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Prevalence of Jaw Tori Among Yemeni Population at UST-Aden Dental Clinics

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ABSTRACT

Background: The tori are benign bony exostosis that normally appear during the adults' age. They are composed of compressed bone and limited vascularized mucosa. Tori can meddle of hard palate torus or the lingual aspect of the mandible torus.

Objective: The purpose of this study is to investigate the prevalence of jaw tori among the Yemeni population visiting the UST-Aden Dental Clinic. The study aims to determine the frequency and characteristics of jaw tori in the study population and explore any potential correlations with demographic factors such as age and gender.

Method: A pilot study was conducted at the University of Science and Technology-Aden dental clinic in Aden, Yemen, from March 2024 to May 2024. Ethical approval and written informed consent were obtained from 250 participants, determining tori presence through clinical examination and palpation.

Results: The study found that 30.4% of patients had jaw tori, with female patients having a higher percentage of palatine tori (5.3%) and male patients having a higher percentage of mandibular tori (2.8%). The most common form was the flat shape, with the lowest prevalence among individuals under 20 years.

Conclusion: This study provides valuable insights into the prevalence of jaw tori among Yemenis. The findings highlight the importance of raising awareness of this dental condition among both the general public and healthcare professionals.

Keywords: prevalence, mandibular tori, palatine tori, bone exostosis and bony overgrowth .

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Introduction

About 10–30% of people worldwide develop torus, a frequent benign exostosis of the jaw bones. This pathologic condition typically first appears around puberty and worsens as a person ages. On the lingual side of the jaws or hard palate, these lesions manifest as lobulated protuberances. The majority of them are asymptomatic and are initially observed by patients or discovered accidently by dentists (1).

According to various literature reviews, the prevalence of jaw tori varies greatly among different populations, and it is estimated to range from 5% to 40% worldwide (2). Understanding the prevalence of jaw tori in the Yemeni population will provide valuable insights into the epidemiology of this condition and aid in the development of appropriate preventive and therapeutic measures tailored to the specific needs of this population (3) .

Bony growths called jaw tori can form on the inside surface of the mandible or the hard palate. Although they are a quite frequent dental abnormality, different populations have varying prevalences of them (4). Mandibular and palatal tori are the two most prevalent varieties. The lower jawbone is where mandibular tori, or mandibular torus if it's a single hump, appear. The Cleveland Clinic estimates that roughly 6% of Americans suffer with this illness. Bilateral torus mandibular is also common (5) . Although its precise cause is uncertain, the most widely accepted view suggests that tori have a complex etiology that includes both environmental and genetic variables (2). A number of possible causes have been suggested, including dietary variables, infections, medications, trauma, and masticatory stress (5). According to one study, eating saltwater fish, which is high in vitamin D and polyunsaturated fatty acids, may contribute to the development of tori by encouraging bone growth (6). The aim of this study is to investigate the prevalence of jaw tori among the Yemeni population visiting the UST-Aden Dental Clinic. The study aims to determine the frequency and characteristics of jaw tori in the study population and explore any potential correlations with demographic factors such as age and gender. The purpose of this study was to find out how common jaw tori was among University of Science and Technology-Aden (UST) dentistry clinic patients.

METHODS

Subjects

This single-center pilot study was carried out at UST dental clinics department of dentistry in Aden city, Yemen, during the period March 2024 to May 2024. Ethical approval was obtained from the Council of Ethics U.S.T, (MEC /AD033). Written informed consent was obtained from all the participants included in this study, with a sample size of 250 persons selected through convenience sampling. The existence of tori was determined by clinical examination and palpation with photographic, and result of the test was recorded as present or absent.

Inclusion criteria

All dental patients who visiting the U.S.T dental clinic, regardless of age or sex, who agreed to participate in this study were included. Participants were required to be of Yemeni ethnicity and could be either dentulous or edentulous.

Exclusion criteria

Patients who refused to participate in the research, individuals with suspicious tori (cysts and malignancies), patients with hyperplasia or soft tissue development in both jaws, and those from ethnic groups other than Yemeni were excluded from the study.

Data collection

Using sterilized mouth mirrors and artificial lighting, the clinical examination was conducted in a dental chair at U.S.T dental clinic. During the clinical examination, the existence of oral tori was assessed both visually and by palpation. The researcher conducted the interviews with the patients, and an

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assistant documented the patients' age, gender, geographic and shape of tori.

