

The Relationship between Knowledge about Halitosis and Dental and Oral Hygiene in Patients with Fixed Orthodontics at the HK Medical Center Makassar

Utari Zulkaidah^{*1}; Arsad²; Sultan Amin Yasin³; Yulistina⁴; Rezki Dirman⁵

Bachelor of Applied Dental Therapy Study Program,

ITKES Muhammadiyah Sidrap, Syarif Al-Qadri Rd, Pangkajene, South Sulawesi, 91611, Indonesia

Abstract: Halitosis is a common problem experienced by many people around the world. The condition is caused by bacterial activity in the mouth that produces sulfur compounds, causing an unpleasant odor. Dental and oral hygiene play a key role in preventing halitosis. Maintaining dental hygiene by brushing regularly, flossing, and rinsing with antiseptic mouthwash can reduce the growth of bacteria in the mouth.. Fixed orthodontic patients have a higher risk of halitosis compared to the general population due to the presence of orthodontic wires and rubber which provide an ideal place for bacteria to multiply. The purpose to determine the relationship between knowledge about halitosis and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar. This study uses analytical observational research and this study is included in the cross sectional research design. This study involved 66 respondents of orthodontic patients undergoing wire and rubber treatment. Measurement of halitosis knowledge level was carried out by distributing questionnaires given to respondents, while oral hygiene was evaluated based on the Debris Index (DI) and Calculus Index (CI) scores. Data analysis using SPSS with cross-section statistical test. Based on the results of the correlation test or relationship test using Spearman Rho, it shows a P-value of 0.00 or P-value <0.05. Which is where the Spearman's Rho correlation coefficient shows a value of .516 which means that the correlation with the degree of relationship is good correlation and the form of relationship is positive. This means that there is a significant relationship between halitosis knowledge and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar. Conclusion : There is a relationship between halitosis knowledge and dental and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar.

Keywords:- Knowledge of Halitosis, Dental and Oral Hygiene, Skilled Orthodontic Patients.

I. INTRODUCTION

Oral health is an integral part of body health, meaning that a healthy body is inseparable from having healthy teeth and mouth. Oral health is important for general health and quality of life. A healthy mouth means freedom from throat cancer, oral infections and sores, gum disease, tooth decay, tooth loss, and other diseases, resulting in no limiting

impairments in biting, chewing, smiling, speaking, and psychosocial well-being. [1]

Dental and oral diseases suffered by many people in Indonesia are generally related to dental and oral hygiene. The high rate of oral and dental diseases is currently strongly influenced by several factors, one of which is the behavioral factors of people who are not aware of the importance of maintaining oral and dental health. [2]

One of the common problems that occur in society is behavioral factors or neglect. Health behavior is one of the factors that affect the oral health of individuals or communities. Early treatment must be carried out and paid attention to because oral health problems in Indonesia still occur frequently, especially cases of halitosis. [3]

Halitosis itself is a term used to describe the unpleasant smelly breath that is released during breathing. Odorous breath is fundamentally caused by two things, viz: physiological and pathological. The physiological source of bad breath comes from conditions on the surface of the tongue. The bacteria found on the surface of the tongue of a healthy patient is different from that of a patient with halitosis. Pathological sources involve the severity of gum pockets, known as periodontal disease. [4]

Halitosis is usually caused by poor oral hygiene, caries, necrosis, and dry mouth, tongue coating, gingivitis/periodontitis, which causes "unpleasant odors caused by volatile sulfur compounds (VSCs) caused by decay from microorganisms". [5] The symptom of halitosis is an unpleasant odor coming from the mouth. The odor usually varies depending on the cause: discomfort, sourness, or bitterness in the mouth, dry mouth, white tongue, especially on the back of the tongue, burning on the tongue, plaque and tartar.

Fixed orthodontics is considered one of the important risk factors for plaque and debris accumulation, as various orthodontic components can become retention sites for plaque and debris accumulation thereby increasing the risk of caries and halitosis. The parts of the fixed orthodontic appliance that are attached to the patient's teeth often make it difficult for the patient to clean the oral cavity. Plaque bacteria accumulated on the tooth surface is the main etiology that causes halitosis. [6]

HK Medical Center Clinic is one of the clinics located in Makassar City. HK Medical Center Clinic collaborates with several specialist doctors, one of which is an orthodontist dentist. Therefore, the researcher chose the HK Medical Center Clinic as the object of research because the majority of patients at the orthodontic clinic are fixed orthodontic users with diverse patient characteristics and no research has been conducted on the Relationship between Knowledge About Halitosis and Dental and Oral Hygiene at this clinic before. Based on this background, the authors are interested in examining the Relationship between Knowledge About Halitosis with Dental and Oral Hygiene in Fixed Orthodontic Patients at the HK Medical Center Clinic Makassar City.

