

**Case Report**

## Dental Health Education for Managing Poor Oral Hygiene in Middle-Aged Female Patient

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### ABSTRACT

**Background:** Oral health has not received sufficient attention from society. Oral hygiene is often neglected, and proper toothbrushing has not yet become a habit. This case study aimed to provide dental health education to middle-aged patients to improve their oral health status.

**Case:** A 57-year-old female patient complains of painful mouth sores on the lower lips, easily bleeding gums, and unpleasant breath. The patient had poor oral hygiene.

**Case Treatment:** The recurrent minor aphthous stomatitis, can be treated with Triamcinolone acetonide 0.1%. The condition of easily bleeding gums and bad breath are managed by performing scaling and root planning on the patient. However, this patient needs to be educated to maintain her oral health.

**Discussion:** Providing dental health education is a crucial aspect to offer patients, alongside addressing their dental concerns. Dental health education was delivered using direct persuasive communication techniques on days 1, 7, and 14, coinciding with treatment and follow-up appointments.

**Conclusion:** The chief complaint of the patient and several other complaints have been addressed successfully. Dental health education for middle-aged patients has proven effective in addressing poor oral hygiene conditions.

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## INTRODUCTION

Dental health in Indonesia has not yet become a priority for the public. Oral health issues still complained about by 57.6% of the population.<sup>1</sup> The majority of the population has not made brushing their teeth twice a day after breakfast and before bedtime a habit. Even though the behavior of brushing teeth every day is practiced by 94.7% of the population, only 2.8% do it correctly. Patients with poor oral hygiene are still frequently encountered in dental practices.

Most patients tend to neglect their dental health and consider it unimportant. They are not aware of the adverse consequences that can develop into more serious general health conditions. Poor oral health can affect systemic conditions, including atherosclerotic diseases, lung diseases, diabetes, pregnancy problems, birth weight, osteoporosis, and kidney diseases. Most patients with these chronic conditions probably do not think that a problem in their mouth can affect their heart or bones. Modifying any coexisting condition may be enough to prevent it.<sup>2</sup>

Preventive care is highly important, especially in the field of clinical dentistry. Different approaches to preventive dental care are required depending on an individual's age and oral health status. Women face varying exposures and vulnerabilities throughout their lives. One vulnerable period in a woman's life is middle age; hormonal changes during this phase have an impact on their overall physical, psychological, and quality of life. Research indicates that women in middle age show an increased vulnerability to plaque formation, gum inflammation, periodontitis, and reduced tooth retention during the menopausal transition in their life cycle.<sup>3</sup>

Periodontitis is a significant contributor to tooth loss, and its effect becomes more pronounced as people age. In this study population, oral hygiene was generally inadequate, with most individuals having calculus, gingival bleeding, and moderate periodontal probing pocket depths of 4–5 mm. A smaller percentage had severe periodontal disease with probing pocket depths of  $\geq 6$  mm. Risk factors for periodontal diseases in the current rural population include advancing age.<sup>4</sup>

The lack of information leads to limited knowledge about proper oral health. Misconceptions, misunderstandings, and incorrect dental health behaviors are often rooted in longstanding community customs and traditions, passed down through generations as part of a culture that may not strongly support oral health.<sup>5</sup> Oral health literacy have poor dental health knowledge. Interest in oral health literacy is driven by oral health disparities, particularly for disadvantaged groups, with conditions such as dental caries and periodontal disease contributing substantially to the global burden of disease.<sup>6</sup> Oral health literacy is often linked to variations in oral health practices and the clinical oral health status of individuals. Therefore, dental health education (DHE) is crucial, especially for patients who may not maintain good oral hygiene. This study aims to offer dental health education to middle-aged patients to enhance their oral health status.

