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RESEARCH ARTICLE

PREVALENCE OF EXOSTOSES IN A MAYAN POPULATION OF THE HEALTH CENTER, TEKAX, YUCATAN, MEXICO

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ABSTRACT

The aim of this research was to establish the prevalence of exostoses in oral cavity of patients from the Urban Health Center, Tekax, Yucatan. This population is characterized by a brachiocephalic-exostosis association. Exostoses area symptomatic bone growth anatomical variation, in jaws, resulting from genetic and environmental factors interactive.

Methods: Observational, transversal, descriptive. To obtain data, 274 patients with mayan ascendances records from the Urban Health Center Township Tekax, Yucatán, between 10-80 years of age during a six months period were reviewed. Ninety-eight (35.76%) presented exostoses. A descriptive analysis with frequencies and percentages finding the inference between gender and exostoses category was performed.

Results: Of the 274 patients data reviewed, 124 (45.25%) were male and 150 cases (54.74%) women. 98 (35.76%) presented exostoses: 54 (19.70%) women and 44 (16.05%) men. According to the Location reported that the MT (20.43%) had the highest and VE (1.45%) the lowest prevalence. Nodular shaped (9.4%) was the most prevalence. According to age range the group 21-40 years reported 15.69%, while 41-60 years revealed 14.96% and 5.10% for the 61-80 years. Exostoses shape and location were independent from gender; location also was independent from ages, while shape and location were dependent.

Conclusions: According to the results found in this Mayan ethnic population, the prevalence of exostoses reported is the highest (35.76%) at the state level until today. But sex is still consistent with that reported being women who have a higher prevalence (19.70%).

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INTRODUCTION

Mayan population has influence in the southeast of Mexico especially in the Yucatan Peninsula area (Yucatan, Campeche, Quintana Roo states), Chiapas, and Central American countries (Guatemala and Belize). The National Indigenous Language Institute estimates the presence of 759,000 speakers of Mayan languages in Mexico; most of them living in Yucatan (Mendiburu Zavala and Casanova, 2013). The National Institute of Statistics, Geography and Information (INEGI), reported 15% to 30% of the population in Yucatan are Mayan ascendency and speakers of the native language (INEGI, 2011). Morley SG, defines Mayan as a population characterized by an average height of 154.61 cm and 142.65 cm, weight of 52.86 kg and 50 kg and a cephalic index average of 85.8 and 86.8 for males and females respectively (Cucina, 2013).

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Based on archaeological evidence, the Mayan have a wide-flat forehead (brachycephalic), aquiline nose, straight black hair, high cheekbones, almond-shaped dark eyes, short neck and broad shoulders (Cucina, 2013). Cucina A. mentions that the brachiocephalic skeleton includes individuals with short antero-posterior skulls, forming a round head, due to a diameter, where the length is almost equal in size to the width (Cucina, 2013). Environmental factors, such as soil and hydrology of the Yucatan Peninsula could be associated to the presence of exostoses. The soil consists of limestone, with sandstone that can contain shell material on the coastal area. The lower parts have soils with low permeability coupled with high humidity and proximity to cenotes (natural pits or sinkholes, resulting from the collapse of limestone bedrock that exposes groundwater underneath), factors that are prone to cause flooding and emerging gleysols. These soils contain large amounts of organic material, which explains its low alkalinity (Aguilera, 2012). The hydrology of Yucatan coast lagoons are directly correlated with a loading and nutrient dynamics, both