II. METHODS

This study used analytical observational research and this study was included in the cross sectional research design. the sample size used was 66 respondents. The instruments used used were knowledge questionnaires and observation sheets.

The data that has been collected in this study will be analyzed using the Statistical Package for the Social Science (SPSS) the data obtained will be tested using the Spearman correlation test.

III. RESULT

A study was conducted entitled the relationship between knowledge about halitosis and dental and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar as many as 66 respondents. The research data were collected by administering a questionnaire to measure respondents' knowledge and collecting data on oral hygiene status by direct examination of respondents regarding their oral hygiene using the OHI-S index.

The questionnaire was then distributed to respondents to be filled in. All research results were then collected and recorded, and data processing and analysis were carried out using the SPSS program. The results of the study are displayed in the distribution table as follows:

Table 1 Frequency Distribution of Halitosis Knowledge in Patients with Fixed Orthodontics Based on Age

Age	Knowledge level						Total		p-value
	Good		Medium		Less				
	N	%	N	%	N	%	N	%	
15-25	8	12,1	15	22,7	4	6,1	27	40,9	0,319
26-35	11	16,7	18	27,3	5	7,6	34	51,5	
36-45	0	0,0	3	4,5	2	3,0	5	7,6	

Based on Table 1 above, it is known that the level of knowledge of respondents about halitosis knowledge at the age of 15-25 years with a good category as many as 8 respondents with a percentage (12.1%), a moderate category as many as 15 respondents with a percentage (22.7%), and a category less as many as 4 respondents with a percentage (6.1%). At the age of 26-35 with a good category as many as 11 respondents with a percentage (16.7%), a moderate category as many as 18 respondents with a percentage

(27.3%), and a poor category as many as 5 respondents with a percentage (7.6%). Whereas at the age of 36-45 with a good category there were no respondents, a moderate category of 3 respondents with a percentage (4.5%) and a category of less as many as 2 respondents with a percentage (3.0%). showed a P-value of $0.319 > 0.05$ which means that there is no correlation between knowledge and age in patients with fixed orthodontics at HK Medical Center Makassar.

Table 2 Frequency Distribution of Halitosis Knowledge in Patients with Fixed Orthodontics Based on Education.

Education	Knowledge level						Total		p-value
	Good		Medium		Less				
	N	%	N	%	N	%	N	%	
Junior High School	0	0,0	2	3,0	2	3,0	4	6,1	0,11
High School	4	6,1	15	22,7	5	7,6	24	36,4	
Diploma 3	1	1,5	1	1,5	0	0	2	3,0	
Diploma 4/ Bachelor	14	21,2	18	27,3	4	6,1	36	54,5	

Based on Table 2 above, it is known that the level of knowledge of respondents about halitosis knowledge in junior high school education with a good category did not have respondents, a moderate category was 2 respondents with a percentage (3.0%), and a deficient category was 2 respondents with a percentage (3.0%). In SMA / SMK education with a good category as many as 4 respondents with a percentage (6.1%), a moderate category as many as 15 respondents with a percentage (22.7%), and a deficient

category as many as 5 respondents with a percentage (7.6%). In D3 education with a good category as many as 1 respondent with a percentage (1.5%), a moderate category as many as 1 respondent with a percentage (1.5%) and a poor category there were no respondents. Meanwhile, with a D4 / S1 education with a good category as many as 14 respondents with a percentage (21.2%), a moderate category of 18 respondents with a percentage (27.3%) and a category of less as many as 4 respondents with a percentage (6.1%).

The P-value is 0.011 <0.05. This means that there is a significant relationship between education and halitosis knowledge in patients with fixed orthodontics at HK Medical Center Makassar.

Table 3 Frequency Distribution of Halitosis Knowledge in Patients with Fixed Orthodontics Based on Gender.

