



LIVE BIRTHS IN ASSOCIATION WITH SOCIO-ANTHROPOMETRIC ATTRIBUTES OF DHURWA WOMEN OF BASTAR, CHHATTISGARH, INDIA.

D. K. Verma

Govt. J. Y. Chhattisgarh College, Raipur

ABSTRACT

Socio-Anthropometric variables influence reproductive behavior of women. In present paper an attempt has been made to examine an association between an average number of live births and socio-anthropometric attributes of Dhurwa women. Cormic index is an anthropometric index that define the concept of body shape and used as tools for population comparison. On the population level sitting height varies from 45 to 56 percent of standing height. Anthropometric data from 207 women were collected with their live births among Dhurwa women of Bastar. Information on their socio-cultural life are also collected by using pre-tested structured schedule. The mean setting height vertex is found to be 73.10±0.24 cm and it indicates its heighest value among women of 30-34 years age group, joint family, Business class, literate group and women over weighted and experienced first menstruation at 15 years. However, the mean height vertex is observed to be 151.13±0.37 cm and shows its higher magnitude in women aged 30-34 years, nuclear family, women experienced first mensuration at 13 years, literate group, underweight women and women having Brachycormic trunk. The mean Cormic index is estimated as 48.39±0.15 and Dhurwa women may be characterized by Brachycormic trunk. The values of mean Cormic index is observed to be higher in women aged 30-34 years, Joint family, literate group, Service class and women having BMI more than 24.9kg/m². However, the average number of live births is observed to be 2.56 and its higher value is associated with women of joint family, illiterate group, service class, women ranged over weight and Matriocormic trunk. The Dhurwa women of sitting height vertex ranged as 73.24 to 77.59 cm and height vertex ranged as 148.88 to 150.30 cm. have shown higher number of average live birth. However, women having BMI more than 24.9 and Matriocormic trunk indicate relatively higher number of average live births. Majority of Dhurwa women are observed with Brachycormic trunk and positively associated with different socio-anthropometric determinants.

KEYWORDS : Dhurwa tribe. Sitting Height Vertex. Height Vertex. Cormic Index. Bastar.

INTRODUCTION

The term live birth was created by the World Health Organization in 1950 and chiefly used for public health and statistical purposes. Live births refer to the complete expulsion or extraction from its mother of product of conception. Reproductive behavior is influenced by different variables like education level, occupational level and other variables connected with individuals. A study by Karkal (1975) reveals that an average live birth is higher in extended families than nuclear families, while Lorimer and Davis (1954) have concluded in their studies that higher fertility in traditional cultures was caused by extended family system. However live births of women also influenced by their physical feature. Height is sexually dimorphic trait in human. A study on 20th century British natality trends indicated that while tall men tended to reproduce more than short men, women of below average height had more children than taller women. Maternal height has been reported as an obstetric risk factor since short maternal stature may be associated with an increased incidence of obstructed labour due to cephalopelvic disproportion. Women, who suffered from malnutrition during their own growth process tend to end up with short stature in adulthood. Those women tend to give birth to small babies (Cawley et.al, 1954), who are at higher risk for overweight and other diseases later in life (Barker, 2007).

Stature is a major indicator of general body size and of bone length. Sitting height when measured along with standing height can provide information about the body's relative proportion. Individuals from the lower socio-economic background have proportionately shorter leg compared with wellnourished individuals from a higher socio-economics background. Cormic index are also associated with epidemiological risk for overweight, diabetes lever dysfunction, certain cancer and coronary heart disease.

The name cormic index has assigned by the Congress International de Science Anthropologies et. Ethnologique to define a ratio of sitting height to stature (Obikili, 1993). Cormic index defines the percentage of height vertex that is comprised of head and trunk. Cormic index allows individual with different heights to be compared in terms of percentage of the body that is composed of the relative length of leg because it is sitting height dependent this measure can be over-estimated in individuals with high level of gluteal femoral fat. Therefore under estimating the relative contribution of the lower limb to total stature. Cormic index is the most bivarite index for shape which measures the relative height of trunk and lower limb and it varies between individual and groups (Adeyemi, Komolafe and Abioye, 2009, Ukwuma, 2010). Collins et. al. 2000 used cormic index to standardize body mass index values. It is useful for comparing population. On the population level sitting height varies from 45 to 56

percent of standing height. The length of leg offers contribute more to height than trunk length itself. Mongoloids usually relatively short leg Caucasoid, Americanids and Capoides leg of medium length and Negroid as well as Australoid long leg apart from pygmies. Relative trunk length seems to be one of the primary human adaptation.

