Dental caries prevalence among 3- and 5-year old children in Da Nang, Vietnam

Jonna Edberg and Linn Sjöberg

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Supervisors: Brittmarie Jacobsson, Senior Lecturer
Dr. Nguyen Huu Hai, University Lecturer
Examiner: Malin Stensson, Senior Lecturer
Summary

**Background:** Da Nang city is located in the central of Vietnam and is a developing country in Asia. Previous studies have shown high dental caries prevalence among young children in Vietnam. Dental caries is a chronic disease that can cause pain and discomfort for individuals suffering from the disease. In 2008 intervention program was made at Hoa Huong Dong Pre-school, in Da Nang. The intervention was made to promote better dental health in children at the school, after study results showed that almost all children had at least one dental caries lesion. **Aim:** The aim of this study was to investigate the prevalence of dental caries among pre-school children in Da Nang, Vietnam. **Method:** The study was a cross-sectional cohort study with clinical dental examination, among 143 children aged 3 and 5 at Hoa Huong Dong Pre-school in Da Nang. **Result:** Results showed that 96.5% of all participating children suffered from at least one initial and, or manifest dental carious lesion. **Conclusion:** The results of the study indicate that dental caries prevalence among 3- and 5-year old children is high. Further prevention programs and more studies to promote better dental health for young children in Da Nang are needed. **Keywords:** Dental disease, dental health, developing countries, pre-school children.

Sammanfattning

**Bakgrund:** Da Nang är en stad som ligger i mitten av Vietnam, som är ett utvecklingsland i Asien. Tidigare studier har visat att kariesprevalensen bland barn i Vietnam är hög. Karies är en kronisk sjukdom som kan orsaka smärta och obehag för individer som lider av sjukdomen. År 2008 utformades en förändringsplan som skulle utföras på Hoa Huong Dong förskola, i Da Nang. Förändringarna utformades i syfte till att främja bättre tandhälsa hos barnen som går på skolan, detta efter att en studies resultat visade att nästan alla barn då hade minst en kariesskada. **Syfte:** Syftet var att undersöka prevalensen av karies hos förskolebarn i Da Nang, Vietnam. **Metod:** Studien var en tvärsnitts-, kohortstudie med kliniska undersökningar på 143 barn, 3 och 5 år, på Hoa Huong Dong skola i Da Nang. **Resultat:** Resultatet visade att 96,5% av alla medverkande barn led av minst en initial och, eller manifest kariesskada. **Slutsats:** Resultatet av studien indikerar på att kariesprevalensen hos 3- och 5-åringar är hög. Detta indikerar för fortsatt utveckling av förebyggande program och även mer studier för att förbygga bättre tandhälsa hos unga barn i Da Nang. **Nyckelord:** Förskolebarn, tandsjukdom, tandhälsa, utvecklingsländer.
1.0 Background

1.1 Vietnam
Vietnam is a densely populated developing country located in Southeast Asia, with a population of approximately 92.5 million inhabitants (1). In 2014 the population density was recorded at 273 inhabitants per square kilometer (2). According to the World Health Organization (WHO) (3) 70 % of the population lives in the rural areas of the country. Vietnam classes as a lower-middle income country, counted by GNI (Gross National Income) per capita. In 2003 Vietnam had 7.2 million inhabitants who were 5 year olds or younger. Between the years of 2009-2013 the gross enrolment to pre-school, for boys and girls, were 98 % (4).

Located in central Vietnam lays the city of Da Nang. The city has a population just north of one million people and has a population density of 892 inhabitants per square kilometer, 2015 (5) thus making Da Nang one of the most populated cities in Vietnam (6). The figure sets Da Nang as the fourth largest city in Vietnam and second largest port town of the country (7).

1.2 Oral health
According to WHO (8), oral health is a part of the general health and therefore a part of the human social, physical and psychological well-being. To achieve good oral health requires that each individual practice good oral hygiene techniques, since poor oral hygiene is one of the most significant underlying factors to dental disease. Another attributing factor that can cause dental disease is an unhealthy diet. An example would include sweetened beverages and candy products (9-10).

