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Comparison of Intercommissural width between population of North Indian and South Indian origin in chennai

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Abstract

Aim: The aim of this study is to assess variations in the intercommissural width between the population of North Indian and south Indian origins in chennai. **Background:** Intercommissural width is a reliable guide to aid in dental procedures within different ethnicities.There was a paucity of literature related to comparison of intercommissural distance between different ethnicities in the population studied. **Materials and Methods:**A cross-sectional study was conducted among 150 students of Saveetha Dental college and Hospitals of different cultural backgrounds. Data tabulation and Statistical analysis was performed in Statistical Package for the Social Sciences (SPSS) software version 23.0 (IBM, Chicago, USA). Independent 't' test was performed to assess the mean width of the samples and pearson chi-square test was done to find the correlation between the mean width of North indian and south Indian populations. **Results:** The North Indian Population had more Intercommissural width (Mean= 47.79) compared to the South indian Population (Mean= 47.38), although the difference was not statistically significant (p= 0.648).**Conclusion:** Within the limits of this study, the North Indian population had more intercommissural width than the South indian population. The intercommissural width measurement is not an accurate measure to differentiate between ethnicities.

Key words: intercommissural width, ethnicity, south indian population, north indian population, Novel analysis.

Introduction:

The intercommissural width is a measure of the corners of the mouth. It is used in orthodontic treatment, as a forensic tool, prosthetic treatment, oral rehabilitation treatment and in many dental procedures.

In an article, the author stated that the knowledge of racial norms and facial appearance aid the practitioners in giving proper treatment. Facial appearance of patients differ in different ethnicities (1). Few articles have stated that the measure of intercommissural width in patients aid practitioners to select maxillary anterior teeth for completely edentoulous patients (2).

Intercommissural width is a reliable guide to aid in dental procedures in clinical practice and treatments within different ethnicities. Though intercommissural width can be a reliable guide, some studies stated that intercommissural width cannot aid in dental practice and it has no correlation with teeth selection in completely edentulous patients (3). There was a paucity of literature related to comparison of intercommissural distance between different ethnicities in the population studied.

Since there is a paucity of literature on the research question; the study was conducted. Our team has extensive knowledge and research experience that has translate into high quality publications (4),(5),(6),(7),(8)(9),(10),(11),(12),(9),(13),(14),(15),(16),(17),(18),(12),(19),(20). The aim of this study is to find variations in intercommissural width between different ethnicities.

Materials and Methods:

A cross-sectional study was conducted among students of Saveetha Dental college and Hospitals of different cultural backgrounds. Convenience sampling technique was employed. To Minimize the sampling bias, random selection of participants was done from different batches.

Prior approval to carry out the study was obtained from the Institutional Research Committee (IRB). The students were asked to sit and face straight. The vernier caliper was placed between the corners of the mouth and measured. The value was recorded and the details of the students were collected. Data collected was tabulated and Statistical analysis was performed in Statistical Package for the Social Sciences (SPSS) software version 23.0 (IBM, Chicago, USA). Descriptive statistics was performed. p value <0.05 was considered to be significant. Independent 't' test was performed.

Results: A total of 150 subjects participated in the study. About 59 (39% of the total participants) of them were males and about 91 (60.6% of the total participants) of them were females. About 28% were in the age group 18-20 years, about 35% were in the age group 20- 22 years and about 37% were in the age group 22- 25 years. About 70% were North Indian population and about 30% were South Indian population. We obtained that the North Indian Population had higher Intercommissural width (Mean= 47.79) compared to the South indian Population of intercommissural width (Mean= 47.38), although it is statistically insignificant (p= 0.648 (> 0.05)) [Table 1].

Table 1: Mean intercommissural width of participants of north indian and south indian origin. Independent t-test was done to assess the significance of the values.

Paired sample correlations

	N	Mean	p-value
South Indian Population and Intercommissural Width	136	47.79 +/- 5.44	0.193

