

# Time Absent from School due to Dental Conditions and Dental Care in Thai Schoolchildren

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## Abstract

**Objectives:** To assess the number of school hours missed for dental reasons per 1,000 grade 5 primary school children in 1 school year and compare dentally related school absences with those related to medical and social reasons. **Methods:** A longitudinal study using a multistage sampling technique was carried out on a sample of 1,211 children attending schools in Lampang province, Thailand. Data on absence were collected from daily school attendance records for 1 year and from children and parents questionnaires and school dental clinic records. Clinical examinations were done using the World Health Organization criteria. **Results:** A total of 1,158 children (response rate: 95.7 percent) aged 9 to 13 years were examined and returned completed questionnaires. Their caries level was relatively low (DMFT  $1.4 \pm 1.7$ ). The children (22.5 percent) reported school absence for any dental reason. The mean number of hours of school absence per year for dental care was 434 hours per 1,000 children (613 hours per 1,000 children when dental screening was included). Among those who actually missed school for dental reasons, the numbers of hours missed were 1,923 hours per 1,000 children. **Conclusions:** The level of school absence for dental-related conditions and care was low per child but cumulatively was considerable. The time missed because of dental reasons was substantially less than the time missed because of other health and social reasons.

**Key Words:** school absence, dental, children, Thailand

## Introduction

Dental problems are associated with school absenteeism. Data from a study in the United States showed that considerable school hours were missed annually because of dental problems and dental visits (1-3). However, few studies exist on quantifying school days missed because of dental problems and/or dental visits. Such dental studies are retrospective or only short term, and the data on the prevalence of school absence for dental reasons are collected for a short period and then extrapolated to a longer period (2-4). There are studies about all causes of school absence and some of those studies quantify the prevalence of school absence caused by social factors (5-7) and medical reasons (8,9). But none compared school absence for dental reasons with the

respective figures for medical and social reasons in the same sample.

The problem of school hours missed is important, because it could affect the quality of life of children in terms of missing academic learning. In addition, children may also miss out on the social side of school life, which can affect their ability to maintain friendships and socialization (10). Another aspect that has not been adequately addressed in relation to dental health and school absence is that as children spend much time in school, school absence can therefore be used, like work absence, as a measure of the impact of oral health on children's lives (11,12). Traditionally used clinical oral health status measures pay relatively little attention to the social dimensions of oral disease (13). On the other hand, sociodental

indicators assess the impacts of the mouth and teeth. The indicators also show how disease interferes with daily living (13) or disrupts normal social role functioning and causes major changes in behaviors such as inability to work or attend school (14,15). So, school absence can be considered a sociodental indicator, as it measures the extent to which children's oral health-related problems and their treatment disrupts normal social role functioning and causes major change in behaviors. Dental policymakers appear to pay little attention to the problem of school absence. This is especially true for planners of school dental services, as most school dental services are available predominantly during school hours (16) and their attendance results in missing time at school.

As limited data are available on dentally related school absence in developing countries, a study was planned with the objective of assessing the number of school hours missed for dental reasons per 1,000 grade 5 primary school children in 1 school year. Another objective was to compare dentally related absences with numbers of school hours missed for medical and social reasons.

## Methods

**Sample.** This study was carried out on primary school children in Lampang province, Thailand, from October 2003 to September 2004. It is part of a broader study, which aimed to determine the prevalence of school dental absenteeism and also assess differences in school

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dental absence between children in different socioeconomic backgrounds. We focused on primary school children as primary education is compulsory and they are the main target of the dental services, with a compulsory school dental care program, therefore constituting an important group for planning dental health care. We specifically opted for grade 5 children, because they have the majority of their permanent dentition and are more suitable, in terms of school activities, for the 1-year observation period than grade 6 children. Furthermore, a pilot study demonstrated their capability of completing the self-administered questionnaire used in this study. Ethical clearance was obtained from the Ethical Review Committee for Research in Human Subjects, Ministry of Public Health, Thailand, and the Human Experimentation Committee, Faculty of Dentistry, Chiang Mai, Thailand.

The minimum sample size required for the broader study was 1,100 children, based on two dental absence prevalence estimates (9 percent in children from affluent families and 15 percent in poorer children), with a 95 percent confidence interval and 90 percent power of the study. This calculation was based on the main aim of the broader study, which was to identify the differences between children in different socioeconomic backgrounds. However, this paper reports only on the prevalence of school dental absenteeism and its comparison with school absence for medical and social reasons.