1.3 Dental caries
Dental caries is a chronic dental disease that causes cavities in teeth due to an imbalance in the oral micro flora and bacterial accumulations. If this accumulation is allowed to amplify on the surfaces of the teeth undisturbed, this is called dental plaque. This is also known as dental biofilm. The bacteria in the dental plaque form acid when sugar is applied to the oral cavity. The acid lowers the pH-value and causes loss of minerals of the tooth surface and this stage is called demineralization. When the oral cavity does not get time to remineralize, i.e. raising the
pH-value, the minerals keeps resolving from the tooth because of constant demineralization, this is the first stage of dental caries process (11).

Prevalence of dental caries can be measured by an index called “decayed, missed, and filled surfaces or teeth” (dmfs/t index). This index describes what happens to surfaces or teeth due to dental caries in the primary dentition (12). According to WHO (9), dental caries is the most common dental disease. Over the world there are 60-90 % of all school children that suffer from the disease. The disease often leads to discomfort and pain (9). Children who have a severe and painful case of dental caries may have difficulties in eating, sleeping and communicating. It can also affect the abilities to concentrate in school, which may restrict the child’s learning development (13-14). Another problem with children, who have had dental caries in their primary dentition, is that they are more likely to develop dental caries in the permanent dentition (15).

1.4 Dental caries among children in developing countries

Previous findings from several studies show that in many developing countries, children have high prevalence of untreated dental caries (10, 16-22).

A study (16) conducted in a less-developed part of China showed that pre-school children had a dental caries prevalence of 89 %, where 49 % of these had severe carious lesions involving the tooth pulp.

Among indigenous 5-6 year old pre-school children in Chepang, Nepal, (17) the dental caries prevalence was 52 %. This is over the recommended standards by WHO was to achieve 50 % of all 5- and 6-year old children over the world would be dental caries free by the year of 2000 (18).

Findings from the National Oral Health Survey of Vietnam 1999 showed that 71 % of the Vietnamese children had at least one decayed, missed or filled primary surfaces. Vietnamese children, 6-years of age, had four times more decayed, missed or filled primary teeth compared to children aged 6-years old in United Kingdom. It was also shown that children in low-income families and those who never visit the dentist had lower untreated decayed surfaces (19). The National Oral Health Survey also showed that dental caries in Vietnam is a rapidly growing problem and 85 % of 6-7 year old children suffer from dental caries (19).

Vietnam is a developing country and has a diverse economic and geographical mix. Because of these indifferences there is a challenge to receive an equal public health care, many inhabitants live in rural areas and are not located near dental professionals or dental
clinics. Most reside exclusively in urban areas (20). Another study (21) from the Central Highlands of southern Vietnam in 2005 concluded that 63% of the primary teeth of the young participants were affected by dental caries. The findings from a study made in Da Nang 2008 (10) showed that 98% of the 3- and 5-year olds children had dental caries. In Jacobsson et al. study from Da Nang the majority of the 3- and 5-year olds participating in the study suffered from either initial and, or manifest dental caries (22).

2.0 Rationale for the study

Dental caries especially in developing countries like Vietnam is still rapidly growing (10, 16-22). In a study among children in Da Nang conducted at Hoa Huong Duong Pre-school that investigated dental caries prevalence among 3- and 5-year olds (10), showed high prevalence of dental caries and where almost all children suffered from the disease. After 2008 intervention programs have been made at Hoa Huong Duong, Pre-school in Da Nang (Appendix 1). The programs was formed to promote better dental health among children at the school, the expectations was that the intervention would work as dental disease prevention. By the year of 2008 the program contained for instance dental education and dental hygiene lesions for the children. The dental room at the pre-school was open all day, with cooperation with Da Nang University of Medical Technology and Pharmacy to examine and treat children.