North Indian Population and Intercommissural Width	136	47.38 +/- 14.96	0.000

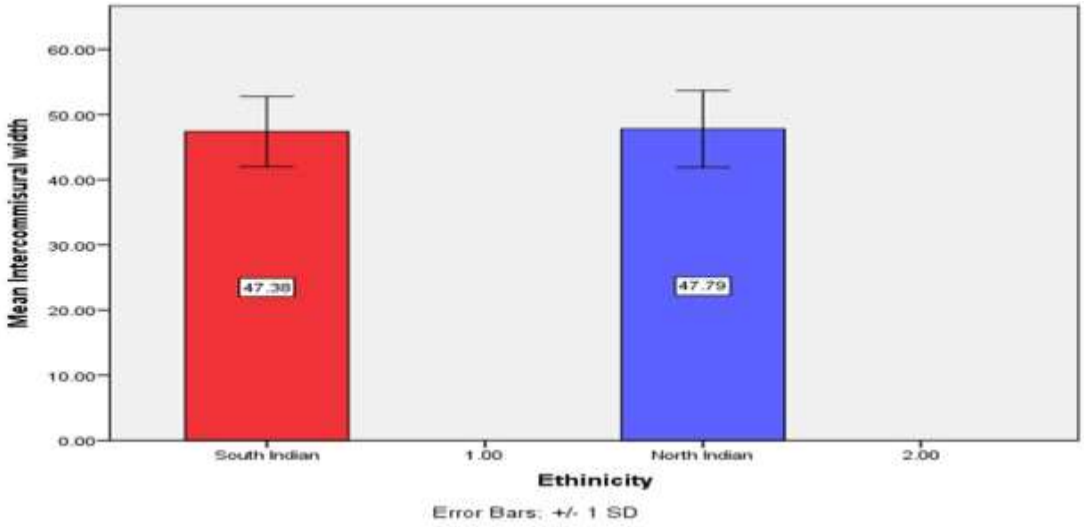

Figure 1: The bar graph represents the association between ethnicity and the mean Intercommissural width of the participants. The X axis represents the ethnicity of the population and the Y axis represents the mean Intercommissural width. Red denotes the south Indian population. Blue denotes the North Indian population. There is no significant difference between Intercommissural width of North Indian Population (Mean= 47.79) compared to that of South Indian Population (Mean= 47.38) . (chi-square, p= 0.648)

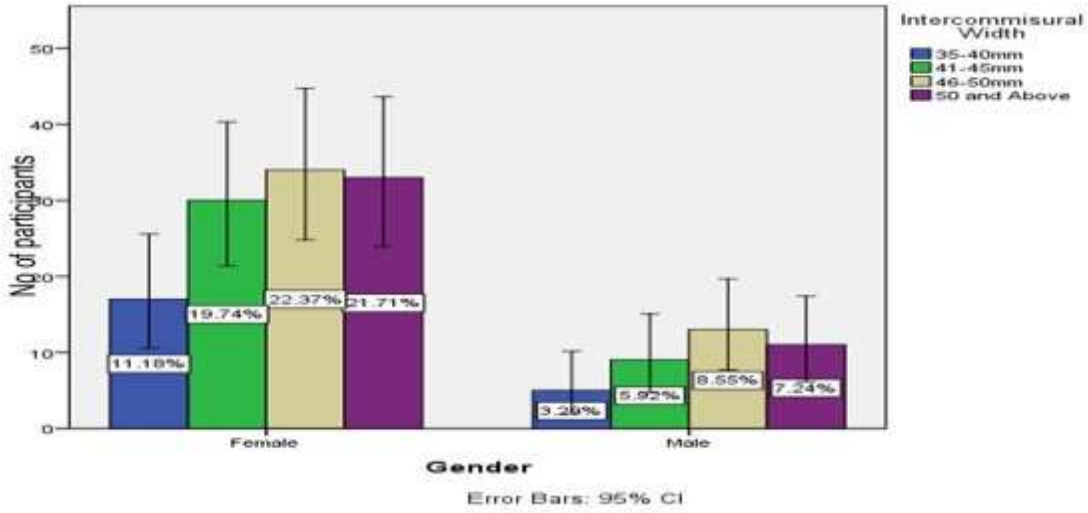

Figure 2: The above bar graph represents the comparison of intercommissural width in male and female participants of the study. The X- axis represents the gender and the Y- axis represents the intercommissural width. The mean intercommissural widths of males were greater than that of female, although the difference was not statistically significant (chi-square, p value = 0.193)

Discussion:

The intercommissural width has more relevance in forensic and other varied fields although it was concluded that the intercommissural width was not a good predictor for the selection of maxillary anterior teeth width for edentulous patients in the study group. The North Indian population had more Intercommissural width than the South Indian population though the difference was not significant (21) (22).

A previous research was done on this topic to assess whether intercommissural width can be used in aesthetic treatments (23). The author found that intercommissural width decreases with age. While measuring the intercommissural width of male and female, during a smile, preferably females had greater commissural width compared to male (24). So, from this study it is understood that intercommissural width differs not only in different ethnicities but also has gender-based differences (25).

Challenges faced by an author in a study stated that the facial appearance of the people varied in different ethnic groups. Measuring from the corners of the mouth resulted in selection of narrower teeth suggesting inaccurate and worst esthetic results of the indian group measured (26). So, the author proved that the measure of intercommissural width has many drawbacks and cannot be a reliable guide for any kind of dental treatments.

In a literature whose results are very similar to our study, the author stated that the Intercommissural width is greater in the North Indian population than the South Indian population. Results from this study revealed that the correlation between the CWC- DCM is 0.031. Comparing the gender proportions calculated in DMP/ CWC and DCM/ CWC on the whole sample showed no statistical significance ($p > 0.05$) (27).

