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Original Research Article

# Smile esthetics perception by the general population among different age groups in tiruchengode

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ABSTRACT

**Objectives:** To evaluate the smile esthetic perception on varying gingival display and black triangles among individuals aged between 18-35 and 36-50 using a visual analog scale (VAS).
**Materials and Methods:** To evaluate the two variables (gingival display and Black triangle), a photo album is created that consist of two sets of photos which included six different photographs in each set. The frontal view of young adult female smile was selected for evaluating the esthetic perception. The smile features in the photographs is digitally altered using Adobe Photoshop CS6. Black triangles images are created using 0.5-mm increments. The gingival display by decreasing (−) the distance (2.0 and 4.0 mm) and increasing (+) the distance (2.0, 4.0, and 6.0 mm). The photographs are printed on photographic paper to create a photo album and coded from 1 to 6 and the scoring was done using a 10 cm visual analog scale (VAS). The participants are asked to mark the VAS score according to the attractiveness of each smile image separately with individual ratings.
**Results:** The comparison of smile esthetic perception among age groups was done using the Mann-Whitney U test. On comparing, the results revealed that laypeople with 18-35 yrs have given more scores for 0 mm Black triangle and for 2 mm gingival display which showed statistically significant results. Comparison of images among different age groups does not show significant results.
**Conclusion:** The impact on the perception of smile esthetics vary among different age groups in terms of gingival display and black triangle.



## 1. Introduction

Smiling adds social value to one's life and esthetic perception was the main concerns for patients undergoing orthodontic treatment. In modern dental care, the increased interest in esthetic dentistry results in peoples of different ages to indulge in uptaking orthodontic treatment. [1–3]

The smile esthetics perception between different age groups tends to vary due to lifestyles, evolving attitudes and opinions. Previous studies had evaluated the esthetic perception of midline diastema, smile arc, smiles with the buccal corridor[4,5] and gummy smile in different age groups. In the era of digitalization, due to the increase in concern for an attractive smile and natural teeth preservation, the soft tissue esthetics have become an increased interest in the field of orthodontics. More than the orthodontic viewpoint, the patient's experience, and social environment affect the perception of a smile among different age groups. Therefore, the knowledge of the smile perception will guide orthodontists to attain the treatment objectives.

Kokich et al (2006)[6] studied the perceptions of layperson and dental professionals regarding dental esthetics in terms of crown width, crown length, papilla height, gingiva-to-

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lip relationship and midline diastema. The images were altered and rated by groups of laypersons, orthodontists and general dentists using a visual analog scale. The results showed that the 3-mm distance from the gingiva to the lip was scored unattractive by orthodontists and laypeople. So, alterations in gingiva-to-lip relationships were found to be more unattractive even for the laypersons.

Hideki Ioi et.al (2010)[7] evaluated the alterd gingival display on smile aesthetics which was assessed by dental students and Japanese orthodontists. Gingival displays were modified in 1 mm increments. The orthodontists rated 0 mm gingival display to be the most attractive while the dental students rated the smile with 2 mm of lip coverage to be the most attractive.

Matheus Melo Pithon et.al (2013)[8] investigated a study to evaluate the influence of black spaces on smile esthetics among laypersons in different age groups (15 to 19, 35 to 44, 65 to 74). The digitally manipulated photographs to simulate black spaces was created and individuals were asked to rate the smiles using the visual analog scale method. The results showed that smile esthetic perception is decreased in older age groups when compared to younger people as they rated the photograph with large black spaces as least attractive.

Sawsan A. Alomari et al. (2022)[9] evaluated to compare the perception of laypersons and dental professionals towards altered gingival esthetics. The smiling photograph of a female was taken and digitally manipulated. The study concluded that the most negative rating was given for the presence of black triangles. When compared to laypersons, dental specialists tended to give lower scores for altered smile images.

The influence of the age over the smile esthetic is still unresolved and has been varying in standards of beauty from past to present and also different in various age groups, populations, cultures, and ethnicity.[10] No similar studies have been done previously with this background, the present study was designed. The objectives of this study is to determine the perception of smile esthetics on varying gingival display and black triangles among individuals aged between 18-35 and 36-50 age groups.

