Effect of water fluoridation on dental caries prevention in Ulju-gun

Min Seo Kim1, Hye Jung Jin1, Sae Hee Cheon1, Min Kyung Lee1,4, Hyeon Sook Kwun2, Mi Suk Cho3, Jung-Hwa Lee1,4

1Department of Dental Hygiene, College of Nursing and Healthcare Sciences, Dong-Eui University, Busan, Korea
2Department of Dental Hygiene, Masan University, Changwon, Korea
3Department of Dental Hygiene, Choonhae College of Health Sciences, Ulsan, Korea
4Research Institution of Nursing and Healthy Science, Dong-Eui University, Busan Korea
*corresponding author: yamako93@deu.ac.kr

Abstract. This study was to compare the dental caries status of deciduous and permanent teeth of middle school students, who has water fluoridation program and non-fluoridated in Ulju-gun, Korea, the DMF rate of 12-year-olds was 59.3% in the water fluoridation group and 59.5% in non-fluoridated group; there was no difference in two groups. The DMFT index was 1.69 in the water fluoridation group and 2.02 in non-fluoridated group, the DMFT index in the water fluoridation group was lower than non-fluoridated groups. The community water fluoridation program has reduced dental caries incidence rate in deciduous and permanent teeth sufficiently to be worth of extension to other communities.

Key Words: community water fluoridation, DMF rate, DMFT index

1 Introduction

Water fluoridation programs in 1945 as a program to prevent dental caries by ingested fluoride by the residents during all drinking tap water or cooking food water by adjusting the fluoride levels in tap water it started for the first time Grand Rapids and Newburg in the United States and Brantford in Canada1,2). Currently, the dental caries rate in several advanced countries were significantly reduced3,7). However, in the case of oral health developed countries, while the dental caries prevalence rate of tooth is low, since the dental caries prevalence rate and dental caries experience permanent teeth(DMFT) index of South Korea is a high level when compared with the OECD member countries, in order to promote oral health and improve the quality of life in South Korea, it is necessary to expand the more forceful tap water fluoridation program.

Kim et al 8) was found that children of water fluoridation does not operate in Seongnam city for six years compare with children in Cheongju city program operation area of water fluoridation, reported that dental caries preventive effect was
obtained in 35.4% of water fluoridation program, dental caries preventive effect of deciduous and permanent teeth of Ansan City was carried out for 8- years tap water fluoridation program, it is has been reported to be excellent \(^9\). Recently Kim et al\(^{10}\) was reported that water fluoridation program for 11 years from 1998 in Jinju city shows the excellent results in the economic evaluation of water fluoridation program through a cost-benefit analysis of tap water fluoridation program. The aim of this study was to compare the oral health status of middle school students of water fluoridation areas and non-fluoridation area in Ulju-gun.

2 Materials and Methods

2.1 The subjects

The dental surveys were carried out from 2012, December 1 to December 17 on 13 middle schools in Ulju-gun, Korea. 236 students in water fluoridation and 445 students in non-fluoridation area were performed by oral examination and questionnaire survey.

The survey was performed oral examination by investigators, five dentists (including two dentists who had received oral examination training in the National Health Survey) and 5 dental hygienists to visit to school, based on the oral examination by the World Health Organization has recommended.

2.2 Method

The data were analyzed for frequency analysis and Chi-square by using SPSS v 19.0 (SPSS Inc., Chicago, IL, USA). Statistical significance was set at p <0.05.

3 Results and Discussion

3.1 DMF rate

DMF rate was 59.47% in total, 51.43% in male, 67.98% in female students, 59.32% in water fluoridation area and 59.55% in non-fluoridation area, differences between program group and control group were not observed.

3.2 DMFT index

DMFT index was 1.9 in total, 1.6 in male, 2.2 in female students, 1.69 in water fluoridation area and 2.22 in non-fluoridation area, DMF index in program group were lower than controls.
3.3. Permanent teeth dental caries prevalence rate

Permanent teeth dental caries prevalence rate of the national average was 19.84% in the National Health Survey of 2010, the caries prevalence rate in Ulsan Metropolitan City was lower than the national average 12.0%.

4 Discussion

DMF rate was 59.47% in total, 51.43% in male, 67.98% in female students, 59.32% in water fluoridation area and 59.55% in non-fluoridation area, differences between program group and control group were not observed.

This result was considered that the complex effect associated with tooth sealants program and school dental clinic program in the eight schools was carried out in support of Health and Welfare from 2002.

DMFT index was 1.9 in total, 1.6 in male, 2.2 in female students, 1.69 in water fluoridation area and 2.22 in non-fluoridation area, DMF index in program group were lower than controls.

This result was positive effect of tap water fluorine concentration adjustment program, in order to prevent tooth caries, limit the effort only of individuals, it is necessary to oral health education for the correct recognition of tap water fluorine concentration adjustment program, tap water fluorine concentration adjustment program in Ulju-gun was excellent, it is determined that should be expanded.

References