

Distribution of Abnormal Number of Teeth and Gender Differences: A Sample of Al-Muthanna University Students Aged 18-24 Years Old

Hayder Saad Hanfoosh¹, Osamah Mohammed Aldaghir¹, Arkan Muslim Alazzawi²

¹College of Dentistry, University of AlMuthanna, Iraq, ²College of dentistry, University of Babylon, Iraq

Abstract

Congenital or developmental missing teeth (Hypodontia) is one of important numerical anomalies of teeth. So that many subject field have been carry out in different element of the humans, to find the prevalence of hypodontia. Hyperdontic dentition are teeth that appear in plus to the regular number of teeth.

This review was planned to assess the distribution of abnormal number of teeth decreased (hypodontia), increased (hyperdontia) and gender differences.

This review was applied from 23 /10/ 2016 to 12 /4/ 2019 on 1971 (1065 males, 906 females) students in four colleges in Al-Muthanna University were College of medicine (294), College of dentistry (299), College of pharmacy (185) and college of economics (1193) were clinically examined, only (202) of them had abnormal number of teeth and subjected to orthopanto-mograms to detect the missing teeth and extra teeth. Their age was ranging from 18 to 24 years.

The abnormal number of teeth in (10.2%) students. Hypodontia in (9.18%) students. The hypodontia of maxillary lateral incisor in (34.8%) students followed by hypodontia in mandibular second premolar (30.9%) students. The hyperdontia in maxillary and mandibular teeth (1.06%) students. Mesiodens in (0.7%).

The study displays that about (10.2%) students had abnormal of teeth number. Hypodontia happens more often than hyperdonti. The foremost repeatedly absent tooth was maxillary lateral incisor and the second one was the mandibular second bicuspid. About hyperdontia, the most frequently hyperdontic tooth was Mesiodens. All of them, difference between gender was non-significant.

Keywords: Abnormal number of teeth, Gender differences, AL-Muthanna University.

Introduction

Teeth are classified into kinds according to their specific positions in the dental arch. In mammals, the difference between tooth types depend on the typical contour class, as incisors, canine, bicuspid, and grinder in human race. While difference in shape between tooth types are typical to the teeth in the same family similar each other ⁽¹⁾.

Supernumerary teeth are dentition formed as result of duplicating in the normal full complement as a consequence to excessiveness dental lamina in the dental arch ⁽²⁾.

Congenital missing of all dentition without any associated anomalies is extremely very rare; some studies found that anodontia have suggested to be autosomal recessive hereditary pattern.

Anodontia occurs as an extreme teeth phenotype in ectodermal dysplasia syndrome. In odontology, anodontia, also called anodontia vera, is a rare genetic disorder characterized by the congenital missing of all teeth (permanent or primary dentition. It is associated with other type of dermal and neural syndromes called the ectodermal dysplasia. Anodontia is usually part of a syndrome and rarely to occur as a separated syndrome ⁽³⁾.

Materials and Method

The Sample

Sample distribution was selected from university of Al_Muthanna students. lies south of Capital of Iraq. Age was selected depending on the last birthday giving an age from 18 years 0 months to 24 years 11 months (4).

Number of students presented in Al-Muthanna university were (13366) (Ministry of Higher education and Scientific research, Al-Muthanna University 2016). while the number of population were (842000). The minimum number should be represented of the sample was taken depending on the following equation (5):

(The number of sample= Total number of students / Total number of population × 100000)

$$=13366 / 842000 \times 100000 =1587$$

No sort of systemic abnormality, particularly Down’s syndrome and cleft lip & palate because of delayed teeth development in such conditions (6).

Permission for this study was obtained from the Al_Muthanna University.

Methods of Examination

All students were examined clinically under day light using dental mirrors, for all the students that were not surely diagnosed as hypodontic, or hyperdontic, were subjected to orthopanto-mograms (O.P.G). A tooth was detected as congenitally absent when cannot be seen in the dental arch in the radiograph of the region and there was no history or evidence that it was accidentally missed or lost by extraction.

Their radio-graphs are obtained from orthodontic department clinics and radiographic department clinics at the College of Dentistry of Al-Muthanna University.

Statistical Analysis

The processing and analyzing of data done by using (SPSS Inc., version 25 for windows 10 and excel 2018). The most statistical methods were used in order to obtain the results include: inferential statistics, descriptive statistics, Z-test to compare between significant difference of two proportions. The following levels of significance are used:

P > 0.05 NS Non-significant.

