

**Original Article**

## **Awareness of Malalignment and Malocclusion in Children and Their Guardians**

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### **Abstract**

We conducted a survey on the awareness of abnormalities of dentition and occlusion in 1,904 children (0–15 years old) and their guardians (parents, grandmothers, grandfathers and siblings) on their initial visit to the Department of Pediatric Dentistry, Chiba Hospital, Tokyo Dental College. The location and type of abnormality for which the children and their guardians most commonly sought treatment were crowding of the upper and lower anterior teeth and inverted occlusion. The most common initial triggers for concern were “guardians noticed abnormalities themselves”. It seems logical that where malocclusions that children and guardians can easily notice for themselves are present, they are likely to make an early visit to a clinic in the hope of improving the abnormality. We suggest that further effect is made to educate guardians of children with abnormalities of dentition and occlusion on the importance of obtaining treatment.

**Key words:** Awareness—Guardians and their child patients—Malalignment—Malocclusion

### **Introduction**

Dental examination of children in accordance with the Maternal and Child Health Law is becoming more common, and the code for dental examination in schools has recently been revised. In addition, children and their guardians have been showing increased interest in their dentition and occlusion. As a result, the number of children visiting our hospital seeking consultations and treatment for malalignment and malocclusion<sup>1,3–7,9,11,13–15</sup> has grown significantly. We therefore conducted a survey on children

making their first visit to the Department of Pediatric Dentistry at the Tokyo Dental College, Chiba Hospital, to determine the location of the malalignment and malocclusion that children and guardians perceived as abnormal, the present status of those abnormalities, and the initial trigger for concern.

### **Materials and Methods**

The survey was completed by 1,904 children (0–15 years old) and their guardians (parents, grandmothers, grandfathers and

siblings) making their first visit to the Department of Pediatric Dentistry, Tokyo Dental College, Chiba Hospital, between January 2000 and February 2005. The survey consisted of a self-reported questionnaire containing the following questions:

1. At present, do you have any worries about your dentition and occlusion?
2. What areas of your dentition and occlusion are you most worried about? (cite all that apply)
3. What problems in your dentition and occlusion are you most worried about? (cite all that apply)
4. What was the initial trigger causing you to worry about your dentition and occlusion?

The subjects of the survey were roughly divided into two groups: a group seeking treatment and a group not seeking treatment. For each group, we compiled the locations and types of abnormalities in the dentition and occlusion which the subjects were worried about, as well as the initial triggers of concern. We also investigated the reasons why the second group was not seeking treatment.

## Results

### 1. Awareness of guardians of present status of dentition and occlusion

Out of the 1,904 subjects in this survey, 910 subjects (47.8%) were concerned about their dentition and occlusion, and visited our hospital seeking treatment (the group seeking treatment), while 146 patients (7.7%) did not seek treatment, even though they were concerned about their dentition and occlusion (the group not seeking treatment). At the first visit, the remaining 848 subjects (44.5%) reported that they had no concerns about their dentition and occlusion (Fig. 1).

### 2. Areas in dentition and occlusion causing concern in group seeking treatment according to age

Among patients 6–8 years old (354 subjects), the major area of concern in the dentition and occlusion was the upper anterior teeth region

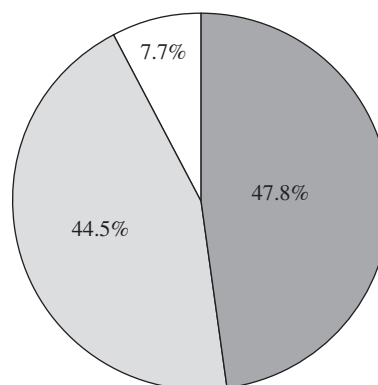


Fig. 1 Awareness of guardians of present status of dentition and occlusion

- : Group who hoped for treatment of malalignment and malocclusion (n = 910).
  - : Group who had no worries about their dentition and occlusion (n = 848).
  - : Group who did not hope for treatment although they were worried about their dentition and occlusion (n = 146).
- n = 1,904

(①: 43.3%), the lower anterior teeth region (④: 49.7%) and the anterior teeth region (⑦: 36.7%). Among the 2–3 year old group (145 subjects) and the 6–8 year old group there was concern about the molar region on the right side (②: 22.8% and ⑤: 15.6% respectively) and the left side (③: 29.0% and ⑥: 37.0% respectively) (Fig. 2). The major area causing concern was the anterior teeth region.

