



Prevalence of malocclusions associated with pernicious oral habits in a Mexican sample

Prevalencia de las maloclusiones asociada con hábitos bucales nocivos en una muestra de mexicanos

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ABSTRACT

Malocclusions are considered by the WHO as the third event by its prevalence and they represent a public health problem. Genetic and environmental risk factors such as abnormal oral habits are of vital importance to consider its frequency, duration and intensity in order to avoid creating specific changes in the occlusion. **Objective:** To determine the prevalence of malocclusions and its association with risk factors, such as pernicious oral habits in a 2 to 15-year-old child population who requested dental care in the Venustiano Carranza peripheral clinic of the UNAM. **Method:** A cross-sectional study was conducted in 147 children. Previously, the examiners who participated in the study were calibrated with a 98% concordance for pernicious habits and 92% for malocclusions. The epidemiologic information was recollected in one phase that comprised two stages to identify the presence of pernicious oral habits and diagnose the type of malocclusion. The statistical package SPSS 15 was used. **Results:** The prevalence of pernicious oral habits was 96.6%. The largest number of cases presented at age 4 and in the 6 to 11 years of age during the mixed dentition. Malocclusions were present in both genders with no significant difference. The habit with the highest prevalence was lingual interposition (66.2%); the second was lip suction (49.3%); the third was onychophagia (41.9%) and finally, mouth-breathing (31.8%). In regard to malocclusions, the most prevalent was open bite (35.1%) followed by lower anterior crowding (26.4%), upper anterior crowding (19.6%) and lastly, posterior crossbite (12.8%). There was an association between tongue thrusting and open bite ($p < 0.000$), and with mouth breathing-posterior crossbite ($p < 0.012$) and Angle class II ($p < 0.008$). **Conclusions:** Child population presents greater susceptibility to develop malocclusions during growth so preventive measures should be adopted during this stage.

Key words: Pernicious habits, malocclusions, mixed dentition.

Palabras clave: Hábitos nocivos, maloclusiones, dentición mixta.

RESUMEN

Las maloclusiones son consideradas por la OMS como el tercer evento por su prevalencia; éstas representan un problema de salud pública. Los factores de riesgo genéticos y ambientales, como hábitos bucales nocivos son de vital importancia, considerar su frecuencia, duración e intensidad para evitar crear cambios específicos en la oclusión. **Objetivo:** Determinar la prevalencia de las maloclusiones y su asociación con factores de riesgo, como hábitos bucales nocivos en la población infantil de 2 a 15 años que solicitaron atención dental en la clínica Periférica Venustiano Carranza de la UNAM. **Método:** Se realizó un estudio de tipo transversal en 147 niños. Previamente se calibraron las personas que participaron en el estudio, con una concordancia del 98% para los hábitos nocivos y 92% en las maloclusiones. La información epidemiológica se levantó en una sola fase, que constó de dos etapas para identificar la presencia de los hábitos bucales nocivos y diagnosticar el tipo de maloclusión. Se utilizó el paquete estadístico SPSS 15. **Resultados:** La prevalencia de hábitos bucales nocivos fue del 96.6%. El mayor número de casos se presentó a la edad de 4 años, y de 6 a 11 años durante la dentición mixta. Se presentó indistintamente de acuerdo con el género. El hábito de mayor prevalencia fue el de interposición lingual: 66.2%; en segundo lugar, succión labial: 49.3%; en tercer lugar, onicofagia: 41.9%; y, por último, respiración bucal: 31.8%. En cuanto a las maloclusiones: mordida abierta, 35.1%; apiñamiento anteroinferior, 26.4%; apiñamiento anterosuperior, 19.6%, y mordida cruzada posterior, 12.8%. Se encontró asociación del hábito de interposición lingual y mordida abierta ($p < 0.000$), respiración bucal con mordida cruzada posterior ($p < 0.012$) y la clase II de Angle ($p < 0.008$). **Conclusiones:** La población infantil presenta mayor susceptibilidad a desarrollar maloclusiones durante el crecimiento, por lo que se deben tomar medidas preventivas durante esta etapa.