The results from previous study (10) showed and indicated a great need to update the current status of dental caries among children at the pre-school. Now it was time to investigate if the oral health prevention program made any improvements or if a need for enhanced action plans was in need to promote good oral health in the children.
3.0 Aim

The aim of this study was to investigate the prevalence of dental caries and the prevalence of fillings and fissure sealants among pre-school children in Da Nang, Vietnam.

- Is there any differences regarding manifest dental caries prevalence when comparing 3- and 5-year olds.
4.0 Material and method

The study was a quantitative cross-sectional cohort study with clinical dental examinations.

4.1 Sample

Selection method used for the study was systematic sample, all 3- and 5-year olds were chosen from a class list at a pre-school (23). Number of individuals invited to participate in the study was 200. However, 157 confirmed to take part.

The study was performed at Hoa Huong Duong, Pre-school. This was a strategic decision since previous study (10) was conducted within the same age category at the same pre-school.

4.1.1 Consent letter

A consent letter was designed to inform the children’s parents and to get their permission to examine their child (Appendix 2). Three dental hygienist students first wrote the letter in English, approved by a Senior Lecturer at School of Health Sciences, Jönköping University. Later a dental professional at Da Nang University of Medical Technology and Pharmacy translated the letter to Vietnamese. Then finally back to English by an external part. After translation a dental nurse at the pre-school handed out letters to the children’s parents. Those parents who signed the release, their children participated in the study.

4.2 Clinical examination

The study included clinical dental examinations performed by three trained dental hygienist students from School of Health Sciences, Jönköping University, Sweden. The students documented dental caries among the children at the pre-school aged three and five. Data collection took place at the dental clinic at the pre-school.

Before examination, proper preparations and calibrations were done among the three student examiners along with one University Lecturer of Da Nang University. This according to the criteria recommended by WHO (24). To ensure the same proper methods being performed regarding dental caries diagnose, of three students and the University Lecturer examined the first three children of the study together. Examiners were able to cooperate and discuss about diagnostic decision. Da Nang University of Medical Technology and Pharmacy had a close cooperation with the pre-school before and during the study. During the dental examinations one Vietnamese dental nurse teacher from the University translated when necessary.
Since no access to x-ray machines were available, the examination method was visual-tactile. This included using a probe, a mouth mirror, a flashlight, cotton, tweezers, masks, gloves, hand disinfection and portable dental examination chairs. The instruments were cleaned and sterilized before and after dental examination with a portable sterilized autoclave.

4.3 Diagnostic criteria

4.3.1 Number of teeth
All erupted primary teeth and surfaces were documented among children aged 3- and 5. Permanent teeth were excluded. If a child had a missing tooth it was impractical to determine if this was due to dental caries or other reason, therefore missing tooth was excluded.

4.3.2 Dental caries
The teeth surfaces that were documented were: Buccal, Lingual, Mesial, Distal and Occlusal.

Criteria from WHO and FDI (World Dental Federation) were used to classify if the tooth had either an initial or manifest carious lesion (24).

4.3.3 Initial dental caries
Initial dental caries are classified as the first stage in the dental caries disease. This is recognized as an opaque change with a white chalky spot and possible to register with visual-tactile method. This stage classifies as a non-cavited lesion and does not necessarily invasive treatment (24-26).

4.3.4 Manifest dental caries
Manifest dental caries are classified as cavited lesions, in wich the tooth has lost dentin. This stage can be diagnosed by visual-tactile method. This includes probing with light pressure on the damaged tooth. When manifest dental caries is active the disease can be determined when the tooth has brown or dark-brown color changes and feels leathery while probing (24-26).

4.3.5 Fissure sealants and fillings
Fissure sealants and, or fillings were documented.

4.4 Statistical method
The results were analyzed and presented by descriptive statistics in Statistical Package for the Social Science version 21.0 (SPSS) (IBM corp, Armonk, New York, USA). The results were calculated in both absolute and relative frequencies with students’ T-test and crosstabs. The T-test was used to compare means of two groups and compare whether two groups are
different, in this case; boys/girls and 3-/5-year olds. The prevalence of dental caries (dfs/t) was calculated in both groups of children 3- and 5-year olds, the children were also divided by gender and compared. The two groups were presented by a chi-square test. P-value of 5 % (p < 0.05) was considered statistical significant when calculating results.

