

## **The impact of oral status on daily performances among 6<sup>th</sup> Grade primary school children in Bangbon District, Bangkok**

Jariya Supananthaporn\* Jiraporn Chompikul\*\* Sirikul Isaranurug\*\*\*

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### **ABSTRACT**

A cross-sectional study was conducted to determine the prevalence of dental caries, gingivitis and characteristics of oral impacts on daily performances among the 6<sup>th</sup> grade primary school children in Bangbon district, Bangkok. 160 children were interviewed by using Child-Oral Impacts on Daily Performances index (Child-OIDP) and were examined dental caries and gingivitis using criterion of WHO and the Community Periodontal Index of Treatment Needs (CPITN). Data collection was done from January 5 to February 6, 2009.

The results illustrated the prevalence of dental caries was 55.63% and mean DMFT was 1.61. The prevalence of gingivitis was 99.38%. Regarding the oral impacts on daily performances, 80.63% of school children had oral impacts on their daily life. The prevalence of impacts was high on eating (61.88%) and cleaning teeth (41.88%). Almost half of school children (45.01%) had very little and little intensity of impacts. For perceived causes of impacts, toothache (51.94%), sensitive tooth (37.21%) and oral ulcer (20.93%) were highly prominent.

The results from clinical index and Child-OIDP index showed discrepancy. So there is the challenge for dental personnel to integrate both measures to plan oral health promotion programs, setting priorities of oral health services and allocating oral health resources in primary schools.

**Keyword** Oral status Oral impacts School children

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Corresponding author : Associate Professor Dr. Jiraporn Chompikul

\* D.D.S., M.P.H.M., Health Center 65, Bangbon, Bangkok

\*\* Ph.D., ASEAN Institute for Health Development, Mahidol University

\*\*\* M.D., M.P.H., Dip. Thai Board of Pediatrics, ASEAN Institute for Health Development, Mahidol University

# ผลกระทบจากสภาวะช่องปากต่อการดำเนินชีวิตประจำวัน ของนักเรียนชั้นประถมศึกษาปีที่ 6 ในเขตบางบอน จังหวัดกรุงเทพมหานคร

จริยา สุภนันท์พร

จิราพร ชมพิกุล

ศิริกุล อิศรานุรักษ์

## บทคัดย่อ

การศึกษานี้เป็นการศึกษาแบบตัดขวางเพื่อประเมินความชุกของโรคฟันผุ ความชุกของโรคเหงือกอักเสบ และผลกระทบจากสภาวะช่องปากต่อการดำเนินชีวิตประจำวันของเด็ก สัมภาษณ์นักเรียนประถมศึกษาปีที่ 6 จำนวน 160 คน เพื่อประเมินผลกระทบจากสภาวะช่องปากโดยใช้ดัชนี Child-OIDP และตรวจรอยโรคฟันผุและสภาวะเหงือกอักเสบโดยใช้ข้อบ่งชี้ขององค์การอนามัยโลก และดัชนีสำหรับวัดความจำเป็นในการรักษาโรคปริทันต์เก็บรวบรวมข้อมูล ระหว่างวันที่ 5 มกราคม ถึง 6 กุมภาพันธ์ 2552

นักเรียนมีความชุกของโรคฟันผุร้อยละ 55.63 ค่าเฉลี่ยฟันผุ ถอน อุด เท่ากับ 1.61 ต่อคน ความชุกของโรคเหงือกอักเสบเท่ากับร้อยละ 99.38 เพียงร้อยละ 8.13 พบเด็กนักเรียนร้อยละ 80.86 มีผลกระทบจากสภาวะช่องปากต่อการดำเนินชีวิตประจำวัน โดยร้อยละ 61.88 มีปัญหาในการรับประทานอาหาร และร้อยละ 41.88 มีปัญหาด้านการทำความสะอาดช่องปาก นักเรียนเกือบครึ่งหนึ่ง (45.01%) มีความเข้มของปัญหาระดับเล็กน้อย สำหรับสาเหตุตามความรับรู้ของปัญหา พบว่าส่วนใหญ่เกิดจากการปวดฟัน (ร้อยละ 51.94) เสียฟัน (ร้อยละ 37.21) และแผลร้อนใน (ร้อยละ 20.93)

