JHER Vol. 24, No. 1, September, 2017, pp. 179 – 189

Establishment of Mean Body Measurements for Development of Block Patterns for Preschool Children (2 to 5 years) in Umuahia and Aba zones of Abia State

Ekumankama, I.O.
Department of Home Science / Hospitality Management and Tourism,
Michael Okpara University of Agriculture, Umudike, Abia State.

and

Igbo, C.A.
Department of Home Economics and Hospitality Management Education
University of Nigeria, Nsukka.

Abstract

The study compared the mean body measurements of preschool children (2 to 5 years) in Umuahia and Aba zones of Abia State. The research design was a survey design. The sample consisted of 928 preschool children who were randomly selected from the population. The research instrument was a Body Measurement Chart (BMC). Data obtained on the measurement of the preschool children (2 to 5 years) in Umuahia and Aba zones were analyzed using means, standard deviation, and student t-test. Results on the comparison of the mean body measurements of the preschool children (2 to 5 years) in Umuahia and Aba zones showed that the differences in the mean body measurements of the subjects in the two zones were non significant (at 0.05 probability level) in most of the body parts that were measured for all the age groups with the exception of 4 year old preschool children. Therefore, the null hypothesis was rejected (at 0.05 probability level) for variables with significant values and accepted for variables with comparable values. The mean body measurements established in this study were recommended for use in teaching pattern drafting, adaptation and alteration in secondary and tertiary institutions in Nigeria.

Key words: Mean, Body, Measurements, Preschool, Children.

Introduction

Infants and children grow rapidly. Children in their rapid growth stage and growth patterns have been shown to differ from one locality to another (Santrock, 2005; Papalia, Olds and Feldman, 2002). The preschool years are between the ages of two (2) to five (5) years. It is an exciting and active period for young children. Research findings revealed that the preschool period is the

period children develop fastest (Papalia, Olds and Feldman, 2002).

Garments for children can be manufactured as made- to-measure (custom-made) or ready -to- wear. They can be made with patterns. A pattern is a piece of paper, drafted and cut to size and shape which is used for sewing dresses. A designer uses a foundation pattern (block pattern) as a basis for making the pattern for a design (style pattern). Successful blocks can only be drafted if the personal measurements are taken accurately in the correct positions of the body (Hosegood 2006; Igbo and Iloeje, 2012 ; Duncan, 2004).

Personal measurements refer to the body measurements needed for drafting the blocks for individual figures. Components of personal or body measurements required for drafting the blocks include, chest/bust, waist, hip/seat, across back/back width, neck size, shoulder, upper arm/biceps, wrist, scye depth, neck to waist/back waist length, waist to hip, cervical height, waist to knee, body rise/crotch, inside leg, sleeve length, head circumference, vertical trunk, leg base, foot, skirt length and trouser length. Accurate personal measurements are required for drafting patterns for constructing perfectly fitted garments. The processes of taking body measurements include the following:

i. Take body measurements over a close fitted garment.
ii. Check that the tape measure is placed correctly.
iii. Determine the waist positions by tying a piece of tape firmly but comfortably around the waist before taking the measurements.
iii. Ensure that the tape measure is not pulled too tightly.
iv. Add allowance for ease of movement to all round measurements (Aldrich, 1999; Aldrich, 2006; Cock, 2003; Weber, 1990). Patterns for preschool children can be produced from the basic blocks namely front bodice, back bodice, front skirt, back skirt, sleeve, front trouser, and back trouser blocks. The use of patterns have been shown to facilitate large scale garment production (Aldrich, 1999; Simplicity Pattern, 2004; Igbo and Iloeje, 2012 ; Duncan, 2004).

Research reports reveal that children in their rapid growth stage and growth patterns have been shown to differ from one locality to another (Santrock, 2005; Papalia, Olds and Feldman, 2002).

Therefore, a comparative study on the establishment of mean body measurements for development of block patterns for constructing perfectly fitted garments of preschool children in Umuahia and Aba zones of Abia State was necessary. This is a measure towards meeting the clothing needs of Nigerian preschool children.

Objectives of Study

The general objective of the study was to compare the mean body measurements of preschool children in Umuahia and Aba zones of Abia State. Specifically, the study,

1. took body measurements of preschool children of ages (2 to 5 years) in Umuahia zone in Abia State.