## 2. Materials and Methods

This study was done in laypeople reporting to Department of Orthodontics, Vivekanandha Dental College for Women, who are not seeking orthodontic treatment are considered as participants. The subjects are categorized into groups, 18-35 and 36-50 years based on their generations. Each age group is planned to comprise 50% males and females. Individuals with ages ranging between 18-35 years and 36-50 years and people accompanying patients visiting the college for dental treatment were included**.** Dental professionals and dental students are excluded from the study

Ethical clearance from the Institutional Ethical Committee was obtained (VDCW/IEC/293/2022) before starting the study.

### *2.1. Inclusion criteria*

1. Age ranging 18-35 years and 36-50 years
2. People accompanying patients visiting the college for dental treatment
3. People who are willing to participate in the study.

### *2.2. Exclusion criteria*

1. Dental professionals
2. Dental students.

#### *2.2.1. Photo album*

The photo used for evaluation was created based on two variables:

1. Black triangle
2. Gingival display

Six different photographs was included in each set. The frontal view of young adult female smile was selected with normal occlusion. The cropping of photograph was done to show teeth, gingiva and lips in order to focus on the smile. The smile features was altered digitally using Adobe Photoshop CS6 into 12 photographs.

#### *2.2.2. Set 1: Black triangle*

The black triangles between the maxillary central incisors are created. Six photographs including the images with increasing sizes of black triangle with 0.5-mm increments (0.5 mm, 1mm , 1.5 mm, 2 mm, and 2.5 mm) and the reference image with no black triangles was taken.

#### *2.2.3. Set 2: Gingival display*

The gingival display is measured from the distance between the gingival margin of the maxillary incisors and upper lip. It is altered by decreasing (−) the distance (2.0 and 4.0 mm) and increasing (+) the distance (2.0, 4.0, and 6.0 mm). The reference image was taken with 0 mm.

The photographic album is created and the photographs are coded from 1 to 6 in each set.

Demographic data is obtained from the participants. The 10 cm visual analog scale (VAS) method was used to score the attractiveness of each smile image by the participants, graded from most attractive to least attractive. The right end (at 10-cm range) of the scale is labeled as most attractive and the left end (at zero) is labeled as least attractive. Each participant is asked to give individual ratings with VAS score according to their smile perception.

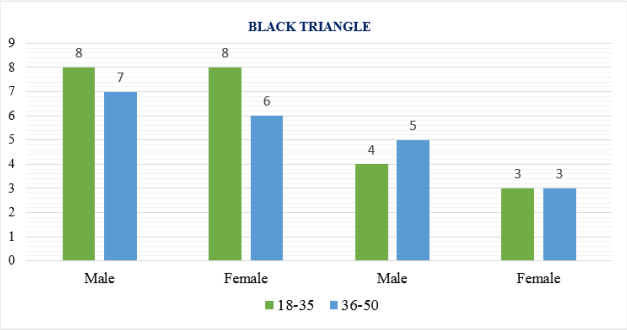
### *2.3. Data analysis*

Descriptive analysis using Statistical Package for Social Sciences (SPSS) software version 25.0 (SPSS Inc., Chicago

USA) was performed. To determine the normality of the data, Shapiro–Wilk test was used. Independent t-test was used to compare the VAS scores between genders. The differences in scoring between age groups are evaluated using Mann-Whitney U test. The significance level was kept at $P \leq 0.05$.

## 3. Results

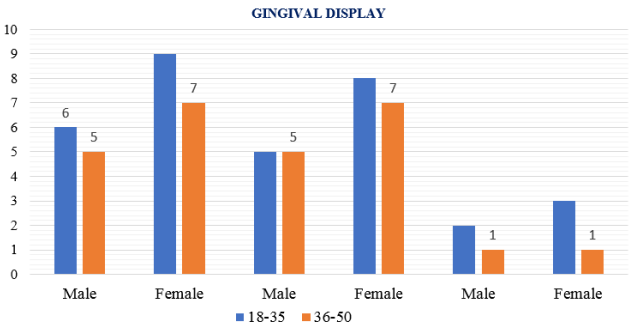
The reults of the study to assess the smile esthetic perception of gingival display and black triangle among different age groups was tabulated. Table 1 shows the Sample distribution in which the sample size was 88 in each group. Grouping was done based on age, 18-35, and 36-50 groups. Table 2 shows the mean and standard deviation of altered black triangle by age group and gender. Considering image 1, the average rating was observed to be 8 in both males and females in the younger age group (18-35). The average rating was 7 in males and 8 in females in the older (36-50 year) age group. Considering image 2, the average rating was observed to be 4 in males and 3 in females in the younger age group (18-35). The average rating was 5 in males and 3 in females in the older age group (36-50). The difference was observed between age groups in both male and female participants in image 1 and in male participants in image 2 which was found to be statistically significant ($p<0.05$). The average rating was 2 related to all other images indicating that the study subjects exhibited a higher preference for image 1.




