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A Morphometric Analysis of Craniofacial Features of the Coastal Indigenous People in Sri Lanka

Análisis Morfométrico de las Características Craneofaciales de los Pueblos Indígenas Costeros de Sri Lanka

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SUMMARY: The existence of an indigenous community within a country is a source of pride and warrants significant attention. Sri Lanka is no exception, and, as a country with the fossil remains of anatomically modern *Homo sapiens*, it is hypothesized that Sri Lankan Indigenous people might harbor ancient genetic signatures. This study aims to establish baseline data of certain craniofacial anthropometric measurements in the Coastal Indigenous people and classify their head, face, and nose types. This study involved 126 (70 Male and 56 Female) unrelated individuals from six villages, representing the Coastal Indigenous population. Sixteen craniofacial measurements were obtained, providing calculations of three craniofacial indices: the Cephalic index, Facial index, and Nasal index. It was apparent that all craniofacial measurements, except nose protrusion of males, had significantly higher dimensions than those of the female participants. In addition to baseline quantitative raw data, the calculated indices are as follows: The mean cephalic, facial, and nasal indices of females were 78.50± 4.84, 88.37±13.06, and 93.93±12.23, respectively, whereas those of males were 78.85±5.76, 91.74±13.70, and 94.58±14.06, respectively. This is the first craniofacial study on Coastal Indigenous people in Sri Lanka. The most common head shape observed among both genders was mesocephalic. Males predominantly exhibited a hyperleptoprosopic facial type, while females mostly showed a leptoprosopic facial type. The most dominant nasal type recorded for both genders was the platyrrhine nasal phenotype. Interestingly, such platyrrhine nose is rarely present in other world populations, except in African populations.

KEY WORDS: Cephalic index; Facial index; Nasal index; Vedda; Indigenous; Sri Lanka.

INTRODUCTION

Sri Lanka is an island in the Indian Ocean, located close to the southern tip of mainland India. Because of its location, Sri Lanka may have acted as a geographic crossroad from west to east, for the replacement of regional archaic populations by anatomically modern *Homo sapiens*. From the comparative osteological analysis of prehistoric human skeletal remains along with later material from historical and contemporary populations, it hypothesized that "biological and cultural continuum" in the country seldom was clearly represented in other part of the world (Kennedy, 1993). He claimed that the presence of indigenous hunting and foraging populations, also known as Vedda people, may bring this biological continuum right up to the century.

The indigenous people's culture and traditions are unique and distinct from the mainstream lifestyle of the Sri Lankan population. These indigenous people established settlements in different parts of the country, and the different locations correspond with various self-identified instinctive groups, namely Forest Vedda, Village Vedda, and Coastal Vedda (Brow, 1978; Knox, 1981; Dart, 1990; Seligmann & Seligmann, 1991). Unfortunately, the Forest Vedda, those who used to live in the stone caves, are extinct today, and information regarding them is confined to literature (Brow, 1978; Seligmann & Seligmann, 1991). It was believed that they followed a conservative way of eating and maintained a forest-based livelihood. The other two groups have become a minority in Sri Lanka as they are being gradually assimilated into the mainstream culture of the country. Among them, the Village Vedda are a group of agricultural

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farmers who have some cultural, linguistic, and kinship relations with Forest Vedda from an ancient time (Brow, 1978; Knox, 1981). They are fundamentally poor, and similar to the traditional farmers of the dry region, have their own agricultural economy. This group engages in hunting and gathering materials as a supplement. The Coastal Vedda community resides along the Northeastern coast of Sri Lanka between Trincomalee and Valaichchenai, primarily sustaining themselves through both inland and offshore fishing practices (Dart, 1990). They engage in certain agricultural activities and appear to be more culturally connected to the neighboring Tamil-speaking farmers and fishermen than to the more geographically distant Village Veddas or non-Vedda populations.

