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Perceptions and Attitudes toward Use of Loupes among Dental Hygienists

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치과위생사의 루페 사용에 대한 인식 및 태도

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Abstract The aim of this study was to examine the perceptions and attitudes of dental hygienists on the use of dental loupes. A questionnaire survey was conducted to 180 dental hygienists working at dental institutions and public health centers. 4.6% of all respondents answered that they use dental loupes currently, and 38.9% answered that they need to introduce dental loupes in the dental clinic. About half indicated that loupes were a benefit to improved vision(53%) and Improved clarity(44%). The most commonly reported disadvantages to loupes wear were limited depth of vision(39%) and overall dependency. It was confirmed that most dental hygienists did not use loupes, there was little interest in loupes. More research is needed on the effects of loupes in dental practice.

Key Words : Dental magnification, Loupes, Dental hygienists, Dental treatment, Dental practice

요 약 이 연구의 목적은 치과용 루페 사용에 대한 치과 위생사의 인식과 태도를 조사하는 것이었다. 치과 의료기관 및 보건소에서 일하는 180명의 치과위생사를 대상으로 설문조사를 수행하였으며, 치과임상에서의 루페에 대한 치과위생사의 인식 및 태도에 대해 분석하였다. 전체 응답자 중 4.6%가 현재 루페를 사용한다고 응답했으며, 38.9%는 치과 의료기관에 루페도입이 필요하다고 응답했다. 약 절반에 해당하는 대상자는 루페가 시력 향상(53%)과 선명도 향상 (44%)에 도움이 된다고 응답하였다. 루페 착용에 있어 가장 일반적으로 응답한 단점은 제한되는 시야 (39%)와 전반적인 의존성(38%)이었다. 대부분의 치과위생사들은 치과 진료에서 루페를 사용하지 않았음을 확인했으며, 루페에 대한 관심도는 매우 낮았다. 치위생과정에서의 루페 적용 및 그 효과를 입증하기 위한 더 많은 연구가 필요할 것으로 사료된다.

주제어 : 치과용 확대경, 루페, 치과위생사, 치과진료, 치과임상

1. Introduction

Magnification devices are used in many medical field as well as in dentistry[1,2]. Improving diagnostic skills and quality of care is the most significant benefit of dental loupes[3].

The previous studies were replete with evidence that dentists and dental hygenists frequently encounter neck, back, and shoulder injuries as a result of spending long durations of time in non-neutral positions[4].

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Musculoskeletal disorders (MSD) are very serious and costly occupational health-related diseases in the dental profession[5]. Task-related MSDs include injuries, pain, and trauma to various tissues in the body, which are more severe and more frequent over time[6]. Continuous work outside of a balanced body posture adds to physical stress and ultimately threatens work efficiency and the operator's overall health[7-10]. Scaling, one of the main tasks of a dental hygienist, requires repetitive movements for the continuous grip of hands and dental instruments[11]. Also, a typical characteristic of dental work can be said that the head is excessively bowed forward. Because of this, neck pain has been reported to be found at rates between 28.5% and 62% among dental hygienists[12,13]. In another study, neck pain was reported as a general difficulty for dental hygienists, with a 12-month prevalence of between 54 and 69 percent[14]. Also, work related to dental hygiene, such as removal of calculus, has also been reported to cause neck pain among dental hygienists in Australia and Sweden[15].

Various strategies including the use of magnification loupes have been suggested to minimize risk factors associated with MSDs[16]. According to a previous studies evaluating the posture of dental hygiene students wearing a dental loupes while performing periodontal probing using a Posture Assessment Instrument (PAI), it was confirmed that their posture was improved using a dental loupe[17,18]. In a study evaluating the effect of a dental magnifier on the posture of a dental hygienist during a simulated measurement of full magnification exploration, it was evaluated that the dental loupe reduces the need to bend the head, neck and waist forward and enlarges the oral structure when mounted appropriately for the working distance and declination. Therefore, it was introduced that the loupe can minimize the risk of developing work-related MSD[19]. It is not uncommon to use a loupes among dental hygienists, but nevertheless it is a tool that hygienists can choose to use in work life. Although dental loupes can greatly help the improvement of occupational diseases and quality of care for dental staff in the field of dental hygiene, studies to improve clinical quality using loupes are very scarce[20]. In this situation, basic research on the introduction and introduction of dental loupes is needed. Therefore, the purpose of this study was to examine the perceptions and attitudes of the use of dental loupes in the clinical field and to suggest changes in the attitudes of dental hygienists in the dental field.