The aim of the present study is to examine the average live birth in relation to bio-social attributes of Dhurwa women and also to investigate relationship of anthropometric traits with bio-social attributes of women. Beside these the objective of the paper is to understand pattern of live births in association to sitting height vertex, height vertex, cormic index and pattern of their body proportion in relation to their bio-social determinants.

MATERIAL AND METHODS

The Dhurwa is minor tribal group comprising 0.18 percent of total tribal population of Bastar (Census, 2001). The word "Dhurwa" derived from Dhur means chief and they are also Known as the Parji. The Dhurwa inhabit the cntral-eastern portion of Bastar District and their livelihood is depend on agriculture and collection of minor forest produces. They follow the rules of patrilineal, patriarchal, patrilineal and exogamy and racially they may classified as proto-Australoid.

The present study was based on an extensive field work carried out among Dhurwa tribes of Bastar. A door to door survey was conducted by using pretested structural schedule during 2018 and information for present study were collected from 207 households from different villages of Bastar region. Information on bio-social characteristics of women along with their live birth were collected by interviewing both couples. Anthropometric measurements were taken from 207 Dhurwa women aged between 15 to 49+ years and measurements were done by using standard techniques. The height vertex was measured to the nearest 1 mm using Martin anthropometer and sitting height vertex was measured after sitting on a that stool with head at eye-ear plane.

Live births of Dhurwa women were analysis in relation to their bio-social and anthropometric attributes. Cormic index was calculated for each subject to examine the pattern of body proportion of Dhurwa women. Statistical analysis of data was done to understand relationship of live births with anthropometric characteristics of Dhurwa women. Cormic index explained by the ratio of sitting height to stature and it provide an estimation of relative trunk length and examined along with their live births.

RESULT AND DISCUSSION

The distribution of mean sitting height vertex and comic index according to age of Dhurwa women along with their live birth is

presented in table 1. Sitting height vertex could be used for evaluation of various growth-related issues and viewed as bio-marker of cardio vascular risk which is increased in adults with relatively short legs. The mean sitting height varies from 70.92±0.91 to 74.23±0.64 cm with highest value in women aged 30-34 years. The average live birth is found to higher among Dhurwa women aged 40-44 years (3.41) with mean sitting height vertex (73.24±0.82 cm). The average live births increase with increase in age of mothers. The Pattern of live births and sitting height vertex compared to age of women is presented in fig 1.

Table 1. The mean live births, sitting height vertex, Height vertex and Cormic index according age of Dhurwa women of Bastar.

Age in years	No.	Mean live births	Sitting Height Vertex(cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±SE	Mean±SE	SD±SE	Mean±SE	SD±SE
15-19	04	1.00	71.30±1.37	2.75±0.97	147.30±2.18	4.36±1.54	48.45±1.36	2.72±0.96
20-24	39	1.45	73.72±0.57	3.57±0.40	152.03±0.86	5.37±0.61	48.52±0.36	2.26±0.26
25-29	45	2.16	73.43±0.44	2.95±0.31	151.87±0.77	5.21±0.55	48.38±0.29	1.93±0.20
30-34	32	2.94	74.23±0.64	3.61±0.45	152.08±1.02	5.78±0.72	48.85±0.52	2.93±0.37
35-39	41	2.95	72.23±0.59	3.80±0.42	151.10±0.85	5.48±0.60	47.82±0.35	2.22±0.25
40-44	19	3.41	73.24±0.82	3.60±0.58	150.49±1.02	4.46±0.72	48.71±0.65	2.84±0.46
45-49	13	3.00	72.68±0.62	2.23±0.44	150.48±1.19	4.33±0.85	48.32±0.43	1.54±0.30
49+	14	3.17	70.92±0.91	3.40±0.64	146.71±1.42	5.31±0.85	48.35±0.46	1.73±0.33
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11

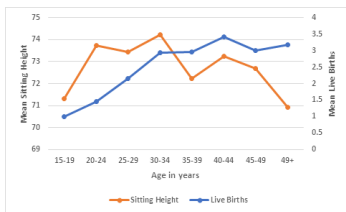


Fig 1. The mean live births compared to mean sitting height vertex among Dhurwa women of Bastar.

