9]. Another factor contributing to the increasing incidence of caries on schizophrenics is higher sugar intake.

Psychiatric patients with schizophrenia shows a limitation of motivation in maintaining their dental and oral health. A negative symptom and personality problem of mental disorder patient might be responsible on the lack of optimal brushing tooth habit and the intensity of visiting dentist which are rarer than the population in general, although they are still in the same society [10]. Several studies regarding dental and oral health on mental disorder patients depict that the patient needs more serious dental and oral care and treatment so that it can influence their life. Long-term care, nevertheless, in the hospital can also increase dental problems, particularly caries and periodontal diseases; this is because preventive care of dental and oral health is not an integral part of psychiatric treatment.

The recent advancement, according to Eugenio Velasco *et al.*, in term of clinical approach of dental and oral health on mental disorder patients has risen and shown the differentiation of prevalence and distribution of decay teeth (D), missing teeth (M), filled teeth (F), or DMFT, between schizophrenic and a healthy controlled group [1]. However, there has not been specific research conducted to assess the relation of antipsychotic medicine use and dental caries status on schizophrenic patients.

Based on the explanation above, researchers are interested to find out the relation of antipsychotic medicine use and dental caries status on schizophrenic patients in the Special Hospital Region (RSKD) of South Sulawesi Province 2017.

### MATERIALS AND METHODS

#### Material

This study used analytical observation research by the cross-sectional study design. This research was conducted in the Special Hospital Region (RSKD) of South Sulawesi Province, Lanto Dg. Pasewang Street, Makassar City, on 19-23 July 2017.

The population of this research is patients diagnosed as schizophrenia at the hospital, 281 patients in total. The samples of this research are patients having been diagnosed as the schizophrenia sufferers, undertaking psychotic medicine therapy in the Kenanga and Kenari ward of Special Hospital Region (RSKD) of South Sulawesi Province. Those who were eligible based on the inclusion and exclusion criteria resulted in 74 samples. The inclusion criteria were patients that were aged more than 20 y, cooperative, present in observation, are not using orthodoxy and psychotic tools, as well as those who did not have food or drink, brush teeth, or smoke 1 hour prior to saliva sampling. On the other hand, the exclusion criteria is those who cannot participate in this research, such as the patients who have diabetes mellitus record, rheumatoid arthritis, and Sjogren's syndrome that could influence the oral cavity condition and those with oral hypoglycemic use record, ACE inhibitors and opioid, including patients who are undertaking radiotherapy, chemotherapy and/or having undergone saliva gland surgery.

The taken data were then processed by program version 23.0 (SPSS Inc., Chicago, IL, USA), presented in tables and descriptions, and analyzed by Spearman's rho correlation test.

## RESULTS AND DISCUSSION

The researchers had conducted the research to find out the relation between antipsychotic medicine use duration and dental caries status on schizophrenia patients in RSKD, South Sulawesi Province. This research was run from the 19 to 23 of April 2017, at Kenari ward for male patients and Kenanga ward for female patients.

Table 1 shows the distribution of sample groups, 74 samples in total. For sex group, there were 34 (45.9%) male patients and 40 (54.1%) female patients. In age group, 50 (67.6%) patients ranged from 21 to 40 y old, and 24 (32.4%) patients ranged from 41 to 60 y old. In the duration of medicine use group, there were 59 (79.7%) patients with under 12 mo of medicine use and 15 (20.3%) patients with over 12 mo of medicine use.