Graph 1: Photograph ratings by age group and gender of altered black triangle

Graph 1 shows photograph ratings by age group and gender of altered black triangle and there was statistically significant difference found between the age groups for both males and females for Figure 1 and for image 2 the difference was found only between males.

Table 3 shows the mean and standard deviation of altered gingival display by age group and gender. Considering Figure 1, the average rating was 6 and 9 in males and females ofyounger (18-35 year) age group respectively. It was observed to be 5 and 7 in older (36-50 year) age group. Considering Figure 2, the average rating was 5 and 8 in males and females of the younger (18-35 year) age group. The average rating was 5 and 7 in the older (36-50 year) age group. Considering image 4, the average rating was 2 and 3 in males and females of the younger age group and the average rating was 1 in both males and females in the older age group. On analysis with the Mann-Whitney U test, the result was found to be statistically significant between age groups as well as gender-related to Figure 1 and 4 and also significant in females in Figure 2. Considering all other images, the average rating was 1 indicating that the subjects preferred Figure 1 to all other images and rating differences between the age groups was statistically significant for image 4.




Graph 2: Photograph ratings by age group and gender of altered gingival display

Graph 2 shows photograph ratings by age group and gender of altered gingival display and there was statistically significant difference found between the age groups for both males and females for Figure 1 and image 4, but for image 2 the difference was found only between females.

Table 4 shows the frequency and percentage of assessing black triangle for the age group 18-35 years in which a maximum of 31.8% reported the highest rating score of 9 for 0 mm black triangle in both males and females and least scores of 0 with a maximum 100% of male patients and 97.7% of females for >2mm black triangle. Table 5 shows frequency and percentage in assessing black triangle for the age group 36-50 years in which a maximum of 20.5% reported the highest rating score of 7 for 0 mm black triangle in males and 18.2% reported a score of 8 in females and least rating scores of 0 with a maximum 100% of both male and female patients for >2mm black triangle.

Table 6 shows the frequency and percentage of assessing gingival display for the age group 18-35 years in which a maximum of 11.4% reported the highest rating scores of 8 for -2mm and 4mm gingival display in males and 2mm gingival display in females and least rating score of 0 with a maximum of 100% of males and 97.7% of females for 6mm gingival display Table 7 shows the frequency and percentage of assessing gingival display for the age group 36-50 years in which a maximum of 13.6% reported with highest rating

scores of 8 for -4mm gingival display in females and 9.1% reported rating score of 8 for -2mm gingival display in males and least rating scores of 0 with a maximum of 95.5% in males and 93.2% in females for 6mm gingival display.

Table 8 shows that the smile esthetic perception among different age groups was compared. The comparison revealed that laypeople with 18-35 yrs have given more scores for the Black triangle with 0 mm and gingival display with 2 mm compared with the 36-50 yrs group and has shown statistically significant results between both age groups. Comparison of images among different age groups does not show significant results.


**Figure 1:** Altered black triangle between the maxillary central incisors in 0.5 mm increments. No black triangle 2) 0.5mm; 3) 1.0 mm; 4) 1.5 mm; 5) 2.0 mm; 6) 2.5 mm.


**Figure 2:** Altered gingival display in 2.0 mm increments. -4.0 mm; 2) -2.0 mm; 3) 0 mm; 4) +2.0 mm; 5) +4.0 mm; 6) +6.0 mm.

