Craniometry of Nigerian Chldren of Urhobo Origin: Clinical and Forensic Implications

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Abstract

The aim of this study is to document the mean head circumference; head breadth; head length; nasal height; nasal breadth; nasal index; maxillary height; mandibular height; facial height and orofacial height of Urhobo children and adolescent of Nigeria and to provide a comprehensive data for use by anthropologists and medical practitioners. A total of nine hundred and eighty one (981) human subjects (454 males and 527 females) between the ages of 3-18 years were used for this study. All the subjects were drawn from Urhobo ethnic group in Delta State. Nasal height, maxillary height, mandibular height, orofacial height, facial height, head circumference, head breadth, nasal index, nasal breadth and head length were measured with a sliding caliper, a spreading caliper and measuring tape. The results showed that the Urhobo male and female had mean head circumference of 51.40 and 50.52 cm respectively, mean head breadth of 15.39 and 14.34 cm respectively. mean head length of 18.48 and 18.01 cm respectively, mean nasal height of 3.83 and 3.25 cm respectively, mean nasal breadth of 3.42 and 3.21 cm respectively and mean nasal indices of 88.56 and 88.03 respectively, mean maxillary height of 2.48 and 2.31 cm respectively, mean mandibular height of 3.59 and 3.27cm respectively, mean facial height of 9.71 and 9.32 cm respectively and mean orofacial height of 6.21 and 5.65 cm respectively. The z-test analysis indicates sexual dimorphism, with significantly higher values of all the parameters in males compared to the females ($p< 0.05$), except for nasal height, maxillary height and mandibular height where no significant difference was observed ($p>0.05$).The accurate determination of sex and race are important tools to Forensic Scientists and physical Anthropologists. Thus, this study is important as it has provided the necessary data for the Nigerian populations under investigation. The data is therefore recommended to forensic anthropologists, craniofacial surgeons and medical practitioners and also serves as the basis for future studies on other Nigerian ethnic group.

KEYWORDS: Anthropology, head circumference, nasal height, nasal index, nasal width.

INTRODUCTION

Anthropometry is concerned with measurement of physical sizes and shapes of human body. (Poswillo *et al.,* 1963). Craniofacial anthropometry is an integral part of craniofacial surgery and syndromology. It is a technique used in both physical and

clinical anthropology comprising precise and systematic measurements of the bones of the human skull.Craniofacial anthropometry includes nasal height, maxillary height, mandibular height, orofacial height, facial height, head circumference, head breadth, nasal index, nasal breadth and head length. It is very important for the study of human growth and variation in different races and also for clinical diagnosis and treatment (Poswillo *et al.,* 1963).

In recent years, craniofacial anthropometry has become an important tool used by clinical geneticists, forensic experts and reconstructive sugeons. Embryology of the face is responsible for its involvement in many syndromes of dysmorphogenesis. As the face is a complex anatomic unit, it is best to evaluate each distinct region of the face separately taking care to relate the various parts to the whole (Zweig *et al.*, 2000).