By using the index finger to check any signs of bony exostosis in the middle of the palate, the sublingual region of the mandible, and the buccal and lingual aspects of the distal areas of both jaws, a clinical examination of torus palatine, torus mandibular is, and alveolar bone exostosis was conducted. Each result was recorded with oral tori existent or absent. The jaw tori patients recoded as 30% distributed as mandibular and palatine tori, changes in the middle part of the palate were analyzed and were recorded as flat, spindle-shaped, nodular, or lobular tori. Mandibular Torus was observed in the sublingual part of the mandible and recorded as unilateral solitary, bilateral solitary, unilateral multiple, bilateral multiple, or bilateral combined. The Patients was questionable tori were excluded from the study.

Data analysis

Data were analyzed using SPSS 22 and chi square test.

RESULTS

Among 250 patients who accepted to participate in our study from different governments, 248 patients who met the criteria were enrolled in the study. The study found that 30.4% of participants had jaw tori, with 18.9% having mandibular tori and 11.5% having palatine tori, as shown in (Table 1). Palatine tori were more prevalent in females (5.3%) than in males (6.2%). While mandibular tori were more common in males (2.8%) than females (2%). However, bilateral mandibular tori were more frequent in females (9.8%) compared to males (4.5%), as shown in (Table 1).

The palatine tori shape showed the flat shape was recode the most prevalence 36.7% following by nodular 33.3 % and then spindle 26.7 % in other hand the mandibulate tori showed the Band-like type more prevalence 47.4% patients than Nodular 42.6 % patients as showed in table (1) and figure (1).

Table 1: Showed the prevalence of jaw tori with gender & shape.

gender		Male		female			
		N	%	N	%	Total	P-value
is the palatine tori present	YES	13	5.3%	15	6.2%	28	0.301
	NO	122	50.2%	93	38.3%	215	
	Total	135	55.6%	108	44.4%	243	
Shape Palatine Of tori	flat	6	20.0%	5	16.7%	11	0.338
	spindle	2	6.7%	6	20.0%	8	
	Nodular	6	20.0%	4	13.3%	10	
	Lobulated	0	0	1	3.3%	1	
	Total	14	46.7%	16	53.3%	30	
Are the mandibular tori present	Yes unilateral	7	2.8%	5	2.0%	12	0.03
	yes bilateral	11	4.5%	24	9.8%	35	
	NO	116	47.2%	83	33.7%	199	
	Total	134	54.5%	112	45.5%	246	
Shape of mandibular tori	Nodular	10	21.3%	10	21.3%	20	0.155
	Band like	8	17.0%	19	40.4%	27	
	Total	18	38.3%	29	61.7%	47	

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Figure 1: Bilateral of tori mandibular around incisors and premolar regions

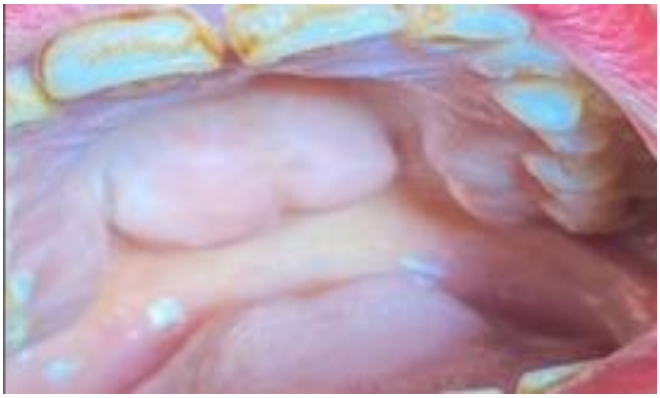

Figure 2: Tori of palatine at midline of anterior hard palate

Individuals under the age of 20 years had the lowest prevalence of palatine tori (10%), while those aged 20-30 years and older had a higher prevalence (18%). Similarly, individuals under 20 had the lowest prevalence of mandibular tori (16%), while those aged 20-30 and older had a higher prevalence (29%), as shown in Table (2).

Table 2: The prevalence of palatine tori among patients based on their age.

