Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 12 [6] May 2023 : 278-281

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD

SHORT COMMUNICATION **OPEN ACCESS**

Smile attractiveness related to buccal corridor space in 3 different facial types: Gandhinagar population

Kalpesh Vaishnav[1] , Dipti S Shah[2], *Khushbu Baraiya[3], Radhika Agnihotri[4], Miloni Bhatt[5], Varda Thakar[6]
1-6 Dept of Prosthodontic Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat
***Corresponding Author**

ABSTRACT
Smile attractiveness is significantly influenced by buccal corridor space and its changes. Regarding various buccal corridor areas and facial patterns, different populations may subjectively perceive certain smiles as being more or less appealing. To generate two distinct facial kinds, a smiling person with a mesofacial face was altered (brachyfacial and dolicofacial). Five alternative buccal corridors (2%, 10%, 15%, 22%, and 28%) were added to each face form. The pictures were shown to two different sets of judges in Gandhinagar, India, who were between the ages of 17 and 21 (female and male, 100 each). The evaluation process used a visual analogue scale. The Kruskal-Wallis test was used to compare the ratings given to each image. The buccal corridor's dark areas could be distinguished by both groups of evaluaters at 2%, 10%, and 28%. All two groups of evaluators discovered that a 2% buccal corridor scored aesthetically identically across three different face types. Depending on the type of facial structure, the width of the buccal corridor space affects how appealing a grin is. In short, normal, and long face types, a medium buccal corridor (15%) is the aesthetic feature that all groups of assessors find most appealing.
Keywords: Buccal corridor, brachyfacial and dolicofacial

Received 16.05.2023 Revised 21.05.2023 Accepted 22.06.2023

INTRODUCTION

One of the best ways for people to express their emotions is with a smile[1]. The eyes and a smile are the two most critical components of face attractiveness [2]. An essential component of the attractiveness of the smile that has attracted attention recently is buccal corridor space [1, 3]. It is described as the bilateral negative spaces, comparable to the commissure of the lips when someone smiles, between the buccal surface of the maxillary posterior teeth and the inner mucosa of the cheek [1, 3]. The buccal corridors added to the appearance of a natural dentition when they were present, but when they are absent, the patient appears artificial [3]. Therefore, selecting the appropriate buccal corridor width is crucial for orthodontists and prosthodontists. Numerous researchers have found those dental practitioners and both laypeople and preferred broader smiles with minimal buccal corridor space [4-8]. The buccal corridor areas have little effect on smile attractiveness, according to various research [9-11]. Regarding the impact of the buccal corridor on smile aesthetics, there is still some uncertainty. The buccal corridor, a miniature aspect of the smile's aesthetics, is influenced by a person's face structure[1]. Therefore, rather than just looking at the image of the smile, it may be more accurate to evaluate the facial image and types (brachyfacial, mesofacial, and dolichofacial) as well. A person with a brachyfacial profile has a wide, square face with a prominent chin, flat lips, a low mandibular plane angle, and a straight profile. A person with a mesofacial structure has balanced facial features. A dolichofacial person has a long, thin face with an unbalanced anterior-posterior face height, a high mandibular plane angle, a convex profile, and inadequate chin development.

In order to better understand patients' perceptions and incorporate their preferences into orthodontic treatment, the current study set out to assess the aesthetic perceptions of two major groups in the Gandhinagar population regarding the buccal corridor in dolichofacial, brachyfacial, and mesofacial individuals.