Craniofacial anthropometry involves measurement of the skull and face. Measurement of the craniofacial complex is important for studies of human growth, populational variation and clinical treatment. (Kolar *et al.*, 1997). Craniofacial landmarks and measurements are used to monitor the treatment of positional plagiocephaly (Salter *et al.*, 1997). Several reports concerning Nigerian craniofacial dimensions have been published. Oladipo and associates reported the nasal parameters of the, Itsekiri, Okpe and Ogonis population and documented the nasal height to be 3.99 cm and 3.91 cm in men and women Ogonis, respectively (Oladipo et al., 2006; Oladipo *et al.*, 2013). Akpa and colleagues reported that the nasal heights for Igbos males and females were 6.31 cm and 6.04 cm, respectively (Akpa et al., 2003). Didia and Dapper measured the facial, nasal, maxillary, and orofacial heights of Nigerians with normal facial morphology, and established that the mean facial heights were 12.28 cm and 1.77 cm; nasal heights were 4.50 cm and 4.48 cm; maxillary heights were 2.44 cm and 2.03 cm; mandibular heights were 4.49 cm and 4.02 cm; and orofacial heights were 6.90 cm and 6.32 cm, for males and females, respectively (Didia et al., 2005). This report demonstrated a sexual dimorphism among Nigerians; the values obtained for males were significantly higher than for females (Didia et al., 2005). In a similar study (and one which established the craniofacial pa-rameters of a Latvian population), Erika and associates reported that the mean nasal and facial heights were 5.87 cm and 12.41 cm in males, and 5.67 cm and 11.76 cm in females(Nagle et al., 2005). Males had wider and higher faces, and a larger minimal frontal breadth (mandibular breadth) and
upper face depth, than females. Oladipo and associates studied the craniofacial dimensions of adult Ijaws, and demonstrated that males had a mean facial height, nasal height, maxillary height, mandibular height and orofacial height of 11.87 cm, 4.71 cm, 2.49 cm, 4.60 cm and 7.12 cm, respectively; the correspond-ing mean values for females were 10.71cm, 4.43 cm, 2.39 cm, 4.28 cm and 6.50 cm. These results demonstrate that there is sexual dimorphism among adult Ijaws (Oladipo et al., 2008).

MATERIALS AND METHODS

The present study was carried out in the following urhobo communities, Ughelli, Warri, Agbaro, and Abraka in Delta State of Nigeria between August and November 2010. This study was carried out on Urhobo Children and aldolescent who were selected at random from the above named communities. A total of nine hundred and eighty one (981) human subjects (454 males and 527 females) between the ages of 3-18 years were

used for this study.Subjects with craniofacial defects were not used. A non- stretchable tape was used for the measurement of head circumference while a sliding caliper for the measurement of nasal height, nasal breadth, facial height ,maxillary and mandibular height.A spreading caliper was used for the measurement head breadth and head length. Orofacial height was calculated as the sum of the maxillary and mandibular heights (B+C). The nasal index was calculated as nasal width distance/nasal height distance x 100. The subject was seated comfortably on a chair with his/her head at the same level as the examiner's head. The subject's was well illuminated. The head circumference (distance between the glabella and occipital protuberance); was then determined by having the subject look straight at the examiner while the tape was used to wrap around the occiput to the anterior portion of the skull.

The nasal height was measured as the distance between the nasion to nasopinale of the nose. Nasal breadth was measure as the distance between the two alar. The subjects were instructed to look forward while the sliding caliper was placed on the nose of the subject; then scroll until it is tightly fixed on the subject's nose. The head length measurement was taken at the distance between the most prominent point between the eyebrow (glabella) and the backward projection of the head. Head breadth was to the greatest transverse diameter of the head located just over the parietal bones. Facial height was defined as the distance between the nasion of the nose and the menton of the mandible. Maxillary height was defined as the distance between the anterior nasal spine and the junction between the upper and lower lips (distance B). Mandibular height was defined as the distance between the junction of the up-per and lower lips and the menton (distance C). Orofa-cial height was calculated as the sum of the maxillary and mandibular heights (B+C).

Measurement was then taken with an accuracy of 0.01 cm; Statistical analysis was made with Z-test at significance level of 0.05.

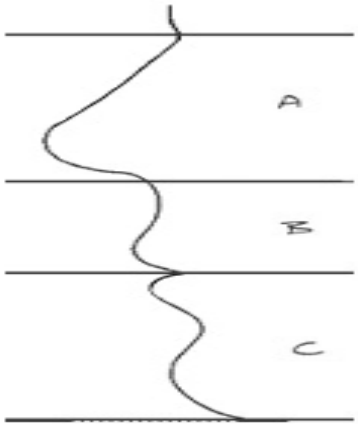

Fig 1: Schematic representation of the measurement of facial parameters A; maxillary height, B; mandibular height, C; orofacial height (B+C), and facial height (A+B+C).