0.05 ≥ P > 0.01 * Significant.

0.01 ≥ P > 0.001 ** highly significant.

Results

Distribution of abnormal number of teeth and difference between both gender as shown in (Table,1). The abnormal number of teeth presented in 202 (10.2%) students (104 (9.7%) males and 98 (10.8%) females). Hypodontia in 181 (9.18%) students (96 (9%) males and 85 (9.3%) females). Hyperdontia in 21 (1.06%) students (8(0.75%) males and 13(1.4%) females), difference between both gender was non-significant.

Table 1: Distribution in (%) of abnormal number of teeth and gender differences, Hypo.= Hypodontia, Hyper.= Hyperdontia.

	Total		Males		Females		P sig.
	No.	%.	No.	%.	No.	%.	
Total	202	10.2	104	9.7	98	10.8	0.2 NS
Hypo.	181	9.18	96	9	85	9.3	0.4 NS
Hyper.	21	1.06	8	0.75	13	1.4	0.08 NS

Distribution of hypodontia in maxillary and mandibular incisor teeth and difference between both gender as shown in (Table, 2): The hypodontia in maxillary central incisor in 4 (2%) students (3 (3.1%) males and 1 (1.1%) females). Unilateral in 3 (1.6%) students (2 (2%) males and 1 (1.1%) females). Bilateral in 1 (0.5%) students (1(1.04%) males and 0(0%) females), The hypodontia in mandibular central incisor in 13 (7.1%) students (6 (6.2%) males and 7 (8.2%) females). Unilateral in 11 (6.07%) students (5 (5.2%) males and 6 (7.05%) females). Bilateral in 2 (1.1%) students (1(1.04%) males and 1(1.17%) females), The hypodontia in maxillary lateral incisor in 63 (34.8%) students (31 (32.3%) males and 32 (37.6%) females). Unilateral in 19 (10.4%) students (8(8.3%) males and 11 (12.9%) females). Bilateral 44 (24.3%) students (23(23.9%) males and 21(24.7%) females), The hypodontia in mandibular lateral incisor in 9 (4.9%) students 5 (5.2%) males and 4 (4.7%) females. Unilateral in 7 (6.07%) students (4 (4.1%) males and 3 (3.5%) females). Bilateral in 2 (1.1%) students (1(1.04%) males and 1(1.17%) females) difference between both gender

was non-significant.

Table 2: Distribution in (%) of hypodontia in maxillary and mandibular incisor teeth and gender differences, Max.Cen.=maxillary central incisor,Man.Cen.= mandibular central incisor. Max. Lat.= maxillary lateral incisor,Man. Lat.= mandibular lateral incisor.T=total,Uni.=unilateral,Bi.=bilateral.

Central incisor No.		Total		Males		Females		P sig.
		%.	No.	%.	No.	%.		
Max. Cen.	T	4	2.2	3	3.1	1	1.1	0.18 NS
	Uni.	3	1.6	2	2	1	1.1	0.31 NS
	Bi.	1	0.5	1	1.04	0	0	0.08 NS
Man. Cen.	T	13	7.1	6	6.2	7	8.2	0.92 NS
	Uni.	11	6.07	5	5.2	6	7.05	0.3 NS
	Bi.	2	1.1	1	1.04	1	1.17	0.46 NS
Lateral incisor No.		Total		Males		Females		P sig.
		%.	No.	%.	No.	%.		
Max. Lat.	T	63	34.8	31	32.3	32	37.6	0.22 NS
	Uni.	19	10.4	8	8.3	11	12.9	0.15 NS
	Bi.	44	24.3	23	23.9	21	24.7	0.45 NS
Man. Lat.	T	9	4.9	5	5.2	4	4.7	0.43 NS
	Uni.	7	3.8	4	4.1	3	3.5	0.41 NS
	Bi.	2	1.1	1	1.04	1	1.17	0.46 NS

Distribution of hypodontia in maxillary and mandibular canine and difference between both gender as shown in (Table, 3): The hypodontia in maxillary canine in 2 (1.1%) students (1 (1.04%) males and 1 (1.17%) females). Unilateral in 1 (0.5%) students (1(1.04%) males and 0(0%) females). Bilateral in 1 (0.5%) students (0(0%) males and 1(1.17%) females), the hypodontia in

mandibular canine in 3 (1.6%) students (2 (2.08%) males and 1 (1.17%) females). Unilateral in 2 (1.1%) students (1 (1.04%) males and 1 (1.17%) females). Bilateral in 1 (0.5%) students (1(1.04%) males and 0(0%) females), difference between both gender was non-significant.