associated to contributions from groundwater and wastewater. The relevance of this data stems from the fact that the Mayan population, still drink the described water containing various mineral deposits; condition that could be associated to the appearance of exostoses in the oral cavity (Díaz *et al*., 2007). Exostoses are bony, generally asymptomatic, slow development benign outgrowths, considered an anatomical variation and not a pathological condition. When located in palatal surface of the upper jaw they are named palatal torus (PT), and if located in the lingual mandible surface, mandibular torus (MT) (Demetrios *et al*., 1998; Manotas and Estebañez, 2010). Both the palatal and mandibular torus can develop in two ways: lobular, surrounded by a pedunculated lobular mass that can arise from a single-surface base; and multi-lobular, with multiple protuberances each with its own single- surface base (Manotas and Estebañez, 2010). Palatal torus are developed in the midline of the hard palate as increased of volume circumscribed stony, hard consistency, with a very thin underlying mucosa (normal pink to pale pink). Shape can be: flat, lobular, nodular and spindle-shaped (Manotas and Estebañez, 2010; Fuentes *et al*., 2009). Mandibular torus are observed in the lingual aspect of the mandible, with variations in shape and size. They could be bilateral in more than 80% and mainly located in the premolar region (Fuentes *et al*., 2009). Thru x-rays, hemispherical radio opacity is observed on the alveolar ridge. When size is less than 4 mm exostoses are not detected. Histologically exostoses are observed as an adult bone cortex structure, with small stroma and marrow spaces. The differential diagnosis should consider palatal abscess, salivary gland tumors and lymphomas (Mayor and Rojas, 1986; Cava *et al*., 2008; Smitha and Smitha, 2014). Exostoses prevalence worldwide is varied but on average, it reports 6.7%. However high data have been reported in European and Asian-oseanic populations 46%; 26% African and south-American and African-Americans had about 25%. In Yucatan a first mixed population study reported 6.7% while in a Mayan population registered a 18.68% (Smitha and Smitha, 2014; Peñaloza-Cuevas *et al*., 2013; Lazaro, 2013). The aim of this study was to determine the prevalence of exostoses in Yucatecan Mayan ascents.

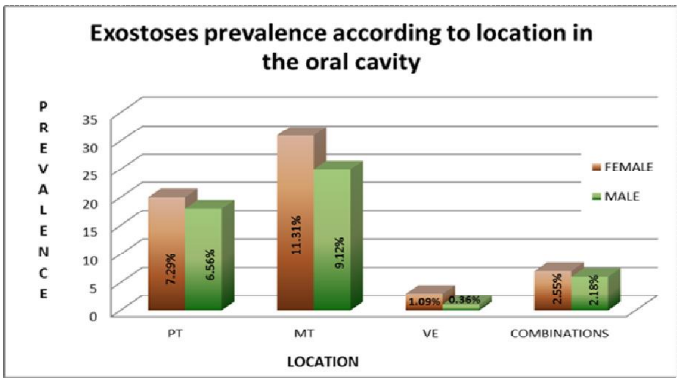

Figure 1. Distribution of exostosis by gender and location in the oral cavity, the graph shows a higher prevalence in women according to gender and TM according to their location

MATERIALS AND METHODS

An observational, descriptive cross-sectional study. Informed consent was given to the patients involved. For data collection Peñaloza-Cuevas instrument was (Peñaloza-Cuevas *et al*., 2016) (Table 1). The study included a review of patient records between 10-80 years attended the Urban Health Center Township Tekax, Yucatan, Mexico dental practice, during the period from February to December 2014. Each patient underwent an intraoral clinical examination (NOM 013) (Norma Oficial Mexicana NOM-013-SSA2-2006). For analysis, descriptive statistics and chi-square test were performed.

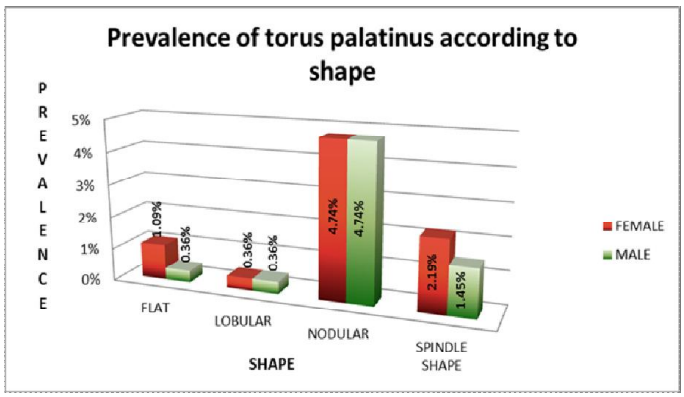

Figure 2. Prevalence of torus palatinus according to shape, the graph shows a higher prevalence of nodular shape women and men