ผลการศึกษาพบว่ามีความแตกต่างกันระหว่างการตรวจทางคลินิกและผลกระทบจากช่องปากต่อคุณภาพชีวิตของเด็กทั้งที่ควรจะเป็นไปในทางเดียวกัน ดังนั้นถือเป็นเรื่องท้าทาย ที่ทันตบุคลากรจะเชื่อมโยงการตรวจทั้ง 2 ด้านเข้าด้วยกัน เพื่อการวางแผนโครงการส่งเสริมสุขภาพช่องปาก การจัดลำดับความสำคัญในการรักษาทางทันตกรรม และจัดสรรทรัพยากร ทางทันตกรรมในโรงเรียนประถมศึกษา

**คำสำคัญ**    สภาวะช่องปาก    ผลกระทบจากช่องปาก    เด็กนักเรียน

## INTRODUCTION

The World Health Organization (WHO) has defined health as a state of complete physical, mental and social well being, and not merely the absence of disease or infirmity [1]. Applying this concept, oral health has been described as a standard of the oral and related tissues which enables individuals to run daily activities such as eating, speaking and contacting with other people without active disease, discomfort or embarrassment which contribute to general well-being [2]. Simply measuring biological aspect of oral health is not enough. Therefore, oral health-related quality of life measures are being used nowadays to evaluate psychological and social aspects of oral health in term of impacts on daily life. One of the measures is Child Oral Impacts on Daily Performances (Child-OIDP) index which was developed by Gherunpong et al in 2004 to assess specifically the impacts on children. They evaluated the Child-OIDP index and indicated that the Child-OIDP index was a valid, reliable and practical measure of assessing oral health-related quality of life of 12 year old Thai children [3].

Oral disease affects children physically, psychologically and socially. Pain and suffer from dental caries alter the

eating and sleeping habits which disturb normal weight, growth and development. Poor oral health has also related to school absences and inability to concentrate on schoolwork. Oral disease constitutes a major public health problem among children in many countries. The most common oral diseases among 12 years old children are dental caries and gingivitis. The estimated-global caries burden of disease in February 2004 in 188 countries from WHO Oral Health Country/Area Profile Program showed the global mean DMFT among 12 years old children was 1.61, and 139 countries (74%) had a DMFT equal to or less than 3. The mean DMFT in each WHO Region was 2.76 in America, 2.57 in Europe, 1.58 in Eastern Mediterranean, 1.48 in Western Pacific, 1.15 in Africa, and 1.12 in South East Asia [4]. Regarding the results from the 6<sup>th</sup> National Oral Health Survey in Thailand in 2007, revealed that 56.87% of 12 years old children had dental caries and 82% had gingivitis [5]. An oral examination report from the Health Promoting School project showed that 83.89% of the 6<sup>th</sup> grade primary school children in Watbangbon school had dental caries. Several studies assessed the oral impacts on daily life of 12 years old children and indicated that there was high prevalent of the impacts on daily life of children [5-7].

Accordingly, information about the oral status of children and how oral status impacts on the quality of life of children is needed in order to plan appropriate oral health promotion programs in primary schools. Hitherto, no research has investigated the oral status of primary school children in Bangbon District, or the manner in which poor oral status affects quality of life.

The aims of this research, therefore are : 1) to determine the prevalence of dental caries, the mean DMFT and the prevalence of gingivitis; and 2) to determine the oral impacts on daily activities of school children, particularly the prevalence, characteristics and intensity of such impacts.

## METHODOLOGY

A cross-sectional study was conducted from 5 January – 6 February 2009. The respondents were 168 6<sup>th</sup> grade primary school children from Bannaiphon School, Bannairhean School, Watbangbon School and Bannaissi School which were Bangkok Metropolitan Administration primary school in Bangbon District, Bangkok which were selected by two-stage cluster sampling technique. At each stage, simple random sampling was used to select schools and then classrooms in each school.