Gender	Knowledge level						Total		p-value
	Good		Medium		Less				
	N	%	N	%	N	%	N	%	
Female	18	27,3	32	48,5	7	10,6	57	86,4	0,097
Male	1	1,5	5	7,6	3	4,5	9	13,6	

Based on Table 3 above, it is known that the level of knowledge of respondents about halitosis knowledge in female gender with a good category was 18 respondents with a percentage (27.3%), a moderate category was 32 respondents with a percentage (48.5%), and a deficient category was 7 respondents with a percentage (10.6%). Whereas in the male gender with a good category as many as 1 respondent with a percentage (1.5%), a moderate

category as many as 5 respondents with a percentage (7.6%), and a poor category as many as 3 respondents with a percentage (4.5%).

The P-value is 0.097 0.05 which means that there is no correlation between knowledge and gender in patients with fixed orthodontics at HK Medical Center Makassar.

Table 4 Correlation Test Results of the Relationship between Knowledge of Halitosis and Oral Hygiene in Fixed Orthodontic Patients

OHIS	Knowledge level						Total		p-value
	Good		Medium		Less				
	N	%	N	%	N	%	N	%	
Good	8	12,1	9	13,6	1	1,5	18	27,3	0,000
Medium	11	16,7	23	34,8	1	1,5	35	53,0	
Bad	0	0	4	6,1	9	13,6	13	19,7	

Table 4 shows that in the category of respondents who have good oral hygiene scores with good knowledge, there are 8 respondents with a percentage (12.1%). The moderate knowledge category was 9 respondents with a percentage (13.6%), and the poor category was 1 respondent with a percentage (1.5%). In the category of respondents who had moderate oral hygiene values with good knowledge, there were 11 respondents with a percentage (16.7%). in the moderate category there were 27 respondents with a percentage (34.8%), in the poor category there were 1 respondent with a percentage (1.5%). Whereas in the category of poor oral hygiene values with good knowledge scores there were no respondents, in the moderate category there were 4 respondents with a percentage (6.1%) and in the poor category there were 9 respondents with a percentage (13.6%).

The p-value of 0.00 <0.05 means that there is a significant relationship between halitosis knowledge and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar.

IV. DISCUSSION

The sample of this study was in the form of adhesive orthodontic patients at HK Medical Center Makassar who met the predetermined sample selection criteria. Sampling using Accidental sampling technique with a total sample size of 66 samples.

The research can be seen that more respondents who perform fixed orthodontic treatment at HK Medical Center Makassar are female, with a very high population. This study is in accordance with the research of Nawal [7] which shows that the male population has a greater likelihood of not visiting a dentist in the last 12 months. Men are less concerned about the impact of oral conditions on their quality of life, while the fact that women have greater demands on the aesthetic appearance of their teeth makes them feel more sensitive to Halitosis. [8] Based on the results of the crosssection statistical test obtained p-value> 0.05, stating that there is no significant relationship between gender and knowledge about halitosis in patients with fixed orthodontics at HK Medical Center Makassar.

In the study, it was found that patients who performed more fixed orthodontic treatment at HK Medical Center Makassar were patients with age categories, namely between the ages of 26-35 years, with the largest population. This is in accordance with the research of Hidana et al. [9] that the largest age group utilizing health services is the age group 17 - 55 years. A person entering late adolescence is in a productive age period so that they have a high awareness to seek services when they need them. The older one gets, the more one's ability to make decisions, think rationally, become wiser, and be able to control emotions and be tolerant of other people's views.

According to Motlagh et al [10] factors that influence the utilization of dental health services are race, age, gender, parental education level, health awareness level, community attitudes, family income, insurance status, geographic

location and socio-cultural factors. Theoretically, formal education will greatly affect a person's knowledge. If a person has a high formal education, his knowledge is also higher, so that he will have a more positive attitude in terms of utilizing health facilities compared to someone with a low education.

Knowledge about halitosis can have a complex relationship with oral hygiene. Individuals who have good knowledge about halitosis may be more likely to take better care of their dental and oral hygiene. This is because they realize that poor dental and oral hygiene can be the main cause of halitosis. Furthermore, this is in line with the research of Quadri et al., [11] Stating that poor OHIS occurs because someone does not routinely carry out maintenance of dental and oral hygiene. This shows that the less the level of knowledge and oral hygiene, the more it can affect the occurrence of halitosis in the oral cavity. Most respondents have a lot of knowledge about halitosis treatment, where respondents already know how to deal with bad breath, the use of mouthwash, as well as the consequences if they experience bad breath and how to maintain dental and oral hygiene. With adequate knowledge, individuals can take appropriate preventive measures and adopt good oral care habits to reduce the risk of halitosis.

