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Prevalence of Dental Developmental Anomalies among Men and Women and its Psychological Effect in a Given Population.

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Abstract:

Aim:
To determine the prevalence of dental developmental anomalies and its psychological effect between men and women in a given population.

Objective:
The objective of the present study is to determine the prevalence of these dental developmental anomalies, and to determine the etiological factors and its effect in the study population.

Background:
Developmental disturbances refers to an abnormality where the pathology starts in the embryonic stage of human life, before the formation of the dentition. This can be associated with genetic changes or can also be due to environmental effects. These developmental anomalies can occur involving the dentition, tongue, gingiva, hard palate, buccal mucosa and salivary glands.

Reason:
The purpose of the study is to determine the etiological factors and its psychological effect between men and women in a given population.

Keywords: Developmental anomalies, dentition, tongue, hard palate, buccal mucosa, salivary glands.

INTRODUCTION:

Understanding the development of the tooth is still challenging as the tooth forms a specialised part of the human body[1]. This development is considered complete and successful if there is reciprocal interaction between the epithelium and underlying mesenchyme[1]. Molecular signals, receptors and transcription control systems are the major factors that contribute to the development of the tooth[1]. Any interference in any of the above factors less to disturbances in the development leading to development anomalies. Any abnormality whose pathology starts in the embryonic life is referred to as a development defect.

Development anomalies of the teeth, oral soft and hard tissues arise due to disturbance in the development of these tissues[2]. This can be as a result of gene mutation or environmental factors[3,4]. Out of the two, the genetic alteration is considered to be the most common etiological factor[4].

Anomalies involving the dentition include alteration in the shape, number, size, position,structure and eruption. Macrodontia, Microdontia, Gemination, Fusion, Dilaceration, Concrescence, Talon's cusp, Dens invaginatus, Dens evaginatus, Enamel pearl, Taurodontism, Supernumerary Roots, Anodontia, Supernumerary Teeth, Pre Deciduous Dentiotion, Post Permanent Dentition, Amelogenesis Imperfecta, Environmental Enamel Hypoplasia, Dentinogenesis Imperfecta, Dentin Dysplasia, Regional Odonto Dysplasia, Dentin Hypocalcification, Premature Eruption, Eruption Sequestrum, Delayed Eruption, Multiple Unerupted Teeth, Embedded Or Impacted Teeth, Ankylosed Deciduous Teeth[1,6-11].

Anomalies involving the tongue are Aglossia, Microglossia, Macroglossia, Ankylosis, Cleft Tongue, Fissured Tongue, Median Rhomboid Glossitis, Benign Migratory Glossitis, Hairy Tongue, Lingual Varices, Lingual Thyroid Nodule. Those involving the lip and palate are Cleft lip and Cleft palate, Double lip. Anomalies involving the buccal mucosa are Pigmented Cellular Nevus, Labial And Oral Melanotic Macule, Fordyce Granules, Focal Epithelial Hyperplasia. Those involving the gingiva are Retrocuspid Papilla, Fibromatosis Gingiva. Anomalies involving the salivary glands are Aplasia, Xerostomia, Hyperplasia Of Palatal Glands, Atresia, Aberrancy.

MATERIALS AND METHODS:

The study was based on the clinical examination and evaluation of the patient. The study involved 250 participants who visited Saveetha Dental College and Hospitals, Chennai for their treatment. Out of the 250 participants, 86 were male participants and 164 were female participants.

Exclusion criteria:

a) Paediatric patients
b) Patients with history of orthodontic treatment
c) Anomalies secondary to structure
d) Patients with syndromes

The study was carried out by general examination of the oral cavity, along with use of other aids like radiographs etc. The patients were further questioned [figure 1] to know if they were aware of the etiological factors and what was the psychological effect of the same to the individual. The data was tabulated and statistically analysed.

RESULTS:

A graph showing the distribution of developmental anomalies is shown in Figure 2.

