A Comparison of Oral Health Behaviors Effects for Demographic and Dental Health-Related Characteristics according to the Usage of Oral Health Convergence Education among Inpatient Alcoholics

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입원 알코올 중독자의 구강보건융합교육 유무에 따른 인구 사회학적 특징과 구강건강 관련 특징의 구강건강행위 효과 비교

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Abstract The aim of this study was to compare effects of oral health education on oral health behavior according to demographic and dental health-related characteristics in inpatient alcoholics. 62 alcoholic male patients were recruited to 32 patients at education group and 30 at non-education group. To search demographic and dental health-related characteristics, the self-administered structured questionnaires were used, and the survey was conducted before and after the oral health education. The oral health education program was consisted of 40 mins theoretical education and individual tooth brushing training once a week for 4 weeks. The oral health education for alcoholic patients had big effects on oral health behavior. And these results indicate that if oral health program was performed systematically in alcohol counseling centers or alcohol hospitals, more oral health promotion effects will appear.

Key Words : Health education, Inpatient alcoholics, Oral health behavior, Dental health-related characteristics, Demographic Characteristics

요 약 본 연구의 목적은 입원한 알코올 중독환자에게 실시한 구강보건교육의 효과가 인구 사회학적 특징과 구강건강 관련 특징들에 따라 어떻게 나타나는지를 알아보는 것이었다. 연구대상은 알코올 전문병원에 입원한 62명의 남자로, 32명을 교육군에 30명을 대조군에 무작위로 배정하였다. 인구 사회학적 특징과 구강건강 관련 특징들을 조사하기 위하여, 자기기입식으로 구조화된 설문지를 이용하였고, 조사는 교육 전과 후 두 번 실시하였다. 구강보건교육은 한국구강건강협회에서 제시한 성인용 구강보건교육 이론과 칫솔질 실기교육으로 일주일에 한번 40~50분, 4주 동안 실시하였다. 연구결과, 구강보건교육은 인구 사회학적 특징이나 구강건강 관련 특징들이 다르다 하더라고, 알코올 중독환자들의 구강건강행동에 큰 개선효과를 나타내었다. 이와 같은 결과들은 구강보건교육 프로그램이 알코올 상담센터나 알코올 전문병원에서 체계적으로 운영된다면 구강환경이 열악하고 구강건강 관리능력이 부족한 사람들에게 확실한 구강건강 향상이 가능할 것이라는 것을 보여준다.

주제어 : 구강보건교육, 인구 사회학적 특징, 구강건강 관련 특징, 알코올 중독자, 구강건강행동

1. Introduction

Korea is pretty tolerant about drinking culture, which leads to alcohol abuse and alcoholism beyond heavy drinking, consequently results in harmful effects and lots of problems in physical, mental and social aspects[1,2]. The social welfare study dictionary defines that alcoholics patient is an alcoholic or a patient with chronic alcoholism, and a patient who has difficulty in controlling heavy drinking or a daily drinking behavior. The drinking dependence is likely to result in both physical and mental disorders, which can cause alcohol-mania as well as hepatism, heart disease, cancer, etc., and is a lethal disease accompanied by resistance, withdrawal symptom and loss of drinking control, so if the patient is not treated for alcoholism, he or she will die[3]. The high risk rate of drinking of people with over 19 in Korea changed from 14.0% in 2011 to 13.4% in 2016; the alcohol dependence rate reduced from 5.6% in 2011 to 5.0% in 2016; and total death toll relating to alcohol increased from 6.4% in 2001 to 9.3% in 2016[4]. On this wise, alcohol-related issues are not only limited to an individual health and life, but also expanded to our entire social boundary[5].

Drinking binge can arouse periodontal disease, gingivitis, glottal disorder, oral tissue problem, oral cancer, etc., and can be the cause of carelessness of oral care[6]. The occurrence of periodontal disease as for a drinker is higher than a non-drinker by 18~27%, and even a little amount of alcohol is probable to augment the risk of periodontal illness[7]. In addition, Kim reported that smoking increased while drinking, which can cause diseases in oral cavity and larynx[8]. However, most oral cavity diseases including dental caries and periodontal disease might be prevented or improved by systematic dental health activities. In particular, in order to manage the dental plaque, which is the most common basic cause of dental caries and periodontal diseases, tooth brushing is the most efficient dental health behavior, and its brushing practice in a regular and ideal way is most recommendable[9], so it can be the self-management

method of oral cavity for an alcoholics patient in rehabilitation, thus it needs to try to stabilize the correct tooth brushing habit.

