



## **Comparative Study of Oral Health Promotion Activities Between Malaysia and Thailand – An Outbound Programme**

The Comparative Study of Oral Health Care Delivery Systems (between Malaysia and other countries) is a compulsory course in the Master of Community Oral Health (MCOH) degree. In 2015, the Department of Community Oral Health and Clinical Prevention, Faculty of Dentistry, University of Malaya formed a partnership with Chiang Mai University to organise an outbound programme which took place from 3-7 August 2015. Three MCOH postgraduate students from UM and one accompanying lecturer participated in this outbound programme.

The aim of the programme was to compare and evaluate the oral health care delivery systems between Malaysia and Thailand. The objectives of the outbound programme were: 1) To observe the public health care services in Chiang Mai, 2) To observe the implementation of the central policy through a field visit at different levels, i.e. central (federal), intermediate (state & district level) and primary health care level (local level), and 3) To make a comparison of the oral health care delivery system between Malaysia and Chiang Mai.

During the outbound program, the places visited were Faculty of Dentistry, Chiang Mai University, Intercountry Centre for Oral Health (ICOH), a community-based defluoridation programme, hospital and district level oral healthcare facilities in Sansai district and Rajanagarindra Institute of Child Development.

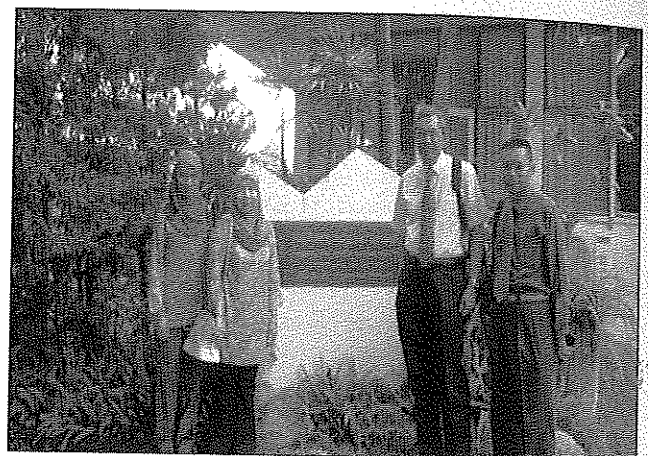
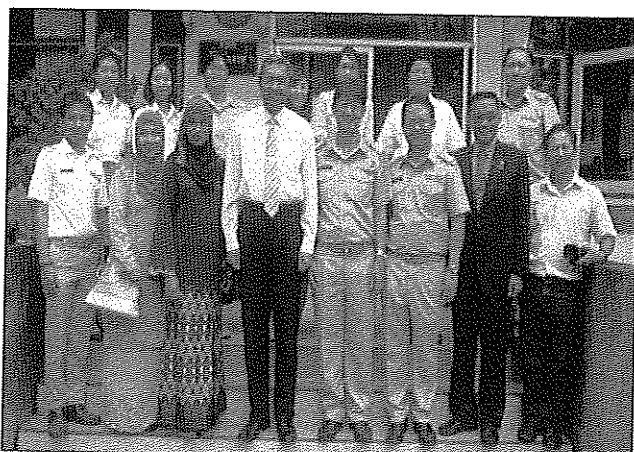
This report is aimed to describe the oral health promotion activities in Thailand in comparison to those activities in Malaysia. In Thailand, various programmes are being implemented to promote the health (including oral health) of the population. These activities are organized by the Thai Health Promotion Foundation (ThaiHealth). Many of the activities place emphasis on individualised oral health promotion and self-care concept as the programme involves volunteers to deliver the activities. Apart from individualised oral health promotion activities, Thailand is also known for its community-based oral health promotion programme which was developed and delivered by the ICOH.

### **INTERCOUNTRY CENTRE FOR ORAL HEALTH (ICOH)**

ICOH is based in Chiang Mai, Thailand. The centre aims to promote community-based oral health care where it assists to develop approaches and tools for the promotion of oral health at community level by means of community empowerment. The centre operates in collaboration with the Thai Government, WHO Regional Office for South-East Asia and oral health programme of neighbouring countries. The WHO, Geneva had developed a 'Community Care Model' for oral health care in 1984 and this model has been used by ICOH in their oral health promotion activities.