**Table 1: Sample distribution based on sex, age, and the duration of medicine use**

	Frequency (n)	Percent (%)
Sex		
Male	34	45.9
Female	40	54.1
Age		
21-40	50	67.6
41-60	24	32.4
The duration of medicine use		
<12 mo	59	79.7
>12 mo	15	20.3
Total	74	100.0

**Table 2: The distribution of the average value of DMF-T in each sex group, age and the duration of medicine use**

	DT		MT		FT		DMF-T	
	n	mean±SD	n	mean±SD	n	mean±SD	n	mean±SD
Sex Group								
men	36	4.03±2.48	42	5.76±4.35	2	1.50±0.70	34	7.15±4.26
Women	34	4.32±3.36	20	5.24±4.22	-	-	40	9.85±6.17
Age Group								
21-40	47	4.04±3.03	33	4.57±3.67	2	1.50±0.70	50	7.64±5.53
41-60	23	4.43±2.74	29	7.50±4.82	-	-	24	10.63±4.98
Medicine Use Duration								
<12 mo	57	3.86±2.46	51	4.98±3.85	1	-	59	7.71±4.66
>12 mo	13	5.54±4.29	11	8.00±5.34	1	-	15	12.13±7.19
Total	70	4.17±2.92	62	5.52±4.26	2	1.50±0.70	74	8.61±5.51

Table 2 depicts the distribution of the average value of DMF-T in each sex group, age, and the duration of medicine use with 8.61±5.51. Male group has DMF-T average value at 7.15±4.26, while the female group has DMF-T average value at 9.85±6.17. This fig. shows that the male group has 7 teeth which are damaged caused by caries with very high average category of DMF-T, while the female group has roughly 10 damaged teeth caused by caries with very high average category of DMF-T. Meanwhile, the group of 21-40 ages has 7.64±5.53 average value, and 41-60 ages group has 10.63±4.98 average value. This means

that the group of 21-40 y has almost 8 damaged teeth with very high average category of DMF-T, and 41-60 ages group has almost 11 damaged teeth with very high average category of DMF-T. Lastly, for medicine use duration, it is found that there is 7.71±4.66 for less than 12 mo use, while there is 12.13±7.19 for more than 12 mo use of DMF-T average value. This illustrates that less than 12 medicine use group has almost 8 damaged teeth with very high average category of DMF-T, while those who consume the medicine more than 12 mo have 12 damaged teeth with very high average category of DMF-T.

**Table 3: The relation between antipsychotic medicine use (The Duration of Medicine Use) and dental caries status**

	DMF-T		Value r	Value p
	n	mean±SD		
The Duration of Medicine Use	74	8.61±5.51	0.359	0.002*

\*Spearman's rho Correlation,  $p < 0.05$ ; significant, r value shows the correlation coefficient

Table 3 denotes the result of Spearman's rho correlation test which shows the relation between the duration of antipsychotic medicine use and dental caries status, with 8.61±5.51 of DMF-T average value, and it has p-value at 0.002 which means there is a significant relationship between the duration of antipsychotic

medicine use and dental caries status and is also found r-value at 0.359 which denotes a positive correlation, it can be said there is 12.88% antipsychotic medicine use duration influencing dental caries status, whereas the rest is at 87.12% influenced by other factors.

Based on the result of 74 samples of caries status and the data of antipsychotic medicine use duration scrutinized on schizophrenics in the Special Hospital Region (RSKD) of South Sulawesi Province, statistic test proved a positive correlation based on Spearman's rho correlation test, and there was a significant relation between antipsychotic medicine use duration and the average value of DMF-T.

Schizophrenia is a functional psychosis with the most problem on the thinking process as well as disharmony among the thinking process, emotion, intention, and psychomotor side accompanied a reality distortion [11]. A study of Yu Chu-Ku *et al.* Found the level of caries in schizophrenics in Taiwan reaching 98.5% [12]. Furthermore, the clinical finding of this research also shows caries severity rate which was very high in all categories table 2. As a result, it is known that schizophrenics are more vulnerable to neglect dental and oral cavity health because they lack motivation and have a number of difficulties to clean their oral cavity routinely, which could increase caries [13].