## 4. Discussion

The present study was taken up with the objective of evaluating the perception of smile esthetics between older and younger age group. The increased awareness of the smile aesthetics among the laypeople had influenced the dental specialists to look for ways to make the treatment better.[8] This study was done to evaluate the smile perception of microesthetic parameters of varying gingival display and black triangle as perceived by laypersons among different age groups.

The method of evaluation followed in the study was the same method used by Sriphadungporn et al study which was done in the Thai population.[11]

In the current study, the results indicated that there is differences in perception between these two age groups. The presence of black triangles in the smile is considered to be least attractive by the laypeople in both age groups. In both groups, the perception was similar, the images were rated the lowest with larger black triangle. Thus, the absence of a black triangle was found most pleasing in both age groups which correlates with the study done by Kokich et al.,[6] showing that laypersons rated the black triangle with 3 mm as least attractive.

The study done by Pithon et al[8] found there is no significant difference between the esthetic scores in terms of black space between groups (15–19 and 35–44 years). However, in the present study, the score given for images presenting with a 0 mm black triangle was found to be significantly different between age groups. The 0 mm black triangle were the most rated and the percentage increased by 31.8% in both males and females in young adults. Also, in the older group, the 0 mm black triangle was rated with the highest percentage of 20.5% in males and 18.2% in females.

The score of images presenting with >2mm black triangle is rated the lowest which does not differ between the age groups.

It was noted that laypeople particularly in younger adults showed an increasing gingival display of -2mm and 4mm, with score ratings of 8 increased by 11.4% in males which does not show any statistical significance, and these results correlates with those of Ker et al.[12] who noted that laypeople with younger age group tolerated gummy smile up to 4 mm.

The study done by Khalid H Zawawi et al[13] reported the gingival display of 2 mm was the most attractive smile that does not show significantly different results, but our study results showed that 2mm gingival display had rating scores of 11.4% and it was statistically significant.

However, in the older age group -4mm gingival display was found to be more attractive with rating scores increased by 13.6% in females, and 9.1% males found attractiveness for -2mm gingival display. Our study found that the older group tolerated more upper lip coverage when compared to young adults.

Although gummy smiles which is more common among younger age groups when compared to older adults, it is noted that either of the group does not tolerate the excessive gingival display of 6 mm which showed similar results with the study done by Hunt et al[14] who showed that more than 2 mm of gingival display was rated as less attractive by the laypeople.

Some similarities and differences in perception of smile esthetics may be due to racial differences as our review literature tells about the differences in smile perception vary in people with different ethnic and racial groups.

## 5. Conclusion

Age has an impact on the smile esthetic perception in terms of varying gingival display and the presence of a

**Table 1:** Number of samples

| Sample size (n) | 18–35 years | | 36–50 years | |
|---|---|---|---|---|
| | Males n(%) | Females (%) | Males n(%) | Females n(%) |
| 176 | 44 | 44 | 44 | 44 |

**Table 2:** Mean and standard deviation of photograph ratings by age group and gender of altered black triangle

| Black triangle | Gender | Age group (mean ± SD) | | P Value |
|---|---|---|---|---|
| | | 18-35 years | 36-50 years | |
| **Image 1** | Male | 8.50 ± 3.41 | 7.51 ± 3.31 | 0.049* |
| | Female | 8.61 ± 3.50 | 6.51 ± 4.41 | 0.001* |
| **Image 2** | Male | 4.51 ± 3.10 | 5.61 ± 3.90 | 0.039* |
| | Female | 3.92 ± 3.50 | 3.62 ± 3.12 | 0.548 |
| **Image 3** | Male | 3.61 ± 2.51 | 3.54 ± 2.10 | 0.774 |
| | Female | 2.62 ± 3.81 | 2.41 ± 1.54 | 0.632 |
| **Image 4** | Male | 2.25 ± 1.40 | 2.20 ± 1.50 | 1.000 |
| | Female | 2.61 ± 2.31 | 2.65 ± 2.10 | 0.904 |
| **Image 5** | Male | 2.62 ± 2.51 | 1.93 ± 2.90 | 0.081 |
| | Female | 0.00 ± 0.01 | 0.00 ± 0.10 | 1.000 |
| **Image 6** | Male | 0.00 ± 0.10 | 0.22 ± 0.15 | 0.312 |
| | Female | 2.31 ± 1.52 | 1.95 ± 0.81 | 0.113 |

