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Anthropometrics Of Normal Newborn Infants In Uromi, Edo State

*L.E[1] EBITE, T.C[2] OZOKO, O.P.G[3] NMORSI, P[1] IGBIGBI.

[1]Department of Anatomy, Delta State University, Abraka. Nigeria.
[2]Saint Camillus Hospital Uromi
[3]Department of Zoology, Ambrose Alli University Ekpoma. Nigeria.
*Author for correspondence

ABSTRACT

This study aims to establish anthropologic norms among normal newborn in Uromi, Esanland. Nigeria. Measurements of weight in kilograms, length (cm), occipitofrontal and suboccipitobregmatic head circumferences (cm) of 180 newborn infants comprising 100 males and 80 females of normal birth weight were made 15-30 minutes after birth. Weight was measured using beam scale, while the others were measured using a tape rule. These measurements were carried out at Saint Camillus Hospital Uromi.

The mean birth weight for males is 3.099 kg +/-0.350 while that of females is3.061kg +/- 0.333. The mean occipitofrontal head circumference for males is33.40cm +/- 2.093 while that of is33.462cm +/- 2.321.The mean suboccipitobregmatic head circumference for males is 30.82cm +/-1.955 and for females 30.475cm +/- 1.841. The mean length for males is 47.49cm +/-3.904 and for females 46.775cm +/- 3.645. The bmi (kg/square metre) for males is 13.969 +/- 2.583 and for females 14.166 +/- 2.302. The ratio of occipitofrontal head circumference to length for males is 0.708 +/-0.075 and for females 0.718 +/- 0.062.The ratio of suboccipitobregmatic to occipitofrontal head circumference for males is 0.923 +/- 0.034 and for females 0.912 +/- 0.049.

The mean birth weights is lower than the value for USA (3.4kg) but higher than the value obtained in India (2.9 kg +/- 0.2), it is higher than that obtained in other parts of Nigeria. The mean lengths are lower than the values obtained in USA (45-55cm), and India (50-52cm). The mean occipitofrontal head circumference was found to be lower than the in India and USA (35cm) but agrees with values obtained elsewhere in Nigeria.

This work apart from documenting for the first time the bmi and ratios of head circumferences and lengths of infants in Nigeria hopes to enrich the existing information globally.

KEYWORDS: Newborn infant, Occipitofrontal, Suboccipitobregmatic, BMI.

Anthropometric measurements of the structure of the body have been known to vary with race, sex, and so on thereby making it necessary to establish reference values for any given population (Roger 1987). The oxford handbook of clinical specialties (paediatrics) did encourage the use of ethnospecific growth charts, and noted the many variances already noted in different populations Collier et al (1999).

Uromi is the headquarter of Esan North East local Government area. It is located at lat60 43' north, long 60 18' east with a population of about 100,000 inhabitants Encarta (2004). It lies on the esan plateau about1000-2000 meters above sea level and hosts its oldest secondary healthcare facility viz Saint Camillus Hospital, where this study was carried out. The predominant occupation is farming and trading.

The normal presentation in pregnancy is cephalic, normal lie is longitudinal, normal attitude is vertex.3,5 A single intrauterine pregnancy is normal. The largest circumference of the presenting head is the occipitofrontal head circumference, the engaging circumference, which is the crowning part of the head, is the suboccipitobregmatic head circumference. Dutta Textbook Obstetrics, an establishment of the norms of these measurements can have an impact in the management of labour.

MATERIALS AND METHODS

A total of 180 singleton, cephalic presenting, longitudinal lie babies which were born normally by spontaneous vaginal deliveries were selected for this study. The following morphological features were measured viz- the occipitofrontal head circumference, the suboccipitobregmatic head circumference, the crown to heel length using a tape rule and the

weight was measured using a beam balance.

These measurementsused in this study as well as cases of still born babies, twin deliveries and operative deliveries. The birth were made within 15-30 minutes of birth. The babies were examined for congenital malformation before their data was admitted into the study. Two cases of congenital anomalies (downs syndrome and cleft lip) were not weight range of 2.5-4.0 kg was used so as to exclude low birth weight babies as well as macrosomic babies.

RESULTS

Table 1 shows the data on mean weight, length and body mass index of male infants while Table 2 shows same for female infants. Table 3 and 4 show the data on mean occipitofrontal and suboccipitobregmatic head circumferences.