2. took body measurements of preschool children of ages (2 to 5 years) in Aba zone in Abia State.
3. compared the mean body measurements of the preschool children in Umuahia and Aba zones of Abia State for ages 2 to 5 years.

Hypothesis

The following null hypothesis was tested by the study at 0.05 level of significance:

There are no significant differences in the mean body measurements of the different parts of the body for preschool children (2 to 5 years) in Umuahia and Aba zones of Abia State.

Methodology

***Area of the study*:** The study was carried out in Abia State. The study was carried out in Abia State, Nigeria. Abia State is located in Eastern part of Nigeria. It is bounded in the south by Rivers State, South- East by Akwa-Ibom sharing boundary with Cross River State in the North- East while in the West and South, it shares boundaries with Imo, Anambra and Ebonyi respectively. It is made up of seventeen local government areas. Administratively, preschools and primary schools in the state are zoned under Umuahia, Aba and Ohafia. The Abia State Universal Basic Education Board (ASUBEB) takes charge of the pre-primary and primary schools in the seventeen local governments in Abia State, Nigeria.

The Design and Procedure for the study was as follows: The study design was a survey design. The procedure for the study involved the following:

i. obtaining a sample of the preschool children (2 to 5 years) to measure
ii. taking body measurements at 21 designated parts of the body of preschool children (2 to 5 years) sampled.
iii. Obtaining average body measurements of parts of the body measured.

Population for the study: The population which comprised the entire preschool children (males and females) (2 to 5 years) in Abia State was 44, 865 as at January to June 2006 when the study was conducted. Information on the statistical data on school enrolment in Abia State was collected from the Abia State Universal Basic Education Board (ASUBEB).

Sample for the study: Multistage sampling procedure was used in selecting the sample for the study. Administratively, preschools and primary schools in the state are zoned under Umuahia, Aba and Ohafia. Two zones namely Umuahia and Aba were randomly selected for the study.

Fifty percent of preschool children were randomly selected from each school. Four schools were selected in each zone while eight schools were used for the study. A Simple random technique was used in selecting the children in order to ensure that every child had equal chance of being selected. Altogether, 928 preschool children (males and females) were used as the sample size. The sample size was

considered adequate owing to the fact that the population was homogenous.

Instrument for Data Collection: The research instrument was a Body Measurement Chart (BMC) developed by the researcher on essential body measurements needed for drafting flat patterns and constructing garments for accurate fit. The researcher developed the instrument through a review of literature. The form was developed to collect information in the following aspects: age, location of school, local government area, twenty-one different body parts to be measured namely height, chest/bust, waist, hip/seat, across back/back width, neck size, shoulder, upper arm, wrist, scye depth, neck to waist, waist to hip, cervical height, waist to knee, body rise, crotch depth, inside leg, sleeve length, head circumference, vertical trunk, leg base and foot.

The instrument was validated by five lecturers. Two lecturers each in Textiles and Clothing and Statistics at Michael Okpara University of Agriculture Umudike, Abia State as well as one lecturer in Textiles and Clothing at University of Nigeria, Nsukka, Enugu State validated the instrument. Validation of the instrument was based on content validity.

The body measurements were pretested on (10) pupils in a study area that did not form part of the study. The reliability of the instrument was established using test-retest reliability method. The mean body measurements of pre/post test was 0.84. This indicated high consistency reliability of the instruments.

Data Analysis: Data obtained on the measurements of preschool children in Abia State was analyzed using means, standard deviation and t-test. Mean was used in establishing the mean body measurements of preschool children ages 2 to 5 years in Umuahia and Aba zones of Abia State.

Table 1: Comparison of Average body measurements of preschool children (2 years old) in Umuahia and Aba Zones in Abia State

S/N	Body Parts			Means		Standard deviation		t-test	Remarks
		S_A	S_B	$\overline{X}_A$	$\overline{X}_B$	SD_A	SD_B		
	Height (X_1)	78	51	98.45	95.22	8.04	6.34	2.419	*
	Chest/Bust (X_2)	78	51	54.96	54.94	3.07	4.01	.033	Ns
	Waist (X_3)	78	51	54.22	54.33	3.05	4.71	-.169	Ns
	Hip/seat (X_4)	78	51	58.32	59.02	4.32	5.47	-.808	Ns
	Across Back/Back Width (X_5)	78	51	21.82	20.78	2.66	3.82	1.818	Ns
	Neck size (X_6)	78	51	28.90	30.84	3.27	3.85	-3.081	*
	Shoulder (X_7)	78	51	6.91	7.69	.98	1.24	-3.947	*
	Upper Arm (X_8)	78	51	20.32	21.55	3.03	3.08	-2.237	*
	Wrist (X_9)	78	51	14.12	15.00	1.79	1.98	-.2633	*
	Scye Depth (X_{10})	78	51	11.24	10.31	1.98	1.68	2.770	*
	Neck to waist (X_{11})	78	51	24.03	22.57	2.03	2.89	3.364	*