RESULTS

The results of this study are presented in Table 1-5. The mean values of the craniofacial parameters investigated were compared statistically using z-test. The results obtained indicated a sexual dimorphism with significantly higher values of all the parameters in males compared to corresponding females ($p<0.05$), except for nasal height, maxillary height and mandibular height where no significant difference was observed ($p>0.05$).

Table 1 shows the mean values of craniofacial dimensions of Urhobo males of different age groups.The highest mean craniofacial value of male subjects was observed at 18 years of age with the exception of mandibular height, orofacial height, facial height and head breadth with highest mean values observed at age 16, 16, 16 and 17 years respectively.Table 2 shows the mean values of craniofacial dimensions of Urhobo females of different age groups. The highest mean craniofacial value of female subjects was observed at 18 years of age with the exception of nasal height, maxillary height, nasal breadth and nasal index with highest mean values observed at age15, 17, 14 and17 respectively. Table 3 shows the Comparison of males and females craniofacial measurements irrespective of age. The nasal height, maxillary height, mandibular height, orofacial height, facial height, head circumference, head breadth, head length, nasal breadth and nasal index were 3.83/3.25 cm, 2.48/2.31 cm, 3.59/3.27 cm, 6.21/5.65 cm, 9.71/9.32 cm, 51.40/50.52 cm,15.39/14.34 cm, 18.48/18.01 cm,3.42/3.21cm and 88.56/88.03% for male/female subjects, respectively. The mean values for all parameters were higher in male than in female subjects.These results demonstrate sexual dimorphism among Urhobo children and adolescent with regard to craniofacial parameters.Table 4 shows that the mean values for all parameters were significantly higher in male than in female subjects ($P < 0.05$), with the exception of nasal height, maxillary height and mandibular height where no significant difference was observed ($p>0.05$).

Thus, craniofacial parameters are sexually dimorphic amongst Urhobo Children and adolescents. Table 6 shows the comparative data on other various populations.

Table 1: Mean values for craniofacial dimensions of Urhobo males of different age group.

Age	N	HC(cm)	HB (cm)	HL(cm)	NB(cm)	NH(cm)	NI(%)	MAX H(cm)	FH(cm)	MAN H(cm)	OROF H(cm)
(yr)		Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
3	29	49.01±0.61	14.01±0.36	17.91±0.49	2.54±0.45	3.20±0.37	80.43±8.17	1.89±0.27	8.58±.0.44	3.41±0.31	5.33±0.34
4	32	49.16±0.93	14.04±0.38	18.02±0.38	2.63±0.47	3.22±0.52	83.49±7.11	2.04±0.35	8.50±0.46	3.32±0.28	5.36±0.49
5	30	49.56±0.54	14.08±0.33	18.03±0.35	2.89±0.16	3.39±0.56	87.25±4.17	2.06±0.22	8.71±0.37	3.39±0.22	5.43±0.30
6	31	49.69±0.39	14.09±0.43	18.05±0.32	2.97±0.31	3.42±0.29	88.62±3.17	2.24±0.25	8.81±0.49	3.45±0.26	5.45±0.34
7	32	50.57±0.61	14.10±0.49	18.18±0.38	3.18±0.34	3.49±0.26	88.02±5.04	2.39±0.35	9.45±0.45	3.46±0.27	5.84±0.44
8	31	50.89±1.06	14.28±0.45	18.32±0.45	3.27±0.39	3.52±0.31	88.26±2.37	2.62±0.25	9.66±0.41	3.48±0.27	6.08±0.41
9	32	50.95±1.45	14.32±0.45	18.34±0.48	3.31±0.35	3.56±0.32	88.60±2.67	2.63±0.25	10.07±0.48	3.49±0.24	6.15±0.34
10	31	51.86±1.02	14.35±0.51	18.38±0.72	3.30±0.22	3.59±0.21	88.83±3.05	2.64±0.17	10.08±0.38	3.57±0.32	6.17±0.37
11	35	52.32±0.08	14.48±0.31	18.48±0.41	3.33±0.37	3.68±0.37	89.36±2.40	2.65±0.08	10.09±0.32	3.58±0.32	6.18±0.32
12	32	52.44±1.04	14.51±0.37	18.52±0.27	3.41±0.38	3.70±0.34	89.92±2.41	2.66±0.33	10.11±0.28	3.68±0.23	6.20±0.48
13	24	52.57±1.64	14.54±0.38	18.55±0.29	3.42±0.42	3.74±0.35	90.36±3.04	2.68±0.23	10.15±0.43	3.71±0.19	6.30±0.32
14	25	52.58±1.03	14.65±0.32	18.65±0.43	3.44±0.42	3.85±0.24	90.55±2.84	2.70±0.28	10.16±0.59	3.72±0.25	6.35±0.49
15	21	52.71±0.99	14.83±0.24	18.72±0.21	3.45±0.29	3.91±0.25	90.85±3.06	2.74±0.36	10.32±0.61	3.73±0.22	6.37±0.40
16	24	53.00±0.75	14.90±0.27	18.81±0.24	3.50±0.28	3.96±0.22	91.14±2.49	2.77±0.45	10.65±0.44	4.19±0.25	6.41±0.38
17	23	53.35±1.15	15.46±0.41	18.91±0.22	3.57±0.23	4.06±1.64	92.24±1.39	2.78±0.35	10.49±0.63	4.06±0.36	6.61±0.54
18	22	54.05±1.17	15.36±0.45	19.07±0.46	3.66±0.19	4.11±0.18	92.91±1.51	2.82±0.43	10.60±0.52	4.08±0.35	6.52±0.41

