The Vietnamese Government’s Role in Dental Care for Orphans

Stephanie Chin, Stella Hahn, Diana Ngo, Rosanna Young
Community Dental Health
Chan

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Introduction

Dental caries, as defined by the World Health Organization (hereafter WHO), is a multifactorial dental disease that is characterized by the dissolution of the dental enamel and dentin, resulting in the eventual destruction of the affected tooth surface(s) or the tooth itself. Elements of the disease include presence of cariogenic, or caries-causing, microorganisms, fermentable carbohydrates, susceptible teeth, and time. The WHO further established that this disease is effectively prevented and controlled through a combination of community, professional, and individual action. It is largely a diet-dependent and hygiene/fluoride-mediated disease that can be prevented and managed at the individual and population levels.

The expected overall trend is that as education efforts increased and preventative practices are emphasized, the rates of dental caries decreased\(^1\); however, the WHO continues to identify this dental disease as being a pandemic. According to the WHO Report 2003, dental caries affected 60-90% of schoolchildren and the vast majority of adults, with the highest prevalence among Asian and Latin American countries. It is perplexing to note that the disease is largely preventative but continues to be one of the most prevalent chronic conditions, despite the advancements in health care over time. Deeper investigations of the issue reveal that the incidences and prevalence of dental caries stems from countries’ economic circumstances, distribution of wealth, availability of technological advances, and access to basic human needs like childhood education. This study focuses on the specific experience of Vietnamese orphans and their development of dental caries in relation to the government’s involvement for preventative care. More specifically, the project aims to identify the level of dental care
Vietnamese orphans receive in terms of disease awareness education and reinforcement of good oral hygiene practices.

**Dental Care for Orphans v. Non-Orphans**

Behavior and attitudes of children are developed from social, cultural, economic, and ethnic factors throughout their lives. This process is also influenced by their knowledge of health and prevention of disease, including oral disease; therefore, the absence of family support might influence oral health behavior. One study, conducted in Brazil, examined the effectiveness of an oral hygiene program among orphans cared for by nuns. The orphans were divided into two groups: a control group and an experimental group.² The control group consisted of children who were unaware of the importance of dental preventative home care and self-care techniques to maintain good oral health; the experimental group had extensive, customized oral hygiene instruction with caregivers, were reminded daily by the nuns to brush and floss, and received professional dental prophylaxis every third week within a six-month period. Interestingly, when questioned about oral health and the etiology of oral diseases at the beginning of the study trial, both control and experimental groups were aware of the importance of plaque control and were familiar with oral hygiene methods. However, the orphans’ knowledge was not reflected in their teeth cleaning habits. This study demonstrated the nuns’ level of knowledge and their interest in preventive care influenced the improvement of oral hygiene and gingival conditions in the orphans. When disclosing solution was used to assess their plaque indices after the preventative program, 67% of the children in the control group had more than 80% of their teeth surfaces covered by plaque, compared to only 32% of children in the experimental group having over 80% of tooth surfaces covered in plaque. At the
end of the study, the researchers concluded there was a great need for the institution of dental preventative programs among orphan children with social problems, and that to have an increased understanding and appreciation for oral health, the children must be reminded daily of oral health importance and self-care practices.

Another study, which took place in India, also supported the importance of parents’ and caregivers’ roles in improving children’s oral condition. The study stated caries statuses varied significantly between children with and without parents, due to regular dental visiting habits. The researchers compared oral health statuses between 279 school children living with parents and 257 orphan children, with a focus on caries prevalence among the children. The results of the study showed an inverse relationship between the two variables: an increase in parental involvement with dental care led to a decrease in caries prevalence. In accordance with these studies, the Foothill College Dental Hygiene Program's 2015 Mission Trip to Vietnam (hereafter FCDH Mission Trip) revealed orphans, for whom the college’s dental hygiene students rendered dental treatments, had overall poor periodontal conditions and high caries prevalence. These orphans were in dire need of oral hygiene education and their caregivers’ attention to daily oral hygiene habits in order to improve their oral health.

Oral health instructions for Vietnamese orphans were of particular interest to the dental personnel from the FCDH Mission Trip, due to the children's lack of consistent adult supervision. In an epidemiological survey of 840 Vietnamese children - ages 3, 5, 10, and 15 - children obtained most of their dental knowledge through mass media. However, since many orphans had limited access to this form of communication, they possibly lacked the information necessary to prevent dental disease, as compared with children with parents. In addition, the
The authors found 70-80% of children consumed sugary foods/beverages between meals, contributing to a lengthy daily acid bath of their dentition. Many Vietnamese orphans had limited nutritional choices; therefore, consumption of inexpensive sugary foods was common. The study also showcased infrequent brushing and insufficient use of fluoride dentifrice in approximately 44-78% of participants; again, orphans had limited access to dental supplies. The combined risk factors of limited dental knowledge, brushing, and fluoride use were correlated with the formation of primary caries in Vietnamese orphans.