4.4.1 Encoding
Individual ID-numbers written at the examination form encoded the children (Appendix 3). The three year olds started with “301” continued with “302”, (…). The five year olds where coded the same, but opened with “501”, “502” etc.

4.5 Ethical considerations
University Lecturer at Da Nang University of Medical Technology and Pharmacy and collaboration with Senior Lecturer at School of Health Sciences, Jönköping University Sweden approved this study. An ethical own review from School of Health Sciences was produced and approved by Senior Lecturer.

The study included human beings and the Declaration of Helsinki (27) was followed and used as a guideline. United Nations Convention on the Rights of the Child (CRC) (28) was also followed since the study was performed on minors.

Consent letters to the children parent’s were applied as consideration, with a signature to confirm their child’s participating. Letters of consents described how the study was performed and that both parents and their child had the right to leave the study at any time, without explanation since all participation was voluntary (28-29). If a child denied examination, or decided to leave during examination this was accepted and examiners discontinued (29).

When manifest dental caries was detected, information about the disease was given to the child and treatment was offered at Dental Department, Da Nang University of Medical Technology and Pharmacy.
5.0 Results

5.1 Sample
The final cohorts in this study were 143 children (71.5 %) out of a total of 200 children who were invited to the examination. Among the 3-year old there were 67 children, 27 boys and 40 girls. The 5-year olds had a participating number of 76, 36 boys and 40 girls. Total number of children who agreed to participate were 157 (non-respondents of 43 children).

A total of 14 children decided to leave the study and those were counted as drop-outs and could not be replaced by another child.

5.2 Number of teeth
There was no statistical significant difference between gender regarding mean number of teeth. Total mean number (SD) in 3-year olds was 19.9 (0.3) and within the 5-year olds 18.8 (1.7), with a statistical significant difference in mean number between 3- and 5-year olds (p<0.001). Table 1 describes total mean number (SD) of teeth among 3- and 5- year olds, separated by boys and girls.

Table 1: Total number of teeth in 3- and 5-year olds, separated by gender. Mean values with standard deviation (SD).

<table>
<thead>
<tr>
<th></th>
<th>3-year olds</th>
<th>5-year olds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Number of teeth</td>
<td>19.9 (0.4)</td>
<td>20.0 (0)</td>
</tr>
</tbody>
</table>

5.3 Dental caries free
The distribution of dental caries free individuals, without initial and manifest dental carious lesion, among the study population is presented in Figure 1.

There was no statistical significant difference regarding dental caries free children within the two age groups. Among the 3- and 5-year olds children the percentage of dental caries free individuals were 4 % (five children). The 3-year olds were shown to be the group of children with lowest amount of decayed teeth, 5 % (three children) from this group was caries free. Among the same group it also shown that no boys were dental caries free.
5.4 Dental caries

The results showed that 96.5 % of participating children in the study had at least one initial and, or manifest dental carious lesion. Table 2 and 3 presents mean (SD) values for initial and manifest dental caries. Regarding initial dental caries it was shown to be no statistical significant difference between the two age groups. Percentage of initial dental caries was 47.7 % of all 3-year olds with a total mean number (SD) of 6.0 (4.6) and 52.3 % among all 5-year olds children with a total mean (SD) number of 5.8 (4.7). The prevalence of manifest dental caries was 36.5 % with a total mean (SD) number of 3.8 (6.0) in the 3-year olds and 63.5 % among the 5-year olds, with a total mean number (SD) of 11.8 (13.4). Comparing 3- and 5-year olds, a statistical significant difference was found regarding manifest dental caries situation (p<0.001).

Figure 1 describes the distribution of dental caries, initial and manifest separate among 3- and 5-year olds. Among all children the percentage of manifest dental caries showed to be 72.7 % (104 of all 143 children).

