ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 12, pp.43037-43041, December, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

A STUDY OF ANTHROPOMETRIC PARAMETERS OF TRIBAL MALE AND FEMALE NEWBORNS OF UDAIPUR DISTRICT

***Neha Vijay and Dr. Ghanshyam Gupta**

Department of Anatomy, RNT Medical College, Udaipur, Rajasthan, India

ARTICLE INFO

Article History:
Received 28th September, 2016
Received in revised form
18th October, 2016
Accepted 06th November, 2016
Published online 30th December, 2016

Key words:

Tribals,
Newborns,
Anthropometric Parameters.

ABSTRACT

Poor nutrition and bad health during pregnancy, due to ignorance or poverty, may reversely affect both – mother as well as newborn. This is well known fact that Tribes are different from general population in their socio-demographic characteristics, literacy, cultural practices and in their health seeking behavior. Apart from maternal factor one more important infantile factor affects the anthropometric parameters of newborn i.e. the gender of babies.

Aims & Objective: Present study was conducted on tribal newborns of Udaipur district to know the effect of gender on anthropometric parameters of Newborns.

Material & Method: A Cross sectional study was conducted in the Department of Anatomy, RNT Medical College and Hospitals, Udaipur, Rajasthan, India. All the anthropometric parameters of 680 tribal newborns were taken from; newborns delivered at Government health institutes of Udaipur district, at Pannadhay Ward of Maharana Bhopal Government Hospital of RNT Medical College and Hospitals.

Results: Mean values of Birth weight, Crown Heel Length, Head Circumference, Chest Circumference, Abdominal Circumference, Foot Length and Skin Fold Thickness were significantly higher in male. Mean values for Thigh Circumference, Mid arm Circumference and Calf Circumference was also higher in male; however it was not statistically significant.

Conclusion: The anthropometric parameters of newborns revealed a significant difference between male and female newborns.

Citation: Neha Vijay and Dr. Ghanshyam Gupta, 2016. "A study of anthropometric parameters of tribal male and female newborns of Udaipur district", *International Journal of Current Research,* 8, (12), 43037-43041.

INTRODUCTION

A healthy balanced diet in pregnancy is essential to provide sufficient energy and nutrients to meet the mother's usual requirements for optimal health, to support the growing fetus and to develop stores for use during lactation. Poor nutrition and bad health during pregnancy, due to ignorance or poverty, may reversely affect both – mother as well as newborn[6]. Present study was conducted on tribal newborns of Udaipur district and this is well known fact that Tribes are different from general population in their socio-demographic characteristics, literacy, cultural practices and in their health seeking behaviour. Tribes are usually hunters, forestland cultivator & minor forest product collectors, live in isolation with nature or far from urban habitants hence they are known as "son of soil". The position of literacy among tribes of Rajasthan is extremely poor, particularly in case of females. The infant & child mortality rate in tribes is comparatively much higher than the average rate. Antenatal care is either not available or not accepted by half of the Tribal Mothers during their pregnancy by the virtue of customary or they are ignorant of importance of the same. About 80% deliveries are said to be performed at their home even three fourth of are conducted by untrained Local Dias or other untrained practitioners. Below average Body Mass Index in majority of tribal women, represents higher nutritional deficiency resulted in malnutrition infants and that's why this study is an attempt to focus on anthropometrical issues of tribal woman and their newborns. By keeping these things in mind thought so that the results of tribal population will be different from the general population. So this study was conducted to obtain a results of anthropometric parameters of tribal newborns of Udaipur district and also to find out the effect of gender on these parameters.

**Corresponding author: Neha Vijay,*
Department of Anatomy, RNT Medical College, Udaipur, Rajasthan, India.

MATERIALS AND METHODS

Cross sectional study was conducted in the Department of Anatomy, RNT Medical College and Hospitals, Udaipur, Rajasthan, India. 680 tribal newborns were included in this study, delivered at Government health institutes of Udaipur

district, at Pannadhay Ward of Maharana Bhupal Government Hospital of RNT Medical College and Hospitals.

Incl Incusion/ Exclusion Criteria:

(A) Inclusion criteria:

- All the singleton pregnancy without any maternal co morbidity affecting newborns anthropometry.
- Mother should be native resident of Udaipur district willing to participate in this study.
- Patient who was able to cooperate for the study
- Patient who was able to communicate and understand the nature of question
- Booked patient along with antenatal card.