The results are tabulated in table 1. Statistical results obtained are tabulated in table 2,3,4,5

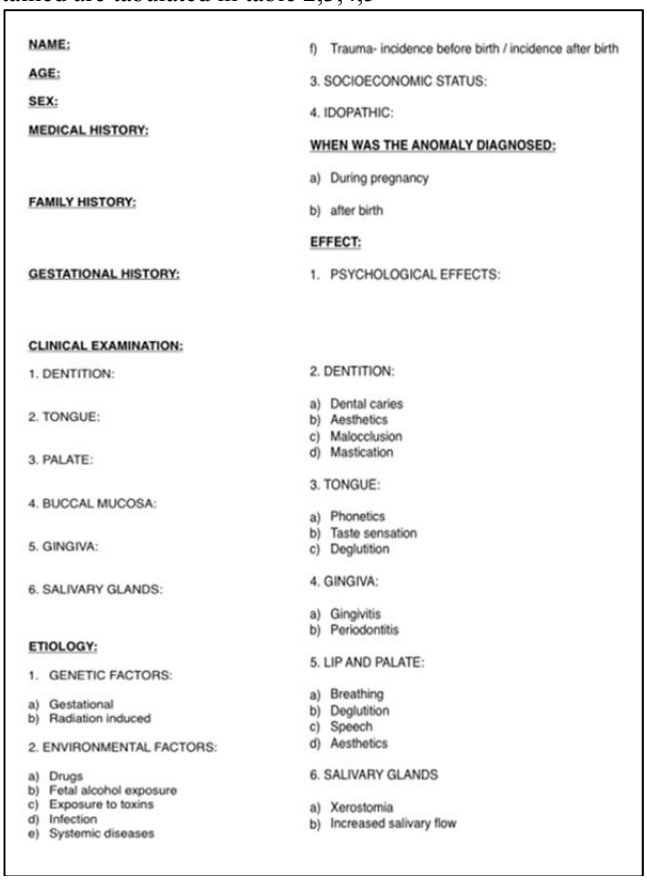
NAME:
AGE:
SEX:
MEDICAL HISTORY:
FAMILY HISTORY:
GESTATIONAL HISTORY:
CLINICAL EXAMINATION:
1. DENTITION:
2. TONGUE:
3. PALATE:
4. BUCCAL MUCOSA:
5. GINGIVA:
6. SALIVARY GLANDS:
ETIOLOGY:
1. GENETIC FACTORS:
a) Gestational
b) Radiation induced
2. ENVIRONMENTAL FACTORS:
a) Drugs
b) Fetal alcohol exposure
c) Exposure to toxins
d) Infection
e) Systemic diseases
f) Trauma- incidence before birth / incidence after birth
3. SOCIOECONOMIC STATUS:
4. IDOPATHIC:
WHEN WAS THE ANOMALY DIAGNOSED:
a) During pregnancy
b) after birth
EFFECT:
1. PSYCHOLOGICAL EFFECTS:
2. DENTITION:
a) Dental caries
b) Aesthetics
c) Malocclusion
d) Mastication
3. TONGUE:
a) Phonetics
b) Taste sensation
c) Deglutition
4. GINGIVA:
a) Gingivitis
b) Periodontitis
5. LIP AND PALATE:
a) Breathing
b) Deglutition
c) Speech
d) Aesthetics
6. SALIVARY GLANDS
a) Xerostomia
b) Increased salivary flow

