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"Health Notions" is a media for the publication of articles on research, book review and literature review in the areas of health science and practice such as public health, medicine, dentistry, pharmaceutical, environmental health, nursing, midwifery, nutrition, health technology, clinical laboratories, health education, health information system, health management, and health popular.

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## The Influence of Oral Hygiene Behavior on Periodontal Disease Status of Fishpond Community in District Sidoarjo

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### ABSTRACT

**Background:** Periodontal disease is one of the most common oral diseases in Indonesia. Poor oral hygiene behavior has been seen as a risk factor for periodontal disease. Oral hygiene behavior is different in each individual or group, as well as the fishpond community. **Purpose:** To analyze the influence of oral hygiene behavior on periodontal disease status of fishpond community. **Methods:** This study was a observational analytic study with cross sectional approach. The samples were fishpond community in Banjar Kemuning village, district Sidoarjo which amounts 100 people in age range between 26 to 65 years old. Oral hygiene behavior in the form of knowledges and attitudes were measured using a closed questionnaire and oral hygiene behavior in the form of practices were measured using a checklist questionnaire, while Periodontal Disease Index (PDI) was used to measured periodontal disease status. **Results:** Ordinal regression analysis of the oral hygiene behavior on periodontal disease status showed significant value that was 0,043. **Conclusion:** Oral hygiene behavior has influence on periodontal disease status of fishpond community in District Sidoarjo.

**Keywords:** Oral hygiene behavior, Knowledge, Attitude, Practice, Periodontal disease status, Fishpond

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### INTRODUCTION

#### Background

Caries and periodontal disease are the two most common dental and oral disease occurring in large prevalence and affecting almost all populations during lifetime<sup>(1)</sup>. The Household Health Survey reported by the Ministry of Health of the Republic of Indonesia in 2010 showed that periodontal disease ranks second as the most common dental and oral disease with 42.8% of Indonesia's population<sup>(2)</sup>.

Oral health are closely related to behavior. A good oral hygiene behavior has a good effect on oral health<sup>(3)</sup>. Oral hygiene behavior is essential for controlling plaque in patients with periodontal disease. Oral hygiene behavior has been seen as a risk factor for periodontal disease<sup>(4)</sup>. Oral hygiene behavior varies among individuals. This behavior will certainly lead to different periodontal disease status. So are people living in the pondfish area in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. Pondfish community in Banjar Kemuning village mostly livelihood as fishpond farmers and fisherman. Ponds in this village produce lots of milkfish and shrimp. The abundant supply of food will affect the consumption pattern, 90% of people in this fishpond community consume fish from ponds on a regular basis. Milkfish are classified as high-protein fish and also contain omega-3s<sup>(5)</sup>. Neither is the shrimp<sup>(6)</sup>. Foods with high protein content will prevent the severity of destruction in periodontal disease, whereas omega-3 has been shown to have anti-inflammatory substances<sup>(7)</sup>. High levels of protein and omega-3 intake in these pond community are expected to show good state of periodontal tissue in pond community.

Health Profile of Sidoarjo regency in 2014 showed that people who require dental and oral care in Sedati sub-district, 81,5% have received treatment at Puskesmas<sup>(8)</sup>. Data of patient visits in Sedati Puskesmas in March 2017 - March 2018 showed that periodontal disease is the second most common oral disease with 24.4%. Periodontitis became the most common periodontal disease with 48.3%, poor oral hygiene suffered by 40.7% of the population, and gingivitis suffered by 11% of the population.

Preliminary observation conducted in the Banjar Kemuning village regarding the oral hygiene behavior showed that the villagers had brushed their teeth at least twice a day, but 100% brushed their teeth in the morning when bathing, not after breakfast. Tooth brushing at night before bedtime was only 38.5% of respondents, 38.5% never brushing their teeth at night and 23% admitted to occasionally doing so. The habit of using toothpicks after meals was done by 70% of respondents and 70% of respondents also had bleeding gums, but no one ever checked their dental and oral condition to the dentist. The results of these observations provide a small picture of the oral hygiene behavior of pond community.

The purpose of this research is to know the description of the oral hygiene behavior in pond community and their periodontal disease status, then later analyzed whether their oral hygiene behavior has an influence on their periodontal disease status although this fishpond community has a consumption pattern that supports the formation good periodontal tissue state.