Table 3: Distribution in (%) of hypodontia in maxillary and mandibular canine and gender differences, Max. Can.= maxillary canine,Man. Can.= mandibular canine T=total,Uni.=unilateral,Bi.=bilateral

Canine No.		Total		Males		Females		P sig.
		%.	No.	%.	No.	%.		
Max. Can.	T	2	1.1	1	1.04	1	1.17	0.46 NS
	Uni.	1	0.5	1	1.04	0	0	0.08 NS
	Bi.	1	0.5	0	0	1	1.17	0.08 NS
Man. Can.	T	3	1.6	2	2.08	1	1.17	0.3 NS
	Uni.	2	1.1	1	1.04	1	1.17	0.46 NS
	Bi.	1	0.5	1	1.04	0	0	0.08 NS

Distribution of hypodontia in maxillary and mandibular premolar teeth and difference between both gender as shown in (Table, 4): The hypodontia in maxillary first premolar in 5 (2.7%) students (2 (2.08%) males and 3 (3.5%) females). Unilateral in 3 (1.65%) students (1(1.04%) males and 2 (2.3%) females). Bilateral in 2 (1.1%) students (1(1.04%) males and 1(1.17%) females), The hypodontia in mandibular first premolar in 3 (1.6%) students (1 (1.04%) males and 2 (2.3%) females). Unilateral in 1 (0.5%) students (0 (0%) males and 1 (1.17%) females). Bilateral in 2 (1.1%) students (1(1.04%) males and 1(1.17%) females), The

hypodontia in maxillary second premolar in 23 (12.7%) students (11 (11.4%) males and 12 (14.1%) females). Unilateral in 17 (9.3%) students (8(8.3%) males and 9 (10.5%) females). Bilateral in 6 (3.3%) students (3(3.1%) males and 3(3.5%) females), The hypodontia in mandibular second premolar in 56 (30.9%) students (29 (30.2%) males and 27 (31.7%) females). Unilateral in 41 (22.6%) students (21 (21.8%) males and 20 (23.5%) females). Bilateral in 15 (8.2%) students (8(8.3%) males and 7(8.2%) females), difference between both gender was non-significant.

Table 4: Distribution (%)of hypodontia in maxillary and mandibular premolar teeth and gender differences, Max. 1st pre.= maxillary first premolar,Man. 1st pre.= mandibular first premolar. Max. 2nd pre.= maxillary second premolar,Man. 2nd pre.= mandibular second premolar. T=total,Uni.=unilateral,Bi.=bilateral

First Premolar No.		Total		Males		Females		P sig.
		%.	No.	%.	No.	%.		
Max. 1 st pre.	T	5	2.7	2	2.08	3	3.5	0.27 NS
	Uni.	3	1.65	1	1.04	2	2.3	0.25 NS
	Bi.	2	1.1	1	1.04	1	1.17	0.46 NS

Table 4: Distribution (%)of hypodontia in maxillary and mandibular premolar teeth and gender differences, Max. 1st pre.= maxillary first premolar,Man. 1st pre.= mandibular first premolar. Max. 2nd pre.= maxillary second premolar,Man. 2nd pre.= mandibular second premolar. T=total,Uni.=unilateral,Bi.=bilateral

Second Premolar No.	Total		Males		Females		P sig.	
	%.	No.	%.	No.	%.	No.		
Man. 1 st pre	T	3	1.6	1	1.04	2	2.3	0.25 NS
	Uni.	1	0.5	0	0	1	1.17	0.12 NS
	Bi.	2	1.1	1	1.04	1	1.17	0.46 NS
Max. 2 nd pre.	T	23	12.7	11	11.4	12	14.1	0.28 NS
	Uni.	17	9.3	8	8.3	9	10.5	0.3 NS
	Bi.	6	3.3	3	3.1	3	3.5	0.44 NS
Man. 2 nd pre.	T	56	30.9	29	30.2	27	31.7	0.41 NS
	Uni.	41	22.6	21	21.8	20	23.5	0.39 NS
	Bi.	15	8.2	8	8.3	7	8.2	0.49 NS