Oral health knowledge is at the root of preventive care – as mentioned, many Vietnamese orphans observed in the FCDH Mission Trip lacked access. In a time of worldwide technological advancements in healthcare, it was egregious to witness the disparity in oral health care amongst orphans in the South East Asian country. In general, dental care professionals were trained to provide oral health instructions to prevent dental disease; however, many Vietnamese orphans manifested early childhood caries. According to Loc et al, in a National Oral Health Survey of Vietnamese Children, which surveyed participants from 6-17 years old, dental care knowledge and professional care were lacking and infrequent. The authors correlated these results with the generalized dental caries observed in many of the children who participated (mean dmfs and DMFS scores of 8.9). In addition, Loc et al. stated the results from their 1999 study revealed an increase in the caries experience of children from ten years prior. Considering these results, their previous national oral health program was a failure. Therefore, the purpose of their study was to highlight the need for alterations in the policy development in Vietnam in order to prevent (further) pervasive dental caries of Vietnamese children into adulthood.
Further studies by the Boston University Center for Global Health and Development and the Hanoi School of Public Health indicated that although policies and legal instruments have been established within the Vietnamese government to aid Vietnamese orphans and other vulnerable children, very few physical governmental programs have been developed to implement these policies. Instead, most organizations providing services to the orphans and vulnerable populations were international non-governmental organizations (hereafter NGOs): only four out of the 22 organizations listed by the Vietnam Country Brief belonged to the Vietnamese government. Furthermore, the services provided by the Vietnamese governmental programs included several projects to provide care and support for this vulnerable population, but only on a relatively small scale.\textsuperscript{14} Sophie Witter also published an article in the International Journal of Health Planning and Management regarding the disparities of health policies and actual policy implementation within Vietnam. In this study, it was noted that with the liberalization of the Vietnamese economy after economic reform starting in the late 1980s, a trend of increasing income and regional disparities led to decrease of access to social services for the lower socioeconomic communities. She elaborated that state policies emphasized equity and free access to services for the poor, but public health costs have drastically increased in the form of official and unofficial payments made by patients to healthcare staff members, as well as for medical drugs.\textsuperscript{15} In fact, another study by Nguyen et al. garnered data showing that visits to a public hospital, even for a mild illness, generally cost five times more than a visit to a privately-owned hospital.\textsuperscript{16} Consequently, utilization of public facilities had drastically declined and patients have increasingly become dependent upon foreign resources for healthcare, especially in the area of preventive services.
The Vietnamese Government's Involvement in Oral Healthcare

The current health care system in Vietnam is arranged in a pyramidal structure - Central & Regional level at the top of the pyramid, followed by the Provincial level, the District level, the Sub-district level, the Village level, and finally the Hamlet level at the bottom of the pyramid. Emergency dental care (urgent oral treatment) is provided by dental therapists in a few sub-district health centers; however, for more complicated procedures, people need to resort to provincial or regional hospitals or dental institutions. Dental treatment is also available from private dental practices at a cost of three to five times greater than that of government hospitals, where treatment fees are requested only to cover the costs of consumable materials, not actual services rendered, and free for children under six-years-old, as mandated by law. When the government only covers just over nine percent of the total expenditure, the remaining portion is paid out-of-pocket. With the average monthly salary ranging from 4 million Dong to 7 million Dong ($170-320USD), depending on the occupation, the cost of having one restoration may cost an individual one-tenth to one-fifth of his/her monthly income.

Studies showed that the primary apparent oral health problem among the rural and poor urban people in developing countries was dental pain caused by caries, periodontal diseases, trauma, or other disorders. The majority of dental treatments performed from various provincial and district level hospitals were extractions, which reflected the consequence of not receiving preventive dental care to preclude tooth loss.