ICOH has adopted three major strategies to accomplish these objectives, which are : 1) emphasis on operational research in community-based oral health and to develop dental health technology appropriate for Thailand and neighbouring countries, 2) training courses and seminars to share new knowledge and technology as well as to facilitate the exchange of experiences among dental personnel both within and

outside Thailand, and 3) disseminate information on best methods, research results and experience gained from field demonstration programmes.



The department postgraduate students, accompanying lecturer and ICOH staff taking picture outside the Intercountry Centre for Oral Health, Chiang Mai, Thailand

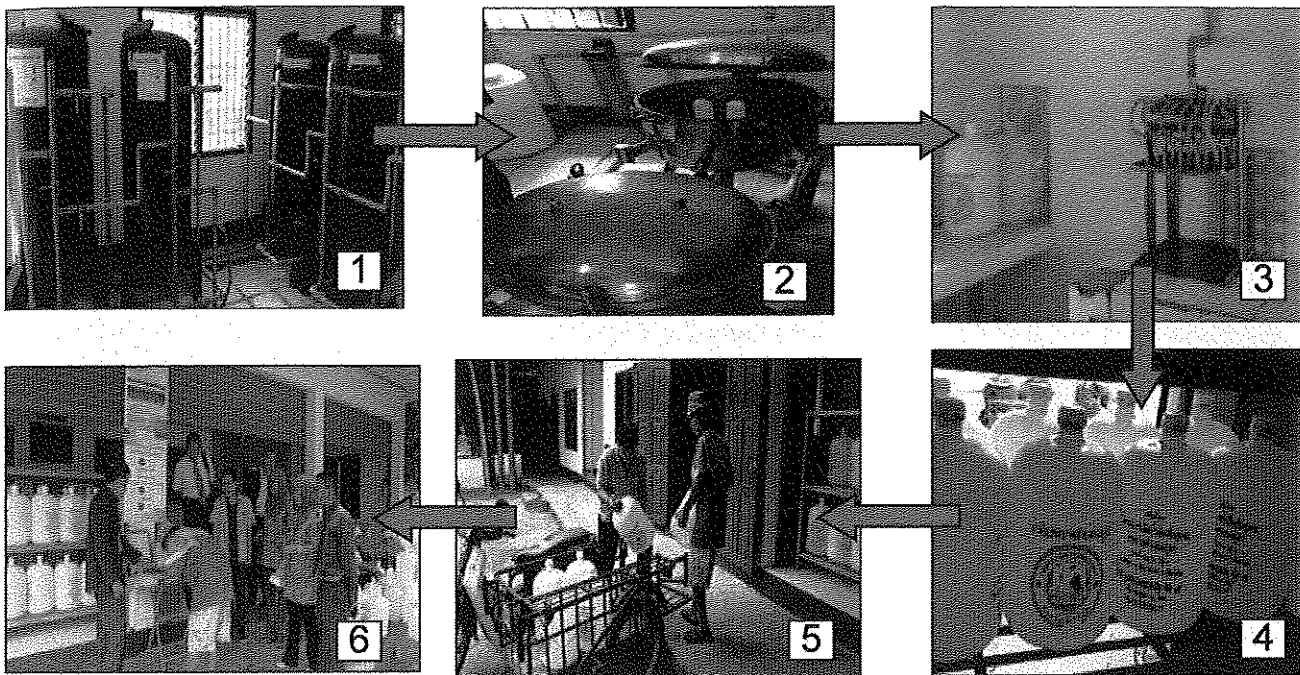
## WATER DEFLUORIDATION PROGRAMME IN CHIANG MAI

One of the community-based oral health promotion programmes facilitated by ICOH is the community-based water defluoridation programme. Unlike Malaysia, many provinces in Thailand have high natural fluoride concentration in the underground water supply whose levels vary from 0 – 16 ppm. Areas in the northern and western provinces of Thailand experience relatively higher fluoride levels in the water supply. Consequently, there are areas in Chiang Mai where the natural fluoride level in the water is very high causing dental fluorosis in children and adolescents. The recommended safe / optimal fluoride level in Thailand is 0.7 ppm.