The research explains that decay teeth (DT) and missed teeth (MT) were more common to find on schizophrenics, and filled teeth (FT) were less common (1.50±0.70) in schizophrenic patients. It means that there is a lack of restorative care towards dental healthcare, which has not been fulfilled on schizophrenic patients. Such negative symptoms can make cause patients to only visit the dentist when they have a severe dental condition, which tends to be difficult to treat. Schizophrenics might be disturbed with dental care so that they might often postpone restorative care. It could also be caused by the lack of attention of those who handle them, such as psychiatrists, nurses, and patient family, towards dental and oral health so that missed teeth cannot be avoided [14, 15].

The result of this research shows that missed teeth prevalence increased significantly following the patient's age attainment. At all age categories, the number of decay teeth (DT), missed teeth (MT) and DMF-T average value denotes a significant increase as their ages. Some studies have reported DMF-T scores that are higher in older (ranging from 48-58 y old) schizophrenic patients [2]. This finding is similar with what can be seen at psychiatry group showing that age is a determining factor of dental and oral health [2, 7].

The large number of schizophrenia patient consumed antipsychotic medicine orderly. Based on the medical record of patients and given information by nurses, schizophrenia patients in the Special Hospital Region (RSKD) of South Sulawesi Province mostly consumed antipsychotic medicine first class, that were haloperidol and chlorpromazine. The drugs can contribute to form caries on schizophrenia patient's dental. A study in United States showed that 99% of caries at the dental surface (root and corona) is related to the low rate of saliva [2].

The result of this research explains that there is a significant relation between antipsychotic medicine use duration and dental caries status table 3. The same finding is also found by Handelman *et al.* and Kronic *et al.* [13], stating that antipsychotic medication use in long-term has low saliva rate and even without stimulus and will directly influence to the forming plaque, the cause of dental caries [16, 17].

Mental disorder, like schizophrenia, can become a risk factor to dental and oral health. The negative symptoms of schizophrenia, such as apathetic that influences their habit, reduces patient's intention and motivation to keep and to maintain cavity oral health status [2, 18]. Besides, patients with chronic conditions who are hospitalized are more likely to have severe negative symptoms compared with those who live in their own community, even long-term inpatient cause the decreasing of self-consciousness in the dental and oral health which can cause the increasing of caries [2, 18, 19].

## CONCLUSION

Based on this study, it can be concluded that there is a significant relation between antipsychotic medicine use (the duration of medicine use) and dental caries status. This shows that the longer antipsychotic medicine is consumed, the higher the DMF-T value is obtained. DMF-T's average value on schizophrenics in the Special

Hospital Region (RSKD) of South Sulawesi Province 2017 is 8.61 denoting that schizophrenia patients in RSKD South Sulawesi Province have virtually 9 damaged teeth caused by caries (decay/missing/filling).

It is better to conduct the next study using a control sample to examine the differentiation of caries status on schizophrenics and those who do not suffer mental disorder or normal. This study result is hoped to be able to become a multidiscipline model/approach which involves mental health and dental and oral health that is a basic thing in dental and oral health program development, in order to be able to educate and to share psychiatrist awareness, mental nurse and patient's family about the importance of maintaining dental and oral health in general and to the patients in particular.

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## AUTHORS CONTRIBUTIONS

All authors have made substantial contributions to the work reported in the manuscript. Nursyamsi: conception and designing of the study, data collection, data analysis interpretation, drafting the article, critical revision of the article, final approval of the study to be published. Ayub Irmadani Anwar: Drafting the article and critical revision of the article. Burhanuddin Pasiga: Data analysis and interpretation, final approval of the study to be published. Fuad Husain Akbar: Data collection and drafting the article. Rini Pratiwi: Critical revision and final approval of the study to be published. Rasmidar Samad: Conception and designing the study, data analysis and interpretation. Dwi Putri Wulansari: Data collection, data analysis and interpretation. Yulia Wardhani: Data collection and drafting the article.

## CONFLICT OF INTERESTS

All the authors hereby declare that there is no conflict of interest

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