There is increasing evidence that lower maternal stature is associated with shorter gestational length in offsprings. Studies showed that in general fertility is not influenced by maternal height but it influences the child mortality while some studies showed that the relationship between maternal height and surviving children is significantly negative. The Mean height vertex compared to age of Dhurwa women varies from 146.71±1.42 to 152.08±1.02 cm and the average live births is observed to be higher among those Dhurwa women, whose mean stature is measured 150.49±1.02 cm. The pattern of live births with their mean height is presented in fig 2.

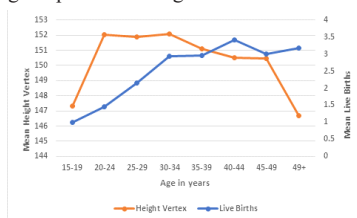


Fig 2. The mean live births compared to height vertex among Dhurwa women of Bastar.

Cormic index is one of the indicators of body composition, which estimates trunk and leg length and affected by age, genetics, environment and life style in adulthood. Sebhatu (2001) showed in his study that cephalopelvic disproportion could not be accurately predicted by height and sitting height while Van Bogaert , 1999

revealed that height and length of the spine were shorter : in women undergoing cesarean section due to inadequate pelvis compared to those who had vaginal delivery. The mean Cormic index compare to age of Dhurwa women varies from 47.82±0.35 to 48.85±0.52 and their mean average live births is associated with 48.71±0.65. However, the mean Cormic index among them is observed to be 48.39±0.15 and grouped under Brachycormic trunk. The pattern of live births with Cormic index is shown in fig 3.

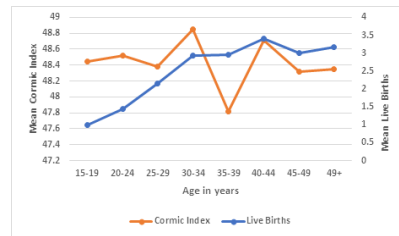


Fig 3. Live births compared to Cormic index among Dhurwa women of Bastar.

Correlation between bio-anthropometric feature is presented in Table 2. On the basis of age of women live births indicate positive correlation with age sitting height and height vertex while it exhibits negative correlation with Cormic index. However, Cormic index shows positive correlation with sitting height vertex and height vertex.

Table 2. Correlation between bio- anthropometric features among Dhurwa women.

	Live births	Sitting height vertex	Height vertex	Cormic index
Age	0.89	-0.25	-0.22	-0.15
Live births	-	0.07	0.08	-0.02
Sitting height	-	-	0.92	0.48
Height vertex	-	-	-	0.11

Family structure affects the fertility of women. The mean live births, sitting height vertex, height vertex and Cormic index compared to family structure among Dhurwa women is presented in Table3. The proportion of Dhurwa women in nuclear family (72.46%) is found to be higher than joint family (27.54%), while an average number of live births indicates its higher value in joint family (2.66) than nuclear family (2.55). The women of joint family indicate higher mean values in their sitting height and Cormic index than women of nuclear family, while mean height vertex indicates it's higher values in nuclear family (151.28±0.45 cm). On the basis of family structure it may be viewed that higher number of live births is associated with relatively higher sitting height vertex and Cormic index and negatively related with height vertex of women. When compared with family structure live birth of women indicate positive correlation with sitting height vertex and negative correlation with height vertex.

Table 3. The mean live births, sitting height vertex, height vertex and Cormic index according to family structure among Dhurwa women of Bastar.

Family Structure	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±SE	Mean±SE	SD±SE	Mean±SE	SD±SE
Nuclear Family	150	2.55	72.95±0.28	3.41±0.19	151.28±0.45	5.46±0.32	48.25±0.17	2.10±0.12
Joint Family	57	2.60	73.44±0.47	3.58±0.33	150.76±0.68	5.13±0.48	48.74±0.31	2.37±0.22
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11

Menarche is considered as a milestone in the women's reproductive life and it influenced by various socio-economic and anthropometric features of women. The mean age of menarche is observed to be 11.90 years among Dhurwa women of Bastar. However the 42.03 percent of women experienced first menstruation at the age of 12 years. Table 3 indicates the mean anthropometric status with live births according to age of menarche among Dhurwa women of Bastar. The mean sitting height vertex varies from 68.02±2.01 to 74.40±1.84 cm and women experienced first menstruation at 9 years indicate highest number of mean live births and lowest value of mean sitting height vertex. While

women experienced at 15 years have shown lowest number of average live births and highest mean sitting height vertex. The mean height vertex varies from 144.47±3.13 to 152.15±0.92 cm and women with lower mean height vertex indicate relatively higher live births and mean Cormic index. The pattern of live births with anthropometric status according to menarched age of Dhurwa women is present in fig 4, 5 and 6.

