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The Occlusal Status of 8 to 10 Years Old Vietnamese Children: A Cross-Sectional Study

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ABSTRACT

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. The purpose of this study was to estimate the prevalence of different degrees of deviation related to oral complications in children aged 8-10 years. 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.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. 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.

KEY WORDS: CHILDREN; CROWDING; DIASTEMA; MALOCCLUSION; PREVALENCE; VIETNAM.

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INTRODUCTION

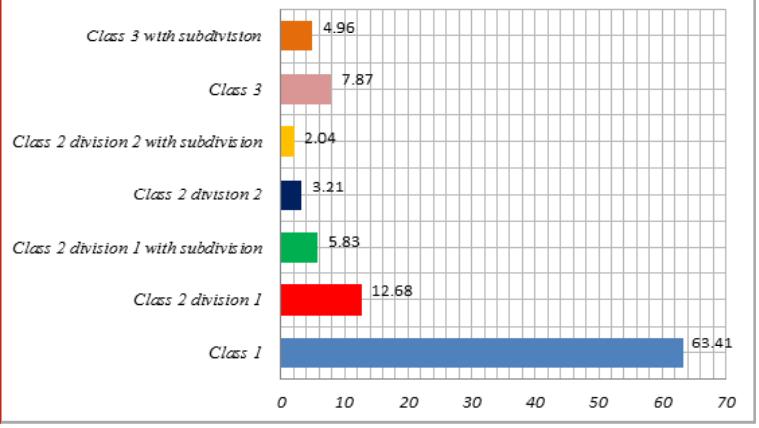
Research has shown that the occlusion of a tooth is important in determining the occlusion in permanent teeth (Radnzic,1988). Malocclusion treatment is a big challenge for dental professionals because of the complex and expensive treatment, so the focus is on early diagnosis and prevention. Determine 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 (Almasri 2014). A number of published studies on major dental obstruction in many countries (Clinch 2007; Jensen et al, 1957; Boyko 1968; Otuyemi et al, 1997; Abu Alhaija & Qudeimat 2003; Meer et al, 2016). 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 (Chapman 1935).

The clinic reported a 43% incidence in asymmetrical molar teeth relationships in 61 children (Clinch 1951). 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 (Kaufman & Koyoumdjisky 1967; Abumelha et al, 2018). In Arab children, a study showed that the rate of end-to-end contact was as high as 80% in 3-5 year olds (Farsi & Salama 1996). 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. 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 (Abumelha et al, 2018). 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.

MATERIAL 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

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



angle classification of the molar relationship. 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 spreadsheet and included in statistical analysis by SPSS version 20.0 (social science statistical package). Before conducting research, moral clearance was taken from the dental college Ho Chi Minh city.

RESULTS AND DISCUSSION

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 (Table 1 to 3). Based on molar relationships, the incidence of malaria 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. 12.68% of the remaining children have malformations with different types of malaria including Class II subdivision II and combination of class II and III malformations (Figure 1). 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 (Al-Zubair & Ghandour, 2014). Abumelha et al, found 35% prevalence of discrepancies in antero-posterior molar relationship in 6-12-year-age Saudi Arabian children (Abumelha, et al, 2018). Johannsdottir et al, found 33% and 36% prevalence of malocclusions in 6-year-age children (Johannsdottir et al, 1997). A study among Lithuanian 7-15 years aged children found that only 15.3% had normal occlusion (Sidlauskas & Lopatiene, 2009). Thailander found that malocclusions found in 88% of 5-7 years old children. 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 (Hassan, 2006).

In the present study, 23.76% of studied children had class II and 12.83% had class III, Abumelha et al, found 22.8% of studied children had class II and 12.2% had class III (Abumelha et al, 2018). And while Johannsdottir et al, 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 (Johannsdottir et al, 1997). Thilander et al. found a 21% and 3.7% prevalence

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	31.20
	Others	87	12.68
Father education level	Less than Secondary	153	22.30
	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

of class II and class III malocclusion in 5-17 years old students (Thilander, et al, 2001). In Lithuanian children, class I, class II and class III occlusions were seen in 68.4%, 27.7% and 2.8% of them (Sidlauskas & Lopatiene 2009). 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 Thilander et al, who found 21.6% prevalence of deep bite in 5-17-years-old boys (Thilander, et al, 2001). 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% (Sidlauskas & Lopatiene 2009). 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. In Lithuania, posterior cross bite was found in 8.8% of schoolchildren. (Sidlauskas & Lopatiene 2009). In the present study, the prevalence of diastema was 37.47%, This result is similar to the result of Abumelha et al 40.7% (Abumelha, et al, 2018), while Alzubair and Ghandour found 14.2% prevalence of diastema with 1 mm or more in 12 years children. Thilander et al, reported a prevalence of 13.5% in early mixed dentition that have been decreased with dentition development to be 3.7% in adolescents (Thilander, et al, 2001). 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% (Farsi & Salama 1997), which explained to some extent the high prevalence of spacing in upper dentition.

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

	Category	Frequency	Percent
Occlusion	Malocclusion	243	35.42
	Normal occlusion	443	64.58
Type of malocclusions	Class 1	435	63.41
based on molar relation	Class 2 division 1	87	12.68
	Class 2 division 1	40	5.83
	with subdivision Class 2 division 2	22	3.21
	Class 2 division	14	2.04
	2 with subdivision		
	Class 3	54	7.87
	Class 3 with subdivision	34	4.96
Type of malocclusions	Normal Bite	234	34.11
based on	Open Bite	324	47.23
vertical relation	Deep Bite	106	15.45
	Edge to edge	22	3.21
Type of malocclusions	Normal bite	453	66.03
based on	Anterior crossbite	116	16.91
transverse relation	Posterior crossbite (unilateral)	70	10.20
	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
	Present (Upper and lower)	13	1.90
Diastema	Absent	429	62.54
	Present (Upper)	189	27.55
	Present (Lower)	13	1.90
	Present (Upper and lower)	15	2.19
	Physiological (Upper)	40	5.83
Premature tooth loss	No	563	82.07
	Yes (Deciduous)	34	4.96
	Yes (Permanent)	75	10.93
	Yes (Deciduous and permanent)	14	2.04

The prevalence of tooth crowding in our study was 37.03% while Alzubair and Ghandour found 31.4% prevalence of crowding and Abumelha et al 36.5% (Al-Zubair & Ghandour 2014; Abumelha et al, 2018). Thilander et al, found the crowding as the most common problem affected more than half of the studied 5-17 years aged students (Thilander, et al, 2001). 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 (Sidlauskas & Lopatiene 2009). This is in accordance with our study that found older children had significantly higher malocclusion prevalence than younger children. 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 discloses that there are no conflicts of interest.

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