San Kamphaeng is one of the many districts in Chiang Mai Province facing the fluoride problem. The community has taken a precaution against the intake of fluoridated water to prevent acute and accumulative long term effects of high fluoride content in the body system. In 2008, the prevalence of fluorosis in San Kamphaeng was over 60%, and over 40% of the elderly showed clinical signs and symptoms related to skeletal fluorosis.

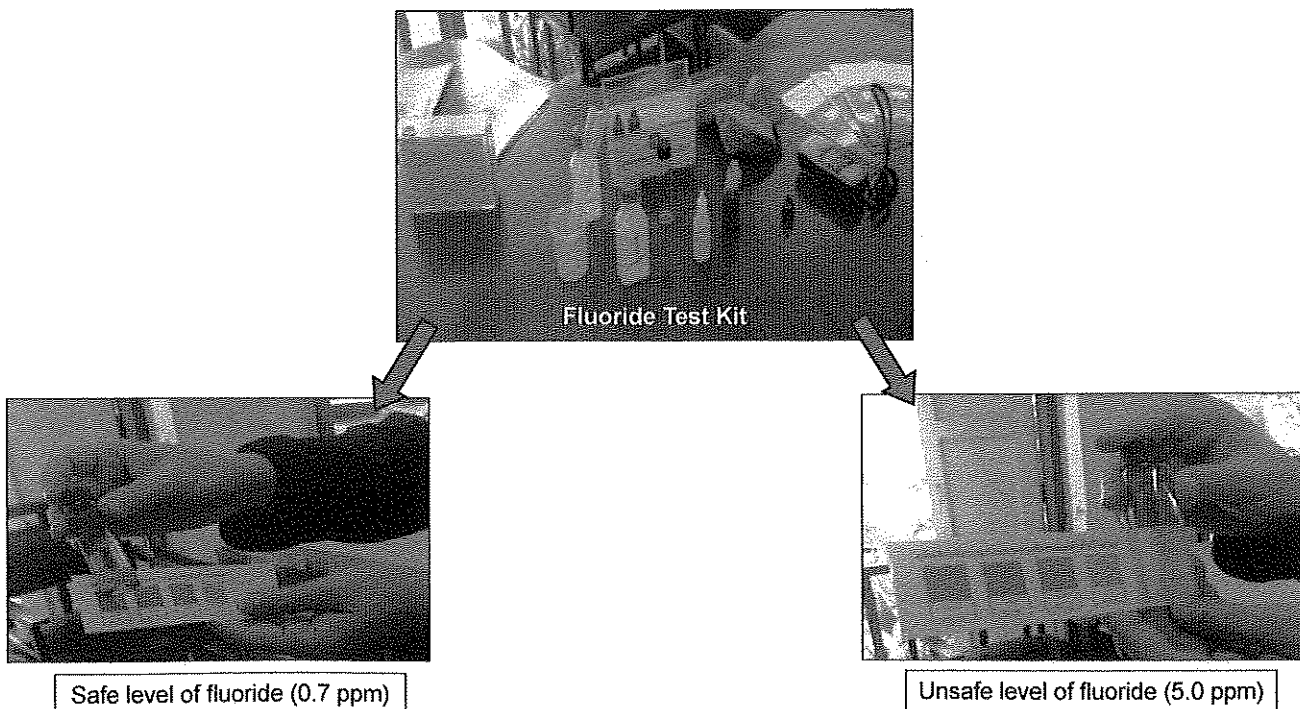
The water defluoridation programme in San Kamphaeng is managed by the subdistrict municipality. The water treatment in the water plant uses reverse osmosis to remove excessive fluoride in the natural water producing manufactured drinking water. The manufactured drinking water is distributed to the villagers and the cost is subsidized by the municipality. The revenue for the safe water management is from taxes collected from the community.