Table 2: Mean values for craniofacial dimensions of Urhobo females of different age groups

Age (yr)	N	HC(cm) Mean±SD	HB(cm) Mean±SD	HL(cm) Mean±SD	NB(cm) Mean±SD	NH(cm) Mean±SD	NI(%) Mean±SD	MAX H(cm) Mean±SD	FH(cm) Mean±SD	MAN H(cm) Mean±SD	OROR F(cm) Mean±SD
3	27	48.28±0.77	13.67±0.41	17.87±0.41	2.50±0.35	2.98±0.24	79.68±4.93	1.76±0.22	8.14±0.34	3.32±0.34	5.07±0.30
4	27	48.85±0.64	13.77±0.42	17.91±0.47	2.52±0.16	3.18±0.13	81.75±4.82	1.99±0.23	8.37±0.35	3.34±0.14	5.19±0.15
5	18	49.23±0.49	13.79±0.29	17.96±0.29	2.83±0.31	3.30±0.23	83.77±4.15	2.05±0.17	8.53±0.32	3.35±0.32	5.33±0.15
6	19	49.50±0.50	13.81±0.36	18.03±0.40	2.93±0.33	3.38±0.18	84.67±3.96	2.19±0.16	8.73±0.51	3.40±0.18	5.41±0.21
7	27	50.10±0.49	13.87±0.45	18.12±0.46	2.95±0.27	3.40±0.16	85.78±4.11	2.28±0.27	8.81±0.32	3.44±0.13	5.63±0.20
8	27	50.30±0.37	13.95±0.41	18.21±0.41	2.97±0.26	3.46±0.12	86.15±2.49	2.34±0.16	8.94±0.33	3.45±0.14	5.78±0.23
9	27	50.47±0.49	14.10±0.20	18.25±0.29	3.26±0.20	3.50±0.15	88.06±2.61	2.51±0.42	9.15±0.36	3.47±0.18	6.00±0.39
10	27	50.53±0.52	14.26±0.36	18.28±0.32	3.28±0.13	3.52±0.18	88.36±2.65	2.54±0.15	9.22±0.40	3.50±0.12	6.08±0.19
11	27	50.81±0.53	14.30±0.32	18.34±0.22	3.30±0.17	3.59±0.18	88.65±2.57	2.59±0.16	9.32±1.43	3.52±0.13	6.12±0.21
12	40	50.94±0.60	14.36±0.34	18.40±0.30	3.37±0.29	3.62±0.31	88.92±2.30	2.61±0.18	9.40±0.18	3.60±0.17	6.19±0.22
13	46	51.04±0.71	14.39±0.27	18.43±0.19	3.39±0.21	3.70±0.20	89.25±1.28	2.63±0.19	9.77±0.50	3.63±0.15	6.28±0.20
14	46	51.17±0.56	14.41±0.22	18.50±0.15	3.61±0.20	3.80±0.18	89.71±2.20	2.67±0.19	9.80±0.35	3.66±0.10	6.30±0.23
15	46	51.30±0.59	14.51±0.25	18.54±0.17	3.43±0.22	3.97±0.17	90.07±2.28	2.70±0.16	9.99±0.39	3.69±0.20	6.34±0.24
16	42	51.51±0.31	14.60±0.20	18.61±0.18	3.45±0.16	3.88±0.23	90.64±0.54	2.72±0.11	10.10±0.38	3.71±0.13	6.38±0.14
17	40	52.14±0.51	14.93±0.25	18.83±0.41	3.49±0.12	3.90±0.12	91.22±0.54	2.84±0.12	10.23±0.42	3.82±0.12	6.43±0.17
18	40	52.44±0.39	15.22±0.31	18.99±0.43	3.58±0.15	3.93±0.13	91.16±0.48	2.79±0.09	10.39±0.28	3.88±0.13	6.48±0.20

