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**The effect of media education in patients  
with temporomandibular disorders**

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# **The effect of media education in patients with temporomandibular disorders**

Directed by Professor Hyung-Joon Ahn, D.D.S., Ph.D.

Doctoral Dissertation

submitted to the Department of Dentistry,

the Graduate School of Yonsei University

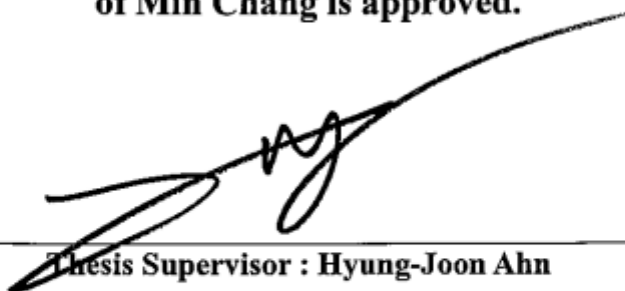
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Dental Science

**Min Chang**

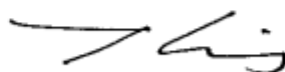
December 2022

**This certifies that the doctoral dissertation  
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**December 2022**

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평생에 걸쳐 저에게 가장 큰 힘이 되어 주시는 사랑하는 아버지, 어머니, 하나뿐인 형제 윤이 누나와 매형, 세상에서 가장 귀여운 조카 한이 모두 감사합니다. 소중한 가족이 없었다면 결코 여기까지 오지 못했을 것입니다.

박사 과정을 마침과 동시에 모교인 연세대학교 치과대학병원에서 임상강사를 시작해 구강내과 학문을 더 진정으로 접할 기회를 얻게 되어 한없이 기쁩니다. 이제 시작입니다. 구강내과에 한 획을 긋는 인재가 되도록 하겠습니다. 감사합니다.

2022년 12월

저자 장민 드림

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## **ABSTRACT**

# **The effect of media education in patients with temporomandibular disorders**

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The Graduate School, Yonsei University

(Directed by Professor Hyung-Joon Ahn, D.D.S., Ph.D.)

**Purpose:** Temporomandibular disorders (TMD) have been recommended to be treated with self-management and education as a first line treatment option. Typical examples of self-management include moist heat application, stretching, diet control, and adjusting mandibular rest position. The effectiveness of video educational resources has been studied in several different sectors. The purpose of this study was to evaluate the effectiveness of media education data in motivating TMD patients to take self-management precautions and improve the symptoms.

**Patients and methods:** The data were taken from hospital records of TMD patients who visited the Department of Oral Medicine, Yonsei University Dental Hospital from May 2020 to December 2021. First, the significance analysis between the degree of self-management and symptom improvement over time were performed without any differences between groups. Regarding instructions for TMD management, at the 2<sup>nd</sup> visit, one group received media education (n = 31) and the other group received written-oriented education (n = 45). On the 3<sup>rd</sup> visit, a comparison analysis was performed on how many precautions were observed between the two groups compared to those during the previous visit. The generalized estimated equations (GEE) multivariate models were used for statistical analysis.

**Results:** In the media education group, the frequency of stretching and the number of patients eating pain-free diet were increased significantly. Following the precautions itself, positively influenced the improvement of the current daily pain intensity (D\_NRS), maximum mouth opening (MMO), and the pain intensity of maximum unassisted opening (O\_NRS).

**Conclusion:** Media education could be useful for TMD patients as it allows the patients to take self-management precautions. It also indirectly influences the improvement of TMD-related symptoms.

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**Keywords:** Temporomandibular joint disorders; Self-care; Education; Treatment outcome

# **The effect of media education in patients with temporomandibular disorders**

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## **I . INTRODUCTION**

Temporomandibular disorders (TMD) refer to a group of symptoms that include temporomandibular joint (TMJ) dysfunction and discomfort in the masticatory muscles. According to a recent systematic review, TMD affected 11% of children and adolescents and 31% of adults and older individuals overall (Valsean et al., 2021). According to research data, the frequency of TMD appears to be increasing in the recent years (Klatkiewicz, 2018; Manfredini, 2010).

Pain, a restricted range of motion, and TMJ noises are the three main signs and symptoms of TMD (Thomas, 2013). Oral behaviors, which cause pain, such as clenching can be a risk factor for TMD (Iodice, 2019; Huan, 2002; Huhtela, 2016). Pain reduction and improved jaw function are the two objectives of TMD therapy. To reduce stress and parafunction, a therapy that aims to improve behavior may also be crucial (Li and Leung, 2021). It is interesting to note that although certain symptoms and signs disappear on their own even without therapy, others last for years despite administering every available treatment (Li and Leung, 2021). For individuals with TMDs, there are several therapy options that can be either conservative or invasive, according to the research. However, a non-invasive, conservative care rather than surgery is used as the first course of treatment (Hemashree, 2021). Conservative care includes pharmacotherapy, physical and thermal therapies, stretching, avoiding parafunctional activities, and eating soft pain-free diet.