(B) Exclusion criteria:

- All twin babies
- Intrauterine death & still born babies.
- Newborns with gross congenital anomalies.
- Newborns born to mother with condition likely to influence fetal growth i.e. hypertensive disorder of pregnancy, gestational diabetes mellitus, chronic infections and illness will be excluded.
- Newbornss whose gestational age would not be assessed i.e. greater than 2 weeks difference between obstetrical and clinical assessed Gestational Age.
- Mother taking treatment which is likely to affect fetal growth
- Anthropometric measurements of new born, except birth weight were measured by using standard instruments and techniques by investigator personally. Birth weight was taken from hospital record/ admission ticket.

Instruments & Methods: Following instruments & methods were used for measurement of various anthropometric parameters of newborns:-

(A) Crown Heel Length (CHL): The baby was placed supine on an infantometer. The head is held firmly in position against a fixed upright headboard, while keeping legs of the baby straight and footboard brought into firm contact with the baby's heels with toes pointing upwards. Length of the baby is measured from a scale, which is set on the board.

(B) Head Circumference (HC): To get the head circumference measured, a flexible non-stretchable fiber glass tape was used. Being the head circumference, the largest dimension around the head (the occipito-frontal circumference) was obtained with tape placed snugly above the ears. To begin with, tape was placed over the mid forehead and was extended circumferentially while including the most prominent portion of the occiput. The measurement was taken to the nearest 1 mm.

(C) Chest Circumference (CC): To measure Chest Circumference, a flexible non-stretchable fiber glass tape was used, which is most suitable to fit the chest more snuggly to ensure accuracy, while placing the same at the level of the nipples during quite respiration The CC was measured to the nearest of 1 mm.

(D) Thigh Circumference (TC): At first Newborn was placed in supine position to take accurate measurement. Flexible non-stretchable fiberglass tape was placed at the level of the lowest gluteal furrow of the left thigh by extending the tape circumferentially. Measurement was recorded to the nearest of 1 mm.

(E) Calf Circumference (CfC): Flexible non-stretchable fiberglass tape was placed at the level of most prominent point in semi flexed position of the left leg by extending the tape circumferentially. Measurement was recorded to the nearest of 1 mm.

(F) Abdominal Circumference (AbC): Flexible non-stretchable fiberglass tape was placed at the level of umbilicus by extending the tape circumferentially. Measurement was recorded to the nearest of 1 mm.

(G) Foot Length (FL): A Wooden Scale or Flexible Non-stretchable Fiberglass Tape, having division of 1mm, was used for the measurement. Wooden Scale or the Tape was fixed against the foot and the length from the heel to the tip of great toe of the left foot was measured to the nearest of 1 mm, after straightening the foot.

(H) Mid arm circumference (MAC): Flexible non-stretchable fiberglass tape was placed at the level of a point halfway down to the left arm between tip of acromion and olecranon process by extending the tape circumferentially. Measurement is recorded to the nearest of 1 mm.

(I) Skin Fold Thickness (SFT): A thickness measurement caliper was used to measure double skin fold thickness in the midline of the posterior aspect of the arm over the triceps muscle, at a point halfway down the left arm between tip of acromion and olecranon process. Two pronged type caliper with screw adjustment was used to measure the same. Double fold of skin was slightly pressured between prongs to measure on a millimeter rule with screw adjustment.

(J) Definitions and Criteria for tribes used in this study

(A) Tribe**:** The following twelve tribes have been declared as scheduled tribes in the state of Rajasthan, vide Amendment order 1976.

- Bhil, Bhil-Grasia, Dholi Bhil, Dungari Bhil, Dungari-Grasia,Mewasi Bhil, Tadvi Bhil, Rawal Bhil, Bhagalia, Pawara, Vasava, Vasave.
- Bhil-Mina
- Damor, Damaria
- Dhanka,Tadvi, Tetaria, valvi
- Garasia (excluding Rajput Garasia)
- Kathodi, Katkari, Dhor Kathodi, Dhor Katkari, Son Kathodi, Son Katkari
- Kokna, Kokni, kukana
- Koli Dhor, Tokre Koli, Kolcha, Kolgha
- Mina
- Naikda, Nayaka, Chotiwala Nayaka, Kapadia Nayaka, Mota Nayaka, Nana Nayaka
- Patelia
- Seharia, Sehria, Saharia

OBSERVATION AND RESULTS

Out of total 680 tribal newborns 379 were male and 301 were female newborns.

