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ADR 2012 24: 2

DOI: 10.1177/0022034511429348

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# Toward Effective Use of Fluoride in Asia

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*Adv Dent Res* 24(1):2-4, 2012

Extraordinary advancement in all areas of public health intervention has occurred during the past 100 years or so. The area of oral health has also enjoyed new successes; several methods are now available for prevention of the most common diseases, dental caries and periodontal disease, and new treatment modalities are available to restore the oral cavity complex to normal function. A breakthrough in oral disease prevention was the discovery of using fluoride for dental caries prevention; controlled addition of fluoride to drinking water supplies in communities that lacked it or where fluoride concentration was below optimal levels to have a cariostatic effect began in the 1940s and has been proven successful in dental caries reduction in many countries. Industrial production of fluoridated salt started in Switzerland in 1955, and its use has expanded to several countries in various regions of the world, with success similar to that achieved with water fluoridation. Research into using milk as a vehicle for administering fluoride started in the mid-1950s, and the first community-based scheme was introduced in 1988. Milk fluoridation has also been reported to be successful in dental caries prevention, particularly among children, and schemes have been developed based on school health programs. Since no special effort is required from the individual for ingesting fluoridated water, salt, or milk, these methods have been designated as automatic systems for dental caries prevention. Fluoride in toothpaste has also been available for decades and has been identified as a main contributor to the decline in dental caries observed among several industrialized countries; unfortunately, toothpastes are not universally used, due to the cost factor, which prevents poor population groups from accessing such preventive measures. Moreover, fluoride has been made available in products for professional application, including gels, varnishes, and restorative materials; finally, fluoride mouthrinses have also been used for decades with various degrees of success in caries prevention, especially in school health programs.

Several industrialized and some developing countries have implemented successful national programs for dental caries

prevention based on the effective use of fluoride. It is unfortunate, however, that, despite the availability of such programs, dental caries is still a major public health problem in most countries. The disease affects 60 to 90% of schoolchildren and the vast majority of adults, and dental caries has contributed to the extensive loss of natural teeth observed in older people. Dental caries is also the most prevalent oral disease in many countries of Asia and Latin America. The principal reasons for this increase appear to be high consumption of sugars and inadequate exposure to fluoride. Few low- and middle-income countries have large-scale fluoridation programs in operation. Some countries in Latin America have introduced water and salt fluoridation, but exposure to fluoride is still fairly limited. In the African region, salt fluoridation has been implemented in Madagascar with the support of the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO). In Asia, Thailand introduced toothpaste with fluoride, and demonstration programs on milk fluoridation have been established in schools. Currently, WHO facilitates the introduction of salt fluoridation in Laos and Viet Nam. In China, while the use of fluoride toothpaste is becoming more common, its use is not the norm, even among those who brush their teeth twice a day, and it is more likely to be used in urban than in rural communities. Locally produced fluoridated toothpastes often have insufficient levels of fluoride. Recently, a WHO symposium reviewed the Chinese experiences from fluoridation programs (Petersen *et al.*, 2008).

According to country reports (Siriphant and Srisawasdi, 2011), dental caries prevalence in 12-year-old children in Asia is moderate or high; for example, in the Korean Democratic Republic, it is 2.1; in the Philippines, 2.9; in Mongolia, 3.7; and in Brunei Darussalam, 4.8. In other countries of the region, dental caries severity is reportedly low; however, current data are not available. Evidently, population groups in several countries have not yet obtained the health benefit from community prevention programs, and dental caries continues to be a burden to society. The reasons for non-implementation of prevention programs may vary, ranging from lack of national policy for oral health to low awareness of oral disease. The need for an appropriate environment that would bring together public health administrators, oral health officers, researchers, and academicians is considered urgent for discussion of state-of-the-art information on fluoride. Such action would have to address key opportunities for implementation of community-oriented administration of fluoride, as well as the identification of important

DOI: 10.1177/0022034511429348

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## Key Words

dental caries, fluoride, prevention, health promotion, public health, Asia.