There are several methods of using superficial heat to treat TMD. The predominant mode was moist heat (Thomas, 2013). The therapeutic utility of this approach in TMD therapy is explained by the advantages of heat application, which include pain reduction, reduced muscular tension, enhanced jaw functioning, and greater mouth opening (Furlan, 2015). Regarding stretching, the severity of the jaw and neck discomfort significantly improved statistically and clinically by Rocabado's 6x6 exercise program for TMJ (Mulet, 2007). The mandible should be held in its postural position, not in occlusion, which necessitates "unintentional" muscular contraction (Michelotti, 1997). This will help maintain relaxation of the jaw muscles. To assess the mandibular rest position, the dentist repeatedly asks the patients to pronounce the letter "N" (Michelotti, 2004). Dietary changes, such as switching to a soft diet, can also help in pain relief (Hemashree, 2021). In addition to advising on the food choices to lessen the stress placed on the temporomandibular joint and lessen the jaw pain, clinicians can counsel the patients to use knives and forks similar to their teeth for cutting food items into small pieces (Nasri-Heir, 2016).

To date, most patient education has been imparted either verbally or through written instructions. However, the use of computer videos with multi-media was more successful and efficient for providing hospital education than using printed diagrams (Painter, 2013). Kinnane et al. (Kinnane, 2008) showed that adding videos to routine chemotherapy instructions enhanced the learning regarding how to deal with expected side effects of chemotherapy and report problems associated with the treatment.

Durham et al. (Durham, 2016) emphasized that any clinical environment should be appropriate for the delivery of self-management, which must be accompanied by written instructions and information, thus suggesting that utilization of electronic media for reinforcement could be possible.

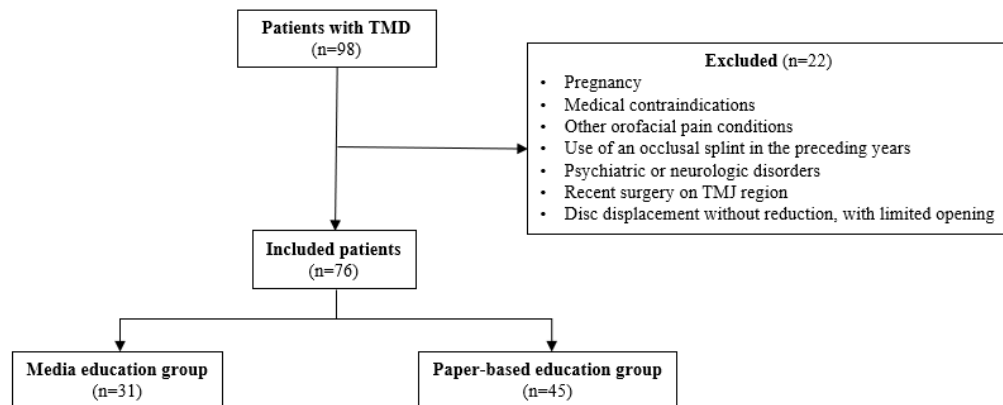
To date, there have been no studies on the effect of video education in the field of TMD. In addition, there was no study that quantitatively analyzed the degree of symptom improvement in TMD patients according to the level of precautions practiced. Therefore, the purpose of this study was to compare the effects of media education and written instructions on the level of practice of precautions for TMD. The relationship between the degree of practice of precautions and the improvement of symptoms was also investigated.

## II . PATIENTS AND METHODS

### 1. Patients

This study was approved by the Yonsei University Dental Hospital Institutional Review Board (IRB no. 2022-0042-001).

The data used for this study were taken from hospital records of TMD patients who visited the Department of Oral Medicine, Yonsei University Dental Hospital from May 2020 to December 2021. There were 98 TMD patients in this study. The inclusion criteria were TMD, minimum 18 years of age, arthralgia or myalgia. The exclusion criteria were pregnancy, medical contraindications such as oral cancer and tetanus, other orofacial pain conditions, use of an occlusal splint in the preceding years, psychiatric or neurologic disorders, recent surgery in the TMJ region, patients with disc displacement without reduction, with limited opening. If the medical records were not completely filled, the patient was excluded from this study. Consequently, 76 patients (31 patients' group with media education and 45 patients' group with paper-based education) were selected for this study (Figure 1).



**Figure 1. Flow chart of included patients**

## 2. Outcome evaluation

### 2.1 Variables

Three outcome variables were used to evaluate the patient's symptom from the 1<sup>st</sup> to 3<sup>rd</sup> visits: (i) the current daily pain intensity, (ii) the range, and (iii) the pain intensity of maximum unassisted opening. The current daily pain intensity (D\_NRS) was measured with the numeric rating scale (NRS) from 0 = "no pain at all" to 10 = "the worst pain imaginable". The patients graded their daily pain level due to current TMD symptoms. The range of maximum unassisted opening (MMO) is the distance between the maxillary and mandibular incisal edges in millimeters. The pain intensity of maximum unassisted opening (O\_NRS) was also measured using the NRS when the participants opened his or her mouth as wide as possible.

Four outcome variables were used to evaluate the degree of increase in the practice of precautions from the 2<sup>nd</sup> to 3<sup>rd</sup> visits: (i) the frequency of application of moist heat, (ii) stretching, the number of patients, (iii) eating pain-free food, and (iv) keeping their teeth-apart.

Application of moist heat was performed using a warm heat pad in the face and neck regions for 10 to 15 min at least twice a day.

Regarding stretching, the participants were asked to slowly open the mouth until they did not experience any pain sensation. At that point, they were instructed to maintain the position for 6 s. This stretching was performed 6 times a day and repeated 6 times for each stretching session.