Multistage random sampling combined with proportional sampling was used. The sample was selected in three phases. The study area included 40 schools that had more than 20 children in grade 5. In the first stage of cluster sampling, the schools were the primary sampling units and were categorized into three groups according to their type: state, municipal, and private schools. Proportional sampling was used to calculate the number of children required from each of the three

school types. Next, in each school type, schools were divided into strata according to school size, and we calculated the number of children required from each stratum of each school type. Lastly, simple random sampling was used to select the sample of classes of grade 5 schoolchildren in each school stratum. Because of the longitudinal nature of data collection and for practical purposes, whole classrooms were selected. Thus, the final sample invited to participate consisted of 17 schools (six private, eight state, and three municipal schools), 30 classrooms, and 1,222 children. Positive consent forms from parents and informed consent from children were obtained. A total of 1,211 agreed to take part in the study, a response rate of 99.1 percent.

#### **Research Instruments and**

**Data Collection.** Data were collected using the following instruments: a) school daily attendance forms; b) school dental service observations; c) oral examinations; d) children's questionnaires; and e) parental questionnaires. The class teacher recorded each child's school attendance daily and the first author collected the forms every month for 1 school year. A specially designed form was used specifying reasons for absence: dental (dental appointments, oral pain without visit to the dentist), medical (medical appointment and medical illnesses), or social reasons (such as attending relatives' weddings, funerals, or helping parents with housework or going on holidays with parents). Dental appointments cover both standard and emergency dental appointments, including appointments made for dealing with acute oral pain and dental trauma, while oral pain refers to school absentees that reported oral pain as the reason for absence, however, without visiting a dentist. Medical reasons referred to all health-related reasons other than those related to oral health, while social reasons covered a wide range of reasons not related to the child's health. Teachers were trained in the criteria and the process

for filling the form. Furthermore, ambiguities were confirmed with the researcher (B. P.) at different occasions during data collection. This form facilitated the recording of absenteeism when a child was not at school.

However, children also missed classes when they were referred for dental treatment in the School Dental Service (SDS). In order to assess this type of dental absenteeism, we also obtained schedules of dental screening dates and appointment times for dental treatment provided by the SDS. When children participating in the study received dental care by the SDS or underwent dental screening, research staff collected information in greater detail than for private dental appointments by recording the following: dental screening time, dental treatment time, traveling time, and waiting time. As dental screening was incorporated into the curriculum, its inclusion into school absenteeism is not conceptually straightforward. Consequently, we have calculated school absenteeism for dental reasons in two ways, including and excluding school dental screening.

Dental examinations were conducted at school by three trained and calibrated dentists using WHO Basic Methods (17). In addition, questionnaires were completed by children at school and each child was asked to take home a questionnaire to their parent(s) and return it within a week of distribution. Both questionnaires contained sociodemographic questions and oral health behaviors and sociodental questions (18). The questionnaires were pretested twice in pilot studies in two schools that were not part of the study.

Ten percent of the questionnaires were repeated to test the reliability of the responses and 10 percent of children were reexamined for intra-examiner and inter-examiner reliability. Cohen's kappa was calculated for examiner(s) agreement and reliability of questionnaires. The inter-examiner and intra-examiner agreement were satisfactory. For intra-examiner agreement, kappa

**Table 1**  
**Distribution of Children Included in the Study (Lampang, Thailand)**

Sociodemographic Variables	Proportion (%) ( <i>n</i> = 1,158)
Sex	
Male	52.5
Female	47.5
Age (years)	
9-10	32.4
11	59.9
12-13	7.7
School type	
Private	49.8
State	37.7
Municipal	12.5
Father's employment	
Unemployed	1.3
Employed	88.3
Unknown	10.4
Mother's employment	
Unemployed	18.2
Employed	76.3
Unknown	5.5
Father's educational level	
Primary school or less	23.3
Junior high school	24.9
Vocational	21.1
Degree level	20.6
Unknown	10.1
Mother's educational level	
Primary school or less	32.6
Junior high school	22.8
Vocational	17.4
Degree level	20.0
Unknown	7.2
Family monthly income (baht)	
3,000 or less	14.8
3,001-9,000	34.5
9,001-15,000	14.5
15,001 or more	29.8
Unknown	6.4
Dental care scheme	
Parents' health welfare scheme or paid privately during school time	53.4
Thai government health care scheme	38.4
Unknown	8.2
Parent marital status	
Both parents	80.7
Single parent	15.7
Unknown	3.6

scores ranged between 0.88 and 0.95. Good inter-examiner agreement was obtained (kappa scores were 0.80 and 0.81 for agreement between the gold-standard examiner and each of the other examiners). Parental and children reliability was also good. The overall unweighed

kappa for children was 0.91 and for parents 0.87.

