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Original Research

Gender Corelation Of Incisor Display In Eastern Up Population During Smile

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ABSTRACT

Smile is an important social asset. Esthetics and posed smile are the two key factors to take into account before initiating orthodontic treatment. Better knowledge of the profile, soft tissue, and incisor display normally during smile helps to provide better treatment and restore the normal state by correcting any aberrant incisor and smile modifications. This study aims to find if in the eastern UP population, the display of incisors when smiling is gender-specific or not. Research includes 90 subjects with equal distribution of men and women. The subjects were photographed with posed smiles or representative smile for the application of the smile analysis. The photographs were transferred to the computer and measurements were taken with software. The parameters of hard and soft tissues were recorded. Study concludes when compared to their female counterparts, males had significantly higher lip commissure heights on both the left and right side and the difference in the display of central incisor was more significant in men showing a marked decrease in posed smile.

Keywords: smile, central incisor, lip commissure, lip length, photograph

INTRODUCTION

One of the best ways for people to express their emotions is through the smile1. It is appropriately regarded as an important means of nonverbal social interaction, a refined method of human interaction, and a reliable indicator of facial attractiveness. Orthodontic treatment's primary purpose is to improve harmony and balance. Over the years various methods and strategies have been developed to obtain better diagnostic tools for analysing the smile2. Smile aesthetics has become paramount from patients' perspective and therefore it is important for the clinician to consider that in their treatment mechanics. Lip position and amount of tooth and gingival display during smile is important diagnostic criteria in orthodontics3. The mouth being the centre of communication in the

face, aesthetic appearance of the oral region during smile becomes an important part of facial attractiveness. This emerging concept of facial attractiveness has led clinicians to broaden their aesthetic analysis by including the display of dentition during smile in their diagnosis and treatment planning2. Men and women present distinct pattern related to the lip tooth relationship. Knowledge of gender related changes has become critical to achieving clinical success, maximising smile aesthetics and obtaining healthy and long-lasting results for patients4. Thus, the aim of this study is to find that in eastern UP population, the display of incisors when smiling is gender-specific.

MATERIALS AND METHOD

90 subjects including 45 males and 45 females were selected who were undergoing orthodontic treatment in Department of Orthodontics & Dentofacial Orthopaedics at Saraswati Dental College Lucknow. Institutional Research and Development Committee (IRDC) and Institutional Human Ethical Committee (IHEC) of Saraswati Dental College, Lucknow, gave their approval to the research work. Subjects were selected under certain inclusion and exclusion criteria's.

Exclusion criteria includes:

- Limitation in facial mobility.
- Missing teeth in the anterior region, fractured or worn incisors, or malocclusions that could affect the outcome of the study, such as a deep overbite, an increased overjet, and an anterior open bite and crossbites.
- Orthognathic surgery or facial plastic surgery.
- Periodontal surgery in the region of the incisor
- Veneers or prosthetic crowns on the incisors, prosthetic or cosmetic increase in the crown length of the maxillary incisors.
- Severe periodontal disease affecting the incisors.
- Active orthodontic treatment or completed treatment in the past 5 years.
- Severe dentofacial deformity.

Inclusion Criteria includes:

- No crowding or spacing
- No missing tooth/teeth.
- Patients with healthy maxillary and mandibular incisors and good periodontal attachment and dental alignment.
- Anterior teeth with normal over jet and over bite

Following verbal disclosure of the study's use of a smile captured on a brief, 3- to 5-second video clip of a small portion of the subjects' faces, written consent was obtained from the subjects.

To standardise subjects, the Natural Head Position (NHP) was used. About 90 cm away from the subject, a tripod supported a Nikon D3400 DSLR camera with an 18-55 mm optical zoom. By positioning the tripod stand in a fixed indicated position alongside the chair, a distance of 90 cm was standardised. The test subjects were seated in chairs, and each was given a sterilised metallic scale to hold with their hand just below the chin while smiling. The lens's (micro lens') magnification was set to 35X; its focal length was 5.3; its shutter speed was 1/60; and its aperture was ISO -A6400. The participants were told to maintain a natural head position. The word "cheese" was taught to each subject as the photograph was being captured.

After placing the individuals in a Natural Head Position, they were photographed with posed smiles (because posed smiles are the easiest to reproduce). Using a Nikon D3400, photos were taken in the same setting under the same natural lighting conditions.
The photos were uploaded to the computer, resized with Adobe Photoshop (version 7, Adobe Systems, San Jose, CA, USA), and then measured using the Digimizer software (version 5.3.4). Using the same programme, the measurement unit was calibrated in every image. The soft tissue and teeth were measured using the following methods:
(1) right lip commissure height
(2) Left lip commissure height
(3) upper lip length
(4) central incisor display during posed smile.

Statistical analysis was done after recording all the parameters.