The instruments were an interview for oral impacts using Child Oral Impacts on Daily Performances (Child-OIDP index) [5] and an oral examination by the dentist who is the researcher. The school children were examined dental status and dental caries based on WHO guideline and the data were described by DMFT scores and mean DMFT.

The Community Periodontal Index Treatment Need (CPITN) was used to examine the gingival status and the CPITN scores were calculated.

The Child-OIDP index attempts to measure the impact of oral health problems on the functional, psychological and social aspects of children's daily activities. The process for using the Child-OIDP index began with self-administered questionnaire about the oral conditions that children had within the past 3 months. Thereafter, the children were individually interviewed assisted by 8 pictures to represent the daily activities and the children were asked about their oral impacts on the following regular 8 daily performances: a) eating; b) speaking; c) cleaning teeth; d) relaxing, including sleeping; e) smiling, laughing and showing teeth without embarrassment; f) maintaining emotional state; g) study; and h) contacting with other people within

the past 3 months. If they had oral impacts on any performance, the school children were also asked to identify frequency, severity and oral problems that cause the impact.

The frequency of impact ranged from 0-3. The severity of the impact on daily life was rated on an ordinal scale of 0 (none) to 3 (severe). The oral impact score of each activity score was calculated by multiplying the frequency score by the severity score and the total performance scores were calculated by totaling every activity scores. The total performance scores for each respondent ranged from 0 to 72. In order to convert to percentage, the total performance scores were divided by 72 and multiplied by 100. The intensity referred to the highest performance score on any performances and classified into 5 levels: very little, little, moderate, severe, and very severe [6].

Following the data collection process, Epidata was used for entering data and exporting data to excel. MINITAB was used for generating data in a formal suitable for analysis.

The protocol of this study was approved by the Ethics Committee of Mahidol University No. MU-IRB 208/269.2512. The researcher contacted and

asked permission from the administrators of the schools. The participant information sheet and the informed consent form were given to caregivers and school children.

## RESULTS

One hundred sixty two of the 168 children returned positive consent forms approved by their parents. One hundred and sixty children (95.23% of total) completed all stages of the study.

Approximately 56% of the school children had dental caries. Only 4.38% had missing teeth and 10% had their teeth filled. The DMFT scores ranged from 0 to 16 with a mean of 1.61 and standard deviation of 2.34. Almost all school children (99.38%) had gingivitis: 41.88% had gum bleeding, 4.38% had calculus and 53.13% had calculus with gum bleeding.

The prevalence of oral impacts of the school children was high, 80.63% of school children had oral impact on their daily life within the past three months. The prevalence of impacts were high on eating (61.88%), cleaning teeth (41.88) and emotion (23.75%) while study (7.50%) and speaking (7.50%) were the lowest prevalence (Table 1).

For those who had oral impacts on daily performances, 28.13% had 1 performance with impact, 24.38% had 2 performances with impacts, 13.75% had

3 performances with impact, 14.38% had 4-7 performances with impact and none had impacts on 8 performances.

**Table 1** Prevalence of oral impacts on daily performances.

Daily performances	Prevalence (n=160)
Eating	61.88
Speaking	7.50
Cleaning teeth	41.88
Relaxing	13.75
Emotion	23.75
Smiling	19.38
Study	7.50
Contacting with other people	13.13
Overall impacts	80.63

The overall impact scores ranged from 0 to 36 with a mean score of 4.64 and S.D. of 5.51. Mean scores of impacts on each of the 8 performances ranged from 0.16 to 1.29 (maximum possible score

is 9). Mean score of impacts on eating (1.29) and cleaning teeth (1.13) were the highest and second highest while mean score of impact on speaking (0.16) was the lowest as shown in Table 2

**Table 2** Score of oral impacts on daily performances. (n=160)

Daily performances	Impact score		
	Range	Mean	S.D.
Eating	0-9	1.29	1.73
Speaking	0-6	0.16	0.71
Cleaning teeth	0-9	1.13	1.87
Relaxing	0-6	0.35	1.05
Emotion	0-9	0.63	1.47
Smiling	0-9	0.52	1.37
Study	0-9	0.20	0.92
Contacting with other people	0-9	0.36	1.19
Overall impacts	0-36	4.64	5.51

The intensity of impacts on overall impacts were found as shown in Table 3, 24.38% of school children had very little intensity of impacts, 20.63% had little intensity of impacts, 20% had moderate intensity of impacts and only 3.75% had

very severe intensity of impacts. The intensity of impacts on each performance revealed that eating and cleaning teeth were the most severely affected while none had a very severe intensity on relaxing and speaking.