In another literature the author stated that the intercommissural width measurement was not accurate for choosing the maxillary anterior tooth in the completely edentulous patients. Within the study group, measurement of intercommissural width showed the gender based difference (3) (28).

Limitations of the study:

In this study, less sample size and South Indian population dominated the North Indian population. Due to the geographical location, it was not possible to go beyond Tamil Nadu and conduct the survey is the limitations of this study. More sample size, time duration are the factors which will be helpful in forensic studies in future.

Conclusion:

Within the limits of the study, the North Indian population had more intercommissural width than the South Indian population. The intercommissural width measurement is not an accurate measure to differentiate between ethnicities. Further research with large sample sizes can establish the regional variation of the populations and can aid in dental treatment for the particular populations studied.

Conflicts of Interest: No

Author contributions:

Author 1: Padmalochini Sudharsan, carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis and in the preparation of the manuscript.

Author 2: Dr. S. Gheena, aided in conception of the topic, designing the study and supervision of the study, correction and final approval of the manuscript.
Author 3: S Sandhya, supervision of the study and correction of the manuscript.

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Conflicts of interest:
The authors declare no potential conflict of interest.

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References:

1. Varjão FM, Nogueira SS. Intercommissural width in 4 racial groups as a guide for the selection of maxillary anterior teeth in complete dentures. Int J Prosthodont. 2005 Nov;18(6):513–5.

2. Miranda G, D'Souza M. Evaluating the reliability of the interalar width and intercommissural width as guides in selection of artificial maxillary anterior teeth: A clinical study [Internet]. Vol. 6, Journal of Interdisciplinary Dentistry. 2016. p. 64. Available from: http://dx.doi.org/10.4103/2229-5194.197665

3. Naeem S, Qamar K, Hussain MW. Significance of intercommissural width and anterior teeth selection. 2013 Aug 1;33(2):393.

4. Princeton B, Santhakumar P, Prathap L. Awareness on Preventive Measures taken by Health Care Professionals Attending COVID-19 Patients among Dental Students. Eur J Dent. 2020 Dec;14(S 01):S105–9.

5. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of Streptococcus mutans, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: randomized controlled trial. Clin Oral Investig. 2020 Sep;24(9):3275–80.

6. R H, Hannah R, Ramani P, Ramanathan A, Jancy MR, Gheena S, et al. CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene [Internet]. Vol. 130, Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology. 2020. p. 306–12. Available from: http://dx.doi.org/10.1016/j.oooo.2020.06.021

7. Antony JVM, Ramani P, Ramasubramanian A, Sukumaran G. Particle size penetration rate and

effects of smoke and smokeless tobacco products - An invitro analysis. Heliyon. 2021 Mar 1;7(3):e06455.

8. Sarode SC, Gondivkar S, Sarode GS, Gadbail A, Yuwanati M. Hybrid oral potentially malignant disorder: A neglected fact in oral submucous fibrosis. Oral Oncol. 2021 Jun 16;105390.

9. Jeevanandan G, Thomas E. Volumetric analysis of hand, reciprocating and rotary instrumentation techniques in primary molars using spiral computed tomography: An in vitro comparative study. Eur J Dent. 2018 Jan;12(1):21–6.

10. Hannah R, Ramani P, WM Tilakaratne, Sukumaran G, Ramasubramanian A, Krishnan RP. Author response for "Critical appraisal of different triggering pathways for the pathobiology of pemphigus vulgaris—A review" [Internet]. Wiley; 2021. Available from: https://publons.com/publon/47643844

11. Chandrasekar R, Chandrasekhar S, Sundari KKS, Ravi P. Development and validation of a formula for objective assessment of cervical vertebral bone age. Prog Orthod. 2020 Oct 12;21(1):38.

12. Subramanyam D, Gurunathan D, Gaayathri R, Vishnu Priya V. Comparative evaluation of salivary malondialdehyde levels as a marker of lipid peroxidation in early childhood caries. Eur J Dent. 2018 Jan;12(1):67–70.

13. Ponnulakshmi R, Shyamaladevi B, Vijayalakshmi P, Selvaraj J. In silico and in vivo analysis to identify the antidiabetic activity of beta sitosterol in adipose tissue of high fat diet and sucrose induced type-2 diabetic experimental rats. Toxicol Mech Methods. 2019 May;29(4):276–90.

14. Sundaram R, Nandhakumar E, Haseena Banu H. Hesperidin, a citrus flavonoid ameliorates hyperglycemia by regulating key enzymes of carbohydrate metabolism in streptozotocin-induced diabetic rats. Toxicol Mech Methods. 2019 Nov;29(9):644–53.

