

# The occlusal status of 8 to 10 years old vietnam children: A cross-sectional study.

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## Abstract

**Background:** Malocclusion can cause frequent bites of cheeks or tongue, cosmetic problems, irritability or chewing, speech problems or development of breath thus affecting the quality of life in general. **Purpose:** Estimate the prevalence of different degrees of deviation related to oral complications in children aged 8-10 years.

**Materials and Methods:** A cross-sectional study was conducted on 686 children aged 8-10 years after getting parental consent. Vietnamese children are selected from certain cities by using proportional allocation techniques by dividing these cities into districts where children are selected from the center and the garden is proportional high school.

**Results:** Based on molar relationships, the incidence of malaria in children aged 8-10 years (children with mixed teeth) was 35.42%, of which 56.12% had a level II division with or without subdivision and 31.20% have class III with or without zoning. The remaining 12.68% of children have different types of malaria including type II and II and type III malformations. Common bites are reported in 34.11% of children, other types of bites include open bites, deep bites, bites from one side to the other are recorded respectively 47.23%, 15.45%, 3.21% in children. **Conclusion:** This study shows that more than one third of Vietnamese children are affected by different types of errors and deviations. Important associations were discovered between the age of children and the prevalence of malaria and crowding.

**Keywords:** Children, Crowding, Diastema, Malocclusion, Prevalence, Vietnam.

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## Introduction

Research has been shown that the occlusion of a tooth is important in determining the occlusion in permanent teeth. Malocclusion treatment is a big challenge for dental professionals because of the complex and expensive treatment, so the focus is on early diagnosis and prevention. Determine the incidence of malaria in children, leading to early diagnosis and setting up the need for social treatment to help orthodontic doctors and pediatricians make appropriate treatment plans and preventive planning and prevent [1].

A number of published studies on major dental obstruction in many countries, however in Vietnam, the number of published documents is limited. The exclusion in primary dentistry has been found to be affected by many types of malocclusion, an old study found that as high as three-quarters of 3-year-old children had a relationship of occlusion. The clinic reported a 43% incidence in asymmetrical molar teeth relationships in 61 children. Similarly, other studies of India, Saudi Arabian and Israel have reported more than half of children with a final relationship with incidences of 52% and 68% respectively. In Arab children, a study showed that the rate of end-to-end contact was as high as 80% in 3-5 year olds. In addition, other defects such as mesial and distal steps have been reported in Saudi children. Malocclusion refers to a number of possible conditions. It may be an improper connection of the teeth, or a change in the appearance of the face [2]. Malocclusion can cause frequent bites of the cheek or tongue inside, cosmetic

problems, discomfort or chewing, voice problems or mouth breathing development thus affecting the quality of life in general.

This study aims to estimate the prevalence of different levels of malocclusion related to oral complications in children aged 8-10 years. The findings of this study can help us understand the need for social treatment and help all relevant parties to develop appropriate prevention and treatment plans.

## Materials and Methods

A cross-sectional study was performed on 686 children aged 8-10 years after receiving consent from parents. Vietnam children are selected from certain cities by using proportional allocation techniques by dividing these cities into districts where children are selected from the center and the garden with attendance rates high. Disposable pen, pencil and ruler test kits were used to evaluate the occlusion status of the study participants. Subjects were classified as having Type I, Type II and Type II malaria by using the angle classification of the molar relationship [3,4].

### Inclusion/exclusion criteria

All children aged 8 to 10 years, ready to participate in the study were included. Children with craniofacial deformities, those who are medically injured and have undergone any orthodontic treatment are excluded from the study.

Diagnosis has been reported in the data collection table along with the demographic data of the subjects. Therefore, the collected data was entered into Microsoft Excel spread sheet and included in statistical analysis by SPSS version 20.0 (Social Science Statistical Package) [5]. Before conducting research, moral clearance was taken from the dental college Ho Chi Minh City.

**Results**

The total sample of 686 children aged 8-10 years was included in this study, of which 80% were female and 20% were male. More than half of the children are from Ho Chi Minh City while about one third of children are selected from Hanoi City (Tables 1-3). Based on molar relationships, the incidence of malocclusion in Vietnamese children aged 8-10 (mixed teeth) is 35.42%, representing 243 children, of which 56.12% have class I. or without subdivision and 31.20% have category III with or without subdivision [6]. 12.68% of the remaining children have malformations with different types of malocclusion including Class II subdivision II and combination of class II and III malformations (Figure 1).

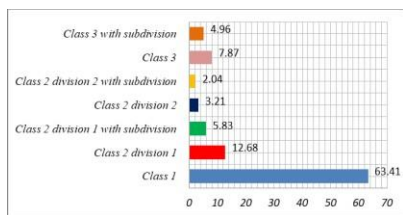


Figure 1. Main types of malocclusion in Vietnam 8-10 aged children based on molar relation.

Table 1. Socio-demographics of included children.

| Demographics           |                     | Frequency | Percent |
|------------------------|---------------------|-----------|---------|
| Sex                    | Male                | 133       | 19.39   |
|                        | Female              | 553       | 80.61   |
| Residence              | Ho Chi Minh city    | 385       | 56.12   |
|                        | Ha Noi              | 214       | 31.2    |
|                        | Others              | 87        | 12.68   |
| Father education level | Less than Secondary | 153       | 22.3    |
|                        | Secondary           | 257       | 37.46   |
|                        | More than Secondary | 276       | 40.23   |
| Mother education level | Less than Secondary | 230       | 33.53   |
|                        | Secondary           | 176       | 25.66   |
|                        | More than Secondary | 280       | 40.82   |

Table 2. Distribution of malocclusions among children aged 8-10 years old in HCM region.