Eating pain-free food meant that the patients should avoid any food causing pain, such as hard, sticky, and large-sized food items. Soft or small pieces of food were recommended for the participants.

Keeping their teeth-apart could be determined by instructing the patients to pronounce the



alphabet 'N' whenever they experienced tooth contact.

## 2.2 Evaluation methods

A total of 76 patients who conformed to the inclusion criteria visited the hospital at least three times. Forty-five patients were included in the paper-based education group and 31 patients were included in the media education group. On the 1<sup>st</sup> visit (T1), demographic and symptomatic analyses were performed for the two groups. On the 2<sup>nd</sup> (T2) and 3<sup>rd</sup> visits (T3), the degree of symptom improvement according to the increase in self-management practice compared to that in the previous visit was analyzed for all patients without any difference between the two groups. On the 3<sup>rd</sup> visit, the degree of the improvement in self-management practice and symptom compared to the that in the previous visit was analyzed between the two groups. On the 1<sup>st</sup> and 2<sup>nd</sup> visits, the patients were practically educated as follows:

### 1<sup>st</sup> visit

On the first visit, each patient was verbally informed of their pathological problems regarding jaw function according to x-ray and clinical evaluation. They were also provided basic written self-care instructions, such as maintaining good posture, eating pain-free diet, keeping their teeth-apart, applying moist heat pads, and stretching without any differences between the two groups.

### 2<sup>nd</sup> visit

**Paper-based education group.** On the second visit, the paper-based education group received reinforcement especially for the self-care instructions that they had not implemented, with paper-based education materials and verbal explanation. The paper material consisted of 4 pages and 738 words in total and included some pictures on correct posture and exercise methods. It was confirmed

that it took about 10 min for the general public to read. Detailed paper-based training materials are included in the appendix.

**Media education group.** On the second visit, the media education group were instructed to watch media education materials regarding basic self-care management in the hospital and encouraged to watch the media-based educational content whenever they forgot the instructions.

The media-based education material was based on the video content uploaded on the YouTube platform (12 min and 14 s long). The contents of this video included physiologic mandibular rest position, parafunctional oral behaviors, dietary advice, the detailed method of moist heat application, jaw exercise, massage, and stress reduction (Figure 2).

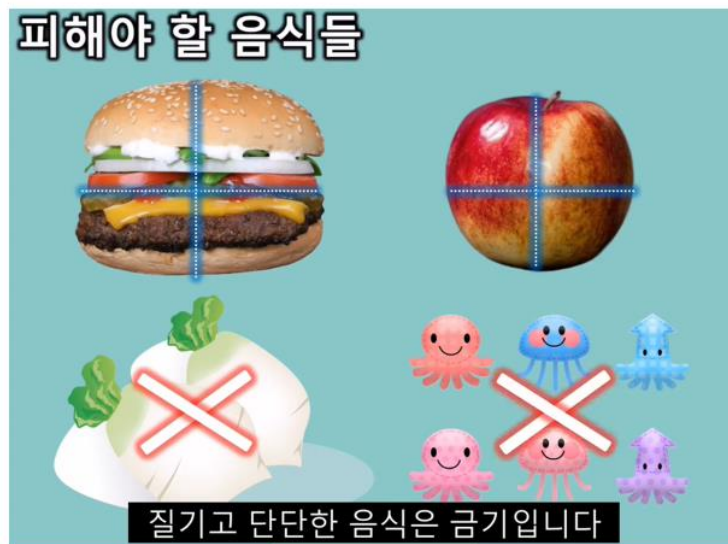


Figure 2. Screenshot and QR code of media education content

### **3. Statistical analysis**

Statistical analyses were performed using the IBM SPSS Statistics for Windows, Version 26.0 (IBM Co., Armonk, NY, USA). The Mann-Whitney U and Chi-square tests were used to compare the demographic and clinical features between the two groups. The generalized estimated equations (GEE) multivariate models were used to determine the significance of differences between the paper-based and media education groups with the assumption that there were differences in the way the outcome variables progressed over time.

### III. RESULTS

#### 1. Comparison of demographic and clinical features

Between media and paper-based education groups, the demographic and clinical data were compared. There were no appreciable differences between the two groups for any factor, as shown in Table 1.

**Table 1. Baseline comparison of demographic and clinical characteristics**

Variables	Paper (n=45)	Media (n=31)	<i>p</i> value
Age (y)	43.8±20.5	35.2±13.0	0.146 <sup>a</sup>
Sex (%)			0.370 <sup>b</sup>
Male	31.0	38.7	
Female	69.0	61.2	
Pain duration (mo)	22.8±56.6	24.1±36.0	0.656 <sup>a</sup>
D_NRS	5.0±2.1	4.6±1.8	0.411 <sup>a</sup>
MMO (mm)	40.5±6.6	43.4±9.0	0.100 <sup>a</sup>
O_NRS	3.5±2.5	3.2±2.3	0.679 <sup>a</sup>

D\_NRS, current daily pain intensity; MMO, range of maximum unassisted opening; O\_NRS, pain intensity of maximum unassisted opening.

Data are shown as mean ± standard deviations.

<sup>a</sup>*p* values were determined from Mann-Whitney U test, <sup>b</sup>*p* value was determined from Chi-square test.