According to the Mahavamsa (a great chronicle written in the Pali language, detailing the history of Sri Lanka), the history of the Vedda people dated back to the 5th century BC (Geiger, 1964). Rudolph Virchow published their pioneering study over a century ago (1881) in Germany and concluded that the Veddas never laughed and indeed were the only known tribe of man who did not do so (Virchow, 1886). Since then, some dedicated scholars such as C.G. Seligman, Brenda Seligman, James Brow, Sarasin brothers, Kenneth A.R. Kennedy and Diane Hawkey conducted scientific studies regarding the Vedda people (Sarasin & Sarasin, 1886; Brow, 1978; Seligmann & Seligmann, 1991; Kennedy, 1993; Hawkey, 2002). Until recently, archaeological findings suggest that the oldest skeletal remains of anatomically modern *Homo sapiens* in the South Asian region, tentatively dated to around 37,000 years before present, were unearthed at the cave site Fahien-lena, with their association with present-day Vedda people proposed on comparative gross anatomical studies (Deraniyagala, 1992; Kennedy, 2000). Some biochemical and morphological data suggest that modern Vedda are closely related to the Senoi of Malaya, as well as to the Chenchu and Yanadi non-caste populations of southern India (Hill, 1941; von Furer-Haimendorf, 1982; Roychoudhury, 1984) and the Mon-Khmer speakers of Northeast India and Thailand (Flatz *et al*., 1972; Mourant *et al*., 1976; Wasi, 1987). The genetic studies on Vedda people date back to 1962 and red cell genes research demonstrated that the allele frequency of the blood groups A and B differentiated the Vedda from Sinhalese and South Indian tribes while the Malayan tribes had ABO allele frequencies, which were similar to the Veddas (Kirk *et al*., 1962). Genetic variations at 11 autosomal STR loci in the Vedda people were reported in 2009. The few mitochondrial DNA studies from Sri Lanka show that the Vedda do not cluster closely with either European or North Asian groups (Harihara *et al*., 1988). The first high resolution noncoding region mitochondrial DNA study of the Sri Lanka population revealed the reduced intrapopulation genetic diversity among subgroups of the Vedda people (Ranaweera *et al*., 2014a). Another such study reveals that the Vedda population clustered separately from other groups and that Sri Lankan Tamils showed a closer genetic affiliation to Sinhalese than to Indian Tamils (Ranasinghe *et al*., 2021). Moreover, the last two studies showed that most Vedda exhibit West Eurasian lineages alongside Indian ancestries. Another study suggests that the Vedda population is a genetically drifted group with limited gene flow from neighboring Sinhalese and Sri Lankan Tamil populations (Ranaweera *et al*., 2014a; Ranasinghe *et al*., 2021).

All the above-mentioned scientific studies focus on the Village Indigenous people, and Coastal indigenous people have attracted little attention from anthropologists. One of the reasons for this may be because research access to Coastal indigenous who settled in the Eastern Province has been limited by the terrorist issue of the country during the past 30 years. But research doors have been opened after the end of the war against the Liberation Tigers of Tamil Eelam (LTTE). This Coastal indigenous group may have already undergone substantial erosion of their cultural identity or complete assimilation due to settlements and intermarriages with neighboring Dravidian and Sinhalese populations. In the pursuit of understanding indigenous identity, conducting a comprehensive study on the Coastal Indigenous community is imperative before they vanish. Hence, our study is the first scientific investigation into craniofacial morphology within the Coastal Indigenous community in Sri Lanka. The aim of the current study is to establish baseline data of certain head and facial anthropometric measurements for male and female of Coast Indigenous people and to classify their head, face and nose type.