Table 4. The mean live births, sitting height vertex, mean height vertex and Cormic index according to age of menarche among Dhurwa women of Bastar.

Age of menarche (Years)	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±SE	Mean±SE	SD±SE	Mean±SE	SD±SE
09	03	3.00	68.02±0.01	3.49±0.16	144.47±3.13	5.43±0.21	47.09±0.45	0.78±0.32
10	16	2.31	74.02±0.80	3.18±0.56	150.08±1.09	4.37±0.77	49.32±0.42	1.70±0.30
11	48	2.00	72.26±0.49	3.43±0.35	150.78±0.64	4.46±0.46	47.95±0.34	2.38±0.24
12	87	2.40	73.31±0.36	3.37±0.25	151.40±0.60	5.60±0.42	48.45±0.23	2.15±0.16
13	41	2.59	73.35±0.54	3.48±0.38	152.15±0.92	5.91±0.65	48.24±0.35	2.24±0.25
14	08	2.50	73.61±0.32	2.60±0.22	149.99±0.62	5.12±0.44	49.10±0.17	1.41±0.12
15	04	1.75	74.40±1.84	3.68±1.30	150.60±1.25	2.49±0.88	49.40±1.11	2.22±0.78
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11

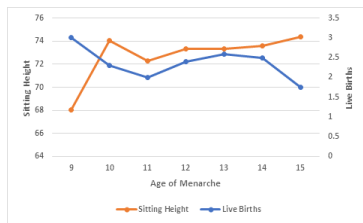


Fig 4. Live births compared to sitting height vertex according to age of menarche among Dhurwa women of Bastar.

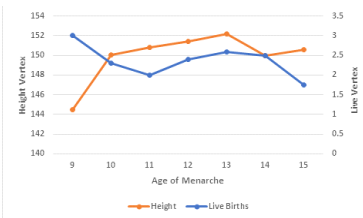


Fig 5. Live births compared to height vertex according to age of menarche among Dhurwa women of Bastar.

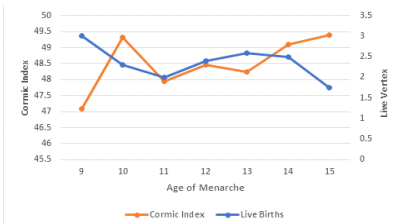


Fig 6. Live births compared to Cormic index according to age of menarche among Dhurwa women of Bastar.

The age of menarche shows negative correlation with live births and positive correlation with anthropometric status of Dhurwa women, while live births indicates negative correlation with anthropometric variables. However, sitting height vertex, height vertex and Cormic index indicate positive correlation to one-another when compared to age of menarche.

Table 5. Correlation between live births and bio- anthropometric status among Dhurwa women.

	Live births	Sitting height vertex	Height vertex	Cormic index
Menarcheal age	-0.53	0.69	0.60	0.62
Live births	-	-0.68	-0.59	-0.62
Sitting height	-	-	0.88	0.90
Height vertex	-	-	-	0.58

Table 6 exhibits the mean anthropometric features with average live birth according to educational status of Dhurwa women of Bastar. Women educational level could affect fertility through its impact on women's health and their physical capacity to give births. The negative correlation between women's education and fertility is strongly observed across region and time however its interpretation is not clear. The average live birth is observed to be higher among graduate women with higher mean value of sitting height vertex (77.20±1.04 cm) than women of other group. The illiterate women indicate average live births as 2.75 with mean sitting height vertex as 72.65±0.29 cm. However, the mean height vertex varies from 150.68±0.43 to 152.87±1.26 cm and average live births associated reversely with mean height vertex when compared with educational status of women. The mean Cormic index varies from 47.99±0.51 to 51.17±0.46 with average live births from 1.70 to 3.00 among Dhurwa women of Bastar. The pattern of live births and the anthropometric status of Dhurwa women according to their educational status is presented in fig 7, 8 and 9.