Thus this study has purpose to identify the dental health-related characteristics of hospitalized alcoholics patients, figure out the effect of dental health education, and consequently provide basic data to develop dental health promotion programs which can induce dental health behaviors more effectively.

2. Methods

2.1 Subjects

The subjects were 62 male alcoholic patients in the two alcohol treatment clinics that allowed the study D area. They understood purpose of the study and voluntarily agreed to participation in the study. The survey and test results were collected from 62 patients, who were divided into education group (32) and non-education group (30).

2.2 Method
2.2.1 Research Methods

The form of self-administered structured questionnaires was used for survey, and the survey was conducted twice before the dental health education and after the dental health education respectively. After the survey, education group patients took the dental health education and tooth brushing education four times at one-week interval.

The subjects were summoned through systematic sampling on ward-number basis. In regard to the size of sample, the number of samples was 27 when it was calculated by effects (0.5), power (0.8) and significance level (0.05), using the G Power 3.14 analysis software. The data were collected from July 21 to August 31, 2012.

2.2.2 Research Variables
2.2.2.1 Demographic characteristics Variables for

demographic characteristics are age, education level, economical condition, marriage, drinking times, drinking period, alcoholic beverages etc.

2.2.2.2 Dental health-related characteristics
Variables for dental health-related characteristics tooth brushing frequency per day, way of tooth brushing, time required for tooth brushing, experience of visit to dental clinic within one year, experience of scaling within one year, experience of dental health education within one year, use of supplementary goods for oral hygiene, subjective dental health condition, current experience of oral pains, etc.

2.2.2.3 Oral health behavior
It is the self-report result that the subject briefed of the number of tooth brushing periodically a day for one week, focusing on practicable behaviors in daily life. Hospitalized alcoholics patients ruled out 'tooth brushing time before meal,' and added 'before-bed results,' dividing the results by one week, finding averages, and used the averages as the variables for dental health behavior (average daily time of tooth brushing).

2.2.3 Oral Health Education Program
The program for oral health education in the study was modified and complemented through the advice of two dental hygienic professors who had majored in education which was based on the oral health education contents that had been developed for adults, senior citizens and the general public by the Korean Dental Health Association, which was supported by the National Health Promotion Fund Project of the Ministry of Health and Welfare, and on the feasibility-acknowledged contents in the study of actual condition and model development of the oral health education project[10]. The first-week program was composed of drinking and smoking hazard, the structure and function of teeth, two major oral diseases, dental plaque and toothbrushing; the second-week program was made up of other oral diseases such as oral cancer, cervical abrasion, xerostomia and halitosis; the third-week

program was composed of the treatment method and materials after two major oral diseases, and denture insertion method and denture types; the fourth-week program was made up of fluoride, scaling and oral auxiliary device.

The education group was trained to individual tooth brushing after the oral health education. The tooth brushing training was conducted by rolling method, because rolling method is the best method for adults[11,12]. Each method was trained by every training The dental health education was implemented with PPT, dental models and oral care products by dental hygienists, and the toothbrushing training was done by well-trained dental hygienics students, who applied dental colorant by themselves, and provided one-on-one education. The education was implemented 4 times at one-week interval, and each time took around 40~50 minutes.

2.3 Statistics
The mean and standard deviation of tooth brushing number a day for every variable before and after oral health education program were estimated, and repeated-sample t tests were used for differences of demographic characteristics and dental health-related characteristics before and after oral health education using SPSSWIN(ver. 20.0). Statistical significance level is $p < 0.05$.

2.4 Ethical Consideration
This study process was approved by the Bioethics Committee of the Graduate School of Medicine of the Chungnam National University (No. 12-05). After explaining the purpose of this study, the informed consents from the subjects who agreed the study were received.

3. Results

Table 1 showed homogeneity of two groups about demographic characteristics. After oral health education, as for age, every age group has statistically

significant differences. More changes were found in less than 39. In education level, the education group showed higher changes in 'below high school degree' than in 'more than high school degree,' and showed a meaningful difference. According to economical condition, every group has statistically significant differences. specially welfare recipients' difference is bigger than health insurance subscribers. As for martial status, every group has statistically significant differences. Specially the married group showed more changes than the unmarried group. As for the drinking numbers per week, every group has statistically significant differences. Over 5 times group marked least difference. In drinking experience period, every group has statistically significant differences. There was the most difference in 'less than 10 years,' . As for type of alcohol, every group has statistically significant difference. as shown in Table 2.

