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A Study on Anthropometric Parameters of Facial Height, Arch Length, And Palatal Rugae in Kurnool Population

Kaki Anusha[1], S.Bindhu Madhavi[2], G.D.Anand Swaroop[3], K. Dinakar[4], Mohan Naik Banothu[5], R.Vijay Kumar*[6]

[1,2]Assistant Professor, Department of Dental Surgery, Kurnool Medical College, Kurnool-518002.

[3]Assistant Professor, Department of Dental Surgery, Rangaraya Medical College, Kakinada-533003.

[4]Senior Lecturer, Department of Oral and Maxillofacial Surgery, PullaReddy Dental College & Hospital, Kurnool-518002.

[5]Reader, Department of Orthodontics and Dentofacial Orthopaedics, KLR Lenora Institute of Dental Sciences &Hospital, Rajahmundry-533294

[*6]Associate Professor, Department of Dental Surgery, Kurnool Medical College, Kurnool-518002.

***Corresponding Author:**

Dr.R.Vijay Kumar

Associate Professor, Department of Dental Surgery, Kurnool Medical College, Kurnool-518002, AndhraPradesh.

Email ID: rvkram4@gmail.com

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ABSTRACT

Background: The anthropometry has been used in fields like anatomy, forensic sciences, cancer research, and cosmetic surgery

Materials and Methods: For the current study, 100 subjects (50-Male;50-Female) with an average age of 18 to25 years were chosen from the Dental Department, Government General Hospital, Kurnool. By using thread and Divider, the Facial height, arch length of the subject was measured, and the digital photography was used to capture the palatal rugae patterns in our study.

Results: The mean facial height in male subjects was (10.25±0.86), whereas in female subjects was (9.83±0.52) in the present study. The male subjects with an incidence of 18(36%) wavy shape palatine rugae patten and the female subjects with an incidence of 20(40%) of straight shape rugae pattern in the present study. The mean palatine arch length in male subjects was 4.38 ± 0.16 and in female subjects was 4.15 ± 0.24 recorded in the present study.

Conclusion: The palatine rugae pattern in male and female subjects with different form patterns was helpful and acknowledged as being important in forensic sciences, the face height and arch length in both male and female subjects with incidence were not significant

Keywords: *arch, facial, palate, rugae*

1. INTRODUCTION

Anthropometric measurements have been used to differentiate traits both within and across races. In the area of the face, many parameters have been used to collect anthropometric data like interpupillary distance, nose height, skull measurements, and facial length. The Populations of different races tend to have distinct anthropologic characteristics. Anthropometry of face and intra oral regions can help in the field of forensic odontology when common forensic data are unavailable[1]. Different studies on dental anthropometry have utilized arch length, facial height, and rugae patterns as individual parameters[2,3,4]. Rugae patterns have been found to be unique and stable topographical structures in the oral cavity[5,6]. Studies on comparison of rugae patterns in different races as well as within the subsets of a single race have reported significant presentation patterns[7]. Due to the varying stability of the rugae, which can affect the type of rugae as well as in cases involving orthodontic treatment and extractions, few studies have questioned the utility of palatal rugae in forensic identification[8,9]. The present study aimed to understand the anthropometric parameters of facial height, arch length, and

palatal rugae in Kurnool population

2. MATERIALS AND METHODS

A total of 100 subjects (50-Male;50-Female) with an average age of 18 to 25 years were chosen from the Dental Department, Government General Hospital, Kurnool for the current study. The Facial height, arch length of the subject was measured using a thread and divider, and the Patterns of the palatal rugae were recorded using digital photography. The rugae were categorized according to shape as curved type (crescent shaped gently curving form), wavy type (curved rugae with a slight curve at origin or termination), straight type (running directly from their origin to termination), circular type (having a continuous ring).The informed consent from all the subjects were obtained prior to the conduct of the study. Subjects with history of facial trauma, maxillofacial surgery, orthodontic treatment, craniofacial abnormalities were excluded from the study. All the parameters were measured and recorded in the present study.