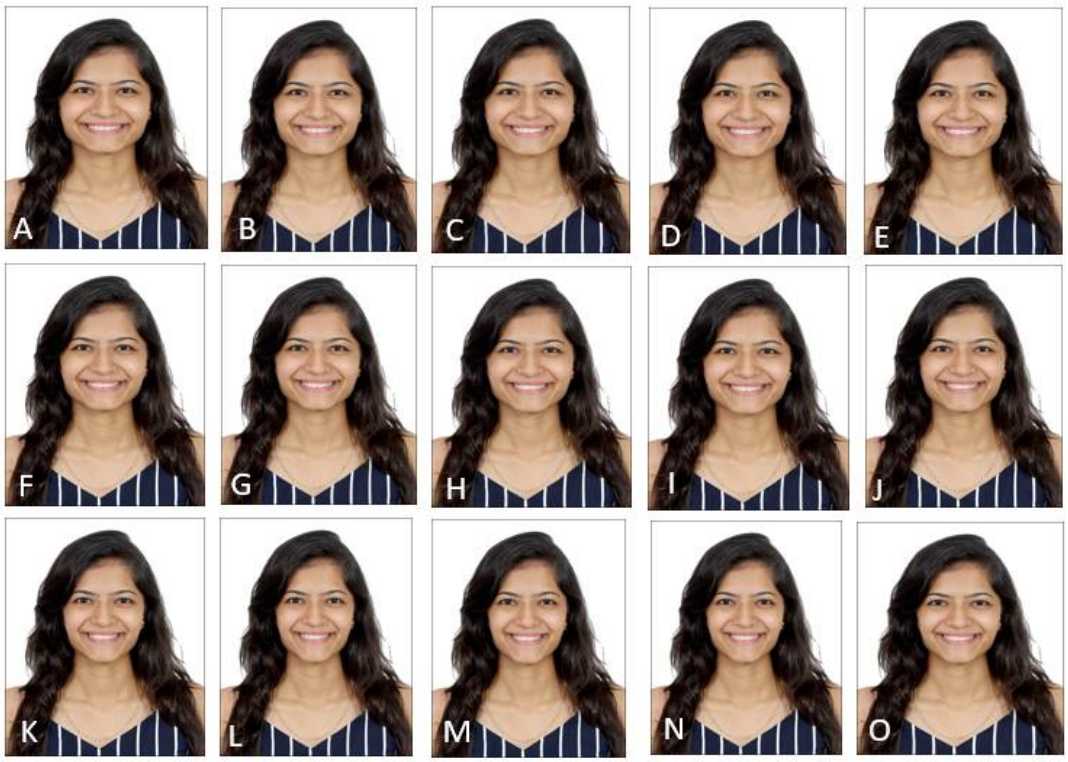

Figure 1.Set of 15 images with 3 different facial types and 5 different buccal corridor widths. A, Short face,2% buccal corridor. B, Short face,10% buccal corridor. C, Short face,15% buccal corridor. D,Shortface,22%buccal corridor. E, Short face,28%buccal corridor. F,Normalface,2%buccal corridor. G, Normal face,10% buccal corridor. H, Normal face,15% buccal corridor. I, Normal face,22% buccal corridor. J, Normal face,28%buccal corridor. K, Long face,2% buccal corridor. L,Longface,10% buccal corridor. M, Long face,15%buccal corridor. N, Long face,22% buccal corridor. O, Long face, 28% buccal corridor

MATERIAL AND METHODS

Institutional ethical committee approval was obtained for the study. A 25-year-old woman with a mesofacial patternand had well-aligned anterior teeth was selected for this study. The individual signed an informed consent form authorizing her image to be used and modified for the purposes of the present study. A frontal picture was made using a digital camera (EOS 5D Mark III; Canon). We employed photo editing software (Photoshop v7.0; Adobe Systems) to fix any minor flaws or asymmetries that might affect how attractiveness is judged. Brachyfacial, mesofacial, and dolichofacial facial types were added to the image. Each of the five buccal corridors (2%, 10%, 15%, 22%, and 28%) was changed to produce a sequence of 15 distinct smiles (Fig. 1).

A total of 200 people from the 2 population groups of Gandhinagar 100 each were recruited as evaluators.The sample size (n=200) was calculated with a 5% margin of error and 95% confidence interval. The distance between the visible maxillary dentition and the inner commissural width was estimated as the inner commissural width divided by the visible maxillary dentition width multiplied by 100. A percentage was used to express the ratio. As illustrated in Figure 1, fifteen pictures were chosen for evaluation purposes. The photographs were displayed to all of the judges using presentation software (PowerPoint v16; Microsoft Corp.). Utilizing random numbers from 1 to 15 produced by a computer, the 15 photos were arranged at random. Each image was displayed for 15 seconds, and then the screen went black and blank for 3 seconds. It was not possible to go back to the prior image.