## CASE

A 57-year-old female patient visited Saraswati Dental Hospital in Denpasar, complaining of a painful lower lip due to a canker sore. The canker sore had appeared three days ago after accidentally biting her lip while eating. The patient has been experiencing canker sores since her teenage years but has never sought treatment for them. She also mentioned frequent gum bleeding, especially during tooth brushing, and bad breath. The patient tends to cover her mouth while speaking due to embarrassment. She admitted to rarely brushing her teeth and even less frequently now because she fears her gums might bleed. She works as a domestic helper, has completed only elementary school education, and sleeps an average of 4 hours per day. This is her first visit to a dentist.

During the intraoral examination, a round, single, shallow, white to yellowish ulcerative lesion with erythematous borders measuring approximately 3 mm in size was found on the lower lip, diagnosed with Recurrent Minor Aphthous Stomatitis (RAS). Plaque and calculus were present in all regions of the upper and lower teeth. The Oral Hygiene Index-Simplified

indicated a poor category (DI: 1.5; CI: 2). There was a very noticeable bad breath. Moderate Chronic Generalized Periodontitis was observed in teeth 22, 27, 28, 34, 35, 37, 38, 44, 47, along with Gingival Recession Class I in teeth 16, 27, 31, 32, 34, 35, 37, 41, 42, 43, 44. Chronic Apical Periodontitis was noted due to gangrenous root canals in teeth 17, 26, 33, 36, and 45. There was enamel caries on tooth 47 (Reversible Pulpitis), and teeth 21 and 46 were edentulous.

## CASE MANAGEMENT

The treatment management was conducted on days 1, 7, and 14. Due to the patient's middle age and low level of education, a persuasive approach was utilized to minimize resistance. On the first day, stomatitis therapy was administered using Triamcinolone acetonide 0.1% in an oral base. Periodontitis therapy was performed through scaling and root planning, and the patient was provided with dental health education (DHE). The patient was educated about gum disease and its causes, the process, and the consequences of malodor. Additionally, she was taught how to brush her teeth using the modified Bass technique, the use of a toothpick, gargling, and tongue cleaning methods. A toothbrush with soft bristles was chosen. Brushing the teeth using the modified Bass technique involves placing the toothbrush head at a 45° angle to the long axis of the teeth, pointing towards the apex with the bristle tips touching the gum line. The brush was moved in small vibrating motions back and forth for approximately 10-15 seconds in each area that covers two or three teeth,<sup>7</sup> this motion was modified with a gentle circular movement,<sup>8</sup> for at least 2 minutes on all tooth surfaces. Brushing should be done at least twice a day, after breakfast and before bedtime. Tooth brushing demonstration was performed on a tooth model with the help of a toothbrush and toothpaste. The patient was asked to fill out a tooth brushing calendar. The patient was also taught to clean their tongue, gargle before brushing, and gargle only twice to remove any remaining bleeding from the gums. Once the bleeding stops, gargling after brushing is sufficient only once. Dental

floss should be used when necessary, and the patient should avoid hot or spicy foods that could potentially irritate mouth sores. The patient was also advised to get an adequate amount of sleep, at least 6 hours, and was asked to record their sleep schedule. The patient appears to be very cooperative and enthusiastic about following the recommended advice.



Figure 1. (a) SAR minor before treatment, and (b) SAR minor after treatment

On the patient's seventh-day visit, a check-up was conducted: there was no stomatitis, and there was no gum bleeding. The patient had been brushing their teeth every day. However, the tooth brushing calendar was not filled out. The patient admitted to frequently forgetting to brush their teeth at night due to falling asleep quickly and not being accustomed to gargling only once after brushing. The patient was able to sleep for about 5-6 hours a day. The patient has gained confidence and no longer covers their mouth while speaking. Plaque was still found around the tooth necks and gingival sulcus. The patient mentioned having difficulty implementing the Bass tooth brushing method. Re-education was conducted to retrain the patient in the Bass tooth brushing technique using a tooth model and a toothbrush. Because of the frequent forgetfulness in brushing teeth at night, it was recommended to set an alarm for tooth brushing at 10 PM, which is her bedtime. The patient had also started brushing their tongue. During this visit, extraction therapy was performed for the remaining root of tooth 33.