Table3: Comparison of males and females craniofacial measurements irrespective of age.

Variable	**Mean±SD Males(n=454)**	**Mean±SD Females(n=527)**
Nasal height (cm)	3.83±0.40	3.25 ±0.32
Maxillary height (cm)	2.48 ±0.43	2.31 ±0.34
Mandibular height (cm)	3.59 ±0.34	3.27 ±0.22
Orofacial height (cm)	6.21 ±0.57	5.65 ±O.48
Facial height (cm)	9.71 ±0.83	9.32±0.82
Head circumference (cm)	51.4 ±1.80	50.52 ±1.19
Head breadth (cm)	15.39 ±0.52	14.34 ±0.52
Nasal index	88.56 ±4.92	88.03 ±4.12
Nasal breadth (cm)	3.42 ±0.46	3.21 ±0.38
Head length (cm)	18.48 ±0.55	18.01 ±0.44

SD- Standard deviation, N-Sample size.

Table4: Statistical analysis of craniofacial parameters of male and female subjects

Parameters	**Mean ± SD**		**Z-calculated**	**Z-critical**	**Inference**
	Male	**Female**			
* HC(cm)	51.40±1.80	50.52±1.19	6.37	1.96	P<0.05
* HB (cm)	15.39±0.52	14.34±0.52	121.46	1.96	P<0.05
* HL(cm)	18.48±0.55	18.01±0.44	122.84	1.96	P<0.05
* NB(cm)	3.42±0.46	3.21±0.38	23.38	1.96	P<0.05
NH(cm)	3.38±0.42	3.25±0.32	0.006	1.96	p>0.05
* NI	88.56±0.49	88.03±4.12	7.52	1.96	P<0.05
MAX H(cm)	2.48±0.43	2.31±0.34	1.19	1.96	P>0.05
*FH(cm)	9.71±0.83	9.32±0.82	4.57	1.96	P<0.05
MAN H (cm)	3.59±0.34	3.27±0.22	0.14	1.96	p>0.05
*ORO F H (cm)	6.21±0.57	5.65±0.48	5.67	1.96	P<0.05

HC=Head Circumference; HB=Head Breadth; HL=head Length; NB=Nasal Breadth; NH=Nasal Height; Nasal Index; MAX H=Maxillary Height; FH=Facial Height; ORO F H=Orofacial Height.
*-Parameters that are sexually dimorphic
SD=Standard Deviation.