### METHODS

This study was an observational analytic study with cross sectional approach. This study was done among pondfish community in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency, Indonesia. It was conducted in Desember 2017 until January 2018 to the 100 respondents from pondfish community. Oral hygiene behavior was measured using questionnaires. Behavior consists of knowledge, attitude, and practice. Knowledge and attitude were measured using a closed questionnaire, practice was measured using checklist questionnaire, whereas behavior was measured through the sum of scores from knowledges, attitudes, and practices. Score obtained are then categorized into good and poor knowledge, attitude, practice, and behavior. Periodontal disease status was measured using the Periodontal Disease Index (PDI). The examination was performed on six teeth (Ramfjord teeth), that is 16, 21, 24, 36, 41, 44. The data will be shown in tables and analyzed by using Ordinal Regression Test.

### RESULTS

Research results regarding the influence of oral hygiene behavior on periodontal disease status of fishpond community is such as follows. Table 1 shows late adult (45%) had more contribution than other age categories. Based on education, we can see that pondfish community still have low level of education.

Table 1. Total Sampel Distribution Based on Age and Education

Category	Frequency (n)	Percentage (%)
<b>Age</b>		
Early adult	17	17
Late adult	45	45
Early elderly	25	25
Late elderly	13	13
<b>Education</b>		
No school	4	4
Primary school	28	28
Secondary school	37	37
High school	28	28
D III	1	1
SI	2	2

Table 2 shows that in the good knowledge group most suffering for PDI (Periodontal Disease Status) score 3 or severe gingivitis (20%) and the poor knowledge group most suffering for PDI score 4 or attachment loss ≤ 3 mm (30%).



Table 2. Cross Tabulation in Oral Hygiene Knowledges and Periodontal Disease Status

Periodontal Disease Status	Good Knowledge		Poor Knowledge	
	Frequency	%	Frequency	%
PDI score 0	0	0	0	0
PDI score 1	0	0	0	0
PDI score 2	3	3	2	2
PDI score 3	20	20	6	6
PDI score 4	9	9	30	30
PDI score 5	2	2	27	27
PDI score 6	0	0	1	1

Table 3. Cross Tabulation in Oral Hygiene Attitudes and Periodontal Disease Status

Periodontal Disease Status	Good Attitude		Poor Attitude	
	Frequency	%	Frequency	%
PDI score 0	0	0	0	0
PDI score 1	0	0	0	0
PDI score 2	5	5	0	0
PDI score 3	26	26	0	0
PDI score 4	14	14	25	25
PDI score 5	2	2	27	27
PDI score 6	0	0	1	1

Table 3 shows that in the good attitude group most suffering for PDI score 3 or severe gingivitis (26%) and the poor attitude group most suffering for PDI score 5 or attachment loss 4 – 6 mm (27%).

Table 4. Cross Tabulation in Oral Hygiene Practices and Periodontal Disease Status

Periodontal Disease Status	Good Practice		Poor Practice	
	Frequency	%	Frequency	%
PDI score 0	0	0	0	0
PDI score 1	0	0	0	0
PDI score 2	4	4	1	1
PDI score 3	19	19	7	7
PDI score 4	5	5	34	34
PDI score 5	4	4	25	25
PDI score 6	0	0	1	1

Table 4 shows that in the good practice group most suffering for PDI score 3 or severe gingivitis (19%) and the poor practice group most suffering for PDI score 4 or attachment loss ≤ 3 mm (34%).

Table 5. Cross Tabulation in Oral Hygiene Behavior and Periodontal Disease Status

Periodontal Disease Status	Good Behavior		Poor Behavior	
	Frequency	%	Frequency	%
PDI score 0	0	0	0	0
PDI score 1	0	0	0	0
PDI score 2	5	5	0	0
PDI score 3	21	21	5	5
PDI score 4	10	10	29	29
PDI score 5	3	3	26	26
PDI score 6	0	0	1	1

Table 5 shows that in the good oral hygiene behavior group most suffering for PDI score 3 or severe gingivitis (21%) and the poor oral hygiene behavior group most suffering for PDI score 4 or attachment loss  $\leq 3$  mm (29%).