MATERIAL AND METHOD

A total of 126 unrelated individuals (70 Male and 56 Female) from six villages (Ambandhanavali (22), Keenankerni (22), Kunjankulum (17), Patalipuram (21), Santhosapurum (21) and Vergal (23) belonging to the Coastal Indigenous group in Sri Lanka, were recruited in the study (Fig. 1). With informed consent, sixteen craniofacial morphological measurements (Head circumference, Bitragion-menton arc, Bitragion-subnasale arc, Bizygomatic-menton arc, Head height, Head length, Head breath, Face width, Chin width, Chin-menton length, Menton-bottom lip length, Face length (Sellion-menton), Nose length, Nose width, Lip width and Nose protrusion) from each individual were obtained using a digital sliding caliper, spreading caliper and measuring tape (Table I). The study was carried out with the approval of the Ethics Committee of the Faculty of Medicine, University of Kelaniya, Sri Lanka.

Table I. Definitions of anthropometric measurements for Coastal Indigenous people used in the study.

Measurement	Definition
Head circumference	The maximum circumference of the head measured above the ears, across the ridges of the eyebrows, and around the back of the head.
Bitragion-menton arc	The surface distance between the right and left tragion landmarks across the chin landmark at the tip of the chin.
Bitragion-subnasale arc	The surface distance between the right and left tragion landmarks across the subnasale landmark just under the nose.
Bizygomatic-menton arc	The surface distance between the left and right tragion landmarks across the anterior point of the chin.
Head height	The vertical distance between the highest point of the head and lowest point of the chin.
Head length	The distance from the glabella landmark between the browridges to the posterior point on the back of the head.
Head breadth	The maximum horizontal breadth of the head above the attachment of the ears.
Face width	The distance between two zygomatic prominences.
Chin width	The horizontal distance between the lateral edges of the chin.
Chin-menton length	The vertical distance measured from the most prominent point of the chin to the lowest point on the mandible.
Menton-bottom lip length	The vertical distance between the lowest point on the chin to the bottom edge of the lower lip.
Face length (Sellion-menton)	The vertical distance from the deepest point in the nasal root depression to tip of the chin.
Nose length	The distance from the nasal root depression to the bottom of the nose.
Nose width	The maximum breadth of the nose.
Lip width	The distance between the corners of the mouth is measured while the facial muscles are relaxed.
Nose protrusion	The maximum anterior protrusion of the nose.

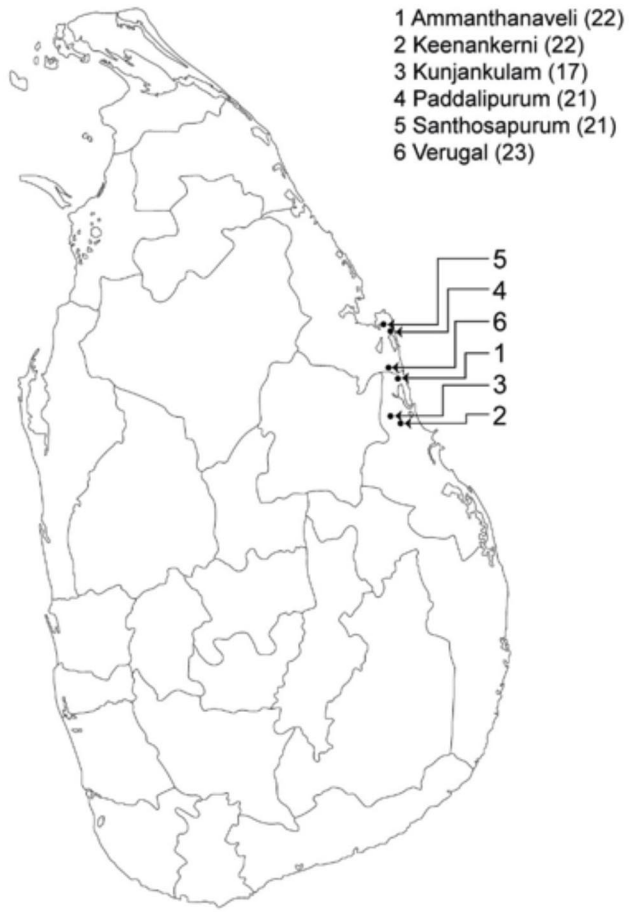

Fig. 1. The Coastal Vedda sample collection sites in Sri Lanka (within bracket indicates the sample size from each location).