### 3. Types of abnormalities in dentition and occlusion causing concern in group seeking treatment according to age

In the 6–8 year old group, the major abnormalities in the dentition and occlusion causing concern were “crowded dentition” (43.9%), “spaced dentition” (52.9%), “protruded teeth” (24.6%), “inclined teeth” (51.1%) and “rotated teeth” (57.9%), while in the 10–12 year old group (134 subjects), “high permanent canine” (45.2 %) was the major abnormality (Fig. 3).

### 4. Initial triggers for concern about dentition and occlusion in group seeking treatment according to age

In the 1–5 year old group (318 subjects), the major initial triggers for concern about

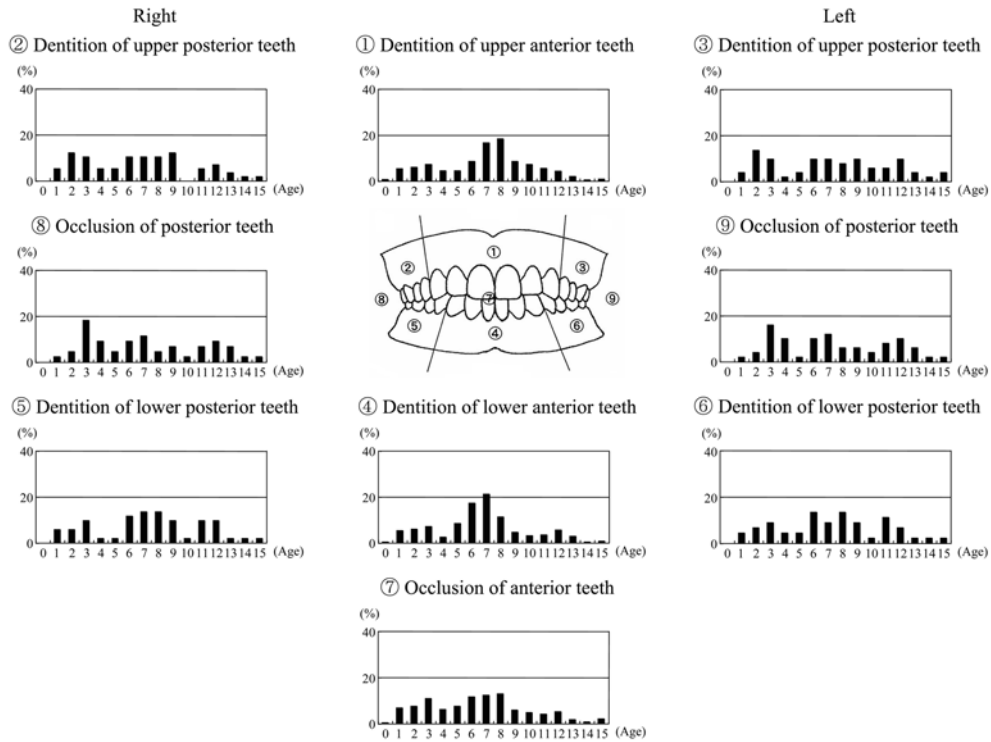


Fig. 2 Areas of dentition and occlusion causing concern for group seeking treatment according to age

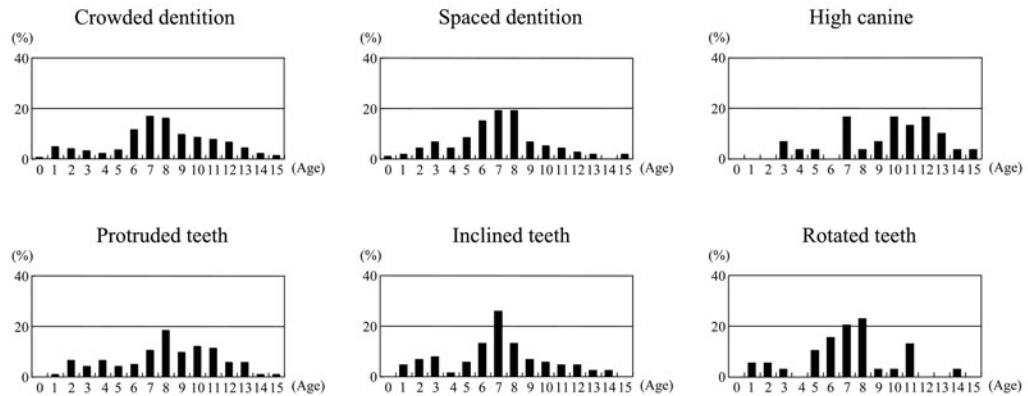


Fig. 3 Types of abnormalities of dentition and occlusion causing concern for group seeking treatment according to age

the dentition and occlusion were “abnormalities pointed out in dental examination by health care center” (80.7%) and “dental examination by kindergarten and nursery school” (25.0%), while in the 6–9 year old group (415 subjects), the major initial triggers

were “abnormalities pointed out by dental examination in school” (56.3%), “abnormalities pointed out by doctors in dental clinic or hospital” (47.0%), “noticed by guardians for themselves” (51.2%), “children became worried themselves” (41.3%) and “pointed