2. Methods

This study was approved by the Institutional Research and Ethics Committee at the Sunmoon university in 2017(IRB number: SM-2017-061-2). The subject of this study was a self-answer questionnaire conducted by 200 dental hygienists working in dental hospitals and clinics nationwide. From March 20, 2018 to May 04, 2018, the subjects were selected as those who received sufficient explanation about the study and agreed to participate. After obtaining the survey consent, the questionnaire was distributed to 200 people and a total of 180 copies were collected. The study participants were surveyed among dental hygienists working in dental medical institutions and public health centers in Seoul, Gyeonggi-Do, Incheon, Chungcheong-Do, Jeolla-Do, Gyeongsang-Do and Jeju-Do. The age of the subjects was 20-40s, and the work experience was 1-33 years.

The questionnaire items in this study were constructed by referring to the questionnaire

items in the representative foreign research related to the introduction of loupe by dental hygienists[9,21,22]. The survey items consisted of 22 questions: 4 questions about the basic characteristics of the survey subjects (age, work area, years of work, field of work), 8 questions about the use of loupes (attendance of training, experience of use, type, duration of use, route of use, etc., 10 questions about awareness of loupes use (recognition and attitudes such as ability improvement, necessity, performance improvement, posture and fatigue reduction, advantages and disadvantages).

Collected data were analyzed using the IBM SPSS Statistics Version 20.0 program. For the analysis of demographic data (age, working area, years of work, field of work, etc.) and data on loupes (usage, perception and attitude on the loupes) frequency analysis was performed,

3. Results

Table 1 shows the demographic characteristics of the study participants. Among the 180 survey subjects, the age group was in the order of 77.8% in the 20s, 17.2% in the 30s, and 5% in the 40s. In the working period, workers under 5 years had the highest number (72.8%).

Table 1. Demographic characteristics of the participants

Variables		N (%)
Total		180 (100)
Age	20s	140 (77.8)
	30s	31 (17.2)
	40+	9 (5.0)
Working period	1-5 year	131 (72.8)
	6-10 year	33 (18.3)
	11 years or more	16 (8.9)

Table 2. Actual education and usage of loupes

Variables		N (%)
Attendance of training course on dental loupes	Yes	23(13.3)
	No	156(86.7)
Experience in the use of dental loupes during training	Yes	22(12.2)
	No	158(87.8)
Current use of dental loupe	Yes	8(4.4)
	No	172(95.6)
Reason for using dental loupes	Dentist's recommendation	5(16.7)
	dental hygienist's recommendation	1(3.3)
	Used in dental hygiene school courses	9(30.0)
	Etc.	15(50.0)
Reason for not using dental loupes	Not interested	45(30.6)
	Too expensive	21(14.3)
	No confidence in the effect	3(2.0)
	Possible without loupes	30(20.4)
	Etc.	48(32.7)

The status of education and use of loupes are shown in Table 2. Respondents who had been educated about loupes accounted for 13.3% of the total participants, and 12.2% of those who used loupes through the curriculum. Currently, 4.4% of the respondents are using loupes for dental treatment, and 30% of the respondents said that their experience in dental hygiene has led to the use of loupes. In response to the reason for not using loupes, most respondents answered 'No interest' or 'Possible without loupes'. The respondents who answered 'too expensive' accounted for 14.3% of the total.

The response to perceptions and attitudes toward use of loupes are shown in Table 3. About half responded positively to loupes' 'improved accuracy and clinical performance' and 'need education to loupes'. In addition, 66.6% of the respondents answered that loupes has great benefits for dental hygienists and patients. However, only 38.9% of the respondents agreed on introducing loupes.

In addition, respondents to this study cited several advantages and disadvantages of wearing a loupes. About half indicated that loupes were a benefit to improved vision(53%) and Improved clarity(44%). Items for all the benefits identified are shown in Figure 1. The most commonly reported disadvantages on loupes wearing were limited depth of vision(39%) and overall dependency. All of the drawbacks investigated are presented in Fig. 2.