3. RESULTS

We observed the mean facial height in male subjects was (10.25±0.86), whereas in female subjects was (9.83±0.52) in the present study (Table 1 & Graph 1). We noted various shapes of palatine rugae patterns observed in the male and female subjects. The male subjects with an incidence of 18(36%) wavy shape palatine rugae patten and the female subjects with an incidence of 20(40%) of straight shape rugae pattern in the present study(Table 2& Graph 2). The rugae pattern in male subjects on right side noted as with curvy pattern 9(18%), wavy 10(20%), Straight 13(26%) and, Circular4(8%) and on the left side curvy pattern 3(6%), wavy 8(16%), Straight 1 (2%) and, Circular 2(4%) respectively. The rugae pattern in female subjects on right side noted as with curvy pattern 10(20%), wavy 12(24%), Straight 18(36%) and, Circular 2(4%) and on the left side curvy pattern 1(2%), wavy 3(6%), Straight 2 (4%) and, Circular 2(4%) in noted in the present study(Figure 1). The mean palatine arch length in male subjects was 4.38 ± 0.16 and in female subjects was 4.15±0.24 recorded in the present study(Table 3& Graph 3).

Table 1: Facial height in relation to gender distribution in the study

S.NO	Gender	Number	Facial Height (Mean± Sd)
1	Male	50	10.25 ± 0.86
2	Female	50	9.83 ± 0.52

Graph 1: Facial length in relation to gender distribution

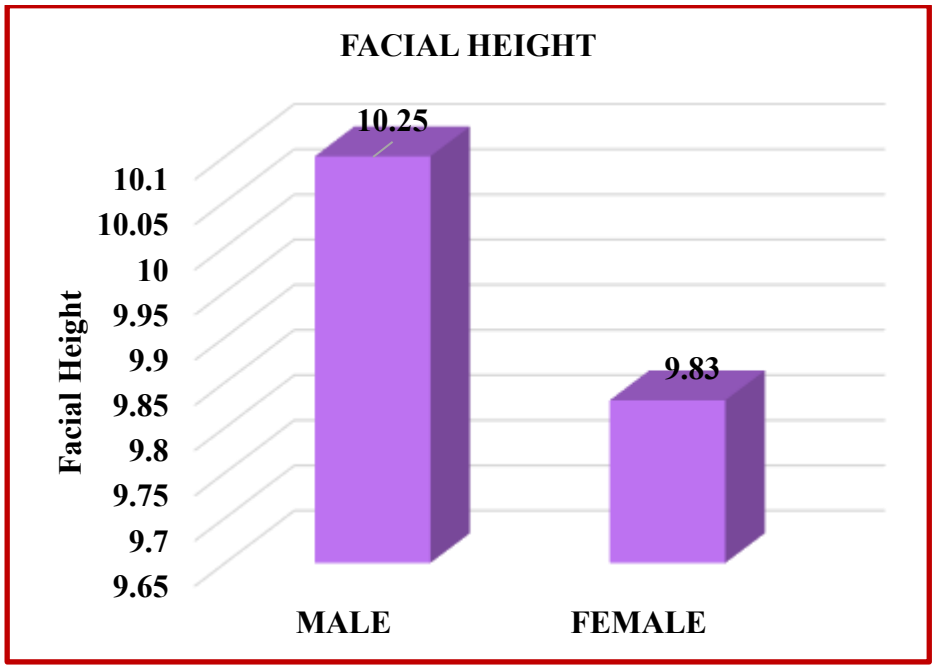


Table 2: Various shapes of palatine rugae patterns in relation to the gender distribution

S.NO	Gender	Number	Various shapes of rugae (Mean± Sd)							
			Curvy		Wavy		Straight		Circular	
			Right	Left	Right	Left	Right	Left	Right	Left
1	Male	50	9(18%)	3(6%)	10(20%)	8(16%)	13(26%)	1(2%)	4(8%)	2(4%)
2	Female	50	10(20%)	1(2%)	12(30%)	3(6%)	18(36%)	2(4%)	2(4%)	2(4%)

Graph 2:Various shapes of palatine rugae patterns in relation to the gender distribution

