

## Awareness and Knowledge of Halitosis: Comparison of Two Grades of Dental Hygienist Students

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Received date: October 26, 2016; Accepted date: November 22, 2016; Published date: November 28, 2016

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### Abstract

Many people worry about their breath odor, and the importance of halitosis treatment is increasing. Consequently, it is necessary for dental hygienists to obtain a basic knowledge of halitosis. To achieve this, we must improve the motivation of dental hygienist students to acquire such knowledge. To this end, we conducted a questionnaire survey to assess the awareness and knowledge of the problem among dental hygienist students and compared the results of the survey for students in the first and third grades.

The percentage of students who perceived the oral malodor of patients was higher in the third grade group. The third graders also placed a greater importance on the participation of dental hygienists in halitosis treatment. Most students in both grades believed that demand for halitosis treatment would increase, although there were students in the first grade that did not hold this view. A similar percentage of students in the two grades were willing to study halitosis, although some first grade students were not at all interested. Many more students in the third grade wanted to take part in halitosis treatment. Student knowledge of halitosis was approximately the same in both grades, but, surprisingly, the third graders gave some incorrect answers in this area.

From the results of this study, the third grade students appeared to have higher motivation to study halitosis treatment than the first graders. However, the upper grade students seemed to lack some knowledge, which may be due to the extended time since they had studied the topic at school. It is necessary for us to improve student motivation for studying halitosis and for maintaining their knowledge in order to better perform the treatment of halitosis after the students become dental hygienists.

**Keywords:** Oral malodor; Halitosis; Education; Dental hygienists; Questionnaire survey

### Introduction

Oral malodor is a common complaint among the general population and is primarily associated with conditions in the oral cavity, including oral hygiene status and periodontal condition [1,2]. Oral malodor mainly results from microbial metabolism of amino acids in local debris [3,4]. Some cases of halitosis result from systemic disorders [5], and dentists must perform careful examination to arrive at the proper diagnosis. Moreover, halitosis can play a role in social anxiety disorders [6], and dental professionals need to support patients by understanding their mental health conditions.

Dental hygienists are often the first to encounter halitosis patients at dental clinics, and they may spend more time with patients than do dentists. Therefore, dental hygienists play an important role in halitosis treatment. However, our recent study revealed that dental hygienists did not necessarily have sufficient knowledge of halitosis [7].

We believe that dental hygienists need a greater knowledge of halitosis. To achieve this, it is important to evaluate the motivation and knowledge of dental hygienist students regarding halitosis. In this study, we conducted a questionnaire survey of dental hygienist students and compared results for two student grades.

### Materials and Methods

#### Students

The dental hygienist students of the Fukuoka College of Health Science go to school for total of three years. In the first year, they receive lectures on halitosis. In the third grade, they attend an on-the-job training at the main hospital (Fukuoka Dental College Medical and Dental Hospital) and also at a satellite clinic (Fukuoka Dental College Center for Oral Diseases). Anonymous questionnaires were prepared and administered to first grade (after lectures of halitosis were all over) and to third grade students (in the middle of on-the-job training) of the college. Written informed-consent forms were received from all the students. All agreed that their responses could be used for this research.

## Results

### Valid response rate

From a total of 79 first grade students, 75 returned completed answer sheets (valid response rate: 94.9%). From a total of 84 third grade students, 81 returned completed answer sheets (valid response rate: 96.4%).

### Perception of patients' oral malodor

We first asked students if they had ever perceived a patient's oral malodor (Figure 1). Among the first grade respondents, 32.9% answered that they had. On the other hand, 60.7% of the third grade students reported experiencing a patient's oral malodor.

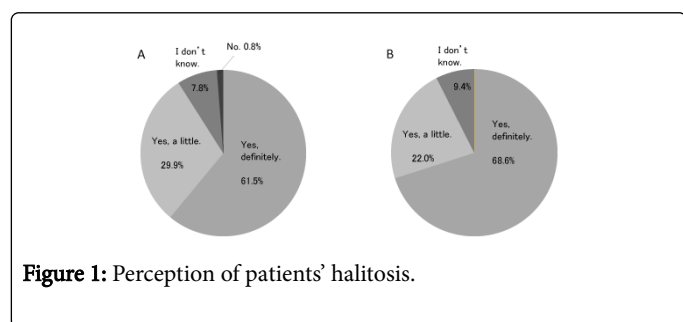


Figure 1: Perception of patients' halitosis.

### Awareness of participation of dental hygienists in halitosis treatment

We then asked the students if they believed that dental hygienists should participate in halitosis treatment (Figure 2). Students in both grades responded that they should. However, the third grade students felt more strongly about such participation.