Waist to Hip (X_{12})	78	51	10.90	11.90	1.78	5.65	-1.466	Ns
Cervical Height (X_{13})	78	51	80.40	80.53	7.01	5.85	-.111	Ns
Waist to Knee (X_{14})	78	51	28.73	27.75	5.00	6.28	.989	Ns
Body Rise /crotch Depth (X_{15})	78	51	14.03	13.73	2.25	3.07	.640	Ns
Inside leg (X_{16})	78	51	42.97	41.53	5.98	7.07	1.247	Ns
Sleeve Length (X_{17})	78	51	37.40	41.98	4.71	5.32	-5.133	*
Head circumference (X_{18})	78	51	50.50	49.37	4.85	6.60	1.117	Ns
Vertical trunk (X_{19})	78	51	112.97	101.86	109.73	13.33	.719	Ns
Leg Base (X_{20})	78	51	17.64	17.98	1.64	3.39	-.759	Ns
Foot (X_{21})	78	51	16.71	16.02	1.88	1.86	2.033	*

S_A = Umuahia Sample; S_B = Aba Sample; $\overline{X}_A$ = Mean for Umuahia ; $\overline{X}_B$ = Mean for Aba; SD_A =Standard Deviation for Umuahia; SD_B =Standard Deviation for Aba; Df = 127; P = 0.05; * =Significant; NS= Non significant.

Table 1 shows non- significant differences (at 0.05 probability level) in the mean body measurements of preschool children in Umuahia and Aba zones in Abia State in most of the variables measured. However, significant values existed between the preschool children in the two zones in their height (t = 2.419), neck size (t = -3.081), shoulder (t = -3.947), upper arm (t = - 2.237), wrist (t = -2.633), scye depth (t = 2.770), neck to waist (t = 3.364), sleeve length (t = -5.133) and foot (t = 2.033).

Table 2: Comparison of Average body measurements of preschool children (3 years old) in Umuahia and Aba Zones in Abia State

S/N	Body Parts			Means		Standard deviation		t-test	Remarks
		S_A	S_B	$\overline{X}_A$	$\overline{X}_B$	SD_A	SD_B		
	Height (X_1)	78	51	102.83	96.26	6.93	7.41	5.098	*
	Chest/Bust (X_2)	78	51	56.61	56.23	3.73	3.57	0.640	Ns
	Waist (X_3)	78	51	53.46	55.93	3.17	3.48	-0.891	Ns
	Hip/seat (X_4)	78	51	59.39	59.94	3.65	5.41	-0.699	Ns
	Across Back/ Back Width (X_5)	78	51	23.74	21.80	3.07	3.82	3.291	*
	Neck size (X_6)	78	51	29.79	31.13	3.27	3.64	-2.559	*
	Shoulder (X_7)	78	51	7.46	8.03	0.85	1.06	-3.608	*
	Upper Arm (X_8)	78	51	22.20	21.74	2.63	3.13	0.950	Ns
	Wrist (X_9)	78	51	15.57	15.40	1.68	1.91	0.618	Ns
	Scye Depth (X_{10})	78	51	11.49	11.76	1.73	1.92	-0.970	Ns
	Neck to waist (X_{11})	78	51	24.66	23.46	2.10	2.51	4.294	*
	Waist to Hip (X_{12})	78	51	11.10	11.84	1.42	2.78	-1.995	*
	Cervical Height (X_{13})	78	51	85.39	80.57	6.26	1033	3.519	*

Waist to Knee (X_{14})	78	51	28.97	27.90	4.51	6.38	1.104	Ns
Body Rise /crotch Depth (X_{15})	78	51	15.07	14.34	1.97	3.03	1.605	Ns
Inside leg (X_{16})	78	51	45.24	42.60	4.54	7.65	2.728	*
Sleeve Length (X_{17})	78	51	40.23	41.59	5.07	5.