Table 6. The live births, sitting height vertex, mean height vertex and Cormic index according to educational status among Dhurwa women of Bastar.

Educational Status	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±SE	Mean±SE	SD±SE	Mean±SE	SD±SE
Illiterate	145	2.75	72.65±0.29	3.51±0.21	150.68±0.43	5.18±0.30	48.25±0.18	2.21±0.13
Primary	20	2.29	73.93±0.61	2.72±0.43	152.87±1.26	5.67±0.89	48.39±0.37	1.67±0.26
Middle	22	1.70	73.19±0.72	3.39±0.51	152.65±1.30	6.12±0.92	47.99±0.51	2.40±0.36
Higher Secondary	17	2.25	74.78±0.75	3.10±0.53	151.25±1.32	5.46±0.94	49.46±0.46	1.88±0.32
Under graduate	03	3.00	77.20±1.04	1.80±0.73	150.85±0.66	1.15±0.47	51.17±0.46	0.80±0.33
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11

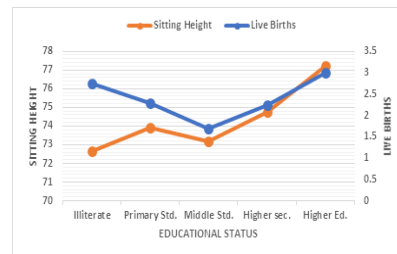


Fig 7. live births compared to sitting height vertex according to educational status of Dhurwa women of Bastar.

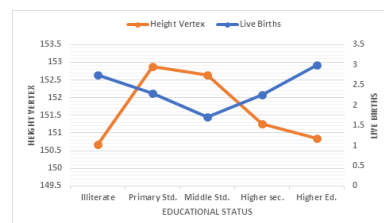


Fig 8. Live births compared to height vertex according to educational status of Dhurwa women of Bastar.

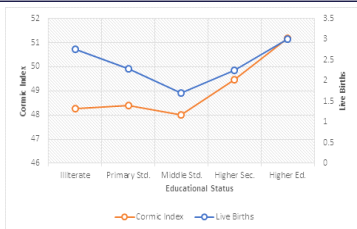


Fig 9. Live births compared to Cormic index according to educational status among Dhurwa women of Bastar.

The values correlation between live births and anthropometric status of Dhurwa women according to their educational status are presented in Table 7. Educational status of Dhurwa women indicates negative correlation with their live births, sitting height vertex, height vertex and Cormic index. However live births observed among women shows positive correlation with sitting height and Cormic index and negative correlation with height vertex. Height vertex indicates negative correlation with sitting height vertex and Cormic index, whereas sitting height vertex observed among women exhibits significant positive correlation with their Cormic index.

Table 7. The values of correlation between live births and anthropometric status of Dhurwa women according to their educational status.

	Live births	Sitting height vertex	Height vertex	Cormic index
Educational status	0.28	-0.64	-0.44	-0.46
Live births	-	0.53	-0.77	0.66
Sitting height	-	-	-0.33	0.97
Height vertex	-	-	-	-0.55

The average live births and anthropometric status of Dhurwa women observed according to their occupational status is shown in Table 8. In present study majority of women observed either labour (47.34%) or house wife (47.34%). The mean live births is found to be higher among women (3.63) engaged in Govt job with mean sitting height vertex as 74.37±0.77 cm height vertex as 150.30±1.35 cm and mean Cormic index as 49.50±0.55. However, Dhurwa women engaged in their own Business show relatively lower value of average live births (1.50) with higher value of sitting height (75.45±0.88 cm) and height vertex (154.10±2.89 cm). The pattern of live births and anthropometric status of Dhurwa women according to their occupational status is shown in fig 10, 11 and 12.

Table 8. The mean live births, sitting height vertex, height vertex and Cormic index according to occupational status among Dhurwa women of Bastar.