Table 5: Comparison of head circumference, head breadth, head length, nasal breadth, nasal index, maxillary height facial height, mandibular height and oro-facial height of this study with other populations.

Author/Year	Tribe	Age Range	N	HC	HB	HL	NB	NH	NI	MAX H	FH	MA N H	OROF H
Oladipo et al (2008)	Ijaw	3-18 (M) 3-18 (F)	500 (M) 500 (F)	53.60±2.48, 53.00±3.22	-	-	-	3.99±1.33 3.88±0.55	-	2.15±1.09 1.97±0.29	10.34±2.39 9.70±1.29	2.40±1.45 4.00±0.56	6.35±43 5.97±0.75
Everkioglu et al (2002)	Turkish	7-15(M) 7-15 (F)	1104(M) 940 (F)	53.26±2.14 52.56±2.18	-	-	-	-	-	-	-	-	-
Banabas & Patience	Zaria	5-15 (M) 5-15 (F)	173 (M) 204 (F)	53.8±19.04 54.05±27.11	14.15±6.50 14.23±7.47	18.27±6.69 17.08±7.30	-	-	-	-	-	-	-
Everkioglu et al (2001)	Turkish	11-16 (M) 11-6 (F)	1084(M) 1051 (F)	53.57±2.19 52.92±2.92	-	-	-	-	-	-	-	-	-
Present study	Urhobo	3-18 (M) 3-18 (F)	454 (M) 527 (F)	51.4±180 50.52±1.19	15.39±0.52 14.34±0.52	18.48±0.55 18.01±0.44	3.42±0.46 3.21±0.38	3.83±0.40 3.25±0.32	88.56±4.92 88.03±4.12	2.48 2.31	9.71 9.32	3.59 3.27	6.21±0.57 5.65±0.48

Note: Parameters were measured in cm

DISCUSSION AND CONCLUSION

The present study investigated the facial height, nasal height, maxillary height, mandibular height, orofacial height, head circumference, head breadth, head length, nasal breadth and nasal index of Urhobo children (3-18 years) in Nigeria.From the study, mean craniofacial dimensions for male Urhobos were; nasal height 3.83±0.40cm,maxillary height 2.48±0.43,mandibular height 3.59±0.34cm,orofacial height 6.21±0.57,facial height 9.71±0.83,head circumference 51.4±1.80,head breadth 15.39±0.52,nasal index 88.56±4.92,nasal breadth 3.42±0.46cm and head length 18.48±0.55cm . Mean craniofacial dimensions for female Urhobos were; nasal height 3.25±0.32cm, maxillary height 2.31±0.34, mandibular height 3.27±0.22cm, orofacial height 5.65±0.48, facial height 9.32±0.82, head circumference 50.52±1.19, head breadth 14.34±0.52, nasal index 88.03±4.12, nasal breadth 3.21±0.38cm and head length 18.01±0.44cm.Mean craniofacial dimensions of male Urhobos were significantly higher than the corresponding female values; this could be as a result of genetic make up and inheritance which manifest as sexual dimorphism as reported by previous authors on most anthropometric parameters (Oladipo et al.,2006; Daniel ,2002).