**Table.** Sessions on the Workshop on Effective Use of Fluoride in Asia, Phan-Nga, Thailand

Date	Time	Sessions
March 22	13.00-13.20	Introduction and Objectives of the Workshop <i>Poul Erik Petersen (WHO) &amp; Prathip Phantumvanit (Chair, LOC)</i>
	13.20-14.50	State of Sciences in Caries and Fluoride: Understanding Dental Caries, by <i>Michael Lennon, University of Sheffield, UK</i> Early Detection of Initial Caries, by <i>Masaki Kambara, Osaka Dental University, Japan</i> Scientific Rationale of Fluoride in Caries Control, by <i>Domenick Zero, Indiana University, USA</i>
	15.05-17.05	Sharing Experience of Fluoride Administration in Asia, facilitated by <i>Poul Erik Petersen &amp; Prathip Phantumvanit</i> Water Fluoridation in Singapore, by <i>Patrick S.K. Tseng</i> Milk Fluoridation in Thailand, by <i>Sutha Jienmaneechotchai</i> Fluoride Varnish in Malaysia, by <i>Norain Abu Talib</i> Fluoridated Toothpaste in Indonesia, by <i>Zaura Rini Anggraeni</i> Fluoride Mouthrinse in Japan, by <i>Hirochi Ogawa</i>
		March 23
March 23	10.45-12.15	Fluoride Administration: Fluoride Administration - Community Approach, by <i>Ramon Baez, University of Texas at San Antonio, USA</i> Professionally Administered Topical Fluoride, by <i>Edward Lo, University of Hong Kong, China SAR</i> The Efficacy of Self-administered Fluorides - A Review of the Global Evidence, by <i>Valerie Marinho, Queen Mary University of London, UK</i>
	12.15-13.00	Discussion and Q&A
	14.00-17.00	Working Groups, Session I: Implementation Plan for Fluoride Administration at the Country Level: Group 1 - Community Administration Facilitated by <i>Poul Erik Petersen, Michael Lennon, and Ramon Baez</i> Group 2 - Professional Administration Facilitated by <i>Edward Lo, Livia Maria Andalo Tenuta, and Christopher Fox</i> Group 3 – Self-administration Facilitated by <i>Valerie Marinho, Domenick Zero, and Prathip Phantumvanit</i>
		March 24
March 24	11.00-12.30	Feedback from Working Group Sessions & General Discussion Facilitated by <i>Roberto Vianna</i> Group 1 - Community Administration, by <i>Lonim Prasai</i> Group 2 - Professional Administration, by <i>Livia Maria Andalo Tenuta</i> Group 3 – Self-administration, by <i>Domenick Zero</i>
	12.30-13.00	Closing Remarks <i>Poul Erik Petersen (WHO)</i> <i>Roberto Vianna (FDI)</i> <i>Christopher Fox (IADR)</i>

barriers that countries may have been facing and which have impeded development of dental caries prevention programs.

This workshop was conducted in Phan-Nga, Thailand, during March 22-24, 2011. The meeting was organized by faculty from the Thammasat University Dental School and the Dental Association of Thailand, in collaboration with the World Health

Organization Global Oral Health Programme, the World Dental Federation (FDI), and the International Association for Dental Research (IADR).

The scientific program (Table) included presentations to explain the public health burden of dental caries and the practical implications of the effective use of fluoride for disease prevention.

The program also provided opportunities for shared experiences of fluoride administration in Asia, with specific emphasis on water, salt, and milk fluoridation, varnishes, mouthrinses, and fluoridated toothpaste. The perspective for caries and fluoride included discussions by representatives from the WHO, the FDI, and the IADR. A special session was held to review fluoride administration strategies, specifically, the community approach, professionally administered fluorides, and the efficacy of self-administered fluorides. This session was followed by two Working Group sessions in which participants had an opportunity to discuss implementation of fluoride utilizing one of the aforementioned strategies. Participants were able to share their country experiences in the use of fluoride as well as actively comment and/or ask questions on the specific strategy being discussed. A summary session was followed by reports from individual Working Groups (Lo *et al.*, 2012; Petersen *et al.*, 2012; Zero *et al.*, 2012), while general discussion sessions focused on the possible translation of experiences. The workshop ended with recommendations on strengthening the prevention of dental caries in Asia through the effective use of fluoride as emphasized by representatives of WHO, FDI, and IADR.

## ACKNOWLEDGMENTS

The active contributions of the participants of the Workshop from 20 Asian countries, including 14 CDO from Ministries of Health, 10 Presidents of the NDA, and eight Dental School

Deans, are highly acknowledged. Sincere appreciation is expressed for the continuous support from the WHO Global Oral Health Programme as well as FDI and IADR, which made this Workshop possible. The WHO Global Oral Health Programme is grateful to the Borrow Foundation for its continuous support of the work for oral health. Enthusiastic support from the staff of the Dental Association of Thailand and the Faculty of Dentistry, Thammasat University, is much appreciated. The meeting was co-sponsored by WHO, IADR, and FDI. The author(s) received no financial support and declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

## REFERENCES

- Lo EC, Tenuta LM, Fox CH (2012). Use of professionally administered topical fluorides in Asia. *Adv Dent Res* 24:11-15.
- Petersen PE, Baez RJ, Lennon MA (2012). Community-oriented administration of fluoride for prevention of dental caries. *Adv Dent Res* 24: 5-10.
- Petersen PE, Kwan S, Zhu L, Zhang BX, Bian JY (2008). Effective use of fluoride in the People's Republic of China - A model for WHO Mega Country initiatives. *Community Dent Health* 25(Suppl 1): 257-267.
- Siriphant P, Srisawasdi S, editors (2011). Proceedings of the workshop on "Effective use of fluoride in Asia". Bangkok: The Dental Association of Thailand and the Thammasat University, pp 53-179.
- Zero DT, Marinho VC, Phantumvanit P (2012). Effective use of self-care fluoride administration in Asia. *Adv Dent Res* 24:16-21.