p>0.05- Not significant

**Table 3:** Mean and standard deviation of photograph ratings by age group and gender of altered gingival display

| Gingival display | Gender | Age group (mean ± SD) | | P value |
|---|---|---|---|---|
| | | 18-35 years | 36-50 years | |
| **Image 1** | Male | 6.51 ± 3.62 | 5.25 ± 4.38 | 0.039* |
| | Female | 9.55 ± 3.41 | 7.18 ± 5.71 | 0.001* |
| **Image 2** | Male | 5.98 ± 3.41 | 5.87 ± 3.21 | 0.825 |
| | Female | 8.12 ± 3.50 | 7.21 ± 2.71 | 0.045* |
| **Image 3** | Male | 2.10 ± 4.04 | 1.59 ± 3.70 | 0.383 |
| | Female | 1.62 ± 3.73 | 1.59 ± 3.69 | 0.957 |
| **Image 4** | Male | 2.22 ± 4.20 | 1.13 ± 3.21 | 0.022* |
| | Female | 3.32 ± 4.27 | 1.29 ± 3.90 | 0.001* |
| **Image 5** | Male | 1.33 ± 3.43 | 1.36 ± 3.47 | 0.954 |
| | Female | 1.86 ± 3.93 | 1.59 ± 3.70 | 0.639 |
| **Image 6** | Male | 0.00 ± 1.01 | 0.31 ± 2.10 | 0.228 |
| | Female | 0.10 ± 1.42 | 0.068 ± 0.254 | 0.166 |

p>0.05- Not significant

**Table 4:** Frequency & percentage of laypeople of age group 18-35 years in assessing black triangle

| | | Vas score | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Image** | **Gender** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Image 1 | Male | 12(27.3%) | 0 | 0 | 0 | 0 | 1(2.3%) | 2(4.5%) | 3(6.8%) | 7(15.9%) | 14(31.8%) | 5(11.4%) |
| | Female | 11(25%) | 0 | 0 | 0 | 0 | 0 | 3(6.8%) | 2(4.5%) | 7(15.9%) | 14(31.8%) | 7(15.9%) |
| Image 2 | Male | 39(88.6%) | 0 | 1(2.3%) | 1(2.3%) | 0 | 0 | 0 | 0 | 3(6.8%) | 0 | 0 |
| | Female | 38(86.4%) | 0 | 0 | 0 | 0 | 0 | 0 | 3(6.8%) | 3(6.8%) | 0 | 0 |
| Image 3 | Male | 41(93.2%) | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 1(2.3%) | 0 | 1(2.3%) |
| | Female | 42(95.5%) | 0 | 0 | 1(2.3%) | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 |
| Image 4 | Male | 43(97.7%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 0 |
| | Female | 42(95.5%) | 0 | 0 | 1(2.3%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 0 |
| Image 5 | Male | 41(93.2%) | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 1(2.3%) | 1(2.3%) | 0 |
| | Female | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Image 6 | Male | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Female | 43(97.7%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 0 |

**Table 5:** Frequency & percentage of laypeople of age group 36-50 years in assessing black triangle

| Vas score | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Image** | **Gender** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Image 1 | Male | 16(36.4%) | 0 | 0 | 0 | 0 | 1(2.3%) | 1(2.3%) | 9(20.5%) | 6(13.6%) | 8(18.2%) | 3(6.8%) |
| | Female | 16(36.4%) | 0 | 0 | 0 | 0 | 0 | 3 6.8% | 3(6.8%) | 8(18.2%) | 7(15.9%) | 7(15.9%) |
| Image 2 | Male | 36(81.8%) | 0 | 0 | 0 | 0 | 1(2.3%) | 2(4.5%) | 1(2.3%) | 2(4.5%) | 1(2.3%) | 1(2.3%) |
| | Female | 37(84.1%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 3(6.8%) | 2(4.5%) | 1(2.3%) | 0 |
| Image 3 | Male | 42(95.5%) | 0 | 0 | 0 | 1(2.3%) | 0 | 0 | 1(2.3%) | 0 | 0 | 0 |
| | Female | 38(86.4%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 2(4.5%) | 1(2.3%) | 0 | 2(4.5%) |
| Image 4 | Male | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Female | 41(93.2%) | 0 | 0 | 0 | 0 | 2(4.5%) | 0 | 0 | 1(2.3%) | 0 | 0 |
| Image 5 | Male | 39(88.6%) | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | | 2(4.5%) | 2(4.5%) |
| | Female | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Image 6 | Male | 43(97.7%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 |
| | Female | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 6:** Frequency & percentage of laypeople of age group 18-35 years in assessing gingival display