1. Steps in water defluoridation process and manufacturing
2. Water treatment of underground water using reverse osmosis technology
3. Water filtration and sterilization process to remove microorganisms
4. Packaging of treated water
5. Storage of bottled treated water
6. Distribution of bottled water products to the villagers
7. Self-collection of the treated water by the villagers



Steps in water defluoridation process and manufacturing

In the water defluoridation programme, ICOH plays a vital role in providing technical training to the village health volunteers whose other roles include: 1) identify dental fluorosis signs in children, 2) identify the occurrence of skeletal fluorosis in the elderly, 3) collect water sample in households, 4) collect Geographical Information System (GIS) data of piped water for fluoride mapping, and 5) test fluoride level in drinking water using a fluoride test kit. The fluoride test kit is developed by ICOH and is provided to the communities in the villages. The fluoride test kit is an example of the use of appropriate technology for promoting oral health in the community as it is easy to use and produced at a cheap cost of 40 baht per kit. The fluoride test kit is used to analyse fluoride level in drinking water for safe consumption.



Testing fluoride level in drinking water

## SUMMARY

The visit to the subdistrict municipality and the water treatment plant (water defluoridation) in San Kamphaeng district arranged by ICOH has given the students new insight on water treatment modalities which was different compared to Malaysia's experience. From studies by local researchers, fluorosis in the upper northern region of Thailand has been identified as a major public health problem which required urgent attention.

As the fluoride level was high in some of the northern region areas, ICOH has played an important role to initiate community empowerment to manage the situation. A visit to a nearby school in San Kamphaeng district has enabled the students to witness the evolution of dental fluorosis over years and the public health evidence of the defluoridation programme.

In younger children, fluorosis was observed to be less severe compared to those of older children (aged 10-12 years old). This resulted from the successful implementation of the defluoridation programme that benefited the population over the past decades.

On the other hand, water fluoridation is a primary prevention initiative against dental caries in Malaysia and become the national prevention strategy. Although water supply is the purview of individual states, water fluoridation is monitored centrally by the Ministry of Health, Malaysia. Since 1974, the nationwide water fluoridation programme was implemented incrementally. In 2005, the optimum fluoride level was revised from 0.7ppm to 0.5ppm. Implementation of water fluoridation in Malaysia involves multisectoral collaboration, such as oral health division, engineering department, chemistry department and water plant management. Up to date, more than 70% of Malaysian's population received fluoridated water supply.

There are similarities and differences observed in the oral health promotion activities between Malaysia and Thailand. Thailand emphasizes a lot more on community empowerment in their oral health promotion activities and its delivery. In strengthening the community empowerment, ICOH plays an important role in planning, providing training and developing a community care module with collaboration with the WHO.

In Malaysia, the oral health promotion activities are delivered by oral health personnel structured under the Ministry of Health and administered by the Oral Health Division. The activities are part of the oral health care delivery system in line with the National Health Goal and the National Oral Health Plan 2010-2020.

## CONCLUSION

Through this outbound programme, the MCOH candidates were exposed to oral health care delivery systems between 2 countries in Southeast Asia. The learning process involved various observations and discussions during the field visits. The insight view during the visits to various oral health care facilities provided a valuable learning experience as this enabled the MCOH candidates to make a comparison and evaluate the oral health care delivery system between the 2 different countries. Although water treatment in Malaysia is in total contrast with those in Thailand with regard to fluoride management, the visit to Chiang Mai provided a great learning experience. This outbound programme has also enhanced the students' intercultural communication competence and interpersonal working skills by working together as a team.

## ACKNOWLEDGEMENTS

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Supplies in West Malaysia' and 'Implementation of Water Fluoridation Programme in Malaysia 2006'. Part of the excerpt were reported from Chatpat Kongpun, Supoj Chamnamprai, Jumpol Promsaka Na Sakon Nakorn during their 32nd Conference of the International Society for Fluoride Research, Fluorosis Prevention: From Research at the Cellular Level to Mitigation, Chiang Mai, Thailand, 2014 entitled 'The Burden and Risk of Dental Fluorosis in The Upper Region of Thailand'.

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