

The Analysis of Facial Anthropometry Based on the Facial Index Between Acehnese and Minangnese Ethnic Groups Among Medical Students at Syiah Kuala University

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Abstrak : The human face is one of the most dominant parts of the body used to distinguish identities. Facial shape is influenced by gender, race, ethnicity, climate, socioeconomic status, nutrition, and genetic factors. To determine an individual's facial type, facial anthropometric measurements can be conducted. Facial anthropometry is a discipline that measures and analyzes human facial proportions, providing essential information about the differences in shape and size among various races, ages, and genders. Once facial anthropometric data is obtained, one can determine a person's facial type using the facial index formula. The facial index is the ratio of facial height to facial width, multiplied by 100. This research was conducted at the Faculty of Medicine, Syiah Kuala University, with a total of 64 research subjects, consisting of 32 Acehnese individuals and 32 Minangnese individuals who met the inclusion criteria on August 30, 2023. This study is descriptive-analytic with univariate analysis. The results of this study indicate that the facial type of Acehnese individuals is leptoprosopic, with 14 individuals (43.75%), while the facial type of Minangnese individuals is also leptoprosopic, with 13 individuals (40.6%).

Kata Kunci : Acehnese; Anthropometry; Facial Index; Facial Type; Minangnese

INTRODUCTION

Ethnic groups are a community of people living together in one place and having their own characteristics. Indonesia, with its thousands of islands, is inhabited by various ethnic groups. These ethnic groups have distinct customs, traditions, and cultures. Each ethnic group has its unique features, which are related to their origin and culture. Some characteristics that can be used to identify ethnic groups include physical traits, language, customs, and art. Examples of physical characteristics include

skin color, hair, face, and body shape. These characteristics differentiate one ethnic group from another. According to the Central Bureau of Statistics, Indonesia has more than 300 ethnic groups^[1]. Considering this, it is essential to create anthropometric data based on ethnic groups.

The importance of anthropometric data cannot be denied. Anthropometric data are widely used in various applications, such as medical treatment, research, sports, physiology, product design, and clothing manufacturing. Plastic facial surgeons use facial anthropometric data and measurements to analyze patients' faces. Every feature and measurement can also be utilized by computer software to provide detailed information to plastic surgeons^[2]. Similarly, in forensics, physical characteristics, age, gender, and ethnicity are crucial in narrowing down the possibilities and providing valuable clues for identification^[3]. Recognizing the significance of anthropometric data, many countries, including the United States, the United Kingdom, Japan, France, Germany, India, and Thailand, have developed their anthropometric databases^[4]. The collection of anthropometric data is necessary to meet product and facility requirements that match body dimensions, and unfortunately, the development of such databases is still lacking in Indonesia.

Facial index is a criterion used for the classification of human faces. The facial index can be obtained by comparing the length of the face (the distance from nasion to menton) to the width of the face (the distance between the right and left zygomatic arches). Facial types can be classified into five types: hypereuryprosopic, euryprosopic, mesoprosopic, leptoprosopic, and hyperleptoprosopic. Euryprosopic (wide face) has a facial index range of 79.0-83.9. Mesoprosopic (round face) has a facial index value between 84.0-87.9. Leptoprosopic (long face) has a facial index value ranging from 88.0-92.9. Facial Index less than 78.9 and greater than 93 are categorized as hypereuryprosopic (very wide face) and hyperleptoprosopic (very long face) respectively^[5]. There is no prior research on facial types based on the facial index among the Acehese ethnic group; therefore, the researchers are interested in identifying Acehese facial types and comparing them with the Minangnese ethnic group since both ethnic groups have Malay ancestry.

RESEARCH METHOD

This research was a descriptive-analytic study with a cross-sectional approach. The study analyzed facial types based on facial Index of two different ethnic groups at a single point in time. The observed ethnic groups in the study were the Acehese and Minangnese. The research was conducted at the Faculty of Medicine, Syiah Kuala University, on August 30, 2023. The study included a total of 64 subjects, comprising 32 Acehese and 32 Minangnese individuals who met the inclusion criteria. Data collection was performed by directly measuring facial length and width.

RESULT AND DISCUSSION

Table 1. Distribution of General Characteristics of Research Subjects

General Characteristics	Ethnicity			
	Acehnese		Minangnese	
	n	%	n	%
Gender				
Male	15	46.9	4	12.5
Female	17	53.1	28	87.5
Age				
18	4	12.5	6	18.8
19	9	28.1	13	40.6
20	14	43.8	5	15.6
21	4	12.5	8	25.0
22	1	3.1	0	0
Academic Year				
2020	17	53,1	9	28,1
2021	9	28,1	7	21,9
2022	6	18,8	16	50,0
Total	32	100	32	100

Source: Primary data from research conducted in August 2023

Table 1 shows that, among Acehnese research subjects, females (53.1%) dominate over males. In terms of age, the majority are 20 years old (43.8%), and most belong to the 2020 academic year (53.1%). On the other hand, among Minangnese research subjects, females (87.5%) also dominate over males. The majority are 19 years old (40.6%), and most belong to the 2020 academic year (50%).