Due to the low demand in preventive treatment, such as restorations to save teeth, the government deemed it too expensive to hire a stationed dentist at sub-district level hospitals – not to mention, the cost of installing expensive equipment with the already limited dental care
budget. With less job opportunities from the government, in addition to other economic factors, many dentists chose to practice in cities to treat the more affluent population. Consequently, less dentists were available in more rural areas where more people of lower socioeconomic statuses live; this was predominantly true in Southern Vietnam. According to the report of dental care in Southern Vietnam in 2008; the population of Southern Vietnam was about 45 million, and only about 850 active dentists, 400 denturists, and 800 dental nurses in the governmental dental care system. On average, the ratio of dentists to the general population in this region is 1:43,000, ranging from 1:178,500 in rural areas to 1:13,400 in urban areas. Notably, in 156 rural districts (of 363 rural districts) there [were] no dentists at all. Considering this low ratio of dental professionals available to patients in the rural districts, where two-thirds of the country's population resided, access to dental care provided to be more challenging. A study that measured the dental caries and oral hygiene status among 6-8-year-old school children in the cities of Hanoi and Langson, urban and rural areas, respectively, supported the theory of how accessibility to dental care affected oral health conditions. Although both groups displayed high incidences of caries, 93% of children living in Langson exhibited untreated caries compared to the 83% of children with caries living in Hanoi, demonstrating an association between untreated caries and residential areas. Similar to Vietnam, Australia correlated the associations between the uneven distribution of dentists, reduced accessibility to dental care, and increased rates of dental caries among populations. With the ratio of only 28.6 dentists per 100,000 patients living outside cities compared to 51 dentists per 100,000 patients living in cities, people living in the rural or remote areas had more
tooth decay, less dental check-ups, fewer preventive dental treatments, and 15% more tooth extractions than the rest of the population.\textsuperscript{13}

Insufficient financial support from the government health care system and dental professional availabilities within the public health sector have made preventive dental care unaffordable for most people living in low-income countries like Vietnam. In order to improve the oral health in developing countries, especially in the more rural areas and school settings, the use of dental auxiliaries – such as dental therapists and dental nurses – might be the most cost-effective way to provide education and preventive treatment, shifting the pattern of oral health care service focuses from pain relief to tooth-loss prevention.

**Accessibility of Dental Services/Education in Vietnam**

The degree of dental caries present within the population of Vietnamese orphans demonstrated that the need for dental care amongst the orphans was great. Rural villages were numerous in the country, with many villagers requiring transportation by ferry access for access to healthcare services. Therefore, it could be difficult for these children to receive the oral healthcare they required. The most efficient manner of providing access to professional dental services was through ambulatory care. One such program has proved successful over the previous ten years - the Dental Mission for Children. This non-profit humanitarian effort has provided dental care to thousands of Vietnamese children, including orphans of rural villages. Their primary treatments included surgical and preventive therapies: mainly extractions and fluoride applications. The aim of the program was to treat the existing disease among Vietnamese children, which the authors described as widespread severe dental caries.\textsuperscript{3}
Although the treatment provided was essential, a more impactful and meaningful service should have included ambulatory oral hygiene care and education.

Access to dental care has always been a challenge in developing countries, especially for disadvantaged groups such as low-income families, and residents in rural areas. Similar to many other developing countries, people in Vietnam also suffered from inadequate oral health services.\textsuperscript{10, 14} According to the data from World Bank, Vietnam was identified as a middle low-income country with a current population of approximately 90 million, with two-thirds of the population living in rural areas\textsuperscript{7}; and yet, most dentists practiced in the cities and treated more affluent urban areas.\textsuperscript{8} With the absence of dentistry in the primary health care system implemented in the 1980s, dental services have become very costly. Due to the financial burdens on low-income families and scarcity of the dental workforce, especially in rural areas, these interrelated barriers limited the access of oral health care for the majority of people in Vietnam.

**Conclusion**

Overall, there is a disparity in oral health promotion among the Vietnamese population, and even more-so among vulnerable populations like orphaned children. The government’s focus on tertiary preventative care instead of primary preventative care, as well as its lack of support for dentistry in the public health sector, have a direct impact on the perpetuation of Vietnam’s dental disease epidemic. Various studies conducted by organizations established within and without Vietnam confirm that the Vietnamese government’s established programs are inadequate in providing proper preventative and restorative dental care for its people, especially for its vulnerable populations. Instead, the majority of the Vietnamese population
have become increasingly dependent upon foreign resources, like international NGOs, for healthcare.

Primary prevention has been proven consistently to be the most effective method to alleviate the epidemic trend of dental diseases like dental caries. Dental caries is a largely preventable disease, as previously defined by the World Health Organization, by a combination of community, professional, and individual action. Consequently, after having identified the underlying causes of disparities in dental care for the Vietnamese population, with a primary focus on Vietnamese orphans, our study aims to create a dental health public program targeting the orphaned population and their awareness of dental disease and the institution and reinforcement of good daily oral hygiene practices. The Foothill College Dental Hygiene Program hopes to travel to Southern Vietnam annually to provide oral hygiene education and fluoride treatments to Vietnamese orphans and their caregivers, in the efforts to decrease dental caries development and to establish a fluoride treatment plan for this particular vulnerable population within Vietnam.
Dental Public Health Program

Program Description
Caries prevention program conducted in orphanages in Vietnam. Oral hygiene instruction and fluoride varnish will be provided for orphans and caregivers in the facilities. Caregivers will be trained to apply fluoride varnish and teach toothbrushing techniques for children residing in the orphanages. A simple survey consisting of five questions regarding oral hygiene knowledge and habits will be asked on-site prior to registration. Fluoride varnish will be sent at a 6-month interval to be applied to the orphans by the caregivers. The program will be evaluated every year by assessing the children’s and caregivers’ oral hygiene via plaque index and DMFT/dmft.