INTRODUCTION

The World Health Organization considers malocclusions as a variable public health problem that ranks third in prevalence of oral anomalies associated with different risk factors such as genetic and environmental.¹⁻³

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Among the environmental risk factors is the presence of pernicious oral habits which may influence the development of a malocclusion depending on their frequency, duration and intensity during growth and development, causing specific changes in the occlusion and in bone and facial tissues.^{4,5}

Occlusal normal patterns for the first dentition according to the terminal position of the primary second molars are the terminal plane (flush) and the mesial step relationship, which lead to an Angle molar class I in the permanent dentition. The severe mesial and distal steps are considered malocclusion precursors for the second dentition.⁶⁻⁷ To consider the position of the upper first molar with respect to the lower first molar in class I, II (sub. div. I and II) and III is of vital importance as guidelines during the diagnosis of any habit-associated malocclusion.⁸⁻¹⁰

Identification of any of the abovementioned conditions and recognition of risk factors could prevent major anomalies; the problem is that, while it is true that a large number preventive studies has been published, these generally focus in the dental caries problem in preschool and school age children in contrast to those related with the prevention of oral habits.¹¹

Risk factors such as thumb sucking for extended periods of time, may cause specific abnormal effects on occlusion and bone development¹² and although breastfeeding has been considered greatly beneficial, it has also been associated with malocclusions such as open bite when maintained for too long.¹³

Malocclusion prevalence studies in children have established that oral habits can affect tooth position and arch shape, interfering with normal growth and orofacial musculature function.¹⁴ Authors as Warren J, Bishara S, attempted to relate nonnutritive habits with facial morphology and malocclusions in Brazilian schoolchildren of 4 years of age and observed that 49.7% of the sample had malocclusions and that 28.5% had 2 or 3 factors for malocclusions; 12.1% had posterior cross bite and the 36.4% anterior open bite. It was also determined that there was an association between thumb sucking habit and malocclusion.¹⁵

Considerable problems could be avoided if pediatricians, general dental practitioners, pediatric dentists and orthodontists when examining 4-6 year-old children, identified the presence of oral habits in order to prevent and intercept them which would avoid physical and psychological repercussions during puberty and adolescence.^{16,17}

Epidemiologic studies provide a great amount of information about the profile of malocclusions

associated with different variables. Agavish reported that female adolescents, 15 to 16 years old, of high social class, showed a high prevalence of pencil eraser biting and ice chewing; 92% referred biting the pencil eraser daily and 48% doing it for three hours a day. Effects on the masticatory muscles were observed which caused TMJ noises and palpation sensitivity.¹⁸

In a study designed to identify and prioritize the possible relationship between atypical swallowing, open bite, diction and school performance by sex and age in children from preschool through sixth grade, it was determined that children between 7 and 8 years of age had more language problems and that girls presented atypical swallowing that caused open bites.¹⁹

The abovementioned information highlights the importance of identifying clinical characteristics of oral habits associated with the development of some of the malocclusions that are more frequently present in the child population, in order to prevent, intercept or correct them during growth and development.

MATERIALS AND METHODS

A cross-sectional study was performed on 147 children of both genders, ages between 2 and 15 years who attended the Venustiano Carranza peripheral clinic of the Dental School of the National Autonomous University of Mexico for dental care and whose parents previously signed a consent form to participate in this study. The epidemiologic information was obtained with the informed consent of the parents or guardians.

The survey contained a section with direct questions for the children in a personal way, and direct and another section addressed to parents in order to identify the presence of oral habits. Finally, epidemiologic variables such as mouth breathing, lip competence, incompetence, or biting; onychophagia and presence of calluses caused by thumb sucking were obtained. The child was asked to swallow saliva to assess if the swallowing was atypical or not and if there was tongue thrust.²⁰⁻²²

Oral habits were also assessed by means of the information provided by the parents. Variables such as thumb sucking, mouth-breathing, atypical swallowing, onychophagia, bruxism, self-mutilation of lips or cheeks, lip sucking and baby's bottle prolonged use were determined.²³ Arch shape, overjet, presence or absence of edge to edge bite upon occlusion, upper and lower anterior crowding, molar relationship class I, II and III, according to

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