PREVALENCE OF CLASS III SKELETAL PATTERN AMONG PATIENTS SEEKING ORTHODONTIC TREATMENT

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AIM: The aim of the study is found prevalence of class 3 skeletal pattern among patients seeking orthodontic treatment

INTRODUCTION: Class III jaw relationship suggests that the mandible acquired a more mesial position in relation to maxilla or cranial base. Its prevalence varies greatly among and within different races, ethnic groups, and geographic regions. Class III malocclusion has a multifactorial aetiology, which is the expression of a moderate distortion of normal development as a result of interaction between innate factors or genetic hereditary with environmental factors.

MATERIALS AND METHODS: A retrospective study was planned with data collection from June 2019 to February 2021 in a university setup. We reviewed the patient’s records and analyzed the data of 86000 patients. The data report includes patient details like gender, age and diagnosis. The records were manually verified by 2 reviewers and the data was tabulated in the Excel sheet followed by statistical analysis using SPSS software (Statistical Product and Service Solutions) in IBM and chi-square tests were performed.

RESULTS: Total subject population was 86 in the age range of 11-70 years, males were (67.4%) and females were (32.5%), the majority of patients were in the 11-20 years age group. Mandibular excess was 26.7% highest in skeletal malocclusion among 11-20 years of age group and 40.7% in Males compared to females.

CONCLUSION: Within the limitations of our study, it can be concluded that male have higher skeletal class III when compared with females and the most common age group affected by skeletal class III was under the age range of (11-20) years.

KEY WORDS: Class III occlusion, malocclusion, aetiology, prevalence, mandible excess

INTRODUCTION

The angles classification was prevailed over the years as a simple, quantifiable method in order to test the prevalence of malocclusion within the populations. However, defined by Angles on “normal occlusion” should be considered the “ideal” occlusion given the strict criteria that used in his classification. This ideal occlusion is rather uncommon and that made researchers disagree on how much deviation from the ideal should be accepted as normal (Proffit, Fields and Sarver, 2012). According to the Angle classification, the class III malocclusion is defined as the mandible molar mesially positioned in relation to the upper molar with no specifications in regards to the line of occlusion (Proffit, Fields and Sarver, 2012),(Salzmann, 1965). Nevertheless, as with all Angle’s classification of malocclusion, class III malocclusion consists of various skeletal and dental components that may vary from the concept of normality. For Better understanding, it can be characterized by presenting a mandible skeletal protrusion that is mandibular prognathism, a maxillary skeletal retrusion, a combination of both, or no anteroposterior skeletal imbalances (Graber and Vanarsdall (Jr.), 1994). Various types of studies have registered about prevalence of Angle class III malocclusion. They have found a wide range of prevalence rates, usually that lead to differences among samples (Lew, Foong and
Loh, 1993). (Willems et al., 2001)[4-5]. For example, several other studies have said that Asian races have a greater prevalence of Angle class III malocclusion compared with other races (Lew, Foong and Loh, 1993), (Onyeaso, 2004). Only in some minor populations the data have shown different reports, for example the studies done among Nigerian children reported that class III malocclusion was prevalent when ranges from 1.2% (1993) up to 11.8% (2004) (Park et al., 2012), (Purmal, 2018). Even though continually increasing data on malocclusion prevalence, little has been done to consolidate this information in a comprehensive and critical way (Baskaradoss et al., 2013). Class III craniofacial pattern though to be little complex biological nonlinear system, a which has multiple components the work of that are interconnected so that one component’s action changes the context for other component changes simultaneously (‘The Architecture of Complexity’, 2007), (Crutchfield and Wiesner, 2010), (Loscalzo, 2017). Therefore, the aim of our study is to find prevalence of class III skeletal patterns among patients seeking orthodontic treatment. Like this, various studies have been done in our institution. (Felicita, 2018),(Chandrasekar et al., 2020),(Arvind and Jain, 2021),(Khan et al., 2021),(Alam et al., 2021),(Marya and Venugopal, 2021),(Adel et al., 2021),(Sivakumar et al., 2021),(Venugopal, Vaid and Bowman, 2021a),(Gopalakrishnan et al., 2021),(Venugopal, Vaid and Bowman, 2021b),(Marya et al., 2021), (Ramesh et al., 2018; Duraisamy et al., 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Arumugam, George and Jayaseelan, 2021; Joseph and Prasanth, 2021) (Gothandam et al., 2019),(Ezhilarasan, 2021),(Preethi, Auxzilia Preethi and Sekar, 2021).