Figure 2 present the distribution of initial and, or manifest dental caries within all participating children, percentage of each single, decayed, tooth in the oral cavity. Overall the first molar (54, 64, 84 and 74) and second molar (55, 65, 85 and 75) were the most affected teeth due to dental caries. The least affected teeth within all children were the central incisors in the mandibular arches (81 and 71).

Table 2: Total mean number of teeth with initial and manifest dental caries and fillings in 3-year olds, separated by gender. Decayed and filled surfaces (dfs). Mean values with standard deviation (SD).

<table>
<thead>
<tr>
<th></th>
<th>Boys Mean (SD)</th>
<th>Girls Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial dental caries</strong></td>
<td>7.3 (4.9)</td>
<td>5.1 (4.2)</td>
</tr>
<tr>
<td><strong>Manifest dental caries</strong></td>
<td>4.4 (6.8)</td>
<td>3.3 (5.4)</td>
</tr>
<tr>
<td><strong>Fillings</strong></td>
<td>0.3 (0.9)</td>
<td>0.3 (0.8)</td>
</tr>
<tr>
<td><strong>Total dfs (initial and manifest)</strong></td>
<td>12.0 (9.9)</td>
<td>8.8 (7.9)</td>
</tr>
<tr>
<td><strong>Total dfs (manifest)</strong></td>
<td>4.7 (6.8)</td>
<td>3.7 (5.6)</td>
</tr>
</tbody>
</table>
Table 3: Total mean number of teeth with initial and manifest dental caries and fillings in 5-year olds, separated by gender. Decayed and filled surfaces (dfs). Mean values with standard deviation (SD).

<table>
<thead>
<tr>
<th></th>
<th>Boys Mean (SD)</th>
<th>Girls Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial dental caries</td>
<td>6.3 (4.8)</td>
<td>5.4 (4.6)</td>
</tr>
<tr>
<td>Manifest dental caries</td>
<td>13.3 (15.0)</td>
<td>10.4 (11.8)</td>
</tr>
<tr>
<td>Fillings</td>
<td>0.9 (1.8)</td>
<td>0.5 (0.9)</td>
</tr>
<tr>
<td>Total dfs (initial and manifest)</td>
<td>20.4 (16.0)</td>
<td>16.3 (13.4)</td>
</tr>
<tr>
<td>Total dfs (manifest)</td>
<td>14.1 (15.2)</td>
<td>10.9 (11.9)</td>
</tr>
</tbody>
</table>

5.5 Fillings and fissure sealants

The total amount of fillings among 3- and 5-year olds was 25.2 %, separating the two age groups showed a percentage of 6.3 % and 18.9 %, respectively. Regarding fissure sealants the total amount, among all children, showed to be 10 children out of 143.

Figure 1: Total number of individuals (n), dental caries free, with initial and manifest dental carious lesions, fillings among children aged 3-and 5-years old.
Figure 2: Percentage distribution of children aged 3- and 5-years old with initial and, or manifest dental caries. Presenting each tooth within the four quadrants in maxillary and mandibular arches.
6.0 Discussion
The results in this study showed that 96.5 % of all participating children had at least one initial and, or manifest dental carious lesion in the oral cavity. Compared to the study made at Hoa Huong Duong Pre-school in 2008 (10), the dental caries situation reviled no considerable differences since the prevalence of dental caries among the 3- and 5-year olds was 98 % in 2008.

6.1 Method
The external non-respondents, 43 children, may have affected the results of mean values. However the internal drop-outs of 14 children, most because of fear, should not have any affect or significant impact of the results. When internal drop-outs occurred this child could not be replaced, this to assure validity of the study.

Important to take into consideration when comparison with the WHO and FDI’s goals (18) is that manifest dental caries solely are recorded as dental carious lesions. This study registered both initial and manifest lesions as criteria for dental caries, this gives a more precise overview of the current situation regarding dental caries at Hoa Huong Duong Pre-school.