Apart from the 16 craniofacial morphological measurements, Cephalic Index, Facial Index and Nasal Index were considered to study the gender base differences among the Coastal Indigenous people (Martins & Saller, 1958). The Cephalic index (CI) is calculated as the ratio of head width to head length, multiplied by 100. CI has been used in the classification of the human head into dolichocephalic (long headed, range: <71 to 75.90), mesocephalic (medium headed, range: 76 to 80.9), brachycephalic (short broad headed, range: 81 to 85.5), and hyperbrachycephalic (very short broad headed, range: ≥ 85.6).

The Facial index (FI) represents the ratio of facial height to maximum facial breadth, also multiplied by 100 %. FI has been used in the classification of the human face into hypereuryprosopic (very broad face, range: <79.9), euryprosopic (broad face, range: 80-84.9), mesoprosopic (round face, range: 85-89.9), leptoprosopic (long face, range: 90-94.9) and hyperleptoprosopic (very long face, range: >95).

The nasal index (NI) quantifies the relationship between nasal width and height, expressed as a percentage. NI has been used in the classification of the human nose into hyperleptorrhine (long narrow nose, range: 40-54.9), Leptorrhine (fine nose, range: less than 70), mesorrhine (medium nose, range: 70-84.9) and platyrrhine (broad nose: range: 85.4-99.9) and hyperplatyrrhine (very broad /wide: ≥100).

Statistical analyses were performed using R statistical software (R Core Team, 2020) and Microsoft EXCEl. The

descriptive statistics of the data by each sex is obtained and expressed as mean standard deviation. Since, for all the variables, normality is violated for at least one sex, gender based statistically significant differences (P value < 0.05) were studied using the non-parametric Wilcoxon rank test.

RESULTS

The assessed measurement errors of all the craniofacial measurements are given in Table II. The obtained values for the intraobserver range of rTEM are lower than the acceptable limit of 1.5 % and coefficient of reliability (R) of all parameters are high with 0.96 - 0.99. Similarly, interobserver range of rTEM of all parameters are acceptable (rTEM ≤ 2.0 %) with the range of R value is 0.98 - 0.99.

Descriptive statistics for all the measurements were calculated village wise and gender wise. Since there is no significant difference among the villages, only the gender difference was considered for further analysis. Gender-wise numerical descriptive statistics with the means and standard deviations for each craniofacial parameter are given in Table III. It was apparent that all variables, except nose protrusion of males, had significantly higher dimensions than those of the female participants (P value <0.05).

It was identified that predominant head types in Coastal indigenous males were mesocephalic 29 (41.14 %) followed by brachycephalic 17 (24.29 %), Dolichocephalic 15 (21.14 %) and hyper brachycephalic 9 (12.86 %). In females, the predominant head types were mesocephalic 31 (55.36 %) followed brachycephalic 12 (21.43 %), Dolichocephalic 9 (16.07 %), and hyper brachycephalic 4 (7.14 %). Further, HCI shows (Table III) no statistically significant difference among males and females (P value >0.05).

In the facial types of Coastal Indigenous population, the dominant type in males was hyper leptoprosopic 27 (38.57 %) followed by mesoprosopic 18 (25.71 %), leptoprosopic 16 (22.86 %), euryprosopic 5 (7.14 %), and hyper euryprosopic 4 (5.71 %). In females, the dominant types of face were leptoprosopic 16 (28.57 %) and mesoprosopic 16(28.57 %), followed by hyper leptoprosopic 11 (19.64 %), euryprosopic 11 (19.64 %), and hyper euryprosopic 2 (3.57 %). Further, TFI shows (Table III) no statistically significant difference among males and females (P value >0.05).