MATERIALS AND METHODS
This study was done in the outpatient of dental college and hospital. The study totally contains 522 patients who were under the age group of 18-83 yrs. This is because the available data with similar ethnicity was collected from the particular geographic location. We omitted the trends in the other location in our study setting. Ethical approval was given by the universal ethical committee before the start of the study. The approval number given was [SDC/SIHEC/2020/DIASDATA/0619-0320]. The obtained data was thoroughly reviewed and analyzed from the total number of 86000 patients between June 2019- March 2020. The case sheet was manually reviewed and cross verified in order to avoid errors. To minimize the sampling bias all available data was included and the sorting process was done. All the samples diagnosed as class III skeletal malocclusion patients were included. This particular time was considered as internal validity and a prescriptive pattern was followed to analyze external validity. All the general data like the patient’s gender, age and their field value was included in the study. The data which are obtained were entered in the excel sheet and tabulated and finally SPSS imported was done including the chi square test.

RESULTS AND DISCUSSION
In our study the results were that the majority of male patients (31.4%) and female patients (13.9%) belong to 11-20 yrs. followed by male patients (24.4%) and female patients (11.6%) belong to 21-30 yrs. Whereas the skeletal malocclusion in reference to ANB angle classification in their study shows that the majority was Class II skeletal jaw relationship 97(48.5%), which is followed by Class I 87(43.5%) and Class III 16(8%). Their study clearly shows a statistically significant difference when compared between gender and distribution of skeletal jaw base relationship (p<0.05). But when the age groups and distribution of skeletal jaw base relationship was compared the chi square test showed (p<0.05). This shows that there was no significant difference. The Most commonly found skeletal malocclusion among the patients who are seeking orthodontic therapy was Class II followed by Class I and Class III in a tertiary center of mid-western Nepal (Sharma, 1970). The prevalence rate of Angle class III malocclusion ranges from 1.22% and 19.72% was found among the African group (Rwakatema and Nganga, 2006). The first study reported a prevalence of class III malocclusion among Mexican American adolescents living in the Los Angeles area was 9.1% (Silva and Kang, 2001). In their study they rated Class III malocclusion among the three Middle Eastern groups and the result was found almost. The previous studies indicated a wide range of rates from Israeli Arabs in 1.3% & Iranian in 15.2% (Steigman, Kawar and Zilberman, 1983). In their study they have a little lack of European populations. Therefore, it was hard to draw any generalization about prevalence rates of class III malocclusion. Recently in many studies they have removed the selection criteria that show a range of 2% to 6% among European countries. This gives a clear idea that Europeans have a relatively lower prevalence rate than other populations (Burgersdijk et al., 1991),
(Willems et al., 2001). In our study we found that the majority (26.7%) of 11-20 years patients belong to Mandibular excess followed by 21-30 yrs. (18.6%) & mandible excess was found high in male patients (40.7%) as well as female patients (19.7%). Whereas in their study the total 83 patients were found to have skeletal class III. Out of that 71 (85.5%) cases were diagnosed as true skeletal class III malocclusions. The skeletal discrepancy was found to be highest in mandible 50.74%, followed by combination of mandibular and maxillary abnormalities 28.16%, only maxillary involvement was 19.12%. Knowing different skeletal types would help in the evaluation of treatment effects in Class III malocclusion (Staudt and Kiliaridis, 2009). The anteroposterior skeletal relationship prevalence was: 49.5% Class I; 23.1% Class II; and 27.4% and last only Class III. The Class III patients had significantly reduced impacted teeth compared to Class I patients (odds ratio 0.608, 95% confidence interval 0.463–0.798; P=0.00009). There was no statistically significant difference found in the occurrence of the malocclusion among the various anteroposterior skeletal types. The occurrence of impacted teeth was found lower in Class III than Class I, where there was no significant differences were noted for hypodontia, hyperdontia, transposition, peg-shaped upper lateral incisors and double teeth. The occurrence of all investigated dental anomalies had no significant difference between Class II and Class I (Chan et al., 2021).

**GRAPH 1: COMPARING AGE AND GENDER**

Graph 1 shows that the majority of male patients (31.4%) and female patients (13.9%) belong to 11-20 yrs. followed by male patients (24.4%) and female patients (11.6%) belong to 21-30 yrs.
Graph 2 shows that the majority (26.7%) of 11-20 years patients belong to Mandibular excess followed by 21-30 yrs. (18.6%).

Graph 3 shows that the mandible excess was found high in male patients (40.7%) as well as female patients (19.7%).
CONCLUSION
Within the limitations of our study, it can be concluded that males have higher skeletal class III when compared with females and the most common age group affected by skeletal class III was under the age range of (11-20) years.

LIMITATIONS
There are few limitations in our survey. There is a small sample size used for our survey which cannot be generated for a large population. And the survey doesn’t represent the ethnic group and population.

FUTURE SCOPE
The survey should be done in a larger population. Multicentered surveys should be done including other criteria.

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REFERENCE