| | | Vas Score | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Image** | **Gender** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Image 1** | Male | 35(79.5%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 1(2.3%) | 4(9.1%) | 0 | 3(6.8%) |
| | Female | 34(77.3%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 2(4.5%) | 2(4.5%) | 3(6.8%) | 2(4.5%) |
| **Image 2** | Male | 33(75%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 1(2.3%) | 5(11.4%) | 1(2.3%) | 3(6.8%) |
| | Female | 36(81.8%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4(9.1%) | 4(9.1%) | 0 |
| **Image 3** | Male | 37(84.1%) | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 2(4.5%) | 3(6.8%) | 0 | 1(2.3%) |
| | Female | 35(79.5%) | 0 | 0 | 0 | 0 | 2(4.5%) | 0 | 3(6.8%) | 2(4.5%) | 2(4.5%) | 0 |
| **Image 4** | Male | 35(79.5%) | 0 | 0 | 0 | 0 | 1(2.3%) | 1(2.3%) | 2(4.5%) | 3(6.8%) | 1(2.3%) | 1(2.3%) |
| | Female | 34(77.3%) | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 5(11.4%) | 4(9.1%) | 0 |
| **Image 5** | Male | 36(81.8%) | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 5(11.4%) | 0 | 2(4.5%) |
| | Female | 38(86.4%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2(4.5%) | 4(9.1%) | 0 |
| **Image 6** | Male | 44(100%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Female | 43(97.7%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 0 |

**Table 7:** Frequency & percentage of laypeople of age group 36-50 years in assessing gingival display

| | | Vas score | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Image** | **Gender** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Image 1** | Male | 33(75%) | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 3(6.8%) | 2(4.5%) | 3(6.8%) | 2(4.5%) |
| | Female | 30(68.2%) | 0 | 0 | 1(2.3%) | 0 | 0 | 0 | 3(6.8%) | 6(13.6%) | 3(6.8%) | 1(2.3%) |
| **Image 2** | Male | 31(70.5%) | 0 | 0 | 0 | 0 | 0 | 0 | 3(6.8%) | 4(9.1%) | 3(6.8%) | 3(6.8%) |
| | Female | 35(79.5%) | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 4(9.1%) | 2(4.5%) | 2(4.5%) |
| **Image 3** | Male | 37(84.1% | 0 | 0 | 0 | 0 | 0 | 2(4.5%) | 2(4.5%) | 1(2.3%) | 1(2.3%) | 1(2.3%) |
| | Female | 37(84.1%) | 0 | 0 | 0 | 0 | 2(4.5%) | 0 | 2(4.5%) | 0 | 3(6.8%) | 0 |
| **Image 4** | Male | 39(88.6%) | 0 | 0 | 0 | 0 | 0 | 2(4.5%) | 0 | 0 | 3(6.8%) | 0 |
| | Female | 40(90.9%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2(4.5%) | 2(4.5%) | 0 |
| **Image 5** | Male | 38(86.4%) | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 1(2.3%) | 1(2.3%) | 3(6.8%) | 0 |
| | Female | 37(84.1%) | 0 | 0 | 1(2.3%) | 0 | 0 | 0 | 0 | 3(6.8%) | 2(4.5%) | 1(2.3%) |
| **Image 6** | Male | 42(95.5%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1(2.3%) | 1(2.3%) | 0 |
| | Female | 41(93.2%) | 0 | 0 | 0 | 0 | 1(2.3%) | 0 | 2(4.5%) | 0 | 0 | 0 |