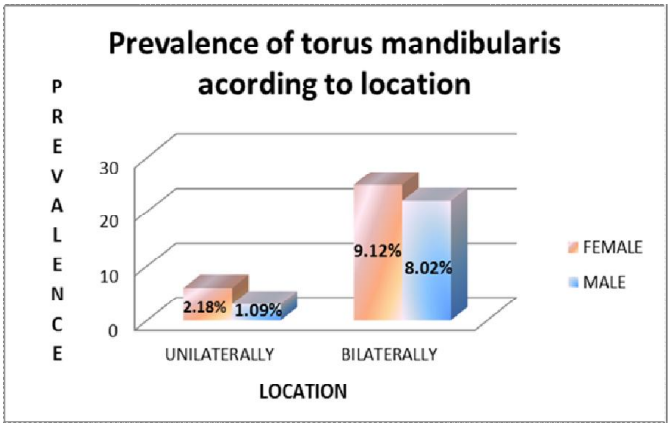

Figure 3. Prevalence of torus mandibularis according to location, the graph shows a higher prevalence of bilaterally in women

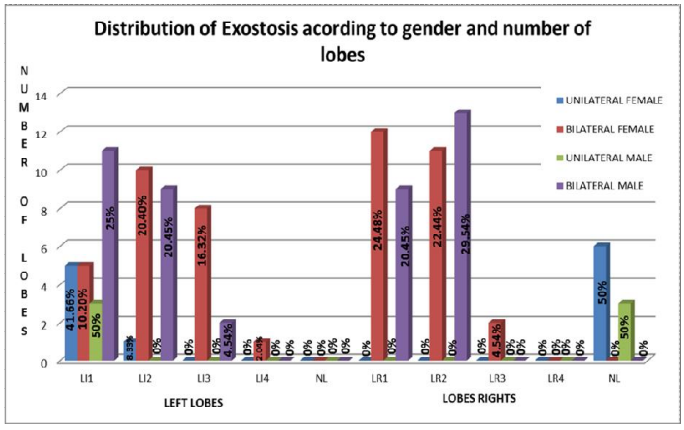

Figure 4. Distribution of exostosis according to gender and number of lobes, the figure shows a higher prevalence in bilaterally males

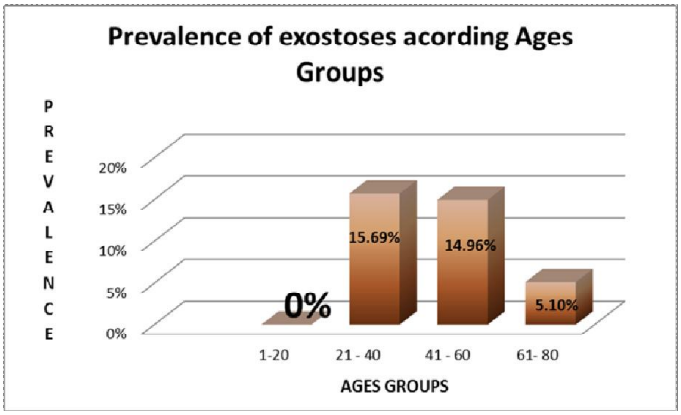

Figure 5. Prevalence of exostoses according Ages Groups, the figure shows a higher prevalence in the group 21-40 ages

Tabla 1. Data collection instrument

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Name: Age: date:

#HC: Sex: M ☐ F ☐ Clinic:

City of birth:	Residence city:
Patient:	
Fathers:	
Grandfabers:	

Exostoses: yes ☐ no ☐ * If the answer was yes, continue filling

Maxila	Exostoses ☐	PT ☐	*Jaw*	Exostoses ☐	MT ☐
Location	Anterior ☐	Medio ☐	Posterior ☐	Anterior ☐	Median ☐	Posterior ☐