Without consultation with any other evaluators, each evaluation was completed independently. The most appealing smile was measured using a 50-mm-long visual analogue scale (VAS), which was anchored at the left "0" and the right "50." The evaluators were given instructions on how to mark the scale to indicate how appealing they thought a grin was: farther to the left for less attractive and farther to the right for more attractive. The markings were measured to identify where they were on the 50-mm-long VAS line after recordings were made, and the means of those scores were determined (Table 1). The Kruskal-Wallis test was used to compare the ratings given to each image.

Table :1 Mean ± standard deviations cores given by 3 ethnic group evaluators for short, normal, and long face types

% of buccal corridor width	Short	Normal	Long	Kruskal- Wallis Test P
FEMALE				
2	25.87±9.62	32.87±9.79	30.55±11.01	<.001
10	18.49 ±9.96	19.92 ±10.50	20.54 ±8.30	.33
15	26.88 ±10.91	24.93 ±8.92	23.92 ±10.24	.08
22	21.00 ±12.66	21.57 ±10.78	22.13 ±10.49	.76
28	15.19 ±10.93	16.75 ±11.03	18.44 ±8.02	.02
MALE				
2	25.82 ±9.21	25.78 ±8.04	28.61 ±11.43	.03
10	29.90 ±12.03	28.82 ±11.86	23.40 ±11.04	<.001
15	32.78 ±12.49	31.98 ±10.53	28.92 ±10.83	.02
22	25.70 ±10.67	31.55 ±9.52	29.56 ±9.02	<.001
28	26.19 ±11.51	24.36 ±11.07	23.58 ±8.81	.15

RESULTS

There were statistically significant differences between female and male in smile perception with respect to the 2% and 28% buccal corridor in all 3 facialtypes. However, only 2% buccal corridor in all 3 face types showed no significant differences among the 2 groups (Table 1). Statistically significant differences were found in the esthetic score among the Female evaluators with respect to face types with 28% (*P*=.02)and 2% (*P*<.001) buccal corridors. There were statistically significant differences between the three face types for the male group in all buccal corridors (2% [P.03], 10% [P.001], 15% [P.02], 22% [P.001], with the exception of 28% [P.15]) (Table 1)

Female evaluators preferred a normal face type with a buccal corridor of 2% the most and a short face with a buccal corridor of 28% the least. Male judges found the 15% buccal corridor in typical face types to be the most alluring, while the 10% buccal corridor was found to be the least alluring. The most beautiful image was a 15% buccal corridor in a regular face type, which was viewed equally by male and female participants.

DISCUSSION

The goal of the current study was to examine how the buccal corridor affects how appealing a smile is on various facial types. Most comparable research simply included photos of the mouth region[10-11]. However, different facial types should be taken into account [14]; while conducting studies on smile attractiveness since, as noted by Valiathan and Gandhi [15], laypeople may assess the buccal corridor differently when viewing a person's entire face.

It has been proven that the software utilised (Photoshop 7; Adobe) is a legitimate technique for image alteration. Instead of utilising photographic printouts, we submitted the photographs using a slide presentation programme (Power-Point) so that we could quickly get more reviewers. Each photograph used for assessment had a constant exposure time [14].

Images were evaluated using a VAS since this classification enables evaluators to express their individual response in a linear fashion with less constraint and more freedom. Additionally, it is frequently employed in research to evaluate the aesthetics of smiles. The study by Lacerda-Santos et al.[14] demonstrated that young people are more critical when evaluating the presence of the buccal corridor, hence young evaluators between the ages of 17 and 21 were included. Additionally, demand for orthodontic treatment is correlated with age, with 16-year-olds showing the greatest interest [16].

In all three face types, only the 15% buccal corridor exhibited no discernible difference between the two groups.

All 2 groups agreed that the medium buccal corridor (15%) was ideal for long and normal face types. The male assessors liked a 15% buccal corridor for short faces, whereas the female evaluators thought the 2% buccal corridor with a typical face type was most beautiful.

This outcome, however, is consistent with that of Roden-Johnson *et al* [10], who found that the buccal corridor space was not essential to the appraisal of the smile's aesthetics.

All three facial types' perceptions of grin aesthetics varied greatly, especially among female raters. They noticed variations in all buccal corridors, with the exception of 28%, demonstrating that they were more critical when assessing the beauty of a grin on various facial types.