## **2. Symptom improvement according to the degree of self-management**

The degree of symptom improvement according to the level of practice of self-management was compared without any difference between the two groups.

According to the GEE analysis between the 1st and 2<sup>nd</sup> visits, D\_NRS and MMO were substantially correlated with the frequency of application of moist heat. D\_NRS and O\_NRS had a strong relationship with the frequency of stretching. MMO was associated with the number of patients with teeth-apart. D\_NRS was substantially associated with the number of patients with pain-free diet (Table 2).

Between the 2<sup>nd</sup> and 3<sup>rd</sup> visits, stretching was found to significantly affect D\_NRS and O\_NRS. Pain-free diet and D\_NRS showed a substantial correlation (Table 3).

**Table 2. Wald Chi-square and *p* values as derived from the GEE analysis (between the 1<sup>st</sup> and 2<sup>nd</sup> visits)**

Model		Wald Chi-Square	df	<i>p</i> value
Moist heat	D_NRS	2.642E+12	8	0.000*
	MMO	140.320	8	0.000*
	O_NRS	4.097	7	0.769
Stretching	D_NRS	70.084	9	0.000*
	MMO	13.937	9	0.125
	O_NRS	24.589	9	0.003*
Teeth-apart	D_NRS	0.016	1	0.899
	MMO	5.388	1	0.020*
	O_NRS	0.072	1	0.788
Pain-free diet	D_NRS	12.312	1	0.000*
	MMO	0.074	1	0.786
	O_NRS	1.379	1	0.240

*p* values were determined from the GEE analysis.

**Table 3. Wald Chi-square and *p* values as derived from GEE analysis (between 2<sup>nd</sup> and 3<sup>rd</sup> visits)**

Model		Wald Chi-Square	df	<i>p</i> value
Moist heat	D_NRS	22.083	7	0.135
	MMO	12.433	7	0.087
	O_NRS	6.893	7	0.440
Stretching	D_NRS	20.616	10	0.024*
	MMO	15.674	10	0.109
	O_NRS	46.159	9	0.000*
Teeth-apart	D_NRS	0.397	1	0.528
	MMO	0.161	1	0.688
	O_NRS	3.172	1	0.075
Pain-free	D_NRS	4.310	1	0.038*
diet	MMO	2.649	1	0.104
	O_NRS	0.209	1	0.647

*p* values were determined from GEE analysis.



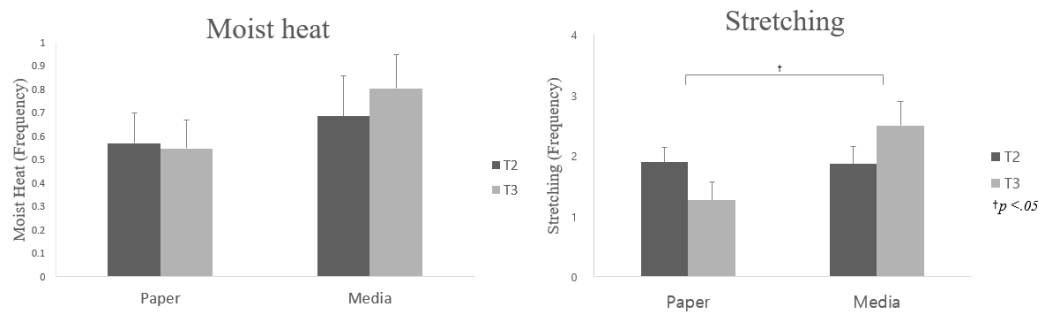
### **3. Comparison of improvement in symptom and self-management practice between the groups**

The degree of improvement in self-management practice and symptoms were compared between the media and paper-based education groups. On the 3<sup>rd</sup> visit, the frequency of stretching and moist heat application had improved in the media education group compared to that during the 2<sup>nd</sup> visit; however, there was a decrease in the same parameter in the paper-based education group (Figure 3) between the two timepoints of visit.

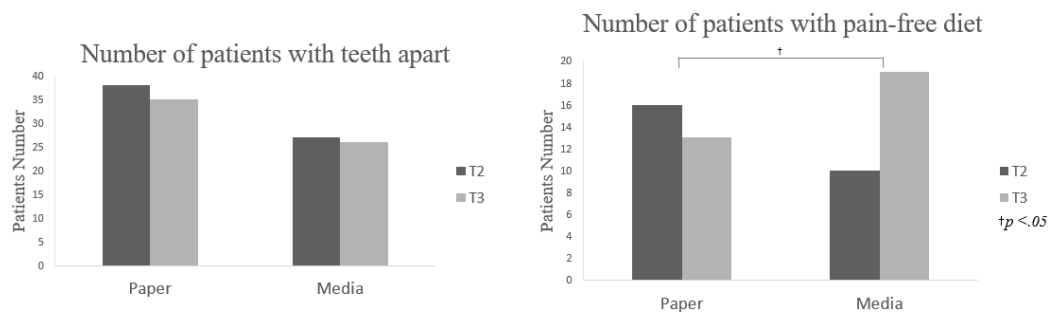
The number of patients with teeth-apart showed comparable reductions in both the groups. The number of patients eating pain-free diet increased in the media education group, while it decreased in the paper-based education group (Figure 4).