Occupational Status	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±S E	Mean±SE	SD±S E	Mean±SE	SD±SE
Labour	98	2.72	73.08±0.38	3.73±0.27	152.07±0.61	6.03±0.43	48.08±0.23	2.25±0.16
House wife	98	2.33	72.95±0.33	3.27±0.23	150.21±0.46	4.55±0.32	48.59±0.22	2.15±0.15
Own Business	02	1.50	75.45±0.88	1.25±0.62	154.10±2.89	4.10±2.05	48.97±0.35	0.49±0.24
Govt. Job	09	3.63	74.37±0.77	2.30±0.54	150.30±1.35	4.04±0.95	49.50±0.55	1.64±0.39
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11



Fig 10. Live births compared to sitting height vertex according to occupational status among Dhurwa women of Bastar.

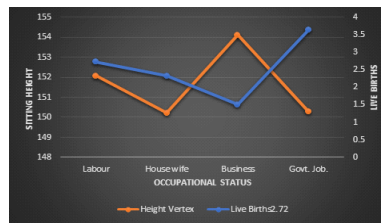


Fig 11. Live births compared to height vertex according to occupational status among Dhurwa women of Bastar.

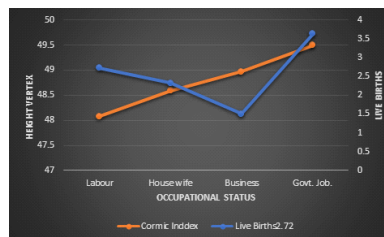


Fig 12. Live births compared to Cormic index according to occupational status among Dhurwa women of Bastar.

The value of coefficient of correlation between live births and anthropometric status of Dhurwa women according to their occupational status are presented in Table 9. Occupational status exhibits negative correlation with anthropometric status of Dhurwa women. However, their live births reveals negative correlation with their sitting height and stature and positive correlation with Cormic index. The value of coefficient of correlation observed between sitting height vertex and height vertex or with Cormic index exhibit positive correlation.

Table 9. The values of coefficient of correlation between live births and anthropometric status according to occupational status of Dhurwa women of Bastar.

	Sitting height vertex	Height vertex	Cormic index
Live births	-0.33	-0.75	+0.31
Sitting height	-	+0.64	+0.65
Height vertex	-	-	-0.16

Leptin and estrogen are two hormones that have been implicated in regulating BMI as well as reproductive physiology. Different studies have implicated abnormal BMI on the female reproductive system by contributing to an ovulation irregular menses adverse oocyte quality endometrial alterations and hormonal imbalance. Joseph A. Hill MD a reproductive endocrinologist and infertility specialist and president of the fertility Centre Boston, New England viewed that right amount of body fat needed for a successful pregnancy.

The distribution of mean sitting height vertex, height vertex and Cormic index according to BMI along with their live birth is presented in Table 10. The proportion of nutritionally normal women is found to be 65.22 % followed by underweight women (33.88%) and overweight women (2.90%). The mean sitting height vertex is found to be higher among overweight women (75.95±1.44 cm). However, the mean height vertex is observed to be higher among underweight women (151.56±0.65 cm) among the Dhurwa tribe of Bastar. The mean Cormic index is found to be higher among overweight women (50.66±0.54). Whereas the mean live birth is observed to be higher among overweight women (2.83), which indicates positively correlation with setting height vertex and Cormic index and negatively correlation with height vertex.

Table 10. Mean live births, sitting height vertex, height vertex and Cormic index according to body mass index of Dhurwa women of Bastar.

Body mass Index (kg/m ²)	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)		Cormic Index	
			Mean±SE	SD±SE	Mean±SE	SD±S E	Mean±S E	SD±SE

<18.50	66	1.98	73.10±0.38	3.08±0.27	151.56±0.65	5.30±0.46	48.26±0.42	3.42±0.29
18.50-24.90	135	2.50	73.11±0.31	3.59±0.22	150.97±0.47	5.46±0.33	48.36±0.19	2.24±0.14
>24.90	06	2.83	75.95±1.44	3.55±1.03	149.88±0.47	3.19±0.92	50.66±0.54	1.89±0.55
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26	48.39±0.15	2.19±0.11

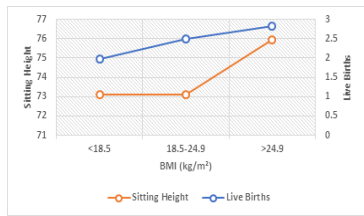


Fig 12. Live births compared to sitting height vertex according to BMI among the Dhurwa women of Bastar.