Table 1. Distribution of anthropometric parameters among male and female tribal newborns

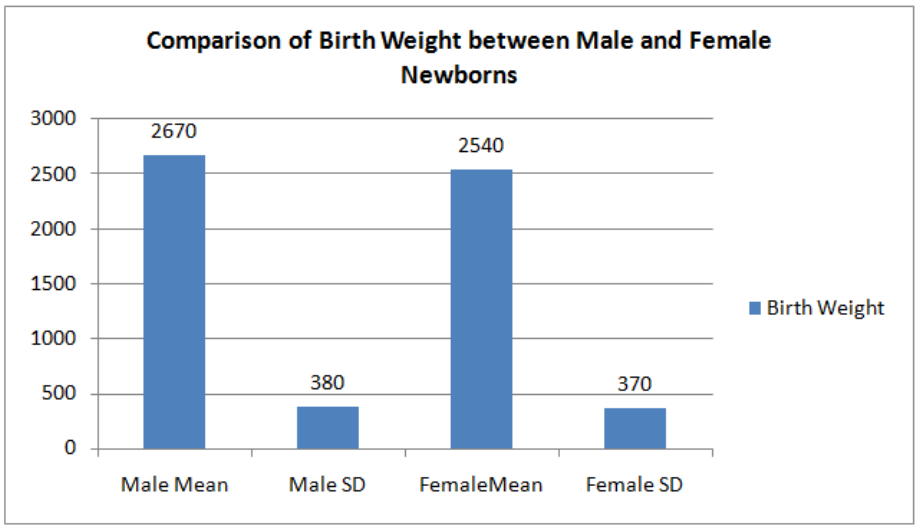
Anthropometric parameters	Male N=379		Female N=301		T-test	P-value
	Mean value	SD	Mean value	SD		
Birth weight(gm.)	2670	380	2540	370	4.53	<0.001
CHL (c.m)	44.82	1.97	44.27	1.73	3.78	<0.001
HC (c.m)	33.20	1.43	32.71	1.25	4.71	<0.001
Chest C. (c.m)	30.79	1.48	30.32	2.02	3.52	<0.001
Abd. C (c.m)	28.12	1.38	27.87	1.86	1.97	0.050
MAC (c.m)	9.90	0.90	9.90	0.89	0.02	0.983
Calf C (c.m)	9.80	1.04	9.81	1.10	0.10	0.918
FL (c.m)	7.38	0.68	7.26	0.60	2.38	0.017
TC (c.m)	13.35	1.10	13.26	1.18	0.94	0.349
SFT (mm)	4.29	0.63	4.13	0.62	3.36	<0.001

Table 1 shows the mean values of all the anthropometric parameters taken into consideration showed a high values in male newborns when compared to female newborns. Also show t-test and their p-values.

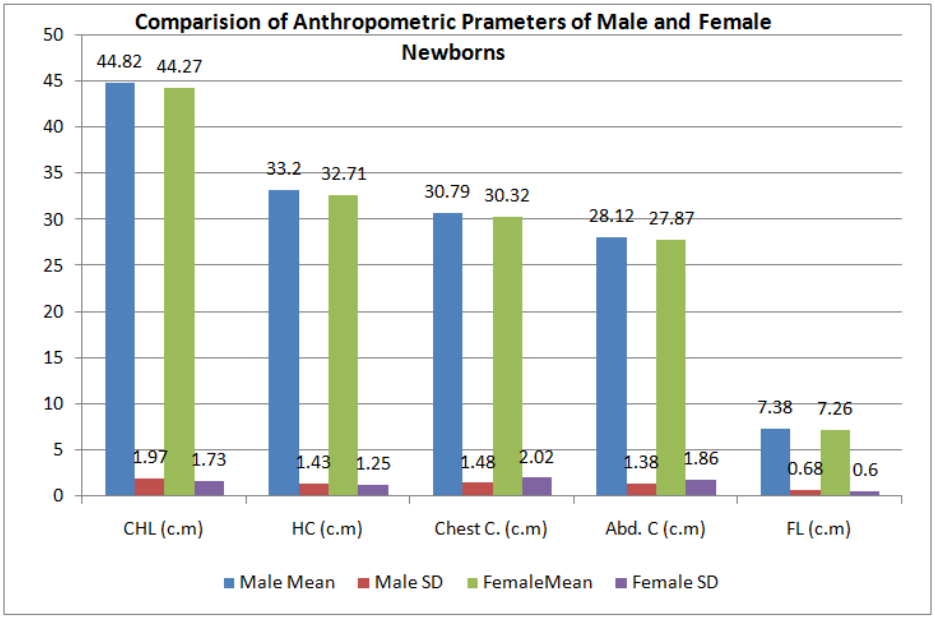
Table 2. The percentiles (3rd, 50th and 95th) of all the study measurements