15. Alsawalha M, Rao CV, Al-Subaie AM, Haque SKM, Veeraraghavan VP, Surapaneni KM. Novel mathematical modelling of Saudi Arabian natural diatomite clay. Mater Res Express. 2019 Sep 4;6(10):105531.

16. Yu J, Li M, Zhan D, Shi C, Fang L, Ban C, et al. Inhibitory effects of triterpenoid betulin on inflammatory mediators inducible nitric oxide synthase, cyclooxygenase-2, tumor necrosis factor-alpha, interleukin-6, and proliferating cell nuclear antigen in 1, 2-dimethylhydrazine-induced rat colon carcinogenesis. Pharmacogn Mag. 2020;16(72):836.

17. Zafar A, Sherlin HJ, Jayaraj G, Ramani P, Don KR, Santhanam A. Diagnostic utility of touch imprint cytology for intraoperative assessment of surgical margins and sentinel lymph nodes in oral squamous cell carcinoma patients using four different cytological stains. Diagn Cytopathol. 2020 Feb;48(2):101–10.

18. Karunagaran M, Murali P, Palaniappan V, Sivapathasundharam B. Expression and distribution pattern of podoplanin in oral submucous fibrosis with varying degrees of dysplasia – an immunohistochemical study [Internet]. Vol. 42, Journal of Histotechnology. 2019. p. 80–6. Available from: http://dx.doi.org/10.1080/01478885.2019.1594543

19. Raj Preeth D, Saravanan S, Shairam M, Selvakumar N, Selestin Raja I, Dhanasekaran A, et al. Bioactive Zinc(II) complex incorporated PCL/gelatin electrospun nanofiber enhanced bone tissue regeneration. Eur J Pharm Sci. 2021 May 1;160:105768.

20. Prithiviraj N, Yang GE, Thangavelu L, Yan J. Anticancer Compounds From Starfish Regenerating Tissues and Their Antioxidant Properties on Human Oral Epidermoid Carcinoma KB Cells. In: PANCREAS. LIPPINCOTT WILLIAMS & WILKINS TWO COMMERCE SQ, 2001 MARKET ST, PHILADELPHIA …; 2020. p. 155–6.

21. Ariga P, Nallaswamy D, Jain AR, Ganapathy DM. Determination of correlation of width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A systematic review. World J Dent. 2018 Feb;9(1):68–75.

22. Kurien A, Cherian KP, Mhatre S, Tharakan RG. A comparative study on the relationship between inter alar width, and inter commissural width on circumferential arc width of maxillary anterior teeth in different age groups. J Indian Prosthodont Soc. 2014 Dec;14(4):352–7.

23. Mavroskoufis F, Ritchie GM. Nasal width and incisive papilla as guides for the selection and arrangement of maxillary anterior teeth [Internet]. Vol. 45, The Journal of Prosthetic Dentistry. 1981. p. 592–7. Available from: http://dx.doi.org/10.1016/0022-3913(81)90417-0

24. Chetan P, Tandon P, Singh GK, Nagar A, Prasad V, Chugh VK. Dynamics of a smile in different age groups. Angle Orthod. 2013 Jan;83(1):90–6.

25. Miran FA, University of Sulaimani, Muhamad SR, General dental practitioner at Chamchamal medical center. The selection of maxillary anterior teeth width in relation to facial measurements [Internet]. Vol. 2, Sulaimani dental journal. 2015. p. 101–7. Available from: http://dx.doi.org/10.17656/sdj.10047

26. Deogade SC, Mantri SS, Saxena S, Daryani H. Correlation between Combined Width of Maxillary Anterior Teeth, Interpupillary Distance and Intercommissural Width in a Group of Indian People [Internet]. Vol. 4, International Journal of Prosthodontics and Restorative Dentistry. 2014. p. 105–11. Available from: http://dx.doi.org/10.5005/jp-journals-10019-1116

27. [No title] [Internet]. [cited 2021 Mar 11]. Available from: https://www.researchgate.net/profile/Ashish-Jain-17/publication/325554541_Reliability_of_intercommissural_width_in_the_determination_of_width_of_maxillary_anterior_teeth_in_Indian_and_Malaysian_population/links/5b2a41810f7e9b1d009be4ff/Reliability-of-intercommissural-width-in-the-determination-of-width-of-maxillary-anterior-

teeth-in-Indian-and-Malaysian-population.pdf

28. Mishra MK, Singh RK, Parajuli PK, Shrestha P, Baral D, Suwal P. A comparative study to find out the relationship between the inner inter-canthal distance, interpupillary distance, inter-commissural width, inter-alar width, and the width of maxillary anterior teeth in Aryans and Mongoloids [Internet]. Clinical, Cosmetic and Investigational Dentistry. 2016. p. 29. Available from: http://dx.doi.org/10.2147/ccide.s87837