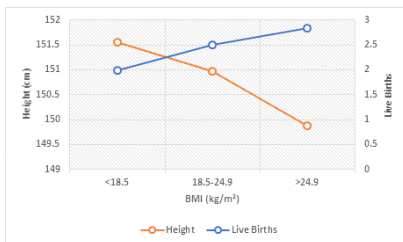


Fig 13. Live births compared to height vertex according to BMI among the Dhurwa women of Bastar.

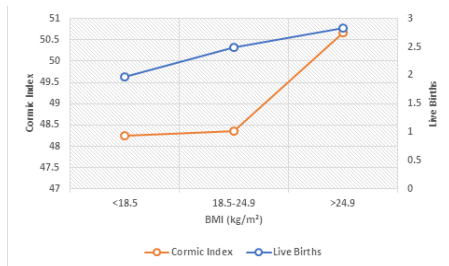


Fig 14. Live births compared to Cormic index according to BMI among the Dhurwa women of Bastar.

The value of the coefficient of correlation between live birth and anthropometric status of Dhurwa women according to their Body mass index is Presented in Table 11. BMI indicates negative correlation with bio- anthropometric status of women except height vertex. However live births show the positive correlation with sitting height vertex and Cormic index. The value of coefficient correlation between sitting height vertex and Cormic index indicate highly positive correlation.

Table 11. The values of correlation coefficient between live births and anthropometric status among Dhurwa women of Bastar.

	Live births	Sitting height vertex	Height vertex	Cormic index
BMI	-0.35	-0.84	+0.61	-0.82
Live births	-	+0.80	-0.96	+0.82
Sitting height	-	-	-0.94	+0.99
Height vertex	-	-	-	-0.95

Cormic index is used as valid means to study body size, which indicates ethnic variation. Asian populations have proportionally shorter leg with Cormic index value around 51.00 percent. Various study suggested that Cormic index is attributed to better living conditions while it has been noted that human being growing up in adverse bio-cultural environments including diet and family circumstances. The majority of Dhurwa women are observed with Brachy Cormic trunk (91.30%). It is evident from the table that mean Cormic index increases with increase in sitting height vertex, while the reverse trend is observed with height of Dhurwa women. The mean live births is found to be higher among Mesocormic Dhurwa women with mean sitting height vertex 77.59±0.43 cm and mean height vertex

as 149.40±0.91 cm. The result of present study reveals that live births positively correlated with women of Mesocormic trunk.

Table 12. Mean live births, sitting height vertex and height vertex accordig to Cormic index among Dhurwa women of Bastar.

Cormic Index	No.	Mean live births	Sitting Height (cm)		Height Vertex (cm)	
			Mean±SE	SD±SE	Mean±SE	SD±SE
<51.00	189	2.33	72.66±0.24	3.26±0.17	151.32±0.40	5.46±0.28
51.00-53.00	16	2.44	77.59±0.43	1.74±0.31	149.40±0.91	3.63±0.64
>53.00	02	1.00	78.55±1.94	2.75±1.37	146.75±3.74	5.30±2.65
Total	207	2.56	73.10±0.24	3.48±0.17	151.13±0.37	5.38±0.26

Table 13. The values of correlation coefficient between live births and anthropometric status according to Cormic index among Dhurwa women of Bastar.

	Live births	Sitting height vertex	Height vertex
Cormic index	+0.44	-0.99	+0.84
Live births	-	-0.51	+0.84
Sitting height vertex	-	-	-0.89

The Cormic index shows positive correlation with live births and height vertex, while live births indicate positive correlation with height vertex and Cormic index among the Dhurwa women of Bastar.

CONCLUSION

The Dhurwa tribes inhabit the central eastern portion of Bastar district are economically backward and majority of Dhurwa women are found to be illiterate and labourer. The present study reveals that average height of Dhurwa women is 151.13±0.37 cm which is slightly more than standard height of 151.00 cm as set for Indian women suggested by Indian council of medical Research. The study determines the mean Cormic index for Dhurwa women is 48.39±0.15. The bio-social attributes of women express positive correlation with live births while, no statistically significant correlation has been observed between Cormic index and live births according to age of women and their menarcheal age. The correlation analysis expresses the positive relationship between live births and Cormic index when compared with their educational, occupational and nutritional status. However significant correlation is observed between sitting height vertex and Cormic index. The mean live births are observed comparatively higher among those Dhurwa women having Cormic index between 48.24 to 51.17, when compared with their socio- anthropometric attributes of women.