D\_NRS, MMO, and O\_NRS were also evaluated over time. On the 3<sup>rd</sup> visit, D\_NRS and O\_NRS had decreased in both the groups and MMO had marginally increased (Figure 5). D\_NRS decreased from 3.2 to 2.9 and 3.0 to 2.0 in the paper-based and media education groups, respectively. O\_NRS decreased from 2.5 to 1.9 and 2.4 to 1.4 in the paper-based and media education groups, respectively. MMO increased from 42.7 to 43.4 and 43.3 to 44.0 in the paper-based and media education groups, respectively.

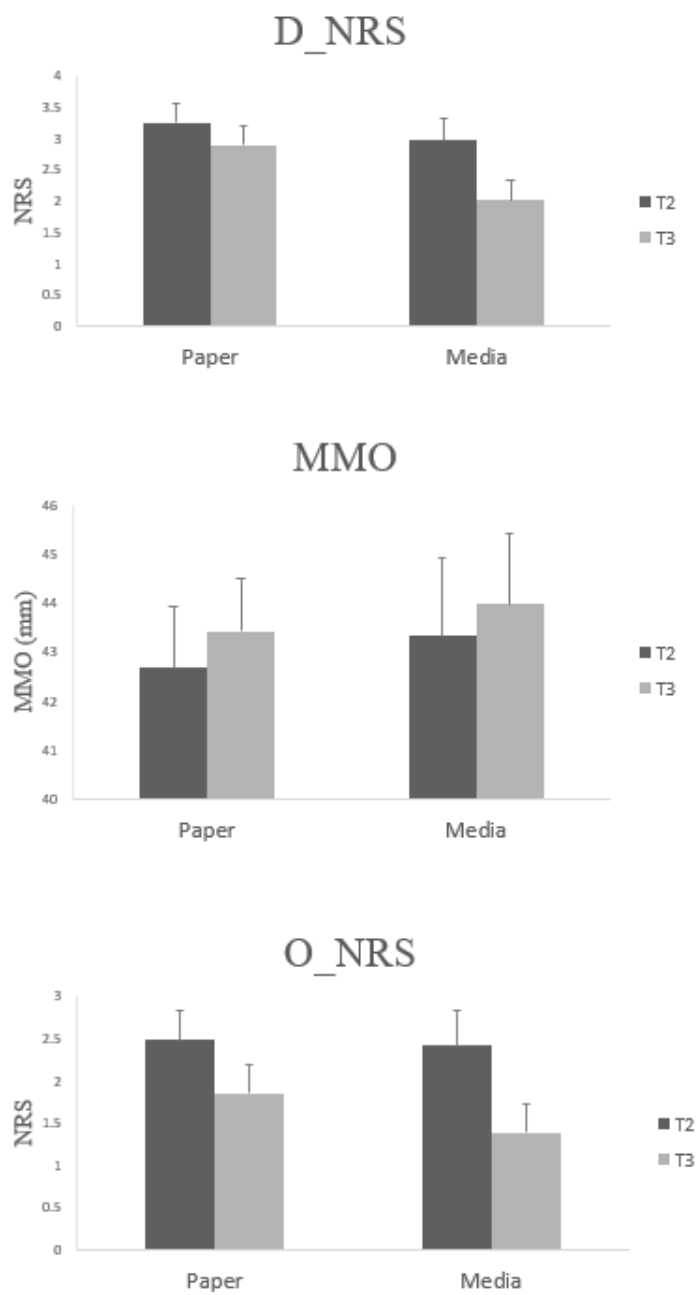
GEE models demonstrated significant differences between the media and paper-based education groups pertaining to the frequency of stretching and the number of patients eating pain-free diet. However, there were no significance between the groups regarding other variables (Table 4).



**Figure 3. The frequency of moist heat and stretching, T2 = 2<sup>nd</sup> visit, T3 = 3<sup>rd</sup> visit**



**Figure 4. The number of patients with teeth-apart and pain-free diet**



**Figure 5. The change in D\_NRS, MMO, and O\_NRS**

**Table 4. Regression coefficients and *p* values as derived from the GEE analysis**

Model	Paper T2 mean	Paper T3 mean	Media T2 mean	Media T3 mean	$\beta$	95% CI	P- value
Moist heat	0.6±0.1	0.5±0.1	0.7±0.2	0.8±0.1	0.144	-0.233, 0.510	0.442
Stretching	1.9±0.2	1.3±0.3	1.9±0.2	2.5±0.4	1.262	0.460, 2.064	0.002*
Teeth- apart	38	35	27	26	0.225	-1.262, 1.711	0.767
Pain-free diet	16	13	10	19	1.497	0.400, 2.595	0.007*
D_NRS	3.2±0.3	2.9±0.3	3.0±0.3	2.0±0.3	-0.596	-1.611, 0.418	0.250
MMO	42.7±1.3	43.4±1.1	43.3±1.6	44.0±1.4	-0.083	-1.679, 1.513	0.919
O_NRS	2.5±0.4	1.9±0.3	2.4±0.4	1.4±0.3	-0.410	-1.210, 0.389	0.315

$\beta$  = regression coefficient.

CI = confidence interval.

Data are shown as means  $\pm$  standard errors.

*p* values were determined from the GEE analysis.