Shape	☐ Lobular Plane	Unilateral ☐		Bilateral ☐	
		Number of lobes:		Number of lobes:	
		Right	left	right	left
	☐ Lobulillar				
	☐ Nodular				
	☐ Bone shape				

RESULTS

The prevalence of exostoses in the population of Tekax was 35.76%. According to gender, female showed a higher prevalence (19.70%) of exostoses (Figure 1). Location reported that the MT (20.43%) had the highest and VE (1.45%) the lowest prevalence. Nodular shaped (9.4%) followed by the spindle-shaped (3.64%) lobulillar (0.7%) and flat (1.45%) were observed (Figure 2, 3, 4). The 3.28%of the exostoses were unilaterally and 17.15% bilaterally. According to age range, the group 21-40 years reported 15.69%, while 41-60 years revealed 14.96% and 5.10% for the 61-80 years (Figure 5). Exostoses shape and location were independent from gender; location also was independent from ages, while shape and location were dependent.

DISCUSSION

In this study a greater prevalence of exostoses was showed in women (55.10%), consistent with those reported by Johnson (93%) in a study at the University of Minnesota, and Yildiray (59%) in a different study conducted at the University of Erciyes of the Cappadocia region of Turkey. Unlike Jainkittivong who indicates greater incidence in men 62.4% (Yldiz *et al*., 2005; Johnson *et al*., 1965; Jainkittivong and Langlais, 2000). According to the location in the oral cavity it was observed a higher MT prevalence (57.14%), the most frequent form was bilateral (83.92%). This is consistent with Johnson (85%) and Al Quran (42.6%); Deferring from Jainkittivong in a study conducted at the University of Chulalongkorn, where 35,65% presented PT (Johnson *et al*., 1965; Jainkittivong and Langlais, 2000; Al, Quran and Al-Dwairi, 2006). According to age, the highest incidence of exostoses was presented in the group of 21-40 (43.87%) years, coinciding with those reported by Dosumu who noted that the highest incidence occurs between 21-40 years; Piera in their study observed higher incidence in a range between 20-40 year. Unlike with Jainkittivong in a study at the University of Chulalongkorn reported the highest incidence in a group of 60 and over; Al Quran found a predominance in the group 81-90 years (Dosumu *et al*., 1998; Jainkittivong and Langlais, 2000; Al, Quran and Al-Dwairi, 2006; Sonja *et al*., 2011). In conclusion according to the results found in this ethnic Mayan population, the prevalence of reported exostoses is among the highest (35.76%) worldwide and most statewide until today. However about gender, still consistent with what was reported, being women who have a higher prevalence (55.10%). On the other hand makes it difficult to compare with other studies because there is no standardized methodology for data collection involving all the anatomical features of number, shape, number of lobes, location, which is why the table is a suggested collection presented in this Project.

REFERENCES

(2006). Norma Oficial Mexicana NOM-013-SSA2-2006, para la prevención y control de enfermedades bucales. Diario Oficial de la Federación, 11.

Aguilera, IMCO. 2012. Programa Especial de Cambio Climático para el periodo 2012-2020 con acciones adicionales y análisis de potencial. México: Semarnat.

Al, Quran FAM, Al-Dwairi ZN. 2006. Torus Palatinus and Torus Mandibularis in Edentulous Patients. *J Contemp Dent Pract,* 7, p. 112.

Cava C, Flores W, Obeso Y. 2008. Extirpación de torus palatino por pensamiento dismórfico. Kiru, 5, p. 73.

Cucina, A. 2013. Afinidades biológicas y dinámicas poblacionales entre los antiguos mayas. Una visión multidisciplinaria. Mérida, Yucatán: Universidad Autónoma de Yucatán.

Cucina, A. 2013. Variabilidad biológica en el área maya durante el clásico y posclásico a partir de la morfología dental. Mérida, Yucatán: Universidad Autónoma de Yucatán.