REFERENCE

- Adeyemi, DO. Komolafe, OA and Abioye, AI. 2009. Variation in body mass indices among post pubertal Nigerian subject with correlation to Cormic indices mid arm circumference and waist circumference. The Internet journal of Biological Anthropology volume 2 no 2.
- Bardeen, C.R. 1923. General relations of sitting height to stature and of sitting height and stature to weight. Am. J. phys. Anthropol. 355-388.
- Barker, D. 2007. Obesity and early life. Obes. Rev. 8: 45-49.
- Bruce, C. 2001. Anthropometric indicators Measurement Guide. Food and Nutrition Technical Assistance Project Academy for Educational Development, Washington, DC. 20:26-29.
- Burton, R.f. 2015. Sitting height as a better predictor of body mass than total height and (body mass)/(Sitting height)³ as an index of build. Ann. Hum. Bio. 42:210-214.
- Cawley, R.M.C, Keoron, T., Record, R. 1954. Parental stature and birth weight. Am. J. Hum. Genet. 6: 448-456.
- David, H. G. Bridgman, S.A. Davies, S.C., Hine, AL and Emery, R.J. 1993. The shoulder in sickle disease. Bone and joint journal 1: 75(4): 538-545.
- Eveleth and Tanner (28,29). Published data for body proportions and leg length estimated via the sitting height ratio from dazen of human population distributed across most geographic regions of the world. The Cormic index is commonly used to measure of body proportion.
- Eveleth, PB. and Tanner, JM .1976. Word wide variation in woman wide variation in human growth. Cup Archive. Dec. 30.
- Eveleth, PB. and Tanner, JM. 1991. World wide variation in Human Growth. Cambridge university press.
- Gerver, WJ. & De Bruin, R. .1995. Relationship between height, sitting height and sub-sischial length in Dutch- Children: Presentation of normal values. Acta. Paediatr. 84:532-535.
- Ghosh, JR. & Bandyopadhyay, AR.2005. A study on Cormic index among semi urban Bengalee Boys of West Bengal, India Coll Anth. 29(1):33-36.
- Gunnell, DJ et. al. 1998. Childhood leg length and adult mortality follow up to the Carnegie (Boydorr). Survey of Diet and health. Prewar Britain Journal of Epidemiology and Community Health. 52(3): 142-152.
- Gunnell, DJ, Smith, GD, Frankel, SJ, Kempin, Peters, T. J. 1998. Socio-economic and dietary influences on leg length and trunk length in childhood: A reanalysis of the Carnegie (Boyd Orr). Survey of Diet and Health in Prewar Britain (1937-39). Paediatr. Perinat Epidemiol. 12 (suppl.1): 96-113.
- Han, TS, Hooper, JP Morrison, CI and Leo ME. 1997. Skeletal proportion and metabolic disorders in adults. European Journal of Clinical Nutrition. 51(12): 804-809.

16. Indian council of Medical Research 1984. Growth and physical development of Indian Infant and children (Tech report series no. 8 Ansari Nager New Delhi).
17. James, W P.T. and Ralph, A. editors 1994. Population Differences in Body Composition in relation to the Body Mass Index. Euro. J. Clin. Nutr. 48(3).
18. Jarvetin, M. R. 2000. Fetal and infant markers of adult heart disease. Heart 84(2): 219-226.
19. Kushner, R.F. 1992. Human body composition. J Am coll. Nutri ll. 199.
20. Myrskylä, M. 2013. The association between height and birth order evidences from 652518 Swedish men. Journal of Epidemiology and Community Health. 67(7): 571-577
21. Pheasant, S. 1986. Body space: Anthropometry ergonomics and design. Am. J. Phys. Anthropology. 4: 331-334
22. Sebhātu, B 2005. Determining the sensitivity of sitting height in predicting cephalo-pelvic disproportion Eritrea Tropical Doctor. 35(4): 204-206
23. UKwuma, M. C.2010. A study of the Cormic index in a south eastern Nigerian population. The International journal of Biological Anthropology V-4 No 1
24. Van Bogaert L, J 1999. The relation between height, foot length pelvic adequacy and mode of delivery. European Journal of obstetrics and Gynecology and Reproductive Biology 82(2): 195-199