Table 3. Perceptions and attitudes toward use of dental loupes

Variables		N (%)
Improving treatment accuracy and quality	Yes	81(45.0)
	No	99(55.0)
Necessity in dental hygiene process	Necessary	101(56.1)
	Unnecessary	79(43.9)
Necessity in education on dental loupe within the basic curriculum of dental hygiene education	Necessary	89(49.4)
	Unnecessary	91(50.6)
Training on dental loupes for clinicians	Necessary	74(41.1)
	Unnecessary	106(58.9)
Necessity in dental clinical process	Necessary	70(38.9)
	Unnecessary	110(61.1)
Benefits for the dental hygienist and patients	Yes	120(66.6)
	No	60(33.4)

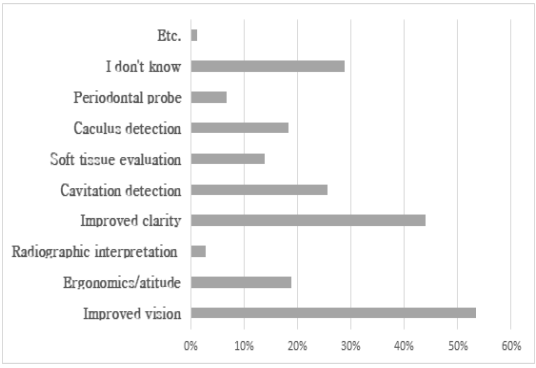

Fig 1. Advantages of wearing loupes

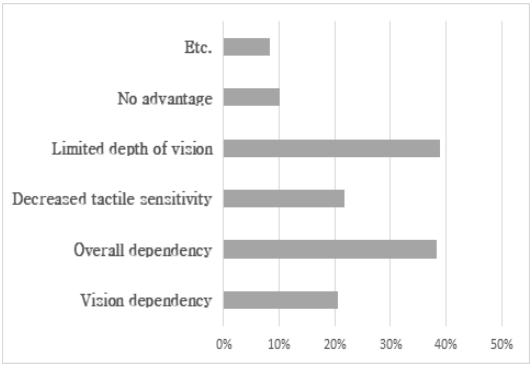

Fig 2. Advantages of wearing loupes

4. Discussion

The purpose of this research was to examine the awareness and attitudes of the use of dental loupes in the clinical setting and to suggest a change in the attitude of dental hygienists to loupes.

According to this study, only 4.6% of the study participants used dental loupes in their clinical practice. In previous study by Turki Y, 19.7% of 437 college students use dental loupes, and 68.8% of 16 graduate students use dental loupes[23]. In another study, the frequency of wearing the loupe was 'sometimes' or 'nearly none'[22]. The results of these previous studies support our findings. In Korea, there is no training and application of dental loupes for dental hygienist, so awareness and interest in loupes is very low. Therefore, it is necessary to introduce on the purpose and effects of loupes in the curriculum of the dental hygiene department.

The strength of this study is to investigate the use of loupe in dental hygiene process for the first time in Korea. As mentioned previously, dental hygienists are unable to avoid occupational diseases such as MSD during the dental hygiene process. Until now, there have been many studies confirming the condition of MSD of dental hygienists, but there have been no studies on dental loupes to improve them. This study can be used as a basis for improving the working environment of dental hygienists.

This study is of great significance for recognizing the attitude and recognition of the use of dental loupes in clinical settings for dental hygienist working in a dental practice. However, due to the limited number of samples, there is a limit to represent the population, and due to the lack of previous studies, sufficient comparison has not been made. On-going research on the use of loupes will be needed for improving occupational diseases and treatment quality of dental personnel.

In this study, advantages of dental loupes include 'enhanced vision', 'enhanced sharpness', 'calculus detection', 'ergonomics/posture', 'cavitation detection', 'soft tissue evaluation'. Similarly in previous studies, the most frequently answered benefit of using loupe was the effect on calculus removal[22]. These results are also in line with previous studies that mentioned ergonomics as an advantage. The Maillet JP's experimental study examined differences in posture improvement between students using dental loupes and students not using dental loupes, indicating that the loupes group had significant postural improvement[18].

However, there have been conflicting results on the use of dental loupes. According to a previous study that mentioned the benefits and limitations of the use of loupe, the adjustment period and the limited depth of vision were reported as disadvantages of the use of loupe[22]. In addition, according to a study observing whether posture is significantly improved compared to the usual working position after wearing a dental loupe, only half of the all respondents answered that posture was improved[3,18]. These results tell us that the introduction of dental loupes is not always the best way to mitigate and prevent MSD. Therefore, the use of dental loupe should be complementary with other methods to find an optimal posture for dental care and a way to improve the quality of dental care.

As mentioned so far, there were not enough papers on the effects of loupes. Therefore, further research on the 'improved vision effect', which has been mentioned as an advantage of loupes in the research results, will be needed.

5. Conclusions

Dental hygienists cooperate with dentists in dental treatment and play an important role in helping patients to prevent and manage oral diseases. Therefore, if a dental hygienist wears loupes, confirms the dentist's treatment and performs dental hygiene management, it is thought that a higher level of medical care will be achieved. More research is needed about the effects of loupes on dental hygienists' quality of oral hygiene and improvement of musculoskeletal disorders.

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