**Table 3** The intensity of oral impacts on daily performances.

Daily performances	Intensity of impacts(% of children with impacts)				
	Very little	Little	Moderate	Severe	Very severe
Eating	31.88	18.75	4.39	5.63	1.25
Speaking	3.75	1.25	1.88	0.63	0.00
Cleaning teeth	15.63	10.63	8.75	5.63	1.25
Relaxing	4.38	3.75	4.38	1.25	0.00
Emotion	8.13	6.88	5.00	3.13	0.63
Smiling	7.50	3.75	5.63	1.88	0.63
Study	2.50	2.50	1.88	0.00	0.63
Contacting with other people	3.75	4.38	3.13	1.25	0.63
Overall impacts	24.38	20.63	20.00	11.88	3.75

### Perceived causes of the impacts

There were various oral problems that school children perceived as the causes of their overall oral impacts as shown in Table 4. The more prominent problems causing impacts were a toothache

(51.94%), sensitive tooth (37.21%) and oral ulcer (20.93%). In addition, bad breath (17.05%) and tooth decay or hole in tooth (16.28%) were also the problems leading to overall impacts.

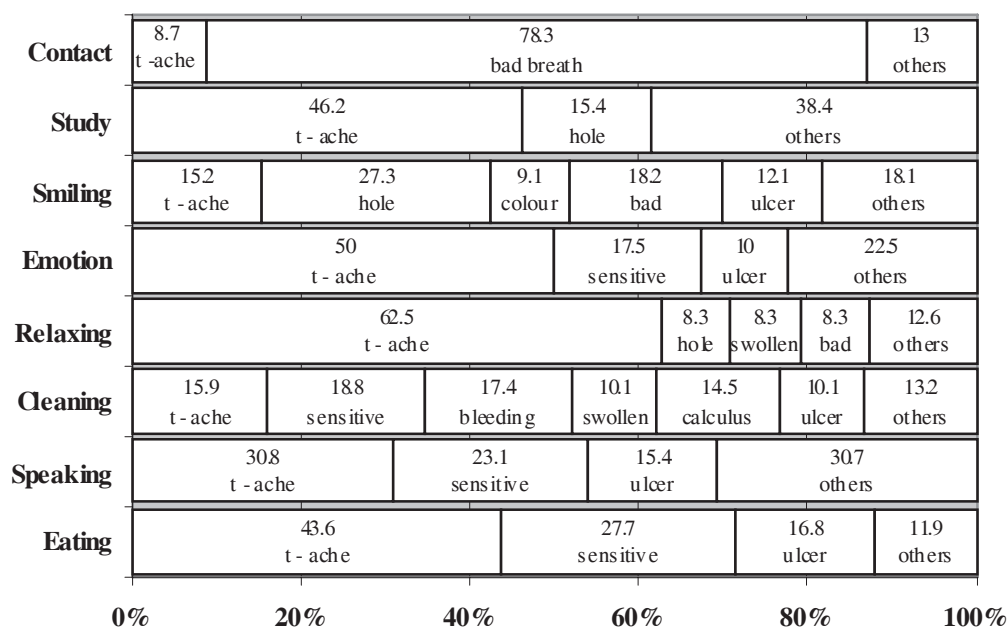
**Table 4** Percentage of school children classified by oral conditions perceived as causing overall oral impacts.