Distribution of hyperdontia in maxillary and mandibular teeth and difference between both gender as shown in (Table, 5): The hyperdontia in maxillary and mandibular teeth in 21 (1.06%) students (8 (0.75%) males and 13 (1.4%) females). Mesiodens in 14 (0.7%) students (6(0.5%) males and 8 (0.8%) females). The hyperdontia in maxillary lateral incisor in 2 (0.1%)

students (1 (0.09%) males and 1 (0.11%) females). The hyperdontia in mandibular lateral incisor in 2 (0.1%) students (1 (0.09%) males and 1 (0.11%) females). The hyperdontia in mandibular second premolar in 2 (0.1%) students (0 (0%) males and 2 (0.22%) females). The hyperdontia in maxillary first premolar in 1 (0.05%) students (0 (0%) males and 1 (0.11%) females), difference between both gender was non-significant.

Table 5: Distribution in (%)of hyperdontia in maxillary and mandibular teeth and difference between both gender.

Hyperdontia	Total		Males		Females		P sig.
	No.	%.	No.	%.	No.	%.	
Total	21	1.06	8	0.75	13	1.4	0.06 NS
Mesiodens	14	0.7	6	0.5	8	0.8	0.2 NS
Max.Lateral Incisor	2	0.1	1	0.09	1	0.11	0.44 NS

Cont... Table 5: Distribution in (%)of hyperdontia in maxillary and mandibular teeth and difference between both gender.

Man.Lateral Incisor	2	0.1	1	0.09	1	0.11	0.44 NS
Man. 2nd premolar	2	0.1	0	0	2	0.22	0.06 NS
Max. 1st premolar	1	0.05	0	0	1	0.11	0.11 NS

Discussion

Prevalence of hypodontia were presented in (9.18%) students, similar with researchers like Sanchez in Argertina (7), Ravn and Nielson in Danmark (8), Mangnusson in Iceland (9), Chung et al in Korea (10) and Dastjerdi et al in Iran (11).

More than other studies including Dolder in Switzerland (12), Werther and Rothenberg in U.S.A (13), Malik in Pakistan (14), Al-Mulla et al in Iraq (15), Silverman and Ackerman in U.S.A (16), Kinaan in Iraq (17) and Al-Hamdany et al in Iraq/Mosul (18). This may reflect a persistent problem in different communities with variation in intensity that result due to racial, size of the sample, type of the study, gender and age variations.

Difference between both gender was non-significant (P>0.05), it agreed with many other studies like Dolder in Switzerland (12) and Werther and Rothenberg in U.S.A (13) and in Iran Dastjerdi et al (11).

Maxillary lateral incisors (34.8%) were foremost repeatedly missing which is followed by mandibular second bicuspid (30.9%) and maxillary second bicuspid (12.7%), then mandibular central incisor (7.1%), similar to Kinan (17), Augard and Gayard (19), Al-Hamdany et al in Iraq/Mosul (18), Dastjerdi et al (11), while others as Al Mulla et al (15), Al Judo (20) and Al-Jourany TS in Baghdad/Iraq (21) showed the mandibular second bicuspid were foremost repeatedly missing which is followed by maxillary lateral incisors, This can be due to racial difference and ethnic factor in the populations who were studied.

Difference between both gender was non-significant (P>0.05), it agreed with other studies Werther and Rothenberg in U.S.A (13), in Iran Dastjerdi et al (11) and Pérez et al (22).

Prevalence of hyperdontia presented in (1.06%) students while Gábris. in a research found that the prevalence of hyperdontic teeth were 1.53% (23). Vahid-

Dastjerdi et al. examined radiographs of 1751 Iranian population and detected that 0.74% had hyperdontic teeth (24), while Udom et al. detected that the prevalence of 1.8% for hyperdontic teeth. The prevalence might be different in prevalence due to the differences in ethnic factor of population and in the sample size.

Most common hyperdontic tooth was mesiodens which followed by mandibular second bicuspid, maxillary lateral incisor, mandibular lateral incisor and maxillary first bicuspid (23). While Sogra et al, in a research found that most frequently hyperdontic tooth were mandibular bicuspid followed by mesiodens.

Difference between both gender was non-significant (P>0.05), it agreed with Pérez et al (22).