**Statistical Analyses.** Frequency distributions of the sociodemographic characteristics of the sample were assessed using descriptive analyses. Epi Info 2000 software (CDC, Atlanta, GA) was used to

create data entry forms. The statistical analysis was carried out using Stata 8.2 software (StataCorp, LP, College Station, TX, USA).

## Results

A total of 1,211 children had an oral examination. Eleven children moved to other towns and 42 parents did not return the questionnaire. Therefore, the present analysis is limited to data from 1,158 children and their parents from 17 schools (a response rate of 95.7 percent). The sociodemographic characteristics of the sample are presented in Table 1. Of the sample, 52.5 percent were boys. The children were aged from 9 to 13 years. The mean age was 10.8 years. Most mothers and fathers were employed (76 and 88 percent, respectively). Twenty-three percent of the fathers and 32.6 percent of the mothers had only primary education or less. About 20 percent of the fathers and mothers had a degree-level education. A large proportion of families (34.5 percent) had monthly incomes of 3,001 to 9,000 baht (low income). The children (53.4 percent) were covered by their parents' health welfare scheme or paid privately, while 38.4 percent used the Thai government health care scheme. Most of the parents were cohabiting (80.7 percent).

Sixty percent of children had mixed dentitions. The children (43.2 percent) were caries-free considering both dentitions. Mean DMFT was 1.4 [standard deviation (SD) = 1.7]. Mean numbers of decayed teeth (d + D), missing teeth, and filled teeth (f + F) were 1.4 (SD = 1.8), 0.02 (SD = 0.19), and 0.6 (SD = 1.2) respectively.

The prevalence of children who were absent for all dental reasons, including attending for treatment but not dental screening, was 22.5 percent. The prevalence of school absence did not differ between girls and boys. Data from school daily attendance records showed that the 1,158 study children missed 159 hours of school either for dental appointments at private dentists or because of oral pain (Table 2). In addition, children spent 547 hours on

**Table 2**  
**School Time Absent because of All Dental Reasons Recorded in Daily School Attendance Register and Dental Screening and Treatment Provided by the School Dental Service (SDS) for 1 School Year of Children in Lampang, Thailand**

Reasons for Absence	Total Hours Absent from School	Time Absent from School per 1,000 Children (hours)
Out-of-school absenteeism for dental reasons		
Dental appointments	117	102
Oral pain	42	37
Total	159	139
School absenteeism for attending the SDS		
Dental screenings	206	179
SDS treatment	341	295
Total	547	474
Total	706	613

**Table 3**  
**Time Absent from School Only for Screening and Care in the School Dental Service (SDS) for 1 School Year (Children in Lampang, Thailand)**

SDS	Total Hours Absent from School	Time Absent from School per 1,000 Children (hours)
Traveling for dental screening	46	40
Traveling for dental treatment	53	46
Total traveling time	99	86
Waiting for dental screening	157	136
Waiting for dental treatment	264	228
Total waiting time	421	364
Dental screening	3	2.6
Dental treatment	24	21
Total school absence for attending the SDS	547	474

**Table 4**  
**Comparison of School Time Absent during 1 School Year for Dental, Medical, and Social Reasons of Children in Lampang, Thailand**

Reasons for Absence	Total Hours Absent from School	Time Absent from School per 1,000 Children (hours)
Dental reasons		
Including dental screening	706	613
Excluding dental screening	500	434
Medical reasons	9,881	8,534
Social reasons	4,191	3,620

dental screenings and dental treatment provided by the SDS. Most of the time, attending the SDS was spent waiting (421 hours) (Table 3). When school time missed for dental reasons obtained from both school

daily attendance records and dental care time by the SDS were combined, the overall school time missed for dental reasons was 706 hours per 1,158 study children. That is 613 hours per 1,000 children per year

(Table 2). Among those who actually missed school for dental reasons excluding dental screening, the amount of absenteeism was 1,923 hours per 1,000 children.

When comparing all school absence caused by each of the main reasons (dental, medical, and social) for missing school, the majority of school time missed was because of medical reasons, followed by social reasons, and lastly, dental reasons. Medical reasons accounted for 9,881 hours missed per year among the 1,158 study children. That is 8,534 hours per 1,000 children. Social reasons also caused a substantial amount of school time missed: 4,191 hours per year, 3,620 hours per 1,000 children. Dental reasons accounted for the least amount of school time missed: 706 hours per year or 500 hours if dental screening is excluded. That is 613 hours (or 434 hours if dental screening is excluded) per 1,000 children of school time missed (Table 4).