Anthropometric parameters	3rd Percentile	50th Percentile	95th Percentile
Birth wt. kg	1.9	2.6	3.2
CHL (c.m)	41	45	47.5
HC (c.m)	30	33	35
Chest C. (c.m)	27.5	31	33
Abd. C (c.m)	25	28	30
MAC (c.m)	8.5	10	11.5
Calf C (c.m)	8	10	11.5
FL (c.m)	6	7	8.5
TC (c.m)	11	13.5	15
SFT (mm)	3.1	4.3	5.2

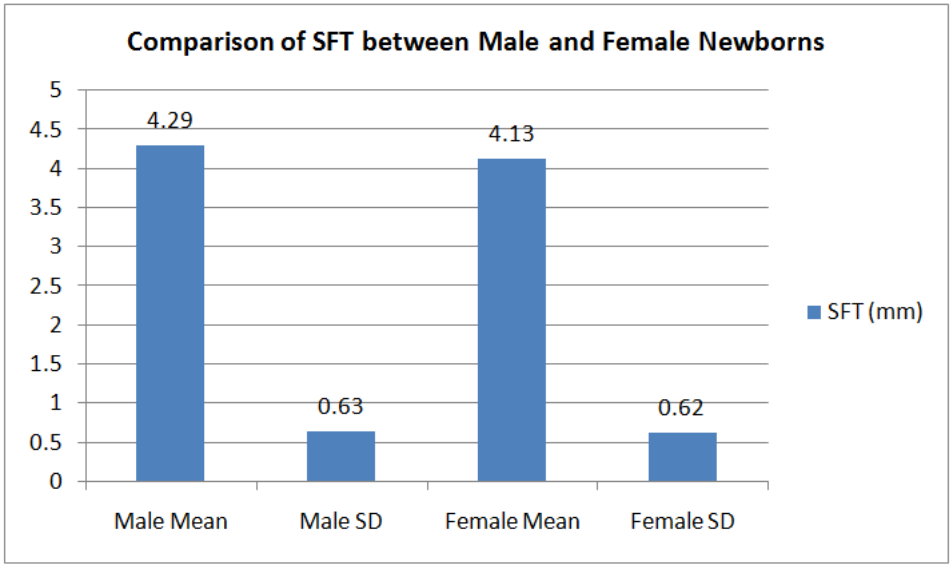
Table 2 Shows the percentiles (3rd, 50th and 95th) of all the study measurements



Graph 1. Comparison of Birth Weight between Male and Female Newborns



Graph 2. Anthropometric parameters, having significantly higher mean values in Male than Female Newborns



Graph 3. Comparison of mean and SD of Male and Female SFT

DISCUSSION

In present study out of 680 tribal newborn babies of Udaipur district 379 were males and 301 were females. Gender is one of the important factors which affect the newborns anthropometry. Various studies led down to conclusion that male newborns are larger than the female newborns so anthropometric parameters of male are greater than the female newborns. Similar findings were observed in present study. Birth weight of tribal male & female newborns in present study was 2670±380 grams & 2540±370 gram respectively. Birth weight of male newborns was found significantly higher in present study similar to study of Ahmed *et al*. (2014). Taksande *et al*. (2015) and Anupama *et al*. (2012) also found higher birth weight of male newborns however, it was not found statistically significant. The crown heel length of male and female was 44.82 ±1.97 and 44.27 ±1.73 cm respectively. Crown heel length of male newborns was found significantly higher in present study. Amar k taksande *et al*. (2015), Ahmed *et al*. (2014), Anupama (2012), Muhammad Nur (2001) also found higher crown heel length of male newborns however, it was not found statistically significant. The abdominal circumference of male and female newborns was 28.12 ±1.38 and 27.87 ±1.86 cm respectively. The abdominal circumference of male newborns found significantly higher in present study. Anupama (2012) Muhammad Nur (2001) also found higher abdominal circumference of male newborns however, it was not found statistically significant. The chest circumference of male and female newborns was 30.79 ±1.48 and 30.32 ±2.02 cm respectively. The abdominal circumference of male newborns found significantly higher in present study. Taksande (2015), Ahmed *et al*. (2014), Anupama (2012) and Muhammad Nur (2001) also obtained higher chest circumference of male newborns, however, it was not found statistically significant. The head circumference of male and female newborns was 33.20 ±1.43 and 32.71 ±1.25 cm respectively. The head circumference of male newborns found significantly higher in present study. Ahmed *et al*. (2014), Anupama (2012) and Muhammad Nur (2001) also obtained higher head circumference of male newborns, however, it was not found statistically significant. The mid arm circumference of male and female newborns was 9.90 ±.90 and 09.90 ±0.89 cm respectively. Mid arm circumference of male newborns was not found significantly higher in present study similar to study of Ahmed *et al*. (2014), Anupama (2012)[3] and Muhammad Nur (2001). Taksande (2015) found mean ±SD 10.1±1.21 and 10.28± 1.38 for male and female newborns respectively which was not matched to our study because of mean values of male newborns were lower.