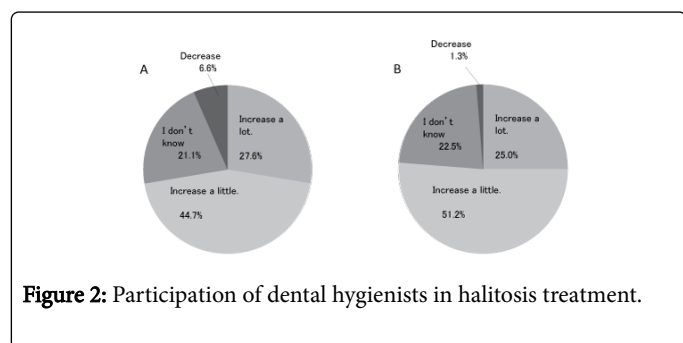


Figure 2: Participation of dental hygienists in halitosis treatment.

### Students' thinking on future demand of halitosis treatment

Students were asked about their expectation of future demand for halitosis treatment (Figure 3). Many students from both grades expected that the demand for halitosis treatment would increase. However, a few more students from the first grade thought that the demand might decrease.

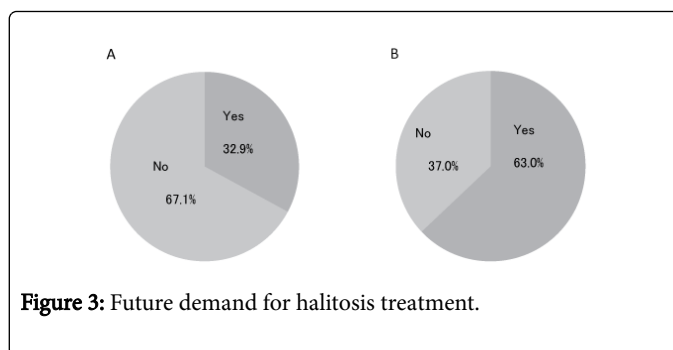


Figure 3: Future demand for halitosis treatment.

### Willingness to study halitosis

We asked the students if they wished to study halitosis (Figure 4). The percentage of students who expressed a willingness to study the problem was almost the same in both classes. However, some first grade students indicated that they did not want to engage in such study.

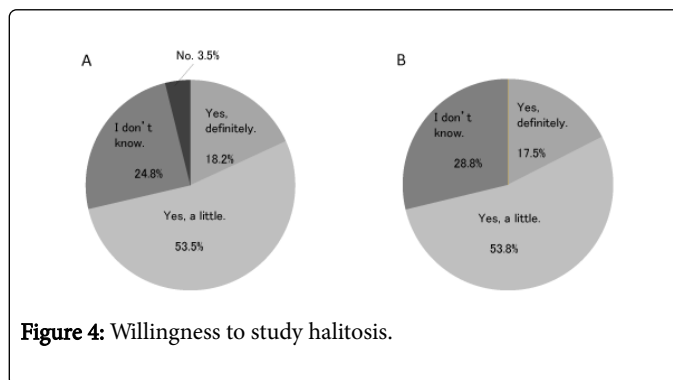


Figure 4: Willingness to study halitosis.

### Participation in halitosis treatment by the students themselves

We asked the students if they wanted to participate in halitosis treatment themselves (Figure 5). Approximately 61% of the first grade students indicated that they would want to take part. On the other hand, more than 71% of the third grade students wanted to participate. Approximately 4% of the first grade students did not want to take part in halitosis treatment.

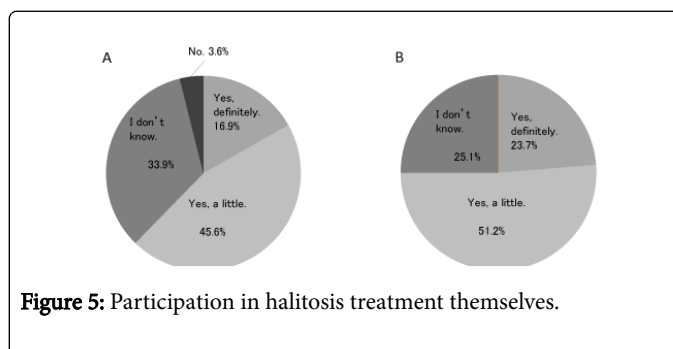


Figure 5: Participation in halitosis treatment themselves.

### Knowledge of halitosis

Lastly, we compared the third grade students' knowledge of halitosis to that of the first grade students. Knowledge of the causes of oral

malodor and the apparatus used to measure it was nearly the same between two groups (Figures 5, 6A and 6B). However, more students in the third grade answered incorrectly a question about oral malodor-associated gasses (Figure 7). They chose some correct answers, but they also marked wrong choice such as parathyroid hormone.

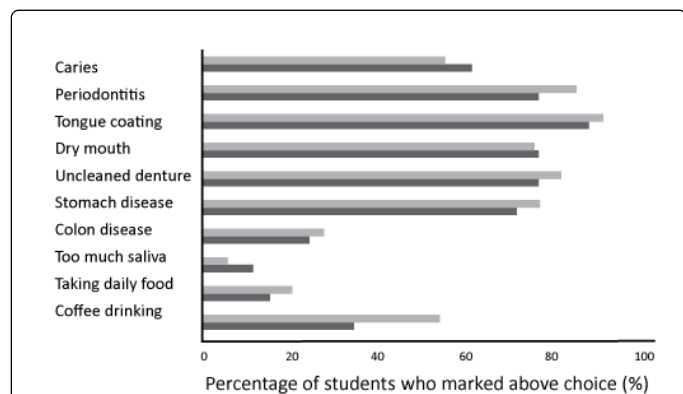


Figure 6A: Knowledge of halitosis-1.