Figure 2. (a) Intra oral appearance before scaling and root planning, and (b) Intra oral appearance after scaling and root planning.



Figure 3. (a) The intraoral appearance before the extraction of tooth 33, and (b) The intra oral appearance after the extraction of tooth 33.



Figure 4. Brushing day and night calendar in 14<sup>th</sup> days.

## DISCUSSION

The oral cavity is the intersection of medicine and dentistry and the window into the general health of a patient. Hundreds of diseases and medications impact the oral cavity, and pathologic conditions in the mouth have a greater systemic impact than many providers appreciate.<sup>2</sup> The condition is often not recognized by many people. There are close relationship between oral health status and health-related quality of life in middle-aged people.<sup>9</sup> Therefore, it is necessary to promote oral health towards oral prophylaxis for individuals and society. The middle-aged group (ages 40 to 64) with periodontal disease issues, it is important to provide DHE about gum disease and its causes, the process, and the consequences of malodor. Additionally, they should be taught to brush their teeth using the modified Bass technique, use a toothpick, practice gargling, and use a tongue cleaner. Planning prevention strategies tailored to different age groups and varying oral health statuses will contribute to preventive dental care.<sup>10</sup>

Plaque control is the most recommended way to maintain oral hygiene. Dental plaque is a soft mass of bacteria that adheres to the tooth's surface and cannot be

removed or rinsed away with water. It is a primary factor and the main cause of both dental caries and periodontal diseases. Removing dental plaque requires mechanical actions such as brushing and flossing, with tooth brushing generally considered the most common and effective method for eliminating plaque and soft deposits.<sup>11</sup>

Good and correct tooth brushing is brushing the teeth using a method that can clean the entire surface of the teeth without injuring the soft tissue in the mouth and is done sequentially from one side to the other regularly. It is recommended to rinse the mouth first before brushing your teeth.<sup>12</sup> Oral health care professionals should motivate patients to brush for longer periods. A minimum duration of 2 minutes or more should be advised to the patients. Special emphasis should be given to motivating all patients to brush for 2 minutes or more for plaque removal.<sup>13</sup>

The objectives of toothbrushing are to (1) remove plaque and disturb reformation; (2) clean teeth of food, debris, and stain; (3) stimulate the gingival tissues; and (4) apply dentifrice with specific ingredients to address caries, periodontal disease, or sensitivity. During the last 50 years many toothbrushing methods have been introduced, such as horizontal scrub, Fones, Leonard, Stillman, Charters, Bass, rolling stroke (press roll), and Smith-Bell. No one method shows consistently better results in removing plaque than scrubbing.<sup>14</sup>

There are relatively few studies evaluating the association between tooth brushing frequency and periodontitis. A clear effect was observed, indicating that infrequent tooth brushing was associated with severe forms of periodontal disease.<sup>15</sup> There was a significant reduction in the amount of plaque with the modified Bass, Fones, and scrub method brushing techniques. Although the short-term outcomes with the Modified Bass method were promising, a long-term effect was not evident. Further, there was no significant difference in plaque control between the three groups.<sup>16</sup>

All of brushing techniques are applicable to the cleaning of the facial, lingual, and to some extent to occlusal surfaces; all are relatively ineffective in cleaning interproximal areas; and only the Bass technique is

effective in cleaning the sulcus.<sup>14</sup> Therefore, the tooth brushing method taught to the patient was the modified Bass method.