V. CONCLUSION

➤ *Based on the results of research conducted at HK Medical Center Makassar, it can be concluded that:*

- From the results of statistical tests of the relationship between knowledge about halitosis based on age, it was found that there was no relationship between halitosis knowledge and age in patients with fixed orthodontics at HK Medical Center Makassar.
- From the results of the statistical test of the relationship between knowledge about halitosis based on education, it was found that there was a significant relationship between halitosis knowledge and education in patients with fixed orthodontics at HK Medical Center Makassar.
- From the results of the statistical test of the relationship between knowledge about halitosis based on gender, it was found that there was no relationship between halitosis knowledge and gender in patients with fixed orthodontics at HK Medical Center Makassar.
- From the results of statistical tests of the relationship between knowledge of halitosis and dental and oral hygiene There is a relationship between knowledge of halitosis and dental and oral hygiene in patients with fixed orthodontics at HK Medical Center Makassar.

REFERENCES

- [1]. Manbait, e. a. (2019). Peran Orang Tua dalam Pemeliharaan Kesehatan Gigi dan Mulut. *Dental Therapist Journal*, 74-79.
- [2]. Purnama, T. N. (2020). Model 5 Days Gosgi sebagai upaya pembentukan kemandirian menggosok gigi anak usia dini di sekolah. *Quality: Jurnal Kesehatan*, 19-24.
- [3]. Yusuf, P. R. (2022). Hubungan Antara Kekhawatiran Pasien Tentang Halitosis Dengan Praktik Kebersihan Mulut Individu Pada Siswa Sman 2 Tambun Utara. *Doctoral dissertation, Universitas YARSI*.
- [4]. Ratmini, N. K. (2017). Bau Mulut (Halitosis). *Jurnal Kesehatan Gigi(Dental Health Journal)*, 25-29.
- [5]. Aninda, R. P. (2022). Pengetahuan Masyarakat Tentang Halitosis Dengan Menggunakan Media Instagram Di Kelurahan Arjuna Bandung. *Indonesian Journal of Healthand Medical*, 583-595.
- [6]. Putri, I. N. (2022). Pengaruh kebersihan mulut dengan kesehatan gingiva pada pemakai alat orthodontik cekat Effect of oral hygiene and gingival health in fixed orthodontics appliances. *Padjadjaran Journal of Dental Researchers and Students*, 217-224.
- [7]. Nawal, L. M., Gross, A. J., Soffe, B., & Lipsky, M. S. (2019). Dental Care Utilization: Examining the Associations Between Health Services Deficits and not Having a Dental Visit in Past 12 Months 11 Medical and Health Sciences 1117 Public Health and Health Services. *BMC Public Health*, 19(1), 265.
- [8]. Bulgareli, J. V., de Faria, E. T., Cortellazzi, K. L., Guerra, L. M., Meneghim, M. de C., Ambrosano, G. M. B., Frias, A. C., & Pereira, A. C. (2018). Fatores Que Influenciam o Impacto da Saúde Bucal nas Atividades Diárias de Adolescentes, Adultos e Idosos. *Revistade Saúde Pública*, 52(44), 1–9.
- [9]. Hidana, R., Shaputra, R., & Maryati, H. (2018). Faktor-Faktor yang Berhubungan dengan Pemanfaatan Pelayanan Kesehatan oleh Pasien Luar Wilayah di Puskesmas Tanah Sareal Kota Bogor Tahun 2018. *Mahasiswa Kesehatan Masyarakat*, 1(2), 105–115.
- [10]. Motlagh, S. N., Ghasempour, S., Bajoulvand, R., Hasanvand, S., Abbasi-Shakaram, S., & Imani-Nasab, M. H. (2019). Factors Affecting Demand and Utilization of Dental Services: Evidence from a Developing Country. *Shiraz E Medical Journal*, 20(12), 1-8.
- [11]. Quadri, M. F., Jafari, F. A., Albeshri, A. T., & Zailai, A. M. (2018). Factors Influencing Patients' Utilization of Dental Health Services in Jazan, Kingdom of Saudi Arabia. *International Journal of Clinical Pediatric Dentistry*, 11(1), 29–33. <https://doi.org/10.5005/jp-journals-10005-1479>