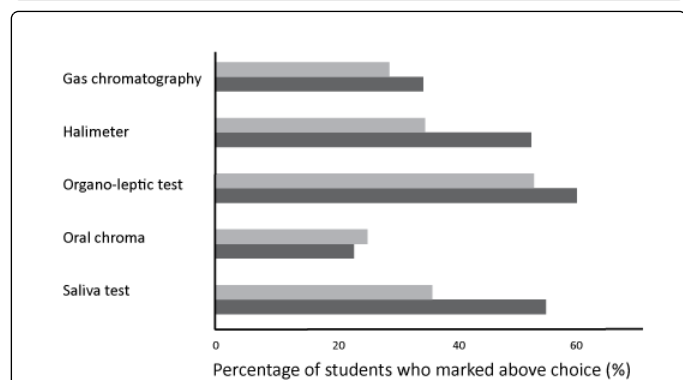


Figure 6B: Knowledge of halitosis-3.

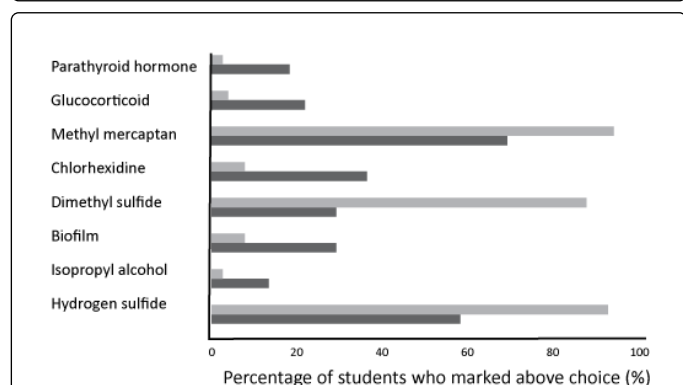


Figure 7: Knowledge of halitosis-2.

## Discussion

An increasing number of patients are visiting halitosis clinics. Our college has two halitosis clinics, one in the main hospital and one in a

satellite clinic. More than 500 patients have come to the two clinics a year. According to our data, more than 60% of the halitosis patients were female, some of whom had severe anxiety [8]. Dental hygienists usually talk with these patients before treatment by a dentist, and they can sometimes relieve the patient's anxiety. Dental hygienists also play an important role in periodontal treatment and oral hygiene instruction [9]. Given these facts, dental hygienists need to have sufficient knowledge of halitosis. However, our recent survey revealed that dental hygienists do not necessarily have the knowledge that is required [7]. To improve the dental hygienist's knowledge of halitosis, it is important to improve motivation and knowledge of halitosis treatment beginning in the dental hygienist's student days. To evaluate student awareness and knowledge of halitosis, we conducted a questionnaire survey of first and third grade students.

It is reasonable to expect that more students in the third grade have experienced oral malodor from at least some of their patients, since they have more opportunities to see patients at the hospitals. The third grade students were more likely to recognize the importance of dental hygienists in halitosis treatment, and they generally believe that the need for halitosis treatment will increase. The first grade students are less interested in studying halitosis and taking part in halitosis treatment. The experience of third grade students at the hospitals may be associated with the higher motivation of the third grade students with regard to halitosis treatment. Actually dental hygienists in our hospitals are playing an important role [10], and the third grade students may have seen their activity which resulted in higher motivation.

The results related to student knowledge of halitosis were unexpected. The third grade students did not necessarily have more knowledge than the first graders. Moreover, some knowledge that they should have acquired in the first year was apparently forgotten by the upper grade students. Students learn about halitosis in the first year, but they do not study it again until the time of national examination. Their knowledge may disappear during the two intervening years.

To provide better halitosis treatment, teachers need to improve the motivation of dental hygienist students in this area. Teachers also need to give the students sufficient knowledge of halitosis and find ways to ensure that the students retain their basic knowledge.

## Conclusion

The percentage of students who experienced oral malodor from their patients was higher among third grade students. The third grade students believed more strongly that dental hygienists should take part in halitosis treatment as compared to the first grade students. More students in the third grade believed that future demand for halitosis treatment would increase as compared to the first grade students. Motivation for studying halitosis was higher among the third grade students. Third grade students seemed to be more positive in contributing to halitosis treatment themselves. Knowledge of the causes of oral malodor and the apparatus used to measure it was not different between the two grades, but knowledge of the oral malodor-associated gasses was lower among the third grade students.

## Acknowledgement

This study was in part supported by a Grant-in-Aid for Scientific Research (C) 16K11577 (M.Y.) and Grants-in-Aid for Advanced Science Research (M.Y., T.H.) from the Ministry of Education, Culture, Sports, Science, and Technology, Japan.

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