It was identified that predominant nose shape in Coastal indigenous males was platyrrhine 31 (44.29 %) followed by hyperplatyrrhine 23 (32.86 %), mesorrhine 14 (20 %), leptorrhine 1 (1.43 %) and hyperleptorrhine 1 (1.43 %). In females, the predominant nose shape platyrrhine 30 (53.57 %) followed by mesorrhine 13 (23.21 %), hyperplatyrrhine 12 (21.43 %), and hyperleptorrhine 1 (1.79 %). Further, NI shows (Table III) no statistically significant difference among males and females (P value >0.05).

Table II. Technical error of measurement (TEM) and coefficient of reliability (R) of intra and inter-observer error.

Measurement	**Intraobserver Error**			**Interobserver Error**		
	TEM	rTEM	R	TEM	rTEM	R
Head circumference	0.22	0.41	0.98	0.13	0.24	0.99
Head height	0.05	0.25	0.99	0.07	0.32	0.99
Head length	0.14	0.81	0.99	0.14	0.81	0.99
Head breadth	0.11	0.84	0.96	0.05	0.41	0.99
Face width	0.08	0.68	0.98	0.04	0.39	0.99
Bitragion mentonarc	0.12	0.44	0.99	0.13	0.45	0.99
Bitragion subnasale arc	0.11	0.41	0.99	0.12	0.46	0.99
Bizygomatic menton arc	0.16	0.78	0.98	0.16	0.79	0.98
Chin menton length	0.32	1.46	0.99	0.31	1.41	0.99
Face length (sellion menton)	0.13	1.26	0.99	0.15	1.42	0.99
Nose length	0.25	0.62	0.99	0.24	0.59	0.99
Nose protrusion	0.21	1.33	0.99	0.24	1.47	0.99
Menton bottom lip length	0.32	0.98	0.98	0.47	1.46	0.99
Nose width	0.46	1.22	0.99	0.50	1.33	0.99
Lip width	0.37	0.82	0.98	0.55	1.22	0.99
Chin width	0.17	1.46	0.99	0.17	1.43	0.99

Table III. Descriptive statistics of the craniofacial measurements of Coastal Indigenous people.

Measurement	Female		Male		
	Mean	Sd	Mean	Sd	p.adj
Head circumference	51.73	1.20	53.00	1.63	<0.0001*
Head height	21.27	0.71	22.16	0.83	<0.0001*
Head length	17.58	0.65	18.07	1.08	0.0019*
Head breadth	13.79	0.89	14.20	0.66	<0.0001*
Face width	11.24	0.51	11.56	0.58	0.0015*
Bitragion mentonarc	27.22	1.78	28.77	1.33	<0.0001*
Bitragion subnasale arc	25.62	1.17	26.72	1.22	<0.0001*
Bizygomatic menton arc	20.07	2.14	21.30	1.14	<0.0001*
Chin menton length	22.09	3.09	24.17	3.97	0.0012*
Face length sellion menton	10.09	0.54	10.51	1.47	<0.0001*
Nose length	37.18	5.52	40.33	7.57	<0.0001*
Nose protrusion	16.12	2.43	17.03	2.53	0.0539
Nose width	34.46	2.92	37.55	4.54	<0.0001*
Menton bottom lip length	31.96	4.37	35.24	5.36	0.0002*
Lip width	43.41	3.47	45.78	7.25	0.0004*
Chin width	9.99	0.68	10.59	1.13	0.0001*
Cephalic Index	78.50	4.84	78.85	5.76	0.6710
Facial Index	88.37	13.06	91.74	13.70	0.0539
Nasal Index	93.93	12.23	94.58	14.06	0.7646

* P value <0.05

DISCUSSION

As an island territory lying off the southern extremity of the South Indian subcontinent, there is no doubt that Sri Lanka has and ethnic variety. In such a multiethnic country, it is vital to maintain an anthropometric database that includes all ethnic groups to effectively respond to emergency situations. Our research has contributed to this effort by providing craniofacial data from 16 variables belonging to the Coastal Indigenous population. Additionally, craniofacial anthropometry is valuable for physical anthropologists, forensic scientists, designers of clothing and equipment, military and industrial helmet designers, genetic counselors, cosmetic surgeons, and specialists in rhinoplasty, orthognathic, and orthodontic surgery.