Age		Less than 20	20-30	31-40	more than 40	Total	P-value*
Is the palatine tori present	YES	10	10	3	5	28	0.99
		4.1%	4.1%	1.2%	2.1%	11.5%	
	NO	74	78	25	38	215	
		30.5%	32.1%	10.3%	15.6%	88.5%	
	Total	84	88	28	43	243	
		34.6%	36.2%	11.5%	17.7%	100.0%	
Shape o Palatine f tori	flat	7	3	1	0	11	0.01
		23.3%	10.0%	3.3%	0.0%	36.7%	
	spindle	2	5	0	1	8	
		6.7%	16.7%	0.0%	3.3%	26.7%	
	Nodular	3	2	1	4	10	
		10.0%	6.7%	3.3%	13.3%	33.3%	
	Lobulated	0	0	1	0	1	
		0.0%	0.0%	3.3%	0.0%	3.3%	
	Total	12	10	3	5	30	
		40.0%	33.3%	10.0%	16.7%	100.0%	
Are the mandibular tori present	Yes unilateral	6	4	0	2	12	0.01
		2.4%	1.6%	0.0%	0.8%	4.9%	
	yes bilateral	10	22	2	1	35	
		4.1%	8.9%	0.8%	0.4%	14.2%	
	NO	69	64	26	40	199	
		28.0%	26.0%	10.6%	16.3%	80.9%	
	Total	85	90	28	43	246	
		34.6%	36.6%	11.4%	17.5%	100.0%	
Shape of mandibular tori	Nodular	8	7	2	3	20	0.02
		17.0%	14.9%	4.3%	6.4%	42.6%	
	Band like	8	19	0	0	27	
		17.0%	40.4%	0.0%	0.0%	57.4%	
	Total	16	26	2	3	47	
		34.0%	55.3%	4.3%	6.4%	100.0%	

*** chi-squared test**

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The highest prevalence of palatine (9.5%) and mandibular (13%) tori was observed in Aden city compared to other cities, as shown in Table 3.

Table 3: The prevalence of palatine tori among patients based on their governments.

CITY		ADEN	Al-Hodeidah	Taizz	Lahij	Shabwah	Total	*P-value
The presence of palatine tori	YES	23	4	1	0	0	28	0.12
		9.5%	1.6%	0.4%	0.0%	0.0%	11.5%	
	NO	159	25	1	8	22	215	
		65.4%	10.3%	0.4%	3.3%	9.1%	88.5%	
	Total	182	29	2	8	22	243	
		74.9%	11.9%	0.8%	3.3%	9.1%	100.0%	
The presence of mandibular tori	Yes unilateral	7	5	0	0	0	12	0.01
		2.8%	2.0%	0.0%	0.0%	0.0%	4.9%	
	yes bilateral	25	7	1	2	0	35	
		10.2%	2.8%	0.4%	0.8%	0.0%	14.2%	
	NO	151	19	1	6	22	199	
		61.4%	7.7%	0.4%	2.4%	8.9%	80.9%	
	Total	183	31	2	8	22	246	
		74.4%	12.6%	0.8%	3.3%	8.9%	100.0%	

*** Chi-squared test**

Discussion

The occurrence of jaw tori in patient in Yemen is expected to be influenced by a combination of genetic and environmental factors, including diet, lifestyle, and socioeconomic status (7). The high prevalence of consanguineous marriages in Yemen, which is a common practice in many Middle Eastern countries, may play a significant role in shaping the genetic predisposition of the population to develop jaw tori. Additionally, the dietary habits and prevalence of jaw tori among other populations in the region. It is hoped that the findings of this study will be utilized by healthcare professionals, policymakers, and researchers to inform prevention and treatment strategies for jaw tori (8).

According to the study, 30.4 % of Yemeni population have jaw tori, a dental abnormality. The study found that 30.4 % of Yemenis have jaw tori, with mandibular tori being more common (18.9 %) than palatine tori (11.5%). This finding aligns with previous research indicating a higher prevalence of mandibular tori (9). The study found a difference in the prevalence of jaw tori (bony growths) between genders: Bilateral mandibular tori (both sides) were more common in females (9.8 %) compared to males. This aligns with the findings of Hama et al. who also reported higher jaw tori prevalence in females (10). However, unilateral mandibular tori (one side only) were more frequent in males (2.8 %). This contradicts another study that suggested a higher incidence of unilateral tori in females (11).