Because it has been demonstrated that the sex of the person in the photograph impacts the perception of grin aesthetics, further research is advised utilizing a photograph of a male to support the conclusions of

this study [17]. It has been demonstrated that the evaluation of grin aesthetics is influenced by the evaluators' sex. While Pithon *et al* [13] observed that male assessors were more critical, Zange *et al* [12] discovered that female evaluators were. Repeated testing was not used to determine the study's dependability. This need to be regarded as one of the limitations.

CONCLUSIONS

Based on the findings of this study, the following conclusions were drawn:

1. Different facial types' smile attractiveness was influenced by buccal corridor width.
2. Both groups favour normal width buccal corridor space (2%), which is an aesthetic quality.
3. The perception of a beautiful smile may be significantly correlated with the individual's sex.

CONFLICT OF INTEREST

We declare that there is no conflict of interest between the authors.

REFERENCES

1. Proffit WR, Fields HW, Sarver DM. (2003). Contemporary orthodontics. 5th ed. St. Louis: Mosby;p168-72.
2. Goldstein RE. Study of need for esthetics in dentistry. J Prosthet Dent 1969;21:589-98
3. Frush JP, Fisher RD. (1958). The dynesthetic interpretation of the dentogenic concept. J Prosthet Dent;8:558-81.
4. Moore T, Southard KA, Casko JS, Quian F, Southard TE. (2005). Buccal corridors and smile esthetics. Am J Orthod Dentofacial Orthop;127:208-21.
5. Parekh SM, Fields HW, Beck M, Rosenstiel S. (2006). Attractiveness of variations in the smile arc and buccal corridor space as judged by orthodontists and laymen. Angle Orthod;76:557-63.
6. Martin AJ, Buschang PH, Boley JC, Taylor RW, McKinney TW. (2007).The impact of buccal corridors on smile attractiveness. Eur J Orthod;29:530-7.
7. Ioi H, Nakata S, Counts AL. (2009). Effects of buccal corridors on smile esthetics in Japanese. Angle Orthod ;79:628-33.
8. Badran SA, Mustafa M. (2013). A comparison between laypeople and orthodontists in evaluating the effect of buccal corridor and smile arc on smile esthetics. J World Federation Orthod;2:123-6.
9. Hulsey CM. (1970). An esthetic evaluation of lip-teeth relationships present in the smile. Am J Orthod ;57:132-44.
10. Roden-Johnson D, Gallerano R, English J.(2005). The effects of buccalaces and arch form on smile esthetics. Am J Orthod Dentofacial Orthop;127: 343-50
11. Ritter DE, Gandini LG, Pinto AS, Locks A. (2006). Esthetic influence of negative space in the buccal corridor during smiling. Angle Orthod;76: 198-203
12. Zange SE, Ramos AL, Coughi OA, Mendonca MRD, Suguino R. (2011). Perceptions of laypersons and orthodontics regarding the buccal corridor in long and short face individuals. Angle Orthod, 81:86-90.
13. Pithon MM, Mata KR, Rocha KS, Costa Bdo N, Neves F, Barbosa GC, et al. (2014). Perceptions of brachfacial, mesofacial and dolichofacial individuals with regard to the buccal corridor in different facial types. J Appl Oral Sci, 22: 382-9
14. Lacerda-Santos R, Pereira TB, Pithon MM. Esthetic perception of the buccal corridor in different facial types by laypersons of different ages. Biosci J 2015;3:1283-90.
15. Valiathan A, Gandhi S. (2005). Buccal corridor space, arch form, and smile esthetics. Am J Orthod Dentofacial Orthop,128:557.
16. Zreagat M, Hassan R, Ismail AR, Ismail NM, Aziz FA. (2013). Orthodontic treatment need and demand among 12- and 16-year-old school children in Malaysia. Oral Health Dent Manag;12:217-21.
17. Al-Ramahi SC, Al-Mulla AA. (2010). Evaluation of buccal corridor is posed smile for Iraqi adults sample with Class I normal occlusion. J Bagh Coll Dent.22: 91-7

CITATION OF THIS ARTICLE

Kalpesh V , Dipti S S, Khushbu B, Radhika A, Miloni B, Varda T. Smile attractiveness related to buccal corridor space in 3 different facial types: Gandhinagar population. Bull. Env.Pharmacol. Life Sci., Vol 12[6] May 2023: 278-281