Figure 1

	Count with %	
Supernumerary teeth	Males- 5.8%	females- 3%
Missing tooth germ	Males- 2.3%	females- 4.3%
Macrodontia	Males- 12.8%	females- 4.9%
Microdontia	Males- 0%	females- 6.1%
Flurosis	Males- 1.2%	females- 1.8%
Abnormal tooth shape	Males- 1.2%	females- 0.6%
Dens invaginatus	Males- 0%	females- 0.6%
Dens evaginatus	Males- 0%	females- 0.6%
Talons cusp	Males- 1.2%	females- 0%
Retained decidous teeth	Males- 3.5%	females- 1.8%
Taurodontism	Males- 0%	females- 0.6%
Peg laterals	Males- 2.3%	females- 2.4%
Macroglossia	Males- 4.7%	females- 0.6%
Microglossia	Males- 0%	females- 1.2%
Tori	Males- 2.3%	females- 0%
Cleft lip	Males- 0%	females- 0.6%
Cleft lip and palate	Males- 1.2%	females- 0%
Bifid tongue	Males- 1.2%	females- 3.0%
Hign arch palate	Males- 3.5%	females- 1.8%
Tongue tie	Males- 2.3%	females- 0%
Enamel hypoplasia	Males- 0%	females- 3.0%
Fissured tongue	Males- 12.8%	females- 5.5%
Geographic tongue	Males- 1.2%	females- 2.4%
Atrophied papillae	Males- 1.2%	females- 0%
Malpositioned teeth	Males- 1.2%	females- 0%

Table 1- Distribution of dental developmental anomalies

Chi-Square Tests

	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	5.030[a]	1	.025		
Continuity Correction[b]	3.966	1	.046		
Likelihood Ratio	4.744	1	.029		
Fisher's Exact Test				.041	.026
Linear-by-Linear Association	5.010	1	.025		
N of Valid Cases	250				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.54.

b. Computed only for a 2x2 table

Table 2: Macrodontia

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.462[a]	1	.019		
Continuity Correction[b]	3.990	1	.046		
Likelihood Ratio	8.649	1	.003		
Fisher's Exact Test				.017	.013
Linear-by-Linear Association	5.441	1	.020		
N of Valid Cases	250				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.44.

b. Computed only for a 2x2 table

Table 3: Microdontia

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.701[a]	1	.030		
Continuity Correction[b]	2.865	1	.091		
Likelihood Ratio	4.471	1	.034		
Fisher's Exact Test				.049	.049
Linear-by-Linear Association	4.682	1	.030		
N of Valid Cases	250				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.72.

b. Computed only for a 2x2 table

Table 4: Macroglossia

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.088[a]	1	.043		
Continuity Correction[b]	3.156	1	.076		
Likelihood Ratio	3.870	1	.049		
Fisher's Exact Test				.052	.040
Linear-by-Linear Association	4.072	1	.044		
N of Valid Cases	250				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.88.