**Table 8:** Comparison of smile esthetic perceptions by vas among different age group on gingival display and black triangle by mann-whitney u test

| Image | Age Group | Black triangle | Gingival display |
|---|---|---|---|
| **Image 1** | 18-35 years<br>36-50 years | **0.041 ★** | 0.354 |
| **Image 2** | 18-35 years<br>36-50 years | 0.399 | 0.587 |
| **Image 3** | 18-35 years<br>36-50 years | 0.396 | 0.688 |
| **Image 4** | 18-35 years<br>36-50 years | 0.996 | **0.047*** |
| **Image 5** | 18-35 years<br>36-50 years | 0.478 | 0.801 |
| **Image 6** | 18-35 years<br>36-50 years | 0.994 | 0.100 |

★P<0.05- Significant

black triangle. The results of this present study shows that laypeople with 18-35 yrs have given more score for Black triangle with 0 mm and gingival display with 2 mm compared with 36-50 yrs group and has showed statistically significant result between both age groups.

## 6. Limitations

The limitation of the study is that the study included only a small size of the sample and it was conducted in one place in Thiruchengode. Further studies with a large number of samples will give us better knowledge of smile esthetic perception, thus aiding in proper planning of treatment.

## 7. Conflict of Interest

None.

## 8. Source of Funding

None.

## References

1. Flores-Mir C, Silva E, Barriga MI, Lagravere MO, Major PW. Lay person's perception of smile aesthetics in dental and facial views. *J Orthod*. 2004;31(3):204–9.
2. Akhare PJ, Daga A. Effect of the gingival display on posed smile with different facial forms: A comparison of dentists and patients concepts. *Indian J Dent Res*. 2012;23(5):568–73.
3. Mokhtar HA, Abuljadayel LW, Al-Ali RM, Yousef M. The perception of smile attractiveness among Saudi population. *Clin Cosmet Investig Dent*. 2015;7:17–23. doi:10.2147/CCIDE.S74764.
4. Aldeeri AA, Alhababi KA, Algahtani FA, Tounsi AA, Albadr KI. Perception of Altered Smile Esthetics by Orthodontists, Dentists, and Laypeople in Riyadh, Saudi Arabia. 2020;12:563–70. doi:10.2147/CCIDE.S272226.
5. Talic N, Samar A, Omar A, Maidhan A. Perception of Saudi dentists and lay people to altered smile esthetics. *Saudi Dent J*. 2013;25(1):13–21.
6. Kokich V, Kokich VG, Kiyak HA. Perceptions of dental professionals and laypersons to altered dental esthetics: asymmetric and symmetric situations. *Am J Orthod Dentofacial Orthop*. 2006;130(2):141–51.
7. Ioi H, Nakata S, Counts AL. Influence of gingival display on smile aesthetics in Japanese. *European Journal of Orthodontics*. 2010;23:633–637.
8. Pithon MM, Bastos GW, Miranda NS, Sampaio T, Ribeiro TP, Nascimento LE. Esthetic perception of black spaces between maxillary central incisors by different age groups. *Am J Orthod Dentofacial Orthop*. 2013;143(3):371–376.
9. Sawsan A, Elham SA, Ahed MAA, Akram KA, Al-Tawachid. Smile microesthetics as perceived by dental professionals and laypersons. *Angle Orthod*. 2022;92(1):101–109.
10. Nathan C, Springer C, Chang HW, Fields F, Beck AR, Firestone S, et al. Smile esthetics from the layperson's perspective. *Am J Orthod Dentofacial Orthop*. 2011;139(1):91–101.
11. Sriphadungporn C, Chamnannidiadha N. Perception of smile esthetics by laypeople of different ages. *Progress in Orthodontics*. 2017;18:8–8.
12. Ker AJ, Chan R, Fields HW, Beck M, Rosenstiel S. Esthetics and smile characteristics from the layperson's perspective A computer-based survey study. *J American Dental Association*. 2008;139(10):1318–1327.
13. Khalid H, Zawawi, Ghadah A, Malki MS, Al-Zahrani, Yaser M, et al. Effect of lip position and gingival display on smile and esthetics as perceived by college students with different educational backgrounds. *Clinical, Cosmetic and Investigational Dentistry*. 2013;5:77–80.
14. Hunt O, Johnston C, Hepper P, Burden D, Stevenson M. The influence of maxillary gingival exposure on dental attractiveness ratings. *European journal of orthodontics*. 2022;24:199–204.

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