The same material and diagnostic criteria were used as in the previous study done in 2008 (10), this assured reliability and validity for the study. The calibration with the three students and the University Lecturer was also necessary to get reliable results of the study.

Furthermore consideration must be taken into account since this study only uses visual-tactile method when registered dental caries, since no access to x-ray during this study was possible. The most confident and effective way to diagnose dental caries is to combine visual-tactile method together with x-ray (30). Since all proximal surfaces were not achievable to be measured only by visual-tactile method, it was not possible to register all initial and manifest dental carious lesions with absence of x-ray. This implies that this study does not provide a complete overview of the actual caries prevalence. Other obstacles that may affected the results of the study adversely is the lack of proper light, the condition of mirrors that were scratched and the lack of other necessary equipment for a correct diagnostic estimation. Due to difficulties cleaning the tooth surfaces from plaque and calculus and to maintain the surfaces dry during registration, may have lead to an inaccurate registration of initial dental caries.
6.2 Results

A positive change was shown regarding mean value of total dfs, initial and manifest (Table 1). Comparing with results from 2008 (10), the total dfs within both 3- and 5-year olds has decreased with 8 surfaces (18.2 to 10.1) and 5 surfaces (23.0 to 18.2), respectively. However among pre-school children in Da Nang, the dental caries prevalence is far from the formulated standards by WHO and FDI. By the year of 2000, one of the goals to achieve good oral health was that 50% of all 5- and 6-year old children over the world would be dental caries free (18).

Comparing caries free 3-year olds children in Sweden and Vietnam, there is a great difference. In Sweden 95% is caries free, while this number nearly represents the percentage of the children who suffer from dental caries in Vietnam (35). When looking at these numbers, it is understandable that Vietnam, Da Nang is still far away from achieving good oral health.

Dental caries is a chronic dental disease that not just affects the oral cavity but also the general health. This means that children who suffer from the illness may get affected negatively because they face difficulties with eating, sleeping and concentrating as an effect of painful tooth decay (9, 13-14). With this information it can be concluded that the majority of the participating children in this study will have, had or will experience these negative consequences due to dental caries. In figure 2 the percentage distribution of caries is shown, in all teeth, of all participating children. The teeth that were least affected by dental caries was the incisors in the mandibular arches. This may be because of the tongue and saliva that helps cleaning the teeth from dental biofilm. However the tongue cannot reach the other teeth as effective as the lower incisors. The teeth that were most affected by dental caries were the molars in all quadrants. One explanation may be that these teeth have pits and fissures, which is a suitable location for the bacterial accumulation to grow undisturbed if not proper oral hygiene is practiced (11). Also these teeth are harder to access, since the location is far back in the mouth and requires correct brushing technique.

Therefore it is important to further develop and try to find more cost-effective preventive action plans that benefit the oral health of the children. The present intervention program (appendix 8.1) only educates the 5-year olds children in oral hygiene habits. Although education is in need for both 5- and 3- years old and to involve the children’s parents. The education, as well, need to be more detailed. One request may be to design an information folder to the children and their parents containing pictures and instructions regarding good oral hygiene habits. Focusing on basic, but most important oral hygiene
practice, to brush the children’s teeth twice a day with proper cleaning technic and to use fluoride toothpaste. Regarding the 5-year olds, who at this age start to get permanent teeth, it might be of great benefit to use professional topical fluoride vanish twice a year applied by dental nurse at the school (31-32). Since studies proved that fluoride is one of the most important component in dental caries prevention (31-32). The next step in dental caries prevention, regarding the 5-year olds and their permanent molars, might be to fissure seal these teeth. This in order to prevent dental caries development in the new molars (33). These actions can be of great important to the child later in age to obtain healthy permanent dentition. Since studies have conducted that children who have had dental caries in their primary dentition are more likely to develop dental caries in the permanent dentition (15, 32). Good oral hygiene habits in early childhood have also been proved to be one of the most important bases to remain good oral health later in life (34). One current obstacle for the performance of fluoride prevention in Da Nang can be the economic cost of fluoride products. Vietnam is a developing country, but nowadays approaching to be classified as a middle-income country, since the country has had an increasing economic growth for several years (36). Considering the rapidly growing economy these preventive fluoride programs can be possible and may form a solid base for good oral health. To implement these drastic changes in both behavior and attitude regarding oral health, in a population level, requires both time and commitment.