## Discussion

This study assessed the prevalence of school absence because of dental reasons in Lampang, Thailand. It is one of the first studies on the issue using prospective data for 1 school year. The study sample is not representative of the national population; however, its main descriptive characteristics (sex and dental caries of children, education level of parents) were comparable with national population statistics.

Cumulatively, the number of hours missed for dental reasons per 1,000 children per year was considerable, with 434 hours or 613 hours per year when dental screening was included. Among those who actually missed school for dental reasons, 1,923 hours per 1,000 children was missed or about 2 hours per child per year. This is a relatively small amount per child. However, at a national level, this school time missed may be a significant problem in terms of school attendance. These figures for school hours missed are much lower than those reported in earlier studies from the United States.



There, the estimates among children 8 to 12 years old were much higher, with 1,120 hours per 1,000 children and 3,100 hours per 1,000 children among those who actually missed school.

One important methodological difference between the Lampang and the US study (3) is that in the US study, the school hours missed for the whole year were extrapolated from data for only 2 weeks. This could give inaccurate information as school absence for dental reasons is not constant over the year. So, using short-period data may not be appropriate. On the other hand, in the Lampang study, absence was recorded for the whole school year and was validated by checking dental records at clinics. The effect that this difference in the methodology may have on the actual results cannot be assessed and limits direct comparability between the two studies.

Despite the lower school time missed in the Lampang sample than in the US study, the frequency of school absences for all dental reasons including attending the SDS treatment was much higher (22.5 percent) in the Lampang study. Gift et al. (3) reported that only 1.3 of children missed school for dental visits/problems. However, the validity of such a direct comparison may be compromised by two methodological discrepancies. First, the differences in the prevalence are probably affected by the differences in the time reference periods. It should be logically expected that over a school year, the prevalence figure would be higher, as different children would miss school on different periods of the school year. Second, the organized SDS in Lampang encourages and enables children to have dental treatment visits during school hours. Such school dental service schemes are not common in the United States. However, the fact that only a few dentists are open in the evening in the United States may contribute to school absenteeism for dental reasons, depending on the demand for services, though this is quite dis-

tinct from the effect of the SDS in Thailand where attendance is based on normative need. When those attending the SDS for dental visits for treatment in the Lampang study are excluded and only dental pain and private dental appointments were included, the prevalence of children missing school was 3.3 percent, a figure much lower than the initial estimate.

Indeed, the prevalence of school absence for dental pain in this study was 0.5 – a prevalence closer to that found by Chen and Hunter (19) over 1 year. They reported that 1 percent of 12- to 13-year-old children in New Zealand missed school because of dental pain (19). Studies in other countries reported a much higher prevalence for missing school because of dental pain (11.1 to 70 percent) than in the present study. All of them collected data for shorter time frames, between 1 and 2 months (20-23).

Some studies reported that school dental screening increased dental care (24,25). As school screening in the Lampang province has been in operation since 1988 (16), it should be considered as a normal contextual factor because all students receive dental screenings. They went in groups for the dental screening, while there was no class teaching at the same time. On the contrary, they went individually for dental treatment to the SDS, while the rest were having classes at the same time.

In our study, dental treatment had an association with school time missed. The main reason for time missed for dental reasons was because of visits to the SDS. However, the cause of school absence was the dental status of children. Children without caries or dental problems are not given appointments with the SDS and therefore do not have to miss school.

Dental reasons caused much lower school absence than medical reasons. The finding, confirmed by studies in western countries (26-29), shows that medical conditions were common reasons for missing school. Most researchers have not compared

medical with dental reasons in the same population. The finding that medical reasons accounted for higher absenteeism than dental reasons may be explained by the fact that while children would stay at home when ill, they are likely to go to school when they have dental problems unless they are painful. School time missed for social reasons in this study was also higher than for dental reasons. Apparently, when children missed school for social reasons, they missed the whole school day. In addition, school absences caused by social reasons are related to various factors that are linked to the dependent status of children at this young age. These factors include parents' attitude toward the importance of education and the availability of a caregiver who takes children to and from school when parents are ill or looks after the child while parents attend social events such as weddings or funerals. Such factors were not measured in this study and should be taken into consideration in future studies.

Further research is required to better explore the relationship between school absence for dental reasons and the severity of dental conditions and the type and location of dental clinics to enable valid generalizations to be made. In addition, the time spent on private dental appointments should be measured in more detail, similar to that reported for the SDS appointments, in order to allow for a full comparison between those two forms of dental school absenteeism. In addition, this study should be replicated in other countries with different school dental health care systems.

In conclusion, the level of school absence for dental-related conditions and care was low per child, but cumulatively was considerable. The time missed because of dental reasons was substantially smaller than the time missed because of other health and social reasons.

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