Original Research Paper

Evaluation of the Golden Proportion in Saudi Population

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Introduction: Esthetic research has found several variables contributing to a lovely face. The notion of the "golden share" or "golden ratio" may prove beneficial among these variables. Many articles and reading material have been suggested as surface-level assets for reestablishing foremost maxillary teeth. Materials and methods: A cross-sectional study included 150 male and female volunteers aged 18 to 40 years for evaluating the breadth and height of the maxillary front teeth, referred to as the gold standard. Under standard conditions, standardized frontal photos will be obtained from each participant. Alginate will be used to create dental castings of the maxillary arch. Results: Participants of right central to right lateral scored high with $F_{(1, 98)} = .003$, $p > .05$ with male participants (M=.772, SD =.127)and female participants (M=.771, SD =.146) followed by participants of left central to left lateral $F_{(1, 98)} = .005$, $p > .05$, right canine to right lateral $F_{(1, 98)} = 2.60$, $p > .05$ and left canine to left lateral $F_{(1, 98)} = .153$, $p > .05$,respectively. Conclusion: The golden proportion did not exist between the apparent widths of maxillary anterior teeth.

Keywords: Golden proportion, Saudi population, esthetics, facial profile.

INTRODUCTION

Esthetic research has found several variables contributing to a lovely face. The notion of the "golden share" or "golden ratio" may prove beneficial among these variables. Many articles and reading material have been suggested as surface-level assets for reestablishing foremost maxillary teeth (Rita, M.E et al., 2013). A growing number of individuals are visiting dental clinics to improve their anterior esthetics. There is no universal standard for esthetic beauty. Values differ based on gender, age, environment, ethnicity, economic status, and individual characteristics because humans want to be seen as beautiful as possible. The dental and facial feel is additionally evolved. It is known as the amazing degree, and it is around 0.618. A few assessments and course readings have offered this magnificent degree as a tasteful rule for fixing and overriding maxillary front teeth (Parnia, F et al., 2010).

Williams, seeing the surfaces nearby the vestibular surface of the maxillary focal incisor, recognized three basic structures in 1914, arranging them as three-sided, oval, and square. He found that when these surfaces are equal, the structure is square; when they meet on the root, the shape is three-sided; and when they unite on the incisor edge, the shape is oval. Notwithstanding the three key structures expressed, it ought to be noticed that Williams additionally recognized seven more strange or blended shapes. Regardless of variety fit as a fiddle and size, teeth hold a singular width/height proportion and a particular extent of genuine and saw width from the front view.

As per a few essayists, the broadness of the smile is identified with the genuine and saw width of the teeth.

Several writers have provided esthetic criteria. The golden standard value is one of the essential guidelines (Golden Proportion). The widespread speculation has been characterized as a proportion of around 1-1.618. In this plan, the evident width of the maxillary is sixty-two percent of the width of the central incisor, and the perceptible width of the canine is 62% of the observable width of the equal incisor. Various exploration habitats stick to rules while making prostheses, an incredible Splendid Worth hypothesis. While treating patients with missing maxillary front teeth, dental experts ought to consider tooth size and design to get the best shallow result. A nice smile assists individuals with having a further developed standpoint about themselves and satisfies them.

LITERATURE REVIEW

The earlier examination discovered gold extents somewhere in the range of 0.55 and 0.64 in 20.4 percent of saw parallel to-focal incisor proportions and 20.4 percent of saw canine-to-sidelong incisor proportions. The presence of a golden proportion of the apparent sidelong to the focal proportion among ethnic gatherings was 13.7 percent, 35.7 percent, and 15.4 percent of the Chinese, individually, and 15.4 percent of Malaysians. The golden proportion of saw canine-to-sidelong incisors was 13.6 percent for Chinese, 21.4 percent for Indians, and 30.8 percent for Malaysians (Al-Marzok, Majeed, & Ibrahim, 2013).

Another investigation discovered that with a central incisor width extent of 0.67, the obvious mean maxilla equal incisor in females and males was 0.70 and 0.67, respectively. The rate perceived by the maxilla canine in the flat incisor width in males and females was 0.744 and 0.714. The ordinary height-to-colossal extent of the central incisor in men was 79.49 percent, while in females, it was 79.19 percent (Sandeep, N et al., 2015).

According to one survey, the ordinary extent in men in the essential to level incisor area was 0.68, which did not satisfy the splendid degree. Peculiarly, the mean degree in the sidelong incisor to the canine area was 0.60, which diverged from the marvelous degree. The obvious mean width in females was 0.62, created to the astonishing degree to the degree essential to take after breadth. The measure of 0.55, notwithstanding, did not compare the unbelievable degree in the sidelong incisor to the canine area. The occasion of the splendid extent in this audit cannot be ignored or pardoned as spontaneous. To a splendid degree, Premier teeth are irrefutably engaging (Kanaparthy, A et al., 2016).