6.3 Conclusion

The study shows a positive change between 2008 (10) and 2015, the current mean value of thedfs per child has been improved. These improvements may be a positive development as a result from the intervention programs (Appendix 1). However the results of this study indicate that dental caries prevalence among children, 3- and 5-year olds still remains high, almost all participating children had at least one initial and, or manifest dental carious lesion. This indicates a great need for further prevention programs and more studies to promote better oral health for young children in Da Nang.
7.0 References


**8.0 Appendix**

**8.1 Appendix 1 - Intervention program**

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**DENTAL DISEASES PREVENTION METHODS FOR KIDS IN**

**HUONG DUONG KINDERGARTEN**

(2008 & 2015)

A. YEAR 2008:

1/ Dental education:

1.1 Dental hygienic lessons for kids:

Taught once a week, with different contents based on kids’ years old:

- For 4 y.o class: “Why & when you need to brush teeth”
  
  “How to hold & use the tooth brush”
  
  “Good & bad foods for teeth & gums”

- For 5 & 6 y.o class: “Right ways to brush teeth”
  
  “Why & when you need to brush teeth”
  
  “Bad habits for teeth & gums”

  “Tooth decay & gingivitis: causes & prevention methods”

2/ Intervention programs:

2.1 With tooth decay:

- Dental room was opened 9 hours/day (7.30 AM to 4.30 PM), 5 days/week (Monday to Friday) to examine & treat for kids:

  + With enamel & dentin decay cases: kids were treated at the dental room

  + With pulp decay cases: parents were noticed to bring kids to private dental clinics & hospitals for further treatments.

2.2 Kids were requested to brush teeth after meals & gargling with dilute salt water, under the guide of teachers (who are trained by the dental nurse)

2.3 In cooperations with faculty of Odonto Stomatolgy of Danang University of Medical Technologies & Pharmacy and Jönköping University (Sweden) to examine & treat for kids (filling sealant into grooves for 1st molar teeth had not been carried out in this year)

3/ Meals:
3.1 Amount of carbohydrate (in candy, biscuits, soft drinks…): wasn’t controlled, average 3 afternoon meals were provided with biscuits & milk per week.

3.2 Menu was changed daily (with meats, eggs, sea foods & fresh vegetables) to ensure kids are nourished by adequate nutrition for teeth development.

A. YEAR 2015:

1/ Dental education:

1.1 Dental hygienic lessons for kids: no change

1.2 Posters from Odonto Stomatology Center of Ho Chi Minh city & Colgate company are showed off at “the parents & kids” corner of each classroom.

2/ Intervention programs:

2.1 With tooth decay: no change

2.2 Tooth brush: no change

2.3 In cooperations with Danang University of Medical Technologies & Pharmacy and Jönköping University (Sweden): filling sealant into grooves for 1st molar teeth is carried out

3/ Meals:

3.1 Amount of carbohydrate (in candy, biscuits, soft drinks…): be controlled carefully, average only 1 afternoon meal is provided with biscuits & milk per week.

3.2 Menu: no change.
Letter of consent

We are three Swedish dental hygiene student, who are studying at Da Nang University of Medical Technology and Pharmacy. We are doing a study regarding children’s oral health. We are asking you, as parents, and your child to participate voluntary in our study we are doing for our school project.

You and your child has been chosen, since the study will be made at Hoa Huong Duong, primary school. The study consists of a clinical examination on your child/children where we are going to study dental caries in the children’s teeth. There is also a questionnaire regarding oral health that we are asking you to fill in. Everything in our study is voluntary. If you or your child/children under any circumstances feel uncomfortable or for some reason don’t want to proceed with the study, you are free to leave at any point, without explanation.