## IV. DISCUSSION

The results of this study suggest that progression in the frequency of stretching and the increase in the number of patients eating pain-free food differ between media and paper-based education groups. However, the frequency of application of moist heat and the number of patients with teeth-apart exhibited weak associations with the method of education (Table 4).

Changes in D\_NRS, MMO, and O\_NRS did not differ significantly between the education groups, although there was a tendency that D\_NRS and O\_NRS reduced more in the media education group compared to those in the paper-based education group (Figure 5).

We performed statistical analysis to estimate the significance of the degree of precautionary practice and symptom improvement, excluding differences between the groups. Although this study did not prove that symptoms improved significantly in the media education group, we assumed that the absolute number of precautions could be helpful in improving symptoms by observing the tendency of the results.

First, an analysis was performed between the 1<sup>st</sup> and 2<sup>nd</sup> visits. There were significant correlations between the frequency of application of moist heat, D\_NRS, and MMO. The frequency of stretching was associated with D\_NRS and O\_NRS. The number of patients with teeth-apart was significantly correlated with MMO. The number of patients eating pain-free diet had a strong relationship with D\_NRS (Table 2).

The second analysis was performed between the 2<sup>nd</sup> and 3<sup>rd</sup> visits. The frequency of stretching showed a significant correlation with D\_NRS and O\_NRS. The pain-free diet substantially affected D\_NRS (Table 3).

This implied that stretching is an action composed of continuous body movements, and it can be difficult to understand and practice with paper and words alone. However, video education can help implement the education in practice, which has the potential of symptom improvement. In the management of myofascial pain dysfunction syndrome, exercise therapy appears beneficial. Jaw discomfort and mobility restrictions, which are impairing symptoms, can be greatly reduced (Nicolakis, 2002).

To the best of our knowledge, this is the first study which quantitatively measured the significant improvements in the degree of self-management and symptom over time. These findings are consistent with the fact that successful patient education to improve self-care is key to obtaining a positive result in TMD therapy (Michelotti, 2012). For example, it is known that applying a heat or cold pad and range-of-motion exercises are important for TMD patients, and that discontinuing oral habits such as chewing a gum can be astonishingly helpful for people (Charles and Menchel, 2018). It has been reported that therapeutic exercise promotes faster restoration of jaw function than that with splints (Haketa, 2010).

The care of TMD patients should include self-management and education (Gil-Martinez, 2018). It is best to start with the therapies that are least intrusive and most reversible (Liu, 2013). Vos et. al (VOS, 2014) contended that arthrocentesis, as an initial treatment, lowered the pain and functional impairment more quickly in comparison to traditional conservative therapy. However, it is desirable that conservative treatment and instructing the patients to follow these precautions should be given priority because of the price and side effects related to arthrocentesis. In this regard, this study found that video education could help patients to substantially increase the frequency of self-management.

Research has been conducted to utilize the efficiency of video education materials in various fields. According to Winters et. al (Winters, 2020), educational video should be used by self-motivated individuals outside of the operating room, to preserve the physical health during a career in plastic

surgery.

Furthermore, providing internet-based self-management programs to patients with chronic pain, such as TMD is expected to provide convenience by reducing the number of visits (Heapy, 2015; Grootel, 2017).

In this study, video education did not increase the practice of all precautions. This suggests that the content of the video educational material is important. Seidel et al. (Seidel, 2013) reported that video education itself is not important in improving the ability to acquire knowledge, and the performance can vary depending on how the content is organized. Therefore, to improve the patient's performance, it would be necessary to organize the content in an advanced manner.

Litt et. Al. (Litt, 2013) reported that TMD treatment non-responder group frequently had psychological issues such as a high depression index, low self-efficacy, pessimism, and high levels of catastrophizing. For those with comorbid emotional distress and chronic pain, a tailored guided internet-delivered cognitive-behavior treatment therapy could be beneficial (Monica, 2013). Based on this principle, we believe that new video education materials that solve mental problems created in collaboration with psychiatrists can help treat the unresponsive group of TMD patients.

The strength of this study was that it was the first attempt to compare the self-management level by dividing the media watching group and the paper-training group. The major weakness of this study was the less number of patients, which made it impossible to use other effective statistical analysis.



## V. CONCLUSION

Our findings show that media education was more effective than paper education in motivating patients to maintain self-management, regarding stretching and pain-free diet instructions. The symptoms were also slightly improved; however, not significantly between the two groups. However, following the precautions itself, positively influenced the improvement of the symptoms significantly.

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## APPENDIX

### 턱관절 및 안면통증치료와 관련된 주의사항

턱관절 관련 증상 및 안면통증이 빠른 시일 내에 적절히 해결되기 위해서는  
병원에서의 치료도 중요하지만 스스로 시행하는 자가 관리가 매우 중요합니다.

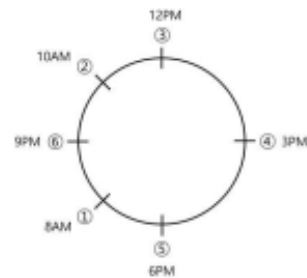
자가 관리함에 있어 **통증이나 소리(어긋남)**를 유발시키거나 악화시키는 행위를 철저히 피하는 것이 중요합니다. 치료 종료 전까지는 증상이 개선되었는지 스스로 확인해 보기 위해 입을 크게 벌려보거나 딱딱하고 질긴 음식을 씹어보거나 하지 않도록 합니다.