Conclusion

The study displays that about (10.2%) students had abnormal of teeth number. Hypodontia happens more often than hyperdontia. The foremost repeatedly absent tooth was maxillary lateral incisor and the second one was the mandibular second bicuspid. About hyperdontia, the most frequently hyperdontic tooth was Mesiodens. All of them, difference between gender was non-significant.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

References

1. Thesleff I, Sharpe P. Signaling networks regulating dental development. *Mech. Dev* 1997; 67:111-123.
2. White SC, Pharoah MJ. *Oral Radiology Principles and Interpretation*; 6th ed. St. Louis: Mosby; 2009

- pp; 310–652.
3. Gorlin RJ, Herman NG, Moss SJ. Complete absence of the permanent dentition: an autosomal recessive disorder. *Is J Med Genet*; 2003, 5:207-209.
 4. World Health Organization. Oral health surveys: Basic methods. 4th ed. Geneva: WHO, The Organization; 1997.
 5. Wayne WD. Biostatistics. A foundation for analysis in the health sciences, 2nd ed. New Work; 1976.
 6. Sisman Y, Uysal T, Gelgor IE. Hypodontia. Does the Prevalence and Distribution Pattern Differ in Orthodontic Patients? *Eur J Dent.*, 2007; 1:167–73.
 7. Sanchez O. Contribucione Al Estudio De La Oligodontia Desde El Punto De Vista Ortodoncico. *Rev A Odont Argentina*; 1964, 52: 17.
 8. Ravn JJ, Nielson LA. En Ortopantomografisk Undersogelse Av Overtal Og Aplasier Hos 1530 Kopenhavnske Skolebome. *Tandlaegebladet* 1973; 77: 12-22.
 9. Magnusson TE. Prevalence of hypodontia and malformations of permanent teeth in Iceland. *Community Dentistry and Oral Epidemiology* 1977; 5:173-178.
 10. Chung CJ, Han JH, Kim KH: The Pattern and prevalence of hypodontia in Koreans. *Oral Dis* 2008; 14:620-5.
 11. Dastjerdi EV, Ali Borzabadi-Farahani, Mina Mahdian, Nazila Amini: Non-syndromic hypodontia in an Iranian orthodontic Population. *Journal of Oral Science* 2010; Vol. 52, No. 3, 455-461
 12. Dolder E. Zahn-Unterszahl. Diagnostik, Statistik, Artikulation. *Schweiz Monatsschr Zahnmed* 1936; 46: 663-71.
 13. Werther R, Rothenberger F. Anodontia, a review of its etiology with presentation of a case. *American Journal of Orthodontics and Oral Surgery* 1939; 25:61-81.
 14. Malik SA: Missing and Rudimentary Upper Lateral Incisors. *J Dent*; 1972, 1:25-27.
 15. Al-Mulla AA, Mahdi TS, Hamid NH. Incidence of Hypodontia of Permanent Teeth. *Tech Res J.*, 1990; 7: 69-80.
 16. Silverman NE Ackerman JL. Oligodontia: A Study Of Its Prevalence and Variation in 4032 Children. *J Dent Child.*, 1979; 46: 470-477.
 17. Kinnan B. Characteristics and Management of Hypodontia in Iraqi Orthodontic Patients. *Iraqi Dent J.*, 1985; 12:133.
 18. Al-Hamdany AKH, Al-Saleem NR, Qasim AA. Angle's classification and hypodontia, is there an association?. *Al-Rafidain Dent J.* 2007; 7(1): 1-5.
 19. Augard GM, Gayard M. Statistical Study on Hypodontia. *Ann Odontostomato*, 1986; 25:L.
 20. AL-Judo F.A. Hypodontia of Permanent Teeth in Jordanian students aged 12- 18 years. A master Thesis submitted to the collage of Dentistry, Baghdad University 2001.
 21. AL- Jourane TS. A thesis, Hypodontia of Permanent Teeth in a Sample of Student in Baghdad City; 2001, 19:26.
 22. Pérez, i. E.; Chávez, a. K. & Ponce, d. Prevalence of supernumerary teeth on panoramic radiographs in a non-adult Peruvian sample. *Int. J. Odontostomat.*, 2014; 8(3);377-383.
 23. Gábris K, Fábrián G, Kaán M, Rózsa N, Tarján I. Prevalence of hypodontia and hyperdontia in paedodontic and orthodontic patients in Budapest. *Community Dent Health*, 2006; 23:80-2.
 24. Vahid-Dastjerdi E, Borzabadi-Farahani A, Mahdian M, Amini N. Supernumerary teeth amongst Iranian orthodontic patients. A retrospective radiographic and clinical survey. *Acta Odontol. Scand.*, 2011;69; 125-128.