From anthropological and evolutionary perspectives, Sri Lanka is among the most fascinating islands in the world. In this territory, in addition to a main cultural stock, whose prototype can be traced to India, there are several other ethnic groups which would prepay biological anthropological research and study. Among these groups, the indigenous people, recognized as a distinct tribe, now number only a few thousand and inhabit parts of the Uva and Eastern provinces. It is remarkable that these marginalized remnants of humanity have managed to survive to some extent in the island's inhospitable dry zone. Unfortunately, the Cave or Stone Veddas have already disappeared, and little attention has been paid to the Coastal Vedda community compared to the Village Veddas due to the country's prolonged conflict with the LTTE and a lack of awareness of their existence. Therefore, this study certainly opens a new chapter for the scientific investigation of the Coastal Indigenous people.

The Sri Lankan coastal indigenous people were found to have a mean CI of 78.5±4.84 and 78.85±5.76 for females and males, respectively. According to the indices values, the predominant head types in Coastal Indigenous males were mesocephalic, brachycephalic and dolichocephalic, while females primarily exhibited mesocephalic and brachycephalic types. Therefore, they tend to have a mesocephalic head shape, with overall medium proportions. Previous study on Henanigala Village Indigenous people reported the similar cephalic index for both female (78.18) and male (77.30) (Ananda & Nahallage, 2024). Sarasin & Sarasin (1886) reported lower CI (70.5) for Vedda people. Similarly, Stoudt (1961) stated the Vedda mean CI as 73.37. Interestingly, another study stated that Vedda has a long and narrow head with a mean CI of 72.6 which categorized under the Dolichocephalic type. However, another study reported that the mean CI value of Sri Lankan adults as 78.54) which is comparable to that of the Coastal Indigenous people (Ilayperuma, 2011). The Meghalaya population in Northeast India reveals a mean CI of 79.13, for both males and females, which is fairly similar to the CI of the Sri Lankan Indigenous people (Sinha *et al*., 2024). Studies from African ethnic groups (Kvangaja, Bhils, Barelias, Ijaw, Igbo) demonstrate a variety of head

types, ranging from dolichocephalic to brachycephalic (Oladipo *et al*., 2014). The African group Ijaw females have a similar mean CI as the Coastal Indigenous people, with 78.24±6.33 which indicates mesocephalic head type (Oladipo & Olotu, 2006). Another study from Malaysian populations reveals a mean CI of 88.44 (Hyperbrachycephalic head type) and, which is significantly higher than the Vedda people, discouraging ideas of shared genetic origins (Pavan *et al*., 2020). Australian groups typically have CIs that are around 73, which signifies a long and narrow skull or brachycephalic tendency, which highly varies from the Vedda people (Gates, 1960).

Sri Lankan coastal indigenous people were found to have a mean FI of 88.37±13.06 and 91.74±13.70 for females and males, respectively. These indicate that they tend to favor hyper leptoprosopic facial type in males, and leptoprosopic and mesoprosopic in females. Studies from the South Indian reveal a mean FI of 85.39±6.33 and 100.28±1.77 for females and males, respectively (Prasanna *et al*., 2013). It reveals a mean facial type of mesoprosopic for females and hyperleptoprosopic for males, which is very similar to the Vedda people. In the same study it was found that the North Indian (Both male and female) FI (Male:101.4 ± 1.95 and females:107.7 ± 7.69) was far higher than the Vedda people (Prasanna *et al*., 2013). Similarly, the African group (Ghanaians) tend to have far higher (Male: 113.27 and Female: 109.14) and thus a more extreme facial type. Studies from the Malaysian population reveal a mean FI of 90.85±8.38 and 85.86±5.69, for males and females, respectively, which indicate somewhat similar face types (Leptoprosopic and mesoprosopic) to the indigenous people (Yesmin *et al*., 2014). Studies from the Andhra Region of India reveal a mean FI of 89.5 and 86.72 for males and females, respectively, which also is fairly similar to the Vedda people (Kanan & Uttekar, 2012). The study by Kurnia *et al*. (2013), regarding Chinese population found that the mean facial index was 89.5 ± 5.56 for males and 86.67 ± 4.45 for females and the dominant type of face was mesoprosopic (Kurnia *et al*., 2013).