Age-related changes in the craniofacial measurements signify the vertical growth of the face and circular growth of the head (Oladipo *et al*., 2009). Measurement of head circumference is valuable in recognizing pathology associated with delayed or impaired head growth (Oyedeyi *et al*., 1997). Knowledge of facial proportions can be used in the field of facial aesthetics (Larman *et al*., 2008). Craniofacial anthropometry is important in the evaluation of facial trauma, facial defect, congenital and post traumatic deformities, easy identification of certain congenital malformation and diagnosis of hypo/hypertelorism (Oladipo *et al*., 2008).It is necessary to have local data of these parameters since this standard reflect the potentially different pattern of craniofacial growth resulting from racial, ethic, sexual and dietary differences (Oladipo *et al*., 2009) .Oyedeyi and associates measured the head circumference of 644 nourished and malnourished children in western Nigeria in 1988, and established that there was a relationship between the circumference of the head and nutritional status.Current concepts concerning diagnosis and treatment planning focus on the balance and harmony of various craniofacial features (Riedel *et al*., 1950). Head circumference provides information relating to brain development (Zahl*etal*.,2008). Zahl and Wester analyzed the benefits of measuring head circumference in a nationwide study based on the medical charts of Norwegian departments of pediatrics and neurosurgery (Wester et al., 2008). Significant changes in head circumference occur between the ages of 5 and 17 years (Bishara *et al*., 2007).

The present study demonstrated significant differences between male and female subjects, as regards to craniofacial dimensions. This is in agreement with previous reports concerning the same anthropometric parameters (Gwunireama *et al*., 2006). Several authors have suggested that genetic factors substantially influence individual differences in developing standards for various populations (Basciftci *et al*., 2004).

As expected, evidence from the present study as compared to reports by other authors revealed that the mean values of craniofacial parameters of adult males and females are higher than those of children. Therefore, age significantly affects craniofacial dimensions within the same ethnic group. Increased age results in increased dimensions

of craniofacial features; this was demonstrated in the present study that craniofacial dimensions of male and female Urhobo children increase with age. All available data concerning the craniofacial parameters of adult Urhobos demonstrate that these features are significantly bigger than those of the Urhobo children and adolescents used in the present study. The inference is that vertical facial growth continues beyond the age of 18 years in both sexes, and that sexual dimorphism exists between Urhobo male and female children in terms of craniofacial parameters, with males having higher mean values than females. The present study suggests that the values reported for adults are of no use when younger individuals are studied. Therefore, it is important to develop separate values for children, adolescents and adults for accurate analysis. The present study shows that males mean values are significantly larger than those of females ($p<0.05$). The results of this study agree with many other studies that compare craniofacial characteristics of male and females.The result of the present study were in agreement with Franciscus and Long (1991) and Oladipo *et al*., (2010) who reported larger values for Head circumference, Nasal height, Nasal width and Nasal index in males than females.

A study carried out on the Ijaw population (3-18years) by Oladipo *et al*., (2009), showed that Ijaw males have a facial height of 10.34cm,mandibular height of 4.20cm,orofacial height of 6.35cm,nasal height of 3.99cm and head circumference of 53.60cm , while Ijaw females have a facial height of 9.70cm,mandibular height of 4.00cm,orofacial height of 5.97cm,nasal height of 3.88cm and head circumference of 53.00cm.These values are significantly higher than those obtained for Urhobos($p<0.05$), thus the urhobos can be said to have a smaller craniofacial profile than the Ijaws.

From the study on Turkish Children by Evereklioglu et al.,(2002), Turkish males and females have a Head Circumference of 53.26 ±2.14 and 52.56±2.18 respectively. Thesevalues are significantly higher than those obtained for Urhobos ($p<0.05$), thus the Urhobos can be said to have a smaller Head profile than the Turkish.

This showed that, genetics and environmental factors are responsible for the variation in craniofacial dimension between and within populations (Cem *et al*., 2001; Kasai *et al*., 1993). The result of this study will be of immense use in forensic medicine and anthropology and will also serve as a future framework for estimating the craniofacial dimensions of other Nigerians ethnic groups. In conclusion, this study established the mean facial dimensions for Urhobo children and adolescents, and showed that craniofacial parameters are sexually dimorphic in Urhobo children and adolescents. The parameters measured, which varied with age, could be influenced by nutrition, growth patterns, climate, and genetic factors. Data concerning craniofacial dimensions of Urhobo children could be of importance in age, sex, and racial differentiation, in clinical practice and forensic medicine.

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