As per nationality research, the golden proportion in our review was 14.28 percent for focal and sidelong incisors and 12.69 percent for canine and horizontal incisors. Thus, the golden proportion does not exist in our situation. The degree of responders who were properly addressed was almost 11, 15, 22, 22, 15, and 12% (Maharjan and Joshi, 2018). The past investigation discovered that the normal assessed proportions for guys and females in the current review were 1.52:1:0.60. When contrasted with the brilliant proportions, Saudis seem to have more slender focal incisors and canines (1.618:1:0.618). In contrast with other Middle Easterner populaces, for example, Iraqis, the Kurdish gathering had a determined proportion of 1.62:1:0.69, while the Middle Easterner gathering had a proportion of 1.59:1:0.73. The Saudi CI: LI proportions will, in general, be more like the Iraqi populace of Arabic legacy, yet the Saudi CA: LI proportions have all the earmarks

of being more like the Iraqi Kurdish populace ((Swelem& Al-Rafah, 2019).

AIM

This research was intended to analyze the anatomic crowns of maxillary focal incisors (CI), sidelong incisors (LI), and canines (C) in Saudi populaces to the golden proportion (GP) and width/height (W/H) proportions.

MATERIALS AND METHODS

A cross-sectional study included 150 male and female volunteers aged 18 to 40 years for evaluating the breadth and height of the maxillary front teeth, referred to as the gold standard. Under standard conditions, standardized frontal photos will be obtained from each participant. Alginate will be used to create dental castings of the maxillary arch. The Inclusion criteria selected will be:

- No missing maxillary or mandibular anterior teeth,
- No gingival or periodontal diseases that change the healthy tissue-to-tooth connection,
- No interdental space or crowding,
- No anterior restorations,
- No orthodontic treatment history

The exclusion criteria were:

- Evidence of gingival changes or dental abnormalities,
- Loss of tooth structure due to attrition, fracture, caries, or restorations,
- Dentition and facial problems.

A digital caliper will be used to examine teeth. The acquired data will be analyzed and compared to current data on tooth dimensions and used to explore the presence of Golden Proportion correlations.

RESULTS

The present study evaluated the golden proportion of the Saudi population. Descriptive analysis and ANOVA tell about the findings of the study and report mean differences. Participants of right central to right lateral scored high with $F (1, 98) = .003$, $p > .05$ with male participants ($M = .772, SD = .127$) and female participants ($M = .771, SD = .146$) followed by participants of left central to left lateral $F (1, 98) = .005, p > .05,$ right canine to right lateral $F (1, 98) = 2.60, p > .05$ and left canine to left lateral $F (1, 98) = .153, p > .05,$ respectively.

DISCUSSION

The reason for this review was to look at the anatomic crowns of maxillary front teeth according to the golden proportion (GP) and width/height (W/H) proportion in Saudi populaces. Findings reported minute mean differences in participants in left central to left lateral incisors with a mean value of .657 for males and .658 for females. However, literature reports that males have a higher ratio than females in left central to left lateral with 38.2% of males and 30.5% of females (Fayyad, M.A., Jamani, K.D. & Aqrabawi, J., 2006).

In right central to right lateral, findings reported no significant group differences in both males and females with a mean value of .77 for both groups.

Descriptive Analysis

		N	M	SD	SE	95% Confidence Interval for Mean		Min	Max
						LB	UB		
Left Central to Left Lateral	Male	50	.656895	.0838277	.0118550	.633071	.680718	.5172	.8470
	Female	50	.658484	.1390308	.0196619	.618972	.697996	.3649	1.1376
	Total	100	.657689	.1142184	.0114218	.635026	.680353	.3649	1.1376
Left Canine to Left Central	Male	50	.517546	.1009298	.0142736	.488862	.546230	.3876	.8378
	Female	50	.525955	.1137285	.0160836	.493634	.558277	.3555	.9138
	Total	100	.521751	.1070587	.0107059	.500508	.542994	.3555	.9138
Right Central to Right Lateral	Male	50	.772247	.1268073	.0179333	.736208	.808285	.4739	.9862
	Female	50	.770662	.1455118	.0205785	.729308	.812016	.5022	1.1349
	Total	100	.771454	.1357916	.0135792	.744510	.798398	.4739	1.1349
Right Canine to Right Lateral	Male	50	.579089	.1254476	.0177410	.543438	.614741	.3006	.7705
	Female	50	.622161	.1411988	.0199685	.582033	.662289	.3780	.8945
	Total	100	.600625	.1346307	.0134631	.573912	.627339	.3006	.8945