The Sri Lankan coast indigenous people were found to have a mean NI of 93.93±12.23 and 94.58±14.06 for females and males, respectively. The indicated platyrrhine (broad and short nose) as the most common nose type among both males (44.29 %) and females (53.57 %). Our nose shape results are par with a consequence of natural selection in human evolution; broader noses are prominent among individuals in warmer tropics while narrower noses are favored among people in temperate regions (Hall & Hall, 1995). However, a previous study on Vedda people reported NI as 73.1. Interestingly, another study from India stated that not the four states of India (Bihar, Kerala, Uttar Pradesh and Jammu and Kashmir) have platyrrhine rather they have either leptorrhine or mesorrhine type of nose (Male-73.09 and Females-72.85) (Nasir et.al. 2021). Similarly, Malaysian study reported that the nasal indices for males and females were 76.66 and 74.55, respectively. In this population, the most common nose type observed was mesorrhine (medium size nose), present in 67.5 % of males and 70 % of females (Than *et al*., 2018). Interesting, the research by Oladipo *et al*. (2006) gues revealed that the African population predominantly exhibits the nasal indices above 85 which comes under the platyrrhine or broad nose type that tend to be similar to the Coastal Vedda people. Therefore, we conducted hypothesis tests to check for significant differences in nasal index between the Coastal Vedda and African populations. The results showed no significant difference between the Coastal Vedda and Igbo tribes for males (P value = 0.2249) and females (P value = 0.077). Similarly, the Bekwara indigenous group showed the same results (Female P value = 0.0578 and Male P value = 0.9708) (Esomonu *et al*., 2013). However, some other African tribes showed nasal indices that were significantly different from those of the Coastal Vedda population (Oladipo, 2010; Oladipo *et al*., 2006).

While our research outcomes additionally support the existence of racial diversity in all the cephalic, facial and nasal indices among humankind, the most fascinating finding is the broad nose type of the Coastal indigenous people which par with some of African populations. There are two possible hypotheses for the presence of broad nose for this community: Climate adaptation and persistent ancient genetic signatures.

The first hypothesis is that the broad nose of Coastal Indigenous populations resulted as an adaptation to the climatic conditions and environment. The Coastal Indigenous people residing in the coastal area in the Eastern province of the country. East coast of the country is hot and humid unlike most of the other Village Vedda settlements inside the country. In such hot and humid climates, having a broader nose of Coastal Indigenous people is advantageous for more efficiently humidifying and cooling the air before it reaches the lungs. Therefore, this nose type might have resulted from natural selection, where individuals with nose shapes better suited to their environment had a survival advantage, leading to the predominance of these traits in the population over generations. At the same time, we cannot forget that the observed platyrrhine or broad nose shape might be due to operation of genetic drift among Coastal indigenous populations.

The second hypothesis is that Coastal indigenous populations might have genetic signatures from ancient

migration waves, which are closely associated with the country's geographic location. The recent dispersal of modern humans out of Africa via the southern migration route is widely accepted. Since such migrations occurred via water channels and shorelines, Sri Lanka is a possible candidate to yield evidence supporting this theory. This hypothesis is supported by the astonishing discovery of human occupation settlements at Minihagalkanda, dating back 150000 years, where small geometric microliths were found and such stone tools do not present anywhere else in the world at that time period. Although no human remains of those who prepared these advanced tools have been found yet, skeletal remains dated back to 4500 BP have been discovered in the Pallemalala shell midden area on Sri Lanka's southern coast. These findings highly suggest the need for archaeological excavations in the East Coast area of the country.