Table 2. Description of Acehnese Facial Types Based on Facial Index

Facial Type	Male		Female	
	n	%	n	%
Euryprosopic (79,0-83,9)	0	0	8	47.1
Leptoprosopic (88,0-92,9)	10	66.7	4	23.5
Mesoprosopic (84,0-87,9)	1	6.6	3	17.6
Hyperleptoprosopic (>93,0)	4	26.7	2	11.8
Hypereuryprosopic (<78,9)	0	0	0	0
Total	15	100,0	17	100,0

Source: Primary data from research conducted in August 2023

Table 2 indicates that among Acehnese males, there are 10 individuals (66.7%) classified as leptoprosopic, 1 individual (6.6%) classified as mesoprosopic, and 4 individuals (26.7%) classified as hyperleptoprosopic. On the other hand, among female Aceh individuals, there are 8 individuals (47.1%) classified as euryprosopic, 4 individuals (23.5%) classified as leptoprosopic, 3 individuals (17.6%) classified as mesoprosopic, and 2 individuals (11.8%) classified as hyperleptoprosopic.

Table 3. Description of Minangnese Facial Types Based on Facial Index

Category	Male		Female	
	n	%	n	%
Euryprosopic (79,0-83,9)	0	0	3	10,7

Category	Male		Female	
	n	%	n	%
Leptoprosopic (88,0-92,9)	3	75.0	10	35.7
Mesoprosopic (84,0-87,9)	0	0	6	21,4
Hyperleptoprosopic (>93,0)	1	2.,0	9	32.2
Hypereuryprosopic (<78,9).	0	0	0	0
Total	4	100.0	28	100.0

Source: Primary data from research conducted in August 2023

Table 3 shows that among Minangnese males, 3 individuals (75.0%) are classified as leptoprosopic, and 1 individual (25.0%) is classified as hyperleptoprosopic. Meanwhile, among Minangnese females, there are 3 individuals (10.7%) classified as euryprosopic, 10 individuals (35.7%) classified as leptoprosopic, 6 individuals (21.4%) classified as mesoprosopic, and 9 individuals (32.2%) classified as hyperleptoprosopic.

Table 4. Difference in Facial Types Between Acehnese and Minangnese Based on Facial Index

Category	Acehnese		Minangnese	
	n	%	n	%
Euryprosopic (79,0-83,9)	8	25.0	3	9.4
Leptoprosopic (88,0-92,9)	14	43.75	13	40.6
Mesoprosopic (84,0-87,9)	4	12.5	6	18.8
Hyperleptoprosopic (>93,0)	6	18.75	10	31.2
Hypereuryprosopic (<78,9).	0	0	0	0
Total	32	100.0	32	100.0

Source: Primary data from research conducted in August 2023

Table 4 indicates that among Acehnese individuals, there are 8 individuals (25.0%) classified as euryprosopic, 14 individuals (43.75%) classified as leptoprosopic, 4 individuals (12.5%) classified as mesoprosopic, and 6 individuals (18.75%) classified as hyperleptoprosopic. Meanwhile, among Minangnese individuals, there are 3 individuals (9.4%) classified as euryprosopic, 13 individuals (40.6%) classified as leptoprosopic, 6 individuals (18.8%) classified as mesoprosopic, and 10 individuals (31.2%) classified as hyperleptoprosopic.

Acehnese Facial Types

There are four facial types identified among all Acehnese respondents, namely euryprosopic, leptoprosopic, mesoprosopic, and hyperleptoprosopic. Among the four facial types observed in Acehnese respondents, it is evident that the most prevalent facial type is the leptoprosopic type, with 14 individuals (43.75%). The leptoprosopic facial type is characterized by its elongated and narrow head shape, a narrow shape and angle of the mandibular plane, a triangular facial shape (tapered), upright cheekbones, a rectangular orbital cavity, and a wide nasal aperture[6]. This facial type falls within the facial index range of 88.0-92.9. The findings of this research do not align with previous studies conducted on Acehnese Deutro-Malay students in the Dentistry program at Syiah Kuala University, where the mesoprosopic facial type was dominant. This discrepancy may be attributed to the differences in ancestral heritage within the Acehnese population, including influences from the Malay ethnicity. Research conducted by Yesmin et al. (2014) at the University of Kuala Lumpur found that, among

40 research subjects, the most dominant facial type in the Malay population was mesoprosopic [7].

Minangnese Facial Types

As per the table above, there are four facial types present among all Minangnese respondents: euryprosopic, leptoprosopic, mesoprosopic, and hyperleptoprosopic. Among these four facial types observed in Minangnese respondents, it is evident that the most prevalent facial type is the leptoprosopic type, with 13 individuals (40.6%). These research findings align with a prior study by Wan Ismail, which stated that the most dominant facial type found among the Minangnese population is leptoprosopic [8].

Differences in Facial Types Based on the Facial Index Between the Acehnese and Minangnese

Based on the results of the research conducted on the Acehnese and Minangnese populations, four facial types were identified among all respondents: euryprosopic, leptoprosopic, mesoprosopic, and hyperleptoprosopic. Similarities were found in the measurements of facial types based on the facial index between the Acehnese and Minangnese students at the Faculty of Medicine, Syiah Kuala University, particularly in the prevalence of the leptoprosopic facial type. This observation is supported by Levene's test for equality of variances, which yielded a value of 0.222 with a p-value of 0.639. Since the p-value obtained is more significant than 0.05, it can be concluded that the facial index data between the Acehnese and Minangnese populations exhibit homogeneous variances. Consequently, decision-making will be based on the "Equal variances assumed" row. It is worth noting that the t-value obtained is 0.945 with a significance level of 0.348, which is greater than 0.05. Therefore, it can be inferred that there is no significant difference between the facial indices of the Acehnese and Minangnese populations. This finding is supported by the assertion that the Acehnese and Minangnese share the same ancestry, both being descendants of the Deutro-Malay sub-race.

CONCLUSION

The conclusion of this study is that the most common facial type found in students of the Faculty of Medicine, Syiah Kuala University, both from the Acehnese and Minang tribes, based on the facial index is the leptoprosopic type.

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