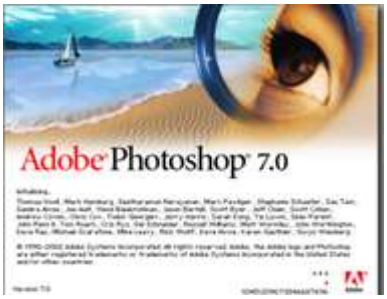

Figure 1: Software's (Adobe Photoshop & Digimizer)

Figure 2–Measurement method on photography of Incisal exposure, Right commissure length, Left commissure length and Lip length

RESULTS

Table – 1: Comparison of CI-Photography between Male & Female

GENDER		Mean	SD	p-value
CI-Photography	Male	7.57	1.35	1.0000
	Female	7.57	1.50	

Comparison of CI – Photography between male and female, shows the mean CI among males 7.57±1.35, whereas in females, the value was 7.57±1.50. p value 1.0000 indicates that no significant difference in CI – Photography values between males and females

Table – 2: Comparison of RLC-Photography between Male & Female

GENDER		Mean	SD	p-value
RLC-Photography	Male	17.57	2.35	<0.001
	Female	16.17	2.97	

Comparison of the RLC – Photography between male and female results in ($p<0.001$), with RLC among males 17.57±2.35, while among females, it was 16.17±2.97 that indicates the significant difference in RLC – Photography values between males and females.

Table – 3: Comparison of LLC-Photography between Male & Female

GENDER		Mean	SD	p-value
LLC-Photography	Male	16.37	3.35	<0.001
	Female	13.27	2.12	

Comparing the LLC – Photography between male and females, revealed LLC among males was 16.37±3.35, while among females, it was 13.27±2.12. Significant difference observed between males and females i.e, p value<0.001.

Table – 4: Comparison of LL-Photography between Male & Female

GENDER		Mean	SD	p-value
LL-Photography	Male	17.27	2.33	<0.001
	Female	13.70	2.12	

Comparison of LL – Photography between male and female indicates LL among males was 17.27±2.33, while among females, it was 13.70±2.12. Highly significant difference was found in LL – Photography values between males and females ($p<0.001$).

DISCUSSION

In the current study, we measured the lip length, right lip commissure height, left lip commissure height, and maxillary incisor display during speech in the population of eastern Uttar Pradesh. The results on how upper incisor show, lip length, and lip commissure height change with gender are consistent with those of earlier studies5,6. An appealing smile and a proper lip-to-tooth connection are important aspects of an attractive face that enhance social interaction7.

The average lip length at rest, measured from the subnasale to the most inferior part of the upper lip at the midline, is approximately 23 mm in men and 20 mm in women, according to Sabri R8. What is significant, however, is the relationship of the upper lip to the maxillary incisors and to the commissure of the mouth. The commissure height, which is the vertical distance between the commissures and a horizontal line from the subnasale, should be nearly equal to the lip length. Few objective standards exist, according to Sarver D9, to evaluate smile characteristics, determine the lip-tooth relationship as the goal of treatment, or gauge the results of treatment on soft tissues.

The mean value of the upper central incisor in this study's comparison of pictures of males and females was determined to be 7.57±1.35 in the males and 7.57±1.50 in the females. Between males and females, there was no discernible difference in central incisor photography values ($p=1.0000$). In line with the findings of this investigation, Ackerman MB et al10 found no gender-related differences in the amount of incisor exposure during posed smiles.

In the current study, it was discovered that the mean RLC for males was 17.57±2.35 and for females it was 16.17±2.97 when measuring the height of the right lip commissure (RLC) using photography. RLC revealed a highly significant difference with a p-value of <0.001. Dickens et al.6 findings complement the current study even though they didn't identify the heights of the right lip commissure and left lip commissure. They discovered that commissural height increased in men and women with time.

Comparing the mean left lip commissure (LLC) height between males and females in the current study, it was discovered that the mean LLC for males was 16.37±3.35 and the mean LLC for females was 13.27±2.12. Male and female LLC - photography values were observed to differ significantly. The outcome was more prevalent in males and was consistent with studies conducted by Drummond et al4 and Chetan et al11.

Comparing the mean lip lengths of males and females, it was discovered that males had a mean lip length of 17.27±2.33 and females had a mean lip length of 13.70±2.12. Between-sexes differences in LL-photography values were found to be highly significant. Drummond et al.4 showed that there was a substantial difference in the mean values of lip length between males and females, which is consistent with the findings of this study. They confirmed the existence of gender dimorphism and demonstrated that female lips were shorter than those of males.

CONCLUSION

- The lip commissure height, both left and right, followed the same pattern as the lip length. The upper lip length increases especially in men with time.
- The maxillary central incisor shows while smiling, which was more pronounced in men than in their female counterparts.
- This difference in the exhibition of central incisor was more significant in men displaying a notable decline in posed smile.

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