The thigh circumference of male and female newborns was 13.35 ±1.10 and 13.26± 1.18 cm respectively. Mid thigh circumference of male newborns was not found significantly higher in present study similar to study of Ahmed *et al*. (2014) Anupama (2012). Taksande (2015) found mean ±SD 14.23±1.90 and 14.44± 1.54 for male and female newborns respectively which was not matched to our study because of mean values of male newborns were lower. The mid calf circumference of male and female was 9.80 ±1.04 and 9.81± 1.10 cm respectively. Mid calf circumference of male newborns was not higher in present study similar to study of Taksande (2015) obtained the mid calf circumference 10.55 ±1.27 and 10.61± 1.11 in male and female newborns respectively. It was similar to our study. Because of higher mean values of females. The foot length of male and female newborns was 7.38 ±.68 and 7.26± .60 cm respectively. The foot length of male newborns found significantly higher in present study. Ahmed *et al*. (2014) and Muhammad Nur (2001) also obtained higher foot length of male newborns, however, it was not found statistically significant. Skin fold thickness of male and female newborns was found 4.29±0.63 and 4.13±0.62 respectively. These values were lower than the values of Kaur (2012). Alveor (1978) found mean values of skin fold thickness 6.1±1.1, 4.3±.9, 4.9±1.1 in Negroes, Europeans and Indian Asians respectively. Values were matched with the values of Alveor (1978) in Europeans and Indian Asians population. They did not specify mean values in male and female newborns.

Conclusion

The present study was undertaken with the aim to determine the effect of gender on anthropometric parameters among male and female Tribal newborns of Udaipur district, showed statistically significant higher mean values of Birth Weight; Crown Heel Length, Head Circumference, Chest

Circumference, Abdominal Circumference, Foot Length and Skin Fold Thickness in male newborns which is in conformity with the previous studies. Except for the mean values of Mid Arm Circumference and Thigh Circumference was not statistically significant however, it was higher in males. The mean value of Mid Calf Circumference was higher in tribal female newborns. It was also observed that mean values of anthropometric parameters of newborns were lower than other studies. It may be attributed to difference in geographical, lower socio economic status, and poor maternal nutrition in Tribal mothers of Rajasthan population.

Acknowledgement

This work was undertaken independently and there were no funding sources. Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

REFERENCES

Ahmed M, Colaco S M, Ashraf Ali M, Ahmad Z. 2014. Birth Weight Status of Newborn and Its Relationship with other Anthropometric Parameters. *Int J Med Health Sci*., Jan; 3(1).

Alveor J. and Brooke O. 1978. Fetal growth in different racial groups. *Arch. Dis. Child*., 53: 27-32.

Anupama M.P, Dakshayani K.R. 2012. The Study of Distribution of Anthropometric Measurements in South Indian Male and Female Newborns. Anatomica Karnataka, 6(3):18-23.

Ashworth, A. 1998. Effects of intrauterine growth retardation on mortality and morbidity in infants and young children. *European Journal of Clinical Nutrition*, 52(1): 34-42.

Kaur H. and Bansal R. 2012. Anthropometric determinants of low birth weight in newborns of Hoshiarpur district (Punjab) - A hospital based study Human Biology Review 1(4); 376-386.

Muhammad Nur, Noval Azis, Guslihan D. Tjipta, Dachrul Aldy. 2001. Correlation between several anthropometric measurements to birth weight. Paediatrica Indonesiana 41(11-12):288-291.

Taksande A M, Lakhkar B, Gadekar A. 2015. Anthropometric measurements of term neonates in tertiary care hospital of Wardha district. *Al Ameen J Med Sci*., 8(2):140-143.

****