Demetrios Z, Belazi M, Papanayiotou P, Greece T. 1998. Concurrence of torus palatinus with palatal and buccal

exostoses. Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 8, p. 552.

Díaz A, González G, Moreno P, Yáñez A. 2007. Diagnóstico Ambiental del Golfo de México. Resumen Ejecutivo. En Diagnóstico ambiental del Golfo de México. México D.F.: Secretaría de Medio Ambiente y Recursos Naturales, Instituto Nacional de Ecología, Instituto de Ecología.

Dosumu, OO, Arotiba JT, Ogunyinka AO. 1998. The prevalence of palatine and Mandibular tori in a nigerian population. Odontostomatol Trop, 28, pp. 6-8.

Fuentes R, Borie E, Parra P, Rebolledo K. 2009. Torus palatino y torus mandibular. Int J Odontostomat, 3, p. 113.

INEGI. 2011. Página del Instituto Nacional de Estadística y Geografía. Recuperado de http://www.inegi.org.mx/

Jainkittivong A, Langlais R. 2000. Uccal and Palatal exostoses: Prevalence and concurrence with tori. Oral Surg Oral Med Pathol Radiol Endod, 90, pp. 48-53.

Johnson CC, Gorlin RJ, Anderson VE. 1965. Torus mandibularis: a genetic study. Am J Hum Genet, 17, p. 9.

Lazaro EI. 2013. Prevalencia de exostosis maxilares en pacientes del centro de salud, Samahil, Yucatán. Mérida, Yucatán: Universidad Autónoma de Yucatán.

Manotas AI, Estebañez E. 2010. Torus palatino, Torus Mandibular y Exostosis Maxilares en pacientes de la clínica odontológica de la Universidad del Magdalena, 2006. Revecienc Biomed, 1, pp. 47-53.

Manotas I, Estevez EA. 2010. Torus palatino, torus mandibulares y exostosis de los maxilares en pacientes de la clínica odontológica de la universidad de Magdalena. Rev Cienc Biomed, 1, pp. 47-53.

Mayor C, Rojas P. 1986. Frecuencia de Torus Palatinus y Torus Mandibularis en Cráneos de pobladores aborígenes de las culturas de la costa central y sur del antiguo Perú. Estomatol, 3, 17-21.

Mendiburu Zavala, C., Casanova, R. 2013. Prevalence of root canals of mandibular second molars in a contemporary Maya population. Inter J Dental Anthropol, 22, 14-23.

Peñaloza-Cuevas R, Mendiburu-Zavala C, Cardenas-Erosa R. Aguilar-Vera L, Ancona-Alcocer J, Rivero-Navarrete A. 2016. Prevalence of Exostoses In Yucatan Maya Ascent Patients. Research & Reviews. J Dent Scien, 4, pp. 23-27.

Peñaloza-Cuevas R, Rodríguez-Fernández MS, Lama-González E, Rodríguez-Casanova BI, Lara-Farfán F. 2013. Prevalencia de exostosis en pacientes que acudieron a la Facultad de Odontología de la Universidad Autónoma de Yucatán (FOUADY). Rev Odontol Latinoam, 5, pp. 7-12.

Piera NN, Ríos ND, Villalain BD. 2002. Valoración clínica de proliferaciones de tejido duro en la cavidad bucal. J Oral Pathol Med , 7, pp. 97-102.

Smitha K, Smitha G. 2014. Alveolar Exostosis revisited: A narrative review of the literature. The Saudi Journal for Dental Research, 6, pp. 67-72.

Sonja S, Matko C, Iva A, Niksa D, Vanja V. 2011. Prevalence of torus palatinus and torus mandibularis in the Split-Dalmatian contunty. Croati. Coll. Antropol, 35, pp. 637-641.

Yldiz E, Deniz M, Ceyhan O. 2005. Prevalence of torus palatinus in Turkish School children. Surg Radiol Anat, 17, p. 9.

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