1. 입을 벌릴 때는 가능한 천천히 벌리고, 크게 벌리지 않도록 주의하십시오.  
예) 하품, 큰 음식(햄버거, 상추쌈), 노래 부르기, 소리 지르기, 갑자기 입 벌리기 등
2. 부피가 큰 음식은 가능한 피하고 얇게 잘라서 드십시오.  
예) 깍두기, 과일 크게 썰어 먹거나 통째로 베어 먹기 등
3. 질기고 딱딱한 음식을 피하고 가능한 부드러운 음식을 드십시오.  
특히 피해야 할 음식 - 오징어, 껌, 갈비, 멸치, 카라멜 등
4. 오랫동안 씹거나 자주 씹는 것을 피하십시오.  
예) 껌 씹기 등
5. 치료 중에는 통증이나 소리가 유발되지 않는 쪽으로 부드럽게 천천히 씹으시고 치료가 종료된 이후에는 잘 사용하지 않던 쪽으로 씹는 양을 서서히 늘려가 가능한 양쪽으로 씹도록 합니다.
6. 손바닥으로 뺨, 옆머리, 어깨 부위를 부드럽게 자주 마사지하는 것이 도움이 됩니다.
7. 근육 및 관절이 쉴 수 있도록 턱을 괴거나 이를 악물지 않도록 주의하십시오.  
위아래 치아가 닿아 있는 것을 발견했을 때는 자연스럽게 'N' 또는 'M' 발음을 하여 윗니와 아랫니 사이가 2-3mm 정도 떨어지도록 유지합니다.

8. **따뜻한 온습포 찜질(찜질팩+물수건)**을 턱과 목/어깨 부위에 자주 (**약 10분, 하루 2-3회**) 시행해 주십시오. 샤워할 때 수건을 대고 따뜻한 물을 뿌려주는 것도 좋습니다.  
(단, 찜질 후 심하게 붓거나 통증이 악화되는 경우 즉시 중단하십시오.)

9. 근육 이완을 위해 다음과 같이 **턱 근육 운동(6X6X6)**을 자주 시행해 주십시오. 통증이 유발되면 하지 않습니다.

- ① 혀를 위 앞니 안쪽에 가볍게 댍니다.  
(혀로 힘을 줘서 밀지 않습니다.)
- ② 혀를 부드럽게 세운다는 느낌으로 통증이 없고 혀가 떨어지지 않는 범위 내에서 최대한 입을 벌리고 약 6초간 유지합니다. 이 운동을 6회 반복하고 2-3 시간 간격으로 하루 6회 시행합니다.



10. **취미활동, 휴식, 적절한 수면** 등을 통해 생활 속 긴장을 푸는 것이 증상 개선에 큰 도움이 됩니다.

담당의사가 처방한 약제를 임의로 중단하지 마시고 의사가 지시한 용법대로 복용하십시오. 만일 부작용이 있는 경우 전화(2228-8880) 상으로 상의하십시오.



## 턱, 목, 어깨 통증 치료를 위한 바른 자세와 운동법

잘못된 자세와 목, 어깨의 통증은 턱 통증이 오래 지속되거나 재발하는데 영향을 주므로 목, 어깨에 특별한 통증이나 불편감을 느끼지 않더라도 다음에 소개하는 자세와 운동법을 잘 읽어보고 실천하는 것이 매우 중요합니다.

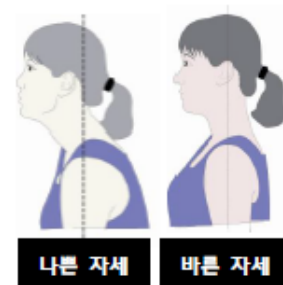
### ● 안정적인 혀의 위치

- 혀를 입천장 앞쪽에 대고 혀를 뒤겨 “딱” 소리를 내면 다시 혀끝이 입천장에 닿게 됩니다. 평소 시 혀가 이 위치에서 자연스럽게 유지되도록 하고 숨은 코로 쉬면서 입술은 살짝 다물고 위아래 치아는 서로 닿지 않도록 해야 합니다.
- 평소에 혀를 치아에 대고 힘을 줘서 밀고 있지 않도록 합니다.



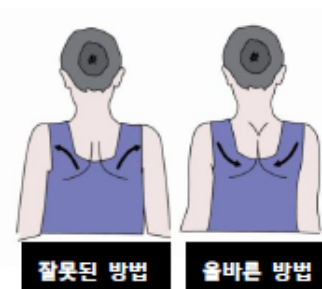
### ● 올바른 목의 자세

- 턱을 목 가까이 편안하게 끌어 당긴 다음 그 상태에서 목을 똑바로 세웁니다. 이 때 귀의 위치가 어깨 위에 있어야 바른 자세입니다.
- 이 자세는 다음에 소개하는 모든 목, 어깨 운동의 기본 자세가 됩니다.



### ● 올바른 어깨 자세

- 양쪽 어깨뼈를 뒤로 잡아당겨 젖히는 동시에 아래로 내려뜨립니다.
- 어깨가 위로 올라가서는 안 됩니다.



연세대학교 치과대학병원 구강내과

☎ 2228-8881, 8882

뒷면에 계속

● 목과 어깨 근육의 이완을 위한 운동

□ 아래 운동에 대해 다음 지시대로 시행하십시오.