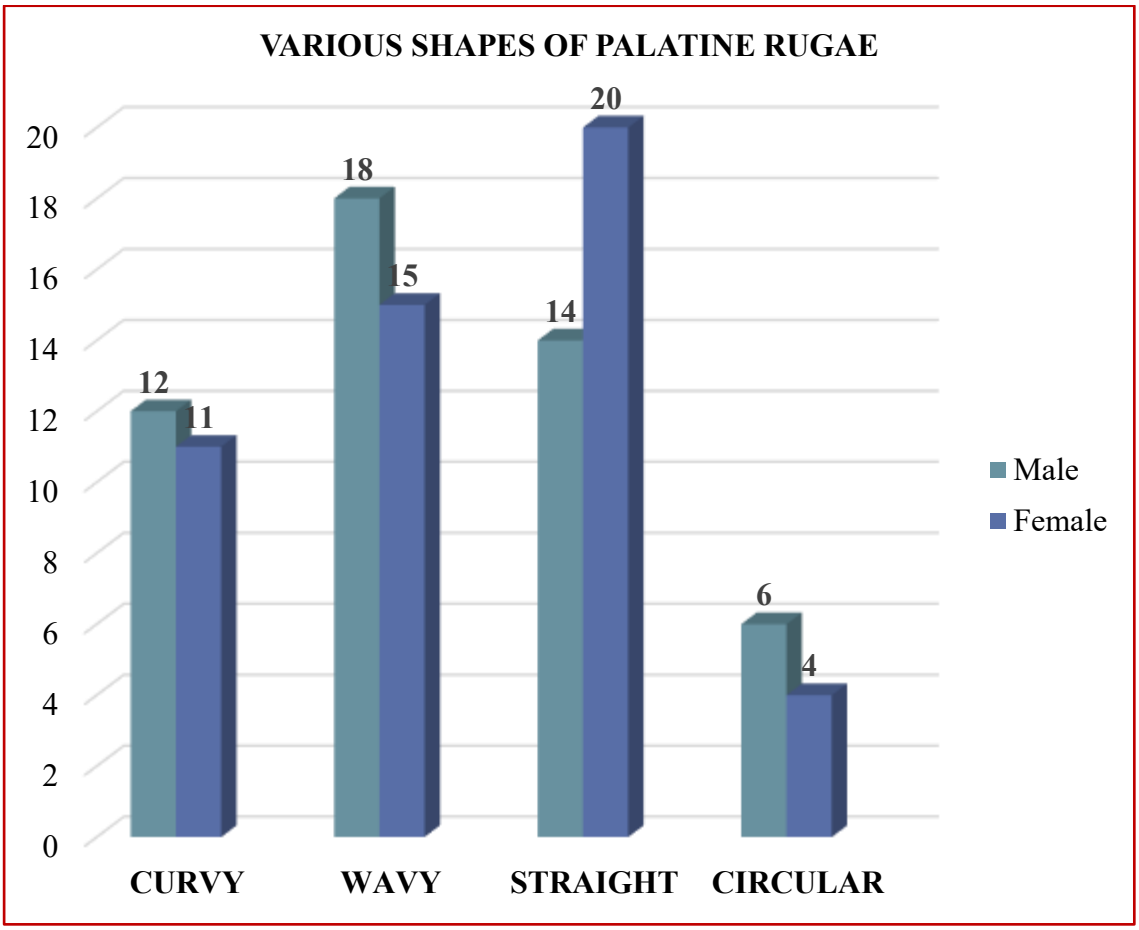


Figure 1: Various shapes of palatine rugae patterns in relation to the gender distribution