Perceived oral problems	Number	Percent
Toothache	67	51.94
Sensitive tooth	48	37.21
Tooth decay, hole in tooth	21	16.28
Fractured permanent tooth	1	0.78
Colour of teeth	3	2.33
Shape or size of teeth	2	1.55
Position of teeth	2	1.55
Bleeding gum	13	10.08
Swollen or inflamed gum	11	8.53
Calculus	13	10.08
Bad breath	22	17.05
Oral ulcer	27	20.93
Exfoliation of primary tooth	7	5.43
Deformity of mouth or face	0	0.00
Eruption of permanent tooth	2	1.55
Missing permanent tooth	1	0.78
Tooth space (due to unerupted permanent tooth)	0	0.00

Figure 1 shows the perceived causes of impacts on each of the 8 performances, toothache was the perceived causes of impacts on 8 performances and was the main perceived cause on eating (43.56%), speaking (30.77%), relaxing (62.50%), study (46.15%) and emotion (50.00%). Oral ulcer was also the perceived cause of impacts on 8 performances: eating (16.83%), cleaning tooth (10.14%), speak-

ing (15.38%), relaxing (4.17%), smiling (12.12%), study (7.69%), emotion (10.00%) and social contact (4.35%). Sensitive tooth was the perceived cause of impacts on 6 performances and was the main cause on cleaning teeth (18.84%). Bad breath was the main perceived cause on social contact (78.26%). Tooth decay or hole in tooth was the main perceived cause on smiling (27.27%).





**Oral conditions perceived as causes of impacts (%)**

t -ache = toothache      sensitive = sensitive tooth      hole = hole in tooth  
 colour = colour of teeth      bad = bad breath      ulcer = oral ulcer  
 bleeding = bleeding gum      swollen = swollen of gum

**Figure 1** Main oral conditions causing impacts on each of the eight performances.

## DISCUSSION

The finding of this study showed that the prevalence of oral impacts was high but not severely, 80.63% of school children had experienced of oral impact on their daily life within the past three months. Almost half of school children (45.01%) had very little and little intensity and half of those had impact score less than 4.64.

The result of this study was consistent with the previous studies in Thailand and Peru [5-7]

According to the results, the prevalence of the oral impacts was high on eating (61.88%), cleaning teeth (41.88%) and emotion (23.75%) while study (7.50%) and speaking (7.50%) were the lowest prevalence. From this result indicated that oral

problems affected their daily life on physical function more than psychological and social function.

For perceived causes of impacts, toothache (51.94%), sensitive tooth (37.21%) and oral ulcer (20.93%) were the most of perceived causes that was similar with the previous study in Thailand [5-6]. Sensitive tooth was the main perceived cause that affected children, particularly in relation to the difficulty in cleaning teeth. Children with difficulty in cleaning teeth are likely to have calculus or gingivitis. Normally dental personnel provide treatment relate to symptom by scaling, and after period of time, children will have calculus again because dental personnel did not eliminate the cause of problem that due to sensitive tooth. This problem would not be solved without understanding the real cause that affects daily life of school children. This finding found that oral ulcer was also the most oral problem which affected daily activities of school children. Dental personnel hardly concern on oral ulcer because its symptom is not severe.

Regarding oral status of this population, the prevalence of gingivitis (99.38%) was higher than the prevalence of dental caries (55.38%) but the high proportion of perceived causes of impacts due to dental caries more than gingivitis. This

finding confirmed difference between clinical measures and oral health-related quality of life measures. So the clinical index is not enough to complete the service goal that is the improvement of quality of life. There is challenge for dental personnel to integrate both measurements to plan oral health service. In conclusion, dental personnel should plan oral health service and oral health promotion programs for dental caries and oral ulcer more than gingivitis to improve the quality of life of the school children in Bangbon District.

Furthermore by using the Child-OIDP index, dental personnel can set priorities to provide oral health services for school children within the limited resources. The school children who had very severe intensity of impacts should received oral health services more than other school children.

## RECOMMENDATIONS

Dental personnel should emphasize on both the impact of oral status on quality of life of children and their oral status to provide appropriate oral health promotion programs and oral health services. For planning oral health services, dental personnel should set priorities and allocate resources based on the severity of impacts.

Further study should be determine how oral ulcer was the most oral problem of school children and assess the oral impacts on daily performances of school children after providing oral health promotion programs or oral health services based on their oral problems that affect their daily activities.

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