- 주치의가 지시하는 대로만 시행하고 **통증을 참고 무리하게 하지 마십시오.** (무리하게 시행하는 경우 통증이 심해질 수 있으므로 주의하십시오. 근육을 천천히 늘려 주는 느낌으로 하십시오. 만일 통증을 느끼면 즉시 중단하고 통증을 느끼지 않는 범위 내에서만 시행해야 합니다.)
- 운동을 **한 번에 몰아서 오랜 시간 동안 하지 마시고 틈 나는 대로 자주** 해야 합니다.
- 한 가지 운동에 대해 각각 **6초씩 6번 반복**하는 운동을 **하루에 6번** 하십시오.
- 턱을 목 가까이 편안하게 끌어 당긴 자세에서 운동을 시작합니다.
- 운동을 하는 동안 **상체가 움직이거나 흔들려서는 안 되며** 목과 머리만 움직이도록 합니다. 운동하는 방향의 반대쪽 손을 엉덩이 밑에 넣거나 의자 밑부분을 잡으면 상체가 기울어지는 것을 방지할 수 있습니다.

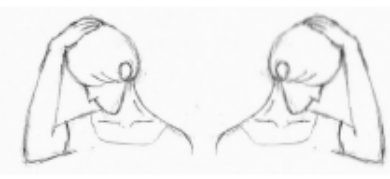
**1** 정면을 바라보고 있는 상태에서 숨을 들이쉬 후 **숨을 내쉬는 동시에 얼굴을 옆으로 천천히 돌리고 6초간 유지** 후 숨을 들이쉬면서 원래 위치로 돌아옵니다. 이와 같은 운동을 **한쪽으로 6번 반복**하고 **반대쪽으로도 똑같이** 합니다.



**2** 정면을 바라보고 있는 상태에서 머리를 옆으로 기울여 **같은 쪽 손으로 반대쪽 관자놀이 부분을 잡고** 숨을 들이쉬 후 **숨을 내쉬는 동시에 귀가 어깨에 가까워지도록 손으로 머리를 잡아 당겨 6초간 유지** 후 숨을 들이쉬면서 원래 위치로 돌아옵니다. 이와 같은 운동을 **한쪽으로 6번 반복**하고 **반대쪽으로도 똑같이** 합니다.



**3** **얼굴을 정면으로부터 옆으로 45도 돌린 상태에서 같은 쪽 손으로 머리 뒤쪽을 잡고**(이때 팔꿈치가 얼굴 바로 앞에 위치해야 합니다.) 숨을 들이쉬 다음 **숨을 내쉬는 동시에 고개를 팔꿈치 쪽으로 숙이며 손으로 머리를 아래쪽으로 당깁니다.** 고개를 숙인 상태에서 **6초간 유지** 후 숨을 들이쉬며 원 위치로 돌아옵니다. 이와 같은 운동을 **한쪽으로 6번 반복**한 뒤 **반대쪽에서도 똑같이** 합니다.



연세대학교 치과대학병원 구강내과

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## ABSTRACT (in Korean)

### 측두하악장애 환자에서

### 영상교육 자료의 효과

<지도교수 안 형 준>

연세대학교 대학원 치의학과

장 민

**목적:** 측두하악장애는 1 차 치료 옵션으로 자가 관리 및 교육으로 접근해야 한다. 자가 관리의 대표적인 예로는 온습포 찜질, 스트레칭, 식이 조절, 아레텍의 적절한 위치 유지 등이 있다. 본 연구의 목적은 측두하악장애 환자가 자가관리 주의사항을 지키고 증상을 개선하도록 동기를 부여하는 데 있어 영상 교육 자료의 효과를 평가하는 것이다.

**대상 및 방법:** 자료는 2020 년 5 월부터 2021 년 12 월까지 측두하악장애를 주소로 연세대학교 치과병원 구강내과를 방문한 환자들의 병원기록을 후향적으로 분석한 것이다. 우선, 환자군간 차이를 두지 않고 자가관리 정도와 시간 경과에 따른

증상 개선 간의 유의성 분석을 수행하였다. 그 다음 두 군으로 구분하여 분석을 진행하였는데 31 명의 영상교육군은 첫번째 재진에서 영상 교육을 받았다. 45 명의 종이교육군은 재진에서 종이 기반의 교육을 받았다. 두번째 재진에서는 지난 방문에 비해 두 군 간에 자가관리를 얼마나 더 잘 지켰는지 여부에 대해 비교분석을 하였다. 일반화 추정 방정식(GEE) 다변수 모델을 통계 분석에 사용하였다.

**결과:** 영상 교육 그룹에서는 종이로 설명한 그룹에 비해 스트레칭의 빈도와 통증 없는 식단을 섭취하는 환자의 수가 유의하게 증가하였다. 주의사항을 지키는 것 자체가 주관적 통증, 최대개구량, 객관적 통증의 개선에 긍정적인 영향을 끼친다.

**결론:** 영상 교육은 환자가 자가 관리 주의 사항을 잘 지킬 수 있게 한다는 점에서 측두하악장애 환자에게 유용한 도구가 될 수 있다. 또한 측두하악장애 관련 증상의 개선에도 간접적으로 영향을 미칠 수 있다.

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핵심어: 측두하악관절 장애; 자가 관리; 교육; 치료 결과