Regarding age, the current study found that the highest prevalence of palatine tori (36.7 %) was observed in the 20-30 age group. This finding aligns with the research by Koç and Çağirankaya, who reported that torus palatine is most common in the 20-29 age group and is often located in the premolar area (12, 13). In the current study, the flat shape was the most prevalent type of palatine torus (36.7 %), followed by nodular (33.3 %) and spindle (26.7 %). This finding aligns with previous research that has documented the frequent occurrence of flat-shaped palatine tori (9, 14).

According to the current study, the band-like type of mandibular torus was more prevalent (47.2%) than the nodular type (42.6%). This finding suggests a

unique pattern of mandibular torus morphology in the studied population. It is recommended that further research be conducted to investigate the underlying causes of jaw tori and identify relevant risk factors. Longitudinal studies can be particularly useful in tracking the development of jaw tori over time. Additionally, future research should address the limitations of the current study, such as the short duration and small sample size.

Conclusion

This study provides valuable insights into the prevalence of jaw tori among Yemenis. The findings highlight the importance of raising awareness of this dental condition among both the general public and healthcare professionals.

Conflict of interest

The authors declare that no conflict of interest.

References

1. Ghahremani GG, Naimi DR, Ghahremani ZK. Torus Lesions of the Jaw: Diagnosis and Clinical Implications. Int J Clin Pr. 2020;e13697.
2. Telang L, Telang A, Nerali J, Pradeep P. Tori in a Malaysian population: Morphological and ethnic variations. J Forensic Dent Sci. 2019;11(2):107.
3. Helmi JM, Hagar AA, Al-Jawfi KA, Al-Dilami A, Al–Wesabi MA. Prevalence of impacted teeth among a sample of yemeni population and their association with sex and age. J Oral Res. 2019;8(4):343–50.
4. Hiremath VK, Husein A, Mishra N. Prevalence of torus palatinus and torus mandibularis among Malay population. J Int Soc Prev Community Dent. 2011;1(2):60–4.
5. Hjertstedt J, Burns EA, Fleming R, Raff H, Rudman I, Duthie EH, et al. Mandibular and palatal tori, bone mineral density, and salivary cortisol in community-dwelling elderly men and women. Journals Gerontol - Ser A Biol Sci Med Sci. 2001;56(11):M731–5.
6. Military A. Prevalence of Torus Palatinus and Torus Mandibularis. 2011;31(1):214–6.
7. Mermod M, Hoarau R. Mandibular tori. Cmaj. 2015;187(11):826.
8. Morita K, Tsuka H, Shintani T, Yoshida M, Kurihara H, Tsuga K. Prevalence of Torus Mandibularis in Young Healthy Dentate Adults. J Oral Maxillofac Surg [Internet]. 2017;75(12):2593–8. Available from: https://doi.org/10.1016/j.joms.2017.04.044
9. AlZarea BK. Prevalence and pattern of torus palatinus and torus mandibularis among edentulous patients of Saudi Arabia. Clin Interv Aging. 2016;11:209–13.
10. Hama AM, Mahmood DK. Prevalence of Maxillary and Prevalence of Maxillary and Mandibular Tori in a Group of Population in Sulaimani City. 2016;I(I):31–3.
11. Maduakor SN, Nwoga MC. Prevalence of mandibular and palatine tori among the Ibos in Enugu, South-East Nigeria. Niger J Clin Pract. 2017;20(1):57–60.
12. Koç N, Çağirankaya LB. Mandibular tori are associated with mandibular bone quality: A case-control study. Folia Morphol. 2018;77(4):736–41.
13. Albadani MM, Al-Wesabi MA, Elayah SA. Graftless Maxillary Sinus Lifting with Simultaneous Dental Implant placement in Extraction Socket and Edentulous Ridge: A prospective Clinical Study. Yemeni Journal for Medical Sciences. 2022 Dec 27;16(1):23-33.
14. Albahari AA, Madfa AA, Dubais MA. Invitro Effect of Bulkfill and Incremental Application Techniques with Different Composite Filling Materials on Marginal Microleakage. Yemeni Journal for Medical Sciences. 2020;14(1):28-35.