b. Computed only for a 2x2 table

Table 5: Fissured Tongue

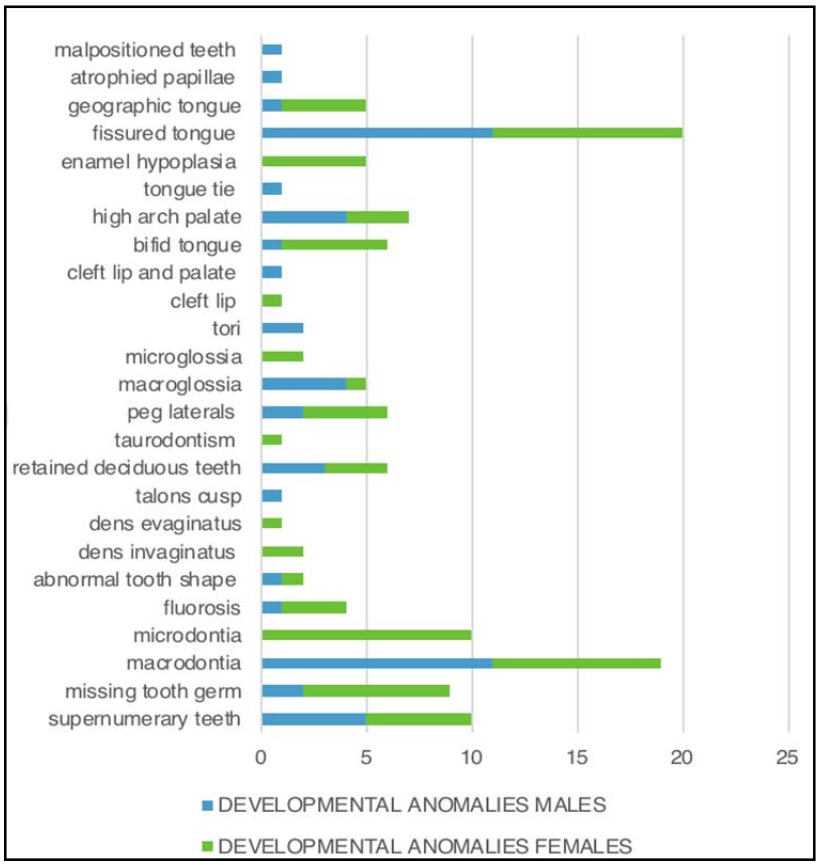

Figure 2

DISCUSSION:

Among the 250 participants selected, 142 individuals were reported to be normal without any dental developmental anomaly, and 108 individuals were reported with dental developmental anomaly (45 males, 63 females). On the basis of the statistical data obtained, Supernumerary teeth was seen in 5.8% males and 3% females, Missing tooth germ was seen in 2.3% males and 4.3% females, Macrodontia in 12.8% males and 4.9% females, Microdontia in 6.1% females, Fluorosis in 1.2% males and 1.8% females, Abnormal tooth shape in 1.2% males and 0.6% females, Dens invaginatus in 0.6% females, Dens evaginates in 0.6% females, Talon's cusp 1.2% males, Retained deciduous teeth in 3.5% males and 1.8% females, Taurodontism in 0.6% females, Peg laterals in 2.3% males and 2.4% females, Macroglossia in 4.7% males and 0.6% females, Microglossia in 1.2% females, Tori in 2.3% males, Cleft lip in 0.6% females, Cleft lip and cleft palate in 1.2% males, Bifid tongue in 1.2% males and 3% females, High arch palate in 3.5% males and 1.8% females, Tongue tie in 2.3% males, Enamel hypoplasia in 3% in females, Fissured tongue in 12.8% males and 5.5% females, Geographic tongue in 1.2% males and 2.4% females, Atrophied papillae in 1.2% males, and Malpositioned teeth in 1.2% males.

Supernumerary Teeth, Macrodontia, Abnormal Tooth Shape, Talons Cusp, Retained Deciduous Teeth, Macroglossia, Tori, Cleft Lip And Palate, High Arch Palate, Tongue Tie, Fissured Tongue, Atrophied Papillae And Malpositioned teeth were more commonly seen in males.

Missing Tooth Germ, Microdontia, Fluorosis, Dens Invaginatus, Dens Evaginates, Taurodontism, Peg Laterals, Microglossia, Cleft Lip, Bifid Tongue, Enamel Hypoplasia, Geographic tongue were more commonly seen in females.

Statistically significant results were obtained for Macrodontia, Microdontia, Macroglossia And Fissured Tongue.

Most of the participants felt that the etiological factor could be gestational while a few opted for unknown causes. The major concern of these developmental anomalies was aesthetics in these individuals.

CONCLUSION:

In the present study, on the basis of the results obtained, the common dental developmental anomaly seen in males are Supernumerary Teeth, Macrodontia, Abnormal Tooth Shape, Talons Cusp, Retained Deciduous Teeth, Macroglossia, Tori, Cleft Lip And Palate, High Arch Palate, Tongue Tie, Fissured Tongue, Atrophied Papillae And Malpositioned Teeth. Those seen in females are Missing Tooth Germ, Microdontia, Fluorosis, Dens Invaginatus, Dens Evaginates, Taurodontism, Peg Laterals, Microglossia, Cleft Lip, Bifid Tongue, Enamel Hypoplasia, Geographic Tongue. But statistically significant results were obtained for Macroglossia, Fissured Tongue, Microdontia, Macrodontia. Hence the study is to be further continued with an increased sample size.

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