Table 6. Ordinal Regression Test to Assess The Pondfish Community's oral hygiene behavior regarding to their periodontal disease status

Variable	Sig (p)
Knowledge-PDS	0.081
Attitude-PDS	0.042*
Practice-PDS	0.035*
Behavior-PDS	0.043*

PDS (Periodontal Disease Status)

\*Influence found

Table 6 presents that there is no influence between oral hygiene knowledge to periodontal disease status of fish pond community ( $p=0.081$ ), however oral hygiene attitude, practice, and behavior shows the influence on periodontal disease status of fishpond community based on ordinal regression test (attitude  $p=0.042$ , practice  $p=0.035$ , behavior  $p=0.043$ ).

### DISCUSSION

Benjamin Bloom distinguishes three domains of behavior that are knowledge, attitude, and action<sup>(9)</sup>. The results of cross-tabulation of pond community's oral hygiene knowledge and their periodontal disease status showed that in good knowledge group had better periodontal disease status compared with the periodontal disease status in the poor knowledge group. Knowledge is an important prerequisite in maintaining oral hygiene<sup>(10)</sup>. However, Ordinal Regression Test results showed that knowledge did not have a significant influence on the periodontal disease status of pond community. It might be happened because good knowledge alone is not enough to form good oral hygiene behavior. This community might have low level of knowledge that is just "know" without applying in daily life<sup>(11)</sup>. Knowledge also relates to education level. Pondfish community that still have a low level of education may lead to low level of knowledge resulting in a lack of self-motivation or awareness of the community itself to maintain oral hygiene and to regard dental and oral diseases is a trivial disease<sup>(12)</sup>.

This study also showed that a good attitude group in maintaining oral hygiene had better periodontal disease status compared with the periodontal disease status in the a poor attitude group. Attitude is one of the predictors of the status of periodontal disease. A positive attitude will lead to overall oral health through reduced periodontal disease<sup>(1)</sup>. Ordinal Regression Test results showed that attitude has a significant influence on the periodontal disease status of pondfish community. Attitudes toward periodontal health and disease are also related to education<sup>(13)</sup>. People with higher levels of education exhibit better attitudes toward health and periodontal disease. Such a better attitude will lead to a better periodontal state<sup>(14)</sup>. The low level of education in pondfish community may be the cause of the poor attitude which results in poor periodontal circumstances.

Good practice group in maintaining oral hygiene have better periodontal disease status compared with periodontal disease status in group with poor practice. Oral hygiene practice can prevent and reduce the rate of periodontal disease, because poor oral hygiene is a strong cause of periodontal disease<sup>(15)</sup>. Ordinal Regression Test results indicated that oral hygiene practice have a significant influence on periodontal disease status of pond community. Practice is the domain of behavior that have the greatest influence over other domains in affecting the health status of a person, especially oral health status that can be seen in the state of periodontal disease status. This is because practice is a real, observable, and straightforward stage of behavior in daily life<sup>(16)</sup>.

Oral hygiene behavior in this study was assessed by the sum of scores on the questionnaire of knowledge, attitude, and practice. Through the sum of scores then be determined categories of good and poor behavior. The results of this study indicated that groups with good oral hygiene behaviors have better periodontal disease status compared with periodontal disease status in group with poor oral hygiene behavior. The maintenance behavior of oral hygiene is closely related to oral hygiene. People with poor oral hygiene have a higher prevalence of periodontal disease<sup>(17)</sup>. Ordinal Regression Tests show that oral hygiene behavior have a significant influence on periodontal disease status of pondfish community. Oral hygiene behavior contributed as the biggest influence on the periodontal health status<sup>(11)</sup>. Oral hygiene behavior determined by several factors, including personal motivation, attitudes, and environmental circumstances. Good knowledge of oral hygiene also promotes improved behavior<sup>(18)</sup>. Level of education and age will also affect knowledge, because higher level education and older age will have ability to receive better information. The more complex the education in adults, the more it will lead to increase his knowledge and develop his abilities<sup>(19)</sup>. Pondfish community have a low level of education, so it is

very possible that this causes their knowledge about maintaining oral hygiene is also low. This low knowledge results in behavior that is still poor as well. Older age suggests association with progression of periodontal disease, with deeper pockets being more common in older respondents. It gets worse if the individual also has poor knowledge and behavior in oral hygiene<sup>(20)</sup>.

### CONCLUSION

There is influence between oral hygiene behavior toward periodontal disease status of fishpond community in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency.

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