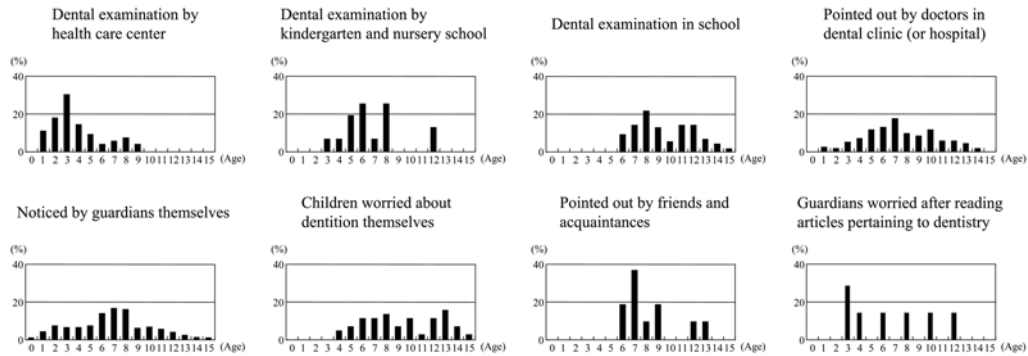


Fig. 4 Initial triggers for concern about dentition and occlusion in group seeking treatment according to age

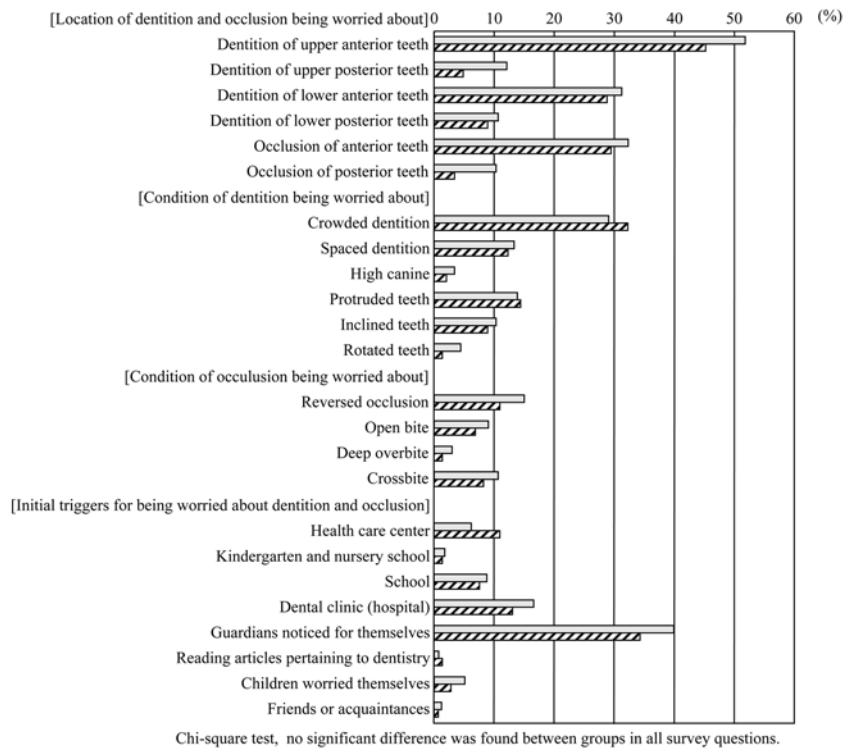


Fig. 5 Comparison of survey responses between group seeking treatment and group not seeking treatment

□ : Group hoping for treatment (n=910). ▨ : Group not hoping for treatment (n=146).

out by friends and acquaintances” (81.8%) (Fig. 4).

**5. Reasons why group not seeking treatment did not want consultation or treatment**

The reasons obtained from 71 out of 141

subjects in the group not seeking treatment were “wait and see at the present moment” (54.9%), “already being treated by another clinic” (16.9%), “receiving regular outpatient treatments is impossible” (15.5%), “cooperation cannot be obtained from children”

(7.1%), “priority is to be given to treatment of dental caries” (4.2%) and “economic reasons” (1.4%)”.