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Left Central to Left Lateral	Between Groups	.000	1	.000	.005	.945
	Within Groups	1.291	98	.013		
	Total	1.292	99			
Left Canine to Left Lateral	Between Groups	.002	1	.002	.153	.697
	Within Groups	1.133	98	.012		
	Total	1.135	99			
Right Central to Right Lateral	Between Groups	.000	1	.000	.003	.954
	Within Groups	1.825	98	.019		
	Total	1.825	99			
Right Canine to Right Lateral	Between Groups	.046	1	.046	2.600	.110
	Within Groups	1.748	98	.018		
	Total	1.794	99			

However, a review completed in a southwestern piece of Saudi Arabia in 2016, it has been seen that the golden proportion is key to parallel incisors which exists solely in females with a mean worth of 0.62. However, men have a mean worth of 0.62.

Nevertheless, it does not match the golden proportion (Kanaparthy, A et al., 2016), .and another study reported significant mean differences in central to lateral incisor in males 25% and females 17.5% (Sandeep, N et al., 2015). In left canine to left central incisor, findings revealed that females have a high proportion compared to male participants with a mean value of .52 for males and .53 for females. However, literature reports that males have a higher left canine to left central incisor ratio. However, the golden proportion in lateral to canine was higher in females, with 5.5% in males and 14.5% in females (Swelem, A.A. & Al-Rafah, E.M., 2019). In the right canine to the right lateral, females outnumbered male participants with mean SD values of .62, .14, and .56, .12, respectively. Previous research backs up the current findings by showing the golden proportion between maxillary lateral incisors and canines 6 participants (5%) in men and 12 subjects (10%) in the female population (Sandeep, N et al., 2015). However, studies also show that males have a slightly higher ratio in lateral to canine than females, and there was a golden proportion between the lateral maxilla incisors (Kanaparthy, A et al., 2016).

Another study reported gender differences, and the study included 50 females and 50 males aged 20 to 27 were examined. The average age was 23.57 2.09 years (standard deviation). Moreover half of those who took part were above the age of 24. The foremost maxillary teeth' length and width are summed up. As indicated by the discoveries of the one-example t-test, there was a genuinely critical contrast between the level of right parallel incisor width and the extent of right focal incisor width dependent on the golden proportion (P0.001). On the left half of the jaw, the thing that matters is likewise critical (P0.001). The hole between the normal right portion extent and the golden proportion was genuinely huge (Parnia, F et al., 2010).

A review uncovered no factual importance in the proportion of golden proportions dependent on sexual orientation. The mean proportion among maxillary and mandibular teeth went from seventy-three percent to eighty-four percent. The proportion of 1.2 and 1.3 was more normal than 1.618, which is one percent of the examples (Chander, Kumar, & Rangarajan, 2012).

In a survey, it was found that there was a huge distinction in the width of the right equal incisors and sixty-two percent of the width of the right central incisors (just nineteen percent of patients had their even right incisors in splendid degree with the width of their right central incisors, M=12.5%, F=20.3 percent, p<.05). There was additionally a huge dissimilarity between the width of the right canines and 62 percent of the width of the right equal incisors (just seventeen percent of respondents had the width of their canines concur with the width of their right sidelong incisors, M=23.1 percent, F=12.2 percent, p<.05), A huge contrast in both male and female in right level incisors and sixty-two percent of the right central incisors, just as in the right canines and 62 percent of the right even incisors. The mean maxillary front tooth degree among dental understudies was 0.70 and 0.82 for laterals to central incisors and canines to sidelong incisors. Splendid degree definitely is not a reasonable methodology for associating the maxillary first tooth degrees in these Malaysian individuals (Sulaiman, E et al., 2010).

Recently, a study in Makkah, Saudi Arabia, reported that 43 percent of GS ratios were within the normal range, 14 percent of GP ratios of canines/laterals, and 34 percent of GP ratios of laterals/centrals. There were no significant variations in GS between males and females (p=0.512) or between races (0.137). However, there were substantial differences in face shapes (p=0.001). There were significant variations in GP of canines/laterals between males and females (p=0.000), various races (p=0.000), and different facial shapes (*p*=0.001). No differences were reported in GP of laterals/centrals between males and females (p=0.216). However, there were significant differences between races (p=0.000) and facies (p=0.000) (Abdallah, M.F, 2021).

CONCLUSION

The golden proportion did not exist between the apparent widths of maxillary anterior teeth. Moreover, there was no statistically significant difference in the ratios when compared among the various anterior teeth.

CONFLICT OF INTEREST

There is no conflict of interest among the authors with regard to this publication.

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