Table 1. Demographic characteristics of the subjects

Variables	Oral health Education		p-value
	Education group (n=32)	Non-education group (n=30)	
Age			0.579
≤ 39	6(18.8)	8(26.7)	
40 - 49	10(31.3)	5(16.7)	
50 - 59	10(31.3)	10(33.3)	
60 ≤	6(18.8)	7(23.3)	
Educational level			0.793
< High school	16(50.0)	14(46.7)	
High school ≤	16(50.0)	16(53.3)	
Economic status			0.622
Health insurance	18(56.3)	15(50.0)	
Welfare recipients	14(43.8)	15(50.0)	
Marital status			0.323
Married	23(71.9)	18(60.0)	
Unmarried	9(28.1)	12(40.0)	
Drinking number(per week)			0.862
1-2	3(9.4)	2(6.7)	
3-4	11(34.4)	12(40.0)	
5 ≤	18(56.3)	16(53.3)	
Drinking period(year)			0.944
≤ 10	1(3.1)	2(6.7)	
11-20	8(25.0)	7(23.3)	
21-30	9(28.1)	8(26.7)	
31-40	8(25.0)	6(20.0)	
41 ≤	6(18.8)	7(23.3)	
Type of alcohol			0.652
Soju	27(84.4)	24(80.0)	
Etc.	5(15.6)	6(20.0)	

Table 2. Oral health behavior according to demographic characteristics

Variables	Oral health behavior (average daily time of tooth brushing)		p-value
	Oral health Education group (n=32)	Oral health Non-education group (n=30)	
Age			
≤ 39	1.67±1.40	0.72±1.33	0.009
40 - 49	1.61±1.09	0.94±1.12	0.011
50 - 59	1.29±0.96	0.70±1.14	0.017
60 ≤	1.21±1.05	0.46±0.73	0.004
Educational level			
< High school	1.60±1.07	0.62±1.33	0.000
High school ≤	1.13±1.13	0.59±1.18	0.014
Economic status			
Health insurance	1.21±1.00	0.66±1.00	0.021
Welfare recipients	1.56±1.25	0.55±1.46	0.000
Marital status			
Married	1.46±1.37	0.41±1.21	0.000
Unmarried	1.11±1.07	0.89±1.26	0.039
Drinking number (per week)			
1-2	1.85±1.48	0.78±0.30	0.000
3-4	1.68±0.94	0.50±1.29	0.000
5 ≤	1.36±1.11	0.66±1.30	0.017
Drinking period(year)			
≤ 10	2.71±0.00	2.00±0.20	0.025
11-20	0.89±1.34	0.55±0.91	0.039
21-30	1.56±1.21	0.30±1.38	0.000
31-40	1.46±1.01	0.50±1.07	0.000
41 ≤	1.79±1.01	0.34±1.18	0.000
Type of alcohol			
Soju	1.40±0.99	0.56±1.32	0.004
Etc.	1.17±1.75	0.76±0.84	0.021

Table 3 showed homogeneity of two groups about oral health related characteristics. After oral health education, in the tooth brushing method, each subgroups have statistically significant differences. specially rolling method group's difference is bigger than others. As for tooth brushing time, each subgroups have statistically significant differences. specially 'below 30 seconds,' group's difference is bigger than others. Regarding Dental visit for last one year, both subgroups have statistically significant differences. 'No' group's difference is bigger than 'Yes' group's difference. Regarding scaling for last one year, both subgroups have statistically significant differences. specially 'Yes' group's difference is bigger than others. Regarding Oral health education experience for last one

year, both subgroups have statistically significant differences. 'No' group's difference is bigger than 'Yes' group's difference. Regarding Use of dental hygiene devices, both subgroups have statistically significant differences. specially 'Yes' group's difference is bigger than others. Regarding Subject oral health status, each subgroups have statistically significant differences. specially 'Not healthy' group's difference is bigger than others. Regarding Oral pain experience, both subgroups have statistically significant differences. specially 'Yes' group's difference is bigger than 'No' group's difference as shown in Table 4.

Table 3. Oral health related characteristics of the subjects

Variables	Oral health Education		p-value
	Education group (n=32)	Non-education group (n=30)	
Tooth brushing methods			0.309
Scrub method	7(21.9)	12(40.0)	
Vertical method	16(50.0)	14(46.7)	
Fones' method	3(9.4)	2(6.7)	
rolling method	6(18.8)	2(6.7)	
Using time for tooth brushing			0.780
< 30sec	4(12.5)	5(16.7)	
1min	11(34.4)	8(26.7)	
2min	11(34.4)	13(43.3)	
3min ≤	6(18.8)	4(13.3)	
Dental visit for last one year			0.851
Yes	21(65.6)	19(63.3)	
No	11(34.4)	11(36.7)	
scaling for last one year			0.190
Yes	6(18.8)	10(33.3)	
No	26(81.3)	20(66.7)	
Oral health education experience for last one year			0.593
Yes	2(6.3)	1(3.3)	
No	30(93.7)	29(96.7)	
Use of dental hygiene devices			0.756
Yes	4(12.5)	3(10.0)	
No	28(87.5)	27(90.0)	
Subject oral health status			0.847
Healthy	2(6.3)	3(10.0)	
Fair	13(40.6)	11(36.7)	
Not healthy	17(53.1)	16(53.3)	
Oral pain experience			0.585
Yes	15(46.9)	12(40.0)	
No	17(53.1)	18(60.0)	