Target Group Description
The program will focus on Vietnamese orphans and the caregivers from three sites: Mai Tam and Chua Ky Quang 2 in Ho Chi Minh City and Chua Long Thanh in Long An. The ages of orphans ranged from 2-18 years, with minimal dental knowledge. The program will teach the orphans how to brush their teeth and fluoride varnish will be applied at determined intervals. Oral hygiene instructions, fluoride varnish application techniques, and simple dietary counseling will be taught to the caregivers.

Potential Community Partners

1. Educational institutions:
   a. FDHA Foundation
   b. Dental schools nearby and on-site (in Vietnam)

2. Dental-related organizations:
a. SCCDS
b. CDHA
   i. Local components
c. Dental companies
   i. Proctor & Gamble
   ii. Johnson & Johnson
   iii. Premier Dental
   iv. Colgate
3. Corporations with donation matching programs:
   a. Google
   b. GE
4. Vietnamese communities

Goals

Note: Oral hygiene awareness refers to knowledge of the link between plaque and caries development, as well as the need for mechanical removal of plaque and the usage of fluoride for protection against caries development.

1. To raise awareness of oral hygiene among orphans and caregivers.
2. To decrease caries in orphans in Vietnam.

Objectives

1. 100% of caregivers will understand the role of fluoride in the prevention of dental caries by answering questions
on a post-test correctly.

2. 100% of caregivers will be able to apply fluoride varnish with a brush in children’s mouths.

3. 100% of children will understand the importance of daily dental self-care and the proper conditions for toothbrushing by answering questions on a post-test correctly.

4. 75% reduction of plaque by proper toothbrushing technique in orphans and caregivers observed, as measured with disclosing agent and recording of plaque indices.

**Target Group Survey**

1. How many times do you brush a day?
   
   a. 0
   
   b. 1
   
   c. 2
   
   d. 3

2. How long should you brush each time?
   
   a. 30 sec
   
   b. 1 min
   
   c. 2 min
   
   d. 4 min

3. Do you know what plaque is?
   
   a. Yes. Please explain:

   ____________________________________________________________

   b. No
4. Do you know what fluoride is?
   a. A. Yes. Please explain:

   ____________________________________________________________________

   b. No

5. Have you had fluoride varnish applied before?
   a. Yes
   b. No

Lesson Plan and Activities

A. Type of Program

Educational & Direct Interventions – For both orphans and caregivers, provide health education on the importance of plaque and caries control, toothbrushing instructions, and fluoride varnish application.

B. Program Activities

The anticipated effects of the program will be to improve the oral hygiene and decrease incidences of caries among Vietnamese orphans and their caregivers. The required activities of the program will be to contact sponsors for funds for the trip, to contact orphanages for available dates and times to provide services (including the survey, OHI video viewings, and fluoride varnish applications). Once the dental hygiene services have been rendered, data will be analyzed for evaluation of the program’s success in caries reduction and basic OHI knowledge. Data from baseline survey will be compared to data collected at next mission trip, approximately 12 months later.

C. Lesson Activities
1. Informed consent & pretest survey given out by instructors/caregivers

2. Watch OHI videos: what is plaque, how to brush, what is good nutrition for dental health

3. While waiting for dental services: “happy/sad tooth” nutrition matching activity (with caregivers helping)

4. OHI station: disclosing agent, toothbrushing technique demonstration (do-show-tell)

5. Deplaquing and applying fluoride varnish

6. Post-test survey

7. Give out OHI supplies and coloring books as gifts/recall assignment

**Budget**

Estimated cost of program = $925

1. Donations = $0
   - Coloring books/pencils/crayons
   - Patient napkins
   - Pens/markers
   - Toothpastes
   - Toothbrushes
   - 5% NaF Varnish

2. Personal protective equipment = $420
   - Eyewear for patients ($50)
• Gloves ($250)
• Gowns ($70)
• Masks ($50)

3. Supplies = $395
• Birex sprays w/ bottles ($30)
• Cotton tip applicators ($25)
• Disposable cups ($50)
• Disposable mouth mirrors ($224)
• Disclosing solution ($26)
• Hand mirrors ($10)
• Tongue depressions ($30)

4. Other supplies = $110
• Garbage bags as barriers ($30)
• Facial tissues ($40)
• Paper towels ($30)
• Table clothes ($10)

**Method of Program Evaluation**

Type of program evaluation: pre- and post-program

The survey about oral hygiene habits and knowledge will be given to orphans and caregivers before and after the program to see if the awareness levels of oral hygiene needs
and techniques have changed. Data will be analyzed to see if any areas of the program can be improved.

References