The importance of Sri Lanka's geographic location is further emphasized by several anthropological studies, including De Silva's suggestion that Vedda groups represent a mixture of Australoid, African, and Mediterranean affinities (De Silva, 1981). Interestingly, previous genetic research revealed that the Village Vedda possess West Eurasian genetic ancestry (Ranaweera *et al*., 2014a) and provided genetic evidence of early modern human dispersal (Ranaweera *et al*., 2014b). Therefore, the presence of broader noses in the Coastal Indigenous people, comparable to that of African populations, and presence of very long face/long face which is similar to Malaysian population might indicate presence of ancient genetic footprints. However, to fully understand the Coastal indigenous people and their position among the world's tribal groups, genetic studies on them are urgently needed before this valuable indigenous community vanishes.

CONCLUSION

The present study successfully establishes standard normative values for all the 16 craniofacial anthropometric measurements of the Coastal Indigenous people in Sri Lanka. The most common head shape observed among Coastal Indigenous males and females was mesocephalic, indicating a medium head size. Males predominantly exhibited a hyperleptoprosopic facial type, characterized by a very long face, while females mostly showed a leptoprosopic facial type, indicating a long face. The most dominant nasal type recorded for both genders was the platyrrhine nasal phenotype, characterized by a broad nose. The broad nose type may be due to adaptations to hot and humid environmental conditions or the presence of ancient genetic signatures. The findings of this study might mark a significant step forward in exploring their history.

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RESUMEN: La existencia de una comunidad indígena dentro de un país es motivo de orgullo y merece una atención significativa. Sri Lanka no es una excepción y como país con restos fósiles de *Homo sapiens* anatómicamente modernos, se plantea la hipótesis de que los pueblos indígenas de Sri Lanka podrían albergar antiguas firmas genéticas. Este estudio tiene como objetivo establecer datos de referencia de ciertas mediciones antropométricas craneofaciales en los pueblos indígenas costeros y clasificar sus tipos de cabeza, cara y nariz. Este estudio involucró a 126 individuos (70 hombres y 56 mujeres) no relacionados de seis aldeas, que representan a la población indígena costera. Se obtuvieron dieciséis mediciones craneofaciales, lo que proporcionó cálculos de tres índices craneofaciales: el índice cefálico, el índice facial y el índice nasal. Fue evidente que todas las mediciones craneofaciales, excepto la protrusión nasal de los hombres, tenían dimensiones significativamente mayores que las de los hombres. Además de los datos brutos cuantitativos de referencia, los índices calculados fueron los siguientes: Índice cefálico, facial y nasal medios de las mujeres fueron 78,50 ± 4,84, 88,37 ± 13,06 y 93,93 ± 12,23, respectivamente, mientras que los de los hombres fueron 78,85 ± 5,76, 91,74 ± 13,70 y 94,58 ± 14,06, respectivamente. Este es el primer estudio craneofacial sobre los pueblos indígenas costeros de Sri Lanka. La forma de cabeza más común observada entre ambos sexos fue la mesocefálica. Los hombres mostraron predominantemente un tipo facial hiperleptoprosópico, mientras que las mujeres mostraron en su mayoría un tipo facial leptoprosópico. El tipo nasal más dominante registrado para ambos sexos fue el fenotipo nasal platirrino. Curiosamente, dicha nariz platirrina rara vez está presente en otras poblaciones del mundo, excepto en las poblaciones africanas.

PALABRAS CLAVE: Índice cefálico; Índice facial; Índice nasal; Vedda; Indígena; Sri Lanka.

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