Table 4. Oral health behavior according to the usage of oral health education

Variables	Oral health behavior (average daily time of tooth brushing)		p-value
	Oral health Education group (n=32)	Oral health Non-education group (n=30)	
Tooth brushing methods			
Scrub method	1.47±0.87	0.38±1.24	0.000
Vertical method	1.80±1.14	0.69±1.22	0.000
Fones' method	0.48±0.50	0.00±1.14	0.043
rolling method	1.91±0.90	0.50±0.87	0.000
Using time for tooth brushing			
< 30sec	2.18±1.18	1.62±0.57	0.010
1min	1.13±0.90	0.01±0.99	0.000
2min	1.28±1.40	0.83±1.40	0.027
3min ≤	1.38±0.79	0.17±0.53	0.000
Dental visit for last one year			
Yes	1.26±1.09	0.62±1.07	0.016
No	1.56±1.19	0.58±1.52	0.000
scaling for last one year			
Yes	1.55±0.85	0.77±0.92	0.007
No	1.32±1.17	0.52±1.38	0.009
Oral health education experience for last one year			
Yes	0.93±1.11	0.57±0.00	0.035
No	1.39±1.13	0.60±1.25	0.010
Use of dental hygiene devices			
Yes	1.50±0.92	0.71±1.36	0.019
No	1.34±1.15	0.59±1.24	0.014
Subject oral health status			
Healthy	1.00±0.00	1.28±1.86	0.049
Fair	1.23±1.21	0.48±1.34	0.017
Not healthy	1.50±1.12	0.56±1.08	0.000
Oral pain experience			
Yes	1.56±1.05	0.31±1.32	0.000
No	1.18±1.17	0.80±1.17	0.039

4. Discussions

According to the results of comparing difference values of dental health behaviors after dental health education, the education group showed the highest value at the age of 39 years or younger, and the younger they were, the more changes they showed. This suggests that the short-term dental health education is easily accepted in younger group but it is not in older group due to the relatively slow acquisition

of education in a short period. Ahn' study result showed that 91.4% elementary students would try to apply brushing method after oral health education. Also, Nam reported that repetitive oral health education for adults had improved oral health behaviors. And, Kim reported the oral health behaviors according to oral health education were significant. Therefore, it is thought that for oral health education to be effective in all age groups, long-term continuing education should be done[13-15].

In case drinking times is less than 2 days a week before admission to hospital, and the drinking duration of the past was less than 10 years, the effect was the highest[16]. This indicates that if dental health program was performed systematically in alcohol counseling centers as well as alcohol hospitals, more dental health promotion effects will appear.

The education group showed much difference in case of Rolling technique in tooth brushing method, in case of within 30 seconds in required time for one-time tooth brushing, and in case of no-education experience group in the experience of dental health education within recent one year[17]. This was because once the groups that had performed dental care in the most improper way experienced dental health education, much more motivation was given to them than other groups, which produced a better effect.

In this study, the improvements of oral health behavior in all kind's demographic characteristics and oral health-related characteristics was done by 4 times of the repeated education and conducting private lessons for tooth brushing. In another study, after four times of the education for tooth brushing, dental plaque removal improved as the number of educations or tooth brushing increased. It was considered that as repeated educations increased, oral health behavior improved[18-20].

This study has some limits to generalize the study output, because it is considerable to apply various methods including observation method, not using paper surveys to evaluate oral health behavior correctly. Also this study measured 4 weeks oral health educations'

effect immediately after the education, so their short-term effects were found. Thus; to measure long-term effects of oral health education, follow-up study is recommended.

5. Conclusion

The oral health education for inpatient alcoholics had positive effects on oral health behavior(average daily time of tooth brushing). So, through regularly applying the oral health education programs that was developed for adults, senior citizens and the general public by the Korean Dental Health Association, we could improve oral health behavior(average daily time of tooth brushing) for subjects whose dental environments are poor and who have lower oral management ability.

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