The mean birthweight of male infants is 3.099+/-0.350 kg, and the mean length is 47.49+/-3.90 cm, and the mean body mass index is 13.97+/-2.58 kg/m^2 (Table 1)

TABLE OF MEAN WEIGHT LENGHT AND B.M.I

Table 1: Mean weight, length and BMI in male newborns

	WEIGHT	LENGTH	B.MI
MEAN	3.09	47.49	13.97
S.D	0.35	3.9	2.58

The mean birth weight for female infants is 3.06+/-0.33 kg, and the mean length for female infants is46.77 +/-3.64cm, and the body mass index is 14.166+/-2.302 kg/m^2. (Table 2)

Table 2: Mean weight, length and BMI in female newborns

	WEIGHT	LENGTH	BMI
MEAN	3.061	46.775	14.166
S.D	0.333	3.645	2.302

The mean occipitofrontal head circumference for male infants is 33.400+/-2.093cm, while their suboccipitobregmatic head circumference is 30.82+/-1.95cm. For female infants, the mean occipitofrontal head circumference is 33.462+/-2.321 cm while their suboccipitobregmatic head circumference is 30.475 +/-1.841 cm.

Table 3: Mean head circumference of male newborn infants

	OFHC	SOBHC
MEAN	33.4	30.82
S.D	2.093	1.95

Table 4: Mean head circumference of female newborn infants

	OFHC	SOBHC
MEAN	33.462	30.475
S.D	2.321	1.841

DISCUSSION

The data in this study showed that the values of 2.39-3.79 recorded for the 95 centile for male babies and the 2.4-3.72 obtained for females is lower than that obtained elsewhere in Nigeria at sea level. Olowe in his work found 95% of term babies to weigh between 2.6-4.2 kg mean3.4. Azubuike et al; 1999, Olowe 1981. It is not known whether altitude has any effect on birth weight. The birth weight values we obtained are almost comparable to values obtained in Malawi (2.7-3.7)Kulmala et al (2001) and India(2.9 kg +/- 0.2)[2,5] It is however lower than mean birth weight in the United Kingdom which is 3.4-3.5kg. Collier et al (1999).

The value of mean occipitofrontal head circumferences obtained is lower than values obtained in the United Kingdom (35cm) and India (35cm) Barnes et al; 1990, Collier et al 1999; Dutta and Vaughn et al 1979. The value obtained elsewhere in Nigeria at sea level is 36cm. Azubuike et al (1999).

The mean length (crown to heel) of 47.47cm +/- 3.90 for male infants and 46.77cm +/- 3.64 for female infants are lower than those obtained at sea level in Nigeria (50cm) Olowe 1981, and in the United kingdom (50cm) Collier et al 1999; Vaughn et al 1979. The values obtained in India is 50-52cm. Dutta Textbook of Obstetrics.

The measurements obtained at Uromi (Esan Land) suggests that the babies here are smaller and lighter than those born at other, probably, lower altitude areas of Nigeria, but more research is needed to show a relationship between altitude and birth weight.

We report for the first time the information on body mass index (BMI) of newborn infants in

this part of the globe. The bmi of female newborn infants - 14.16+/- 2.30, males - 13.96 +/- 2.58 suggests that even though the birth weights of both male and female infants are comparable, the female infants are generally smaller than male infants. More research will be needed to confirm this. Moreover as an indicator of adiposity and nutritive state Encarta (2004 and Pietobelli et al 1998), we intend a follow up to see if there is any relationship between the bmi at birth and the infant obesity and growth.

Values from the United Kingdom show that even though the mean length of both male and female is 50cm, the mean birth weight for males is 3.5kg and for females is 3.4 kg. Calculating their bmi using the standard formula (kg/m^2) gives a bmi value of 14.0 for males and 13.6 for females. This suggests a difference in bmi due to generally lower weight in females and this is in agreement with current texts.

The ratio of the mean suboccipitobregmatic to mean occipitofrontal head circumference for males is 0.923 s.d 0.034 and for females is 0.912 s.d 0.049. This suggests a direct proportionality between the suboccipitobregmatic(sobhc) and occipitofrontal(ofhc) head circumference. We derived a formula

Sobhc = 1.096 ofhc +or - 0.5cm (males)

Sobhc = 1.083 ofhc + or - 0.5cm (females)

This would mean then that since it is possible to measure the ofhc while the baby is in the uterus using ultrasound scan, then the sobhc can be calculated. Comparing this with the parameters of the pelvis, the possibility of cephalopelvic disproportion can be predicted using this method. Further research is however needed to confirm this relationship in other regions and we intend to look into being able to predict the relationship between ofhc, sobhc, pelvic parameters, and incidence of cephalopelvic disproportion.

This further emphasizes the need for anthropometic measurements for this region.

CONCLUSION:

We have studied some anthropometric parameters of newborn infants among Uromi (Esan) people of Edo State of Nigeria.

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