The data will be handled with confidentiality. When writing the result of the study your child’s/children’s name will not be used, only gender and age.

During the clinical examination there will be two teachers present from the Dental department, we will also be in close cooperation with Dr. Nguyen Huu Hai.

If necessary, your child/children will be offered free dental treatment at Da Nang University of Medical Technology and Pharmacy.

I have received the information in this letter
I understand the content of the study
Me and my child/children choose to participate on voluntary basis
I understand I’m free to discontinue at any point

Date and location

Signature

It’s possible to reach us:
Jonna Edberg’s e-mail: edjol240@student.hj.se
Linn Sjöberg’s e-mail: siji1200@student.hj.se
Helena Vennergren’s email: vehe1234@student.hj.se
Dr. Nguyen Huu Hai e-mail: bshankts@gmail.com

Danang University of Medical Technology and Pharmacy
99 Hung Vuong, Danang, Vietnam
PHIẾU CHẤP THUẬN

Chúng tôi là ba sinh viên ngành Vệ sinh Răng miệng đến từ Thụy Điển, và hiện nay đang tiếp tục học tại trường Đại học Kỹ thuật Y – Dự án Đà Nẵng. Chúng tôi đang làm một nghiên cứu liên quan đến sức khỏe răng miệng của trẻ em.

Với phiếu chấp thuận này, anh/chị và con của anh/chị đã đồng ý tham gia vào nghiên cứu này để giúp chúng tôi hoàn thành luận văn tốt nghiệp của mình.


Sự tham gia vào nghiên cứu này là tự nguyện. Nếu anh/chị hoặc con của anh/chị cảm thấy không thoải mái hoặc có bất kỳ lý do gì không muốn tiếp tục tham gia vào nghiên cứu này nữa thì có thể dừng lại bất kỳ lúc nào và sẽ không trở ngại.

Số liệu trong nghiên cứu này sẽ hoàn toàn minh bạch. Khi công bố kết quả của nghiên cứu thì tên của con anh/chị sẽ được giữ kín, chỉ sử dụng giới tính và độ tuổi của các cháu.


Trong trường hợp cần thiết, con của anh/chị sẽ được giới thiệu để khám/chưa răng miệng tại trường Đại học Kỹ thuật Y – Dự án Đà Nẵng

- Tố đã nhận được phù hợp chấp thuận
- Tố đã hiểu mục đích của nghiên cứu này
- Tố và con của tôi tin nguyễn tham gia vào nghiên cứu này
- Tố hiểu tôi có thể dừng lại việc tham gia vào nghiên cứu này bất kỳ lúc nào

Đà Nẵng, ngày/tháng/năm ______________________
Tên của con anh/chị ________________________________
Chữ ký của ba/mẹ ________________________________

Anh/chị có thể liên hệ với chúng tôi:
Jonna Edberg’s e-mail: edjo1240@student.hj.se
Linn Sjöberg’s e-mail: sjli1200@student.hj.se
Helena Venngren’s e-mail: vehe1234@student.hj.se
Dr. Nguyen Huu Hai e-mail: bshainkts@gmail.com
# EXAMINATION FORM 2015

THREE AND FIVE YEARS OLD CHILDREN
HOA HUONG DUONG KINDERGARTEN

**ID:**

**Age:**

**Gender:**

**Examination day:**

**FSS:** fissure sealant

**F:** Filling

**D1:** Initial Dental Caries

**D3:** Manifest Dental Caries

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Thanks to

Thanks a lot to Da Nang University of Medical Technology and Pharmacy, Vietnam and School of Health and Science, Jönköping University, Sweden. A special thanks to all helpful teachers in Vietnam and supervisors in both Jönköping and Da Nang for making this study possible.

We would also like to thank Colgate who sponsored us with tooth pastes and tooth brushes and TePe who sponsored with tooth brushes to all examined children.