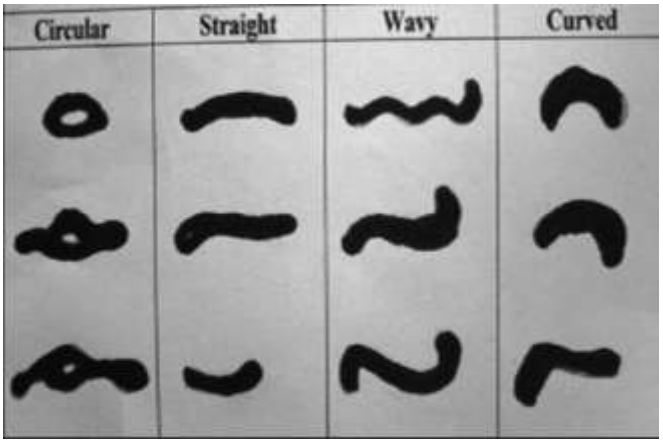
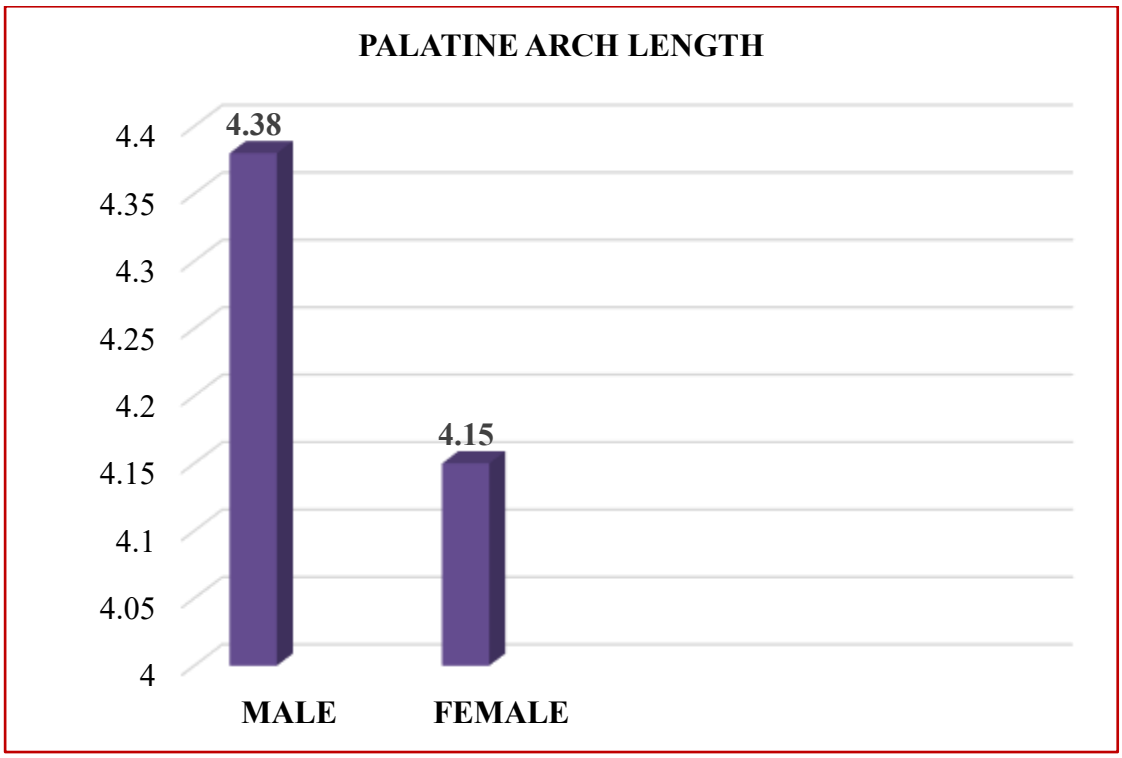


Table 3: Palatine arch length in relation to gender distribution in the study

S.NO	Gender	Number	Palatine arch length (Mean± Sd)
1	Male	50	4.38 ± 0.16
2	Female	50	4.15 ± 0.24

Graph 3: Palatine arch length in relation to gender distribution



4. DISCUSSION

In recent years, anthropometric study has become increasingly important in health assessment across many countries. It has ancillary importance in the determination of age, gender, and race of an individual as applied in anthropology, archaeology, anatomy as well as in the forensic sciences. The mean facial height was found to be higher in male subjects(10.25±0.86) than female subjects (9.83±0.52) and was not statistically significant. The mean total facial height in Indians was 11.27±0.69 and in Nepalese population was 11.38±0.22 and results of our study are in mere agreement with previous literature but female subjects mean facial height was lower compared with male subjects in our study[10].The most predominant shape of palatal rugae was straight (40%), followed by wavy (36%%), curved(23%) and circular (10%). It has been reported curved rugae (32.12%) were most seen followed by the wavy type (28.73%) and straight type (23.98%) in Lucknow, India[11,12]. The most common shape of rugae were wavy and curved whereas straight and circular types were the least common in Australian Aborigines and Caucasians ethnic groups[13].The wavy pattern was the most predominant pattern among Pondicherry population followed by straight, curved and circular pattern[14].The wavy pattern was predominant followed by straight and curved in the Madhya Pradesh population, whereas wavy was followed by curved and straight in the Kerala population[15,16]. The mean arch length in males was higher when compared with females in the current study. In previous literature,[17] the Indian population has higher palatine arch length compared with Nepalian population[18].The face height and arch length in both male and female subjects with incidence were not significant but patterns of palatine rugae in male and female subjects with different form patterns was acknowledged with significance in our study. A deeper comprehension of population variance might be possible through comparison with other populations.

5. CONCLUSION

The palatine rugae pattern in male and female subjects with different form patterns was helpful and acknowledged as being important in forensic sciences, the face height and arch length in both male and female participants with incidence were not significant. A deeper comprehension of population variance might be possible through comparison with other populations.

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CONFLICT OF INTEREST: NIL

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