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Original Article

Prevalence of primate and interdental spaces for primary dentition in 3- to 6-year-old children in Taiwan

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KEYWORDS

Spaced dentition;
Primary dentition;
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Background/Purpose: Spaced primary dentition plays a critical role in the eruption of permanent teeth and the establishment of ideal occlusion. A lack of these spaces in deciduous dentition may result in disproportionate jaw and tooth sizes. Additionally, spaced primary dentition is significantly affected by ethnic factors. However, few of these studies have been conducted in Asia. The purpose of this study was to investigate the prevalence of spaced primary dentition in Taiwan.

Methods: One hundred and forty-seven 3- to 6-year-old Taiwanese children (58 girls and 89 boys) were recruited for a cross-sectional study. Primate and interdental spaces were recorded by intraoral photos. The prevalence of spaced dentition was evaluated. The inter-personal agreement of spaced dentition between the upper and lower arches was also assessed.

Results: Most of the subjects had spaced primary dentition. The prevalence of primate space was 83.7% in the upper arch and 61.2% in the lower arch, whereas the prevalence of interdental space was 44.2% in the upper arch and 53.1% in the lower arch. The prevalence rates of interdental space and upper primate space were significantly higher in boys than in girls. Interdental spaces of the lower arch increased with age.

Conclusion: Ethnic factors can affect the ratio of spaced dentition. Most of the 3- to 6-year-old Taiwanese children have spaced dentition. The boys have higher incidence of spaced dentition

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than the girls. Furthermore, primate space is more frequently found in the upper arch than in the lower arch, whereas interdental space is reversed.

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Introduction

Spaced primary dentition is an indicator of the favorable development of permanent dentition.¹ These deciduous spaces are a prerequisite to compensate for the discrepancy between the tooth sizes of primary and permanent dentitions, and play a critical role in the later eruption of permanent teeth and the establishment of occlusion.² Additionally, a lack of these spaces in deciduous dentition may result in disproportionate jaw and tooth sizes.¹ Spacing in the primary dentition can be subdivided into two types: primate space and developmental space.² Primate spaces are located between the lateral incisors and canines in the upper arch, and between the first molars and canines in the lower arch, whereas developmental spacing (also called interdental spacing) is found between the incisors in both the upper and lower arches.³ Notably, closed dentition without primate or interdental spaces can increase the risk of proximal dental caries.^{4,5} In short, spaced deciduous dentition is necessary for the development of permanent dentition and normal occlusion (see Fig. 1).

There are several methods by which to investigate spaced and closed dentition. Dental casts are used to confirm the presence of spacing, and to measure the

distance of spacing in the primary dentition.^{6–9} Intraoral photography is also common, and used to inspect the spacing in the upper and lower arches.¹⁰ Apart from these methods, some studies have examined and recorded the spacing through direct visualization.^{11–13} These methods are both useful and popular in detecting the spacing in the primary dentition.

Spaced or closed dentition is the most crucial characteristic of the dental arch, and the dental arch is closely related to ethnicity.^{14–17} Several studies have examined the prevalence of spaced dentition among diverse ethnic groups. For example, spaced dentition is present in 98% of the 3-year-old children from Burlington.¹⁸ In Polish children, the interdental space is present in 96% of participants in one study.² Another study of British children revealed a 90% prevalence rate.¹⁹ In Jordan, generalized spacing is found in 61.8% and 61.1% in the children's upper and lower arches, respectively.²⁰ A total of 32% of Nigerian children have anterior segment spacing.¹² Additionally, the prevalence rate of spaced dentition ranges from 69.5% to 82.1% in India.^{1,10,13} In addition to the factors of ethnicity, spaced dentition is also affected by gender. Specifically, spaced dentition has been shown to be more frequent in males than in females,^{7,13} and the amount of spacing was found to

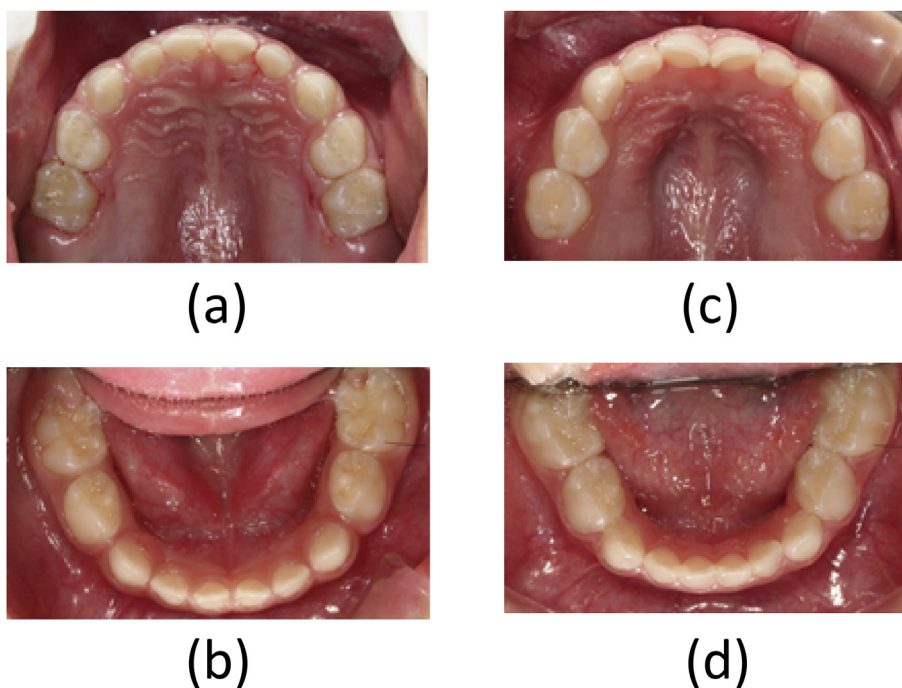


Figure 1 Upper and lower occlusal views of primary dentition. (a) The upper dentition with space. (b) The lower dentition with space. (c) The upper dentition without space. (d) The lower dentition without space.

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