#### **6. Comparison of answers between group seeking treatment and group not seeking treatment**

There were no statistically significant differences between the answers to any of the survey questions given by the group seeking treatment and the group not seeking treatment (chi-square test for statistical analysis) (Fig. 5). The most frequently reported area of concern in the dentition was the anterior teeth region (28.8–51.8%), which was also the most frequently reported area for concern about occlusal conditions (29.5–32.3%). The dental condition most frequently reported as being of concern was “crowded dentition” (29.0%, 32.2%), followed by “protruded teeth” (13.8%, 14.4%), “spaced dentition” (13.3%, 12.3%), “inclined teeth” (10.3%, 8.9%), “rotated teeth” (4.4%, 1.4%) and “high canine” (3.4%, 2.1%). The most frequently reported occlusal abnormality causing concern was “reversed occlusion” (14.9%, 11.0%), followed by “crossbite” (10.7%, 8.2%), “open bite” (9.0%, 6.8%) and “deep overbite” (3.0%, 1.4%). The most frequently reported initial trigger for concern about the dentition and occlusion was “guardians noticed abnormalities for themselves” (39.9%, 34.2%), followed by “abnormalities were pointed out by doctors at dental clinic or hospital” (16.6%, 13.0%), “abnormalities were pointed out by dental examination in school” (8.8%, 7.5%), “abnormalities were pointed out by dental examination by health care center” (6.3%, 11.0%), “children became concerned about abnormalities for themselves” (5.1%, 2.7%) and “abnormalities were pointed out by dental examination in kindergarten and nursery school” (1.8%, 1.4%). Answers such as “abnormalities were pointed out by friends or acquaintances” (1.2%, 0.7%) and “guardians became concerned about dentition and occlusion after reading articles pertaining to dentistry” (0.8%, 1.4%) were infrequent.

## **Discussion**

### **1. Awareness of guardians about dentition and occlusion**

In an earlier survey on children making their first visit to the Department of Pediatric Dentistry, Chiba Hospital, Tokyo Dental College, between 1995 and 1998, 37.7% of patients presented with malalignment and malocclusion as their chief complaint<sup>9</sup>. In the present survey, this number has increased to 47.8%. In 1966, when this Department of Pediatric Dentistry was established, only 3.5% of children presented complaining of malalignment, while 20 years later, there was a five-fold increase to 17.1% in 1986<sup>11</sup>. At present, more than 40 years after the establishment of this Department of Pediatric Dentistry, there has been a 14-fold increase. These statistics are consistent with those of other reports<sup>1,3,5,6,9,15</sup> indicating that the number of patients seeking treatment for dental caries has decreased year after year, while the number of children seeking treatment for malalignment and malocclusion has tended to increase. This situation seems to be due to boosted awareness of guardians about treatment of malalignment and malocclusion.

### **2. Location and types of malalignment and malocclusion for which guardians and child patients hoped for treatment**

The most common location of malalignment and malocclusion for which guardians and children were seeking treatment was the upper and lower anterior teeth region. Many guardians and children were concerned about crowding of the anterior teeth region and reversed occlusion. This seemed to be due to the fact that many patients made their first visit to the Pediatric Department when they were 6–8 years old, coincident with the period of eruption of the canine. Crowding of the anterior teeth region and reversed occlusion are easily noticed by children and their guardians, prompting them to seek advice and treatment early<sup>6,9,10,12,15</sup>.

### 3. Initial triggers for concern about dentition and occlusion

In both groups, the initial trigger of “guardians noticed abnormalities for themselves” was more frequently reported than “abnormalities were pointed out by dental examination in kindergarten, nursery school and school”. This supports the notion that awareness of guardians of dentition and occlusion was boosted.

### 4. Necessity of occlusal diagnosis and treatment in pedodontics

We suggest that it is the responsibility of pedodontists to provide precise diagnosis of occlusal abnormalities in children in order to improve malocclusion to the satisfaction of guardians and the children themselves. However, 7.7% of children with abnormalities in their dentition and occlusion did not seek advice about occlusal problems, suggesting that there is a need for more education about occlusal abnormalities and treatment in pedodontic clinics.

Noguchi *et al.*<sup>8)</sup> reported that out of all the child patients who received treatment for occlusal abnormalities, 15% presented with malocclusion as the chief complaint, while in the remaining 85% it was the pedodontist who pointed out the malocclusion and recommended treatment. Gosney<sup>2)</sup> reported that the opinion of parents, mothers in particular, exerted the greatest influence on the decision as to whether children with abnormalities in their dentition and occlusion received orthodontic treatment. It is therefore important for pedodontists to provide patients and guardians with further education about the necessity of occlusal treatment for children suffering from abnormalities in their dentition and occlusion.

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