At first, the patient found it difficult to apply the modified Bass technique, so she had to keep practicing. The modified Bass technique was most effective in removing plaque at the cervical margin but more difficult to perform.<sup>8,11</sup> Most people brush their teeth using a professionally instructed method without realizing that they brush in a certain way. This is because using the professional method, certain areas are found to be missed during tooth brushing. Therefore, it may be more effective to instruct patients to brush using their own method. The approach involves applying a disclosing solution to the teeth and then examining the results, as not all patients can remember all the instructions.<sup>14</sup>

However, the modified Bass technique was chosen because of Bass technique of tooth-brushing has been recommended for periodontal problems in dental patients. It needed for soft and 1 or 2-lane toothbrushes to vibrate shortly and lightly while holding the toothbrush handle lightly. Short and light vibration would be needed to insert one lane of a toothbrush into the gingival sulcus or periodontal pocket which had been some inflammatory tissues. Vibratory action could induce plaque removal and gingival massage effect at the gingival sulcus, in order to subsid the gingivitis. In recent years, the modification of Bass method by adding the rolling motion together to Bass method has been recommended for subsid gingivitis as well as plaque removal effectively.<sup>8</sup>

The Bass intrasulcular toothbrushing technique in 12-weeks was significantly more effective in reducing gingival inflammation as determined by bleeding on probing than the techniques used by participants who had no instructions on brushing techniques.<sup>17</sup> Compared to all the prevalent toothbrushing techniques, modified Bass/Bass technique is the most effective in reducing plaque and gingivitis. Literature also suggests that, in some instances, by using the Bass technique the cleaning efficiency can reach a depth of 0.5 mm subgingivally.<sup>18</sup> Another study found, the patient hygiene performance index, gingival bleeding rate, pocket depth, amount of

gingival sulcus fluid, and number of bacterial colonies in the gingival sulcus significantly decreased after professional toothbrushing ( $p < 0.05$ ), indicating an improvement in the periodontal health. Professional toothbrushing improved the periodontal health in patients with gingivitis in respect of both biological and clinical results.<sup>19</sup> However, there is still insufficient evidence for suggesting that one toothbrushing method is more effective than another in plaque removal and reduction of gingivitis.<sup>20</sup>

The patient found their own way to clean their tongue, using a stainless-steel spoon. This is acceptable, as the important thing is that the result is the same, which is a clean tongue. Additionally, professionals should never argue with a patient but instead should encourage and help.<sup>14</sup>

Tongue cleaning reduced the amount of bacteria in tongue coating. Tongue cleaner showed a significant reduction in Winkle's tongue coating scores with significant values of reduction of the anaerobic bacterial count.<sup>21</sup> Participants who have the habit of cleaning their tongues have a significantly lower odds ratio (OR) score and concentrations of volatile sulfur compounds (VSC) compared to other participants. This indicates that oral bacteria associated with periodontal disease in the tongue coating sample are closely linked to halitosis, and that tongue cleaning may be an effective method to address bad breath issues.<sup>22</sup>

There has been a change in the duration of sleep in the patients, who originally slept for 4 hours a day and now sleep for 6 hours a day. A study found that short sleep duration was associated with severe periodontitis in this cohort of Japanese adults. The participants who slept less than 5 hours had a higher risk of experiencing severe periodontitis (adjusted odds ratio: 2.64; 95% confidence interval: 1.06–6.60) compared to those who slept between 7 to 7.9 hours.<sup>23</sup>

In this case, low socioeconomic and educational factors also play a role in the poor oral health status. The patient's enhanced knowledge and behavior are reflected in the improved oral health status observed by the 14th-day visit, showing good oral hygiene and absence of any pain complaints. However, the dental care for the patient

is still unfinished, as they had to follow their employer, who relocated to another city, as a domestic helper. Patients are still advised to continue treatment and undergo regular check-ups every six months.

## CONCLUSION

Oral health education is highly essential for patients with cases of periodontal disease caused by poor oral hygiene. The increase in the patient's knowledge has changed her awareness of oral health, motivating her to adopt positive behavioral changes. It's advisable to provide oral health education to all patients. Generally, community illnesses stem from insufficient knowledge or misconceptions about health.

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