| Category  |              | Frequency | Percent |
|-----------|--------------|-----------|---------|
| Occlusion | Malocclusion | 243       | 35.42   |

|   |                                     |     |       |
|---|-------------------------------------|-----|-------|
| Type malocclusions based on molar relation      | Normal occlusion                    | 443 | 64.58 |
|   | Class 1                             | 435 | 63.41 |
|   | Class 2 division 1                  | 87  | 12.68 |
|   | Class 2 division 1 with subdivision | 40  | 5.83  |
|   | Class 2 division 2                  | 22  | 3.21  |
|   | Class 2 division 2 with subdivision | 14  | 2.04  |
|   | Class 3                             | 54  | 7.87  |
| Type malocclusions based on vertical relation   | Class 3 with subdivision            | 34  | 4.96  |
|   | Normal Bite                         | 234 | 34.11 |
|   | Open Bite                           | 324 | 47.23 |
|   | Deep Bite                           | 106 | 15.45 |
| Type malocclusions based on transverse relation | Edge to edge                        | 22  | 3.21  |
|   | Normal bite                         | 453 | 66.03 |
|   | Anterior crossbite                  | 116 | 16.91 |
|   | Posterior crossbite (unilateral)    | 70  | 10.2  |
|   | Posterior crossbite (bilateral)     | 31  | 4.52  |
|   | Posterior crossbite (total)         | 9   | 1.31  |
|   | Over Jet (anterior)                 | 7   | 1.02  |

Table 3. Proportion of spacing and teething in children 8-10 years in HCM region.

| Category             |                           | Frequency | Percent |
|----------------------|---------------------------|-----------|---------|
| Teeth crowding       | Absent                    | 432       | 62.97   |
|                      | Present (Upper)           | 43        | 6.27    |
|                      | Present (Lower)           | 198       | 28.86   |
| Diastema             | Present (Upper and lower) | 13        | 1.9     |
|                      | Absent                    | 429       | 62.54   |
|                      | Present (Upper)           | 189       | 27.55   |
|                      | Present (Lower)           | 13        | 1.9     |
|                      | Present (Upper and lower) | 15        | 2.19    |
| Premature tooth loss | Physiological (Upper)     | 40        | 5.83    |
|                      | No                        | 563       | 82.07   |
|                      | Yes (Deciduous)           | 34        | 4.96    |
|                      | Yes (Permanent)           | 75        | 10.93   |

|  |                               |    |      |
|--|-------------------------------|----|------|
|  | Yes (Deciduous and permanent) | 14 | 2.04 |
|--|-------------------------------|----|------|

## Discussion

In the present study, the antero-posterior molar relationship showed the prevalence of 35.42% of malocclusion in Vietnam children aged 8-10. Similarly, Alzubair and Ghandour found 30.6% prevalence of discrepancies in antero-posterior molar relationship in 12-yearage Yemeni children [7,8].

They found 35% prevalence of discrepancies in antero-posterior molar relationship in 6-12-year-age Saudi Arabian children, found 33% and 36% prevalence of malocclusions in 6-year-age children. A study among Lithuanian 7-15 years aged children found that only 15.3% had normal occlusion. Thailander found that malocclusions found in 88% of 5-7 years old children [9].

This difference in malocclusion prevalence can be attributed to the genetic factors and different criteria used to define malocclusions. Several studies have reported a high prevalence of malocclusion among school children which varied between populations in Saudi Arabia, the seeking for orthodontic treatment has been grown in the last decade [10].

In the present study, 23.76% of studied children had class II and 12.83% had class III, found 22.8% of studied children had class II and 12.2% had class III. And while, found 27% of boys and 32% of girls aged 6 years old had class II in Iceland, while 6.2% and 4.8 had class III in boys and girls respectively found a 21% and 3.7% prevalence of class II and class III malocclusion in 5-17 years old students [11]. In Lithuanian children, class I, class II and class III occlusions were seen in 68.4%, 27.7% and 2.8% of them.

The present study found normal bite in 34.11% of the children, other types of bites include open bite, deep bite, edge to edge bite which were recorded in 47.23%, 15.45%, 3.21% of children respectively. Similar results of who found 21.6% prevalence of deep bite in 5-17-years-old boys. These findings were different in Lithuanian children where the prevalence of deep bite (>3.0 mm) was 14.5% and the prevalence of open bite was only 3.5%. The transverse relation between dentitions in the studies children were normal in 75.1% of children, while 10.1% and 13.8% of children had anterior and posterior cross bite respectively [12]. In Lithuania, posterior cross bite was found in 8.8% of schoolchildren.

In the present study, the prevalence of diastema was 37.47%, This result is similar to the result of prevalence of diastema with 1 mm or more in 12 years children, reported a prevalence of 13.5% in early mixed dentition that have been decreased with dentition development to be 3.7% in adolescents. Another study among Swedish school children found 5% prevalence of medial diastema. The prevalence of sucking habits among Saudi children was found as high as 48.36%, which explained

to some extent the high prevalence of spacing in upper dentition [13].

The prevalence of tooth crowding in our study was 37.03% while Alzubair and Ghandour found 31.4% prevalence of crowding. The found of crowding as the most common problem affected more than half of the studied 5-17 years aged students [14]. In Lithuanian children, the prevalence of crowding in the upper and lower dentitions was 38.4% and 35.5% respectively. This prevalence was found significantly increased with age of children. This is in accordance with our study that found older children had significantly higher malocclusion prevalence than younger children [15].

## Conclusion

This study found more than one third of Vietnam children affected by different types and degrees of malocclusion, mal-alignment and crowding. Significant associations were detected between age of children and prevalence of malocclusion and crowding. These findings will highlight the high treatment needs of orthodontic treatment among Vietnam children.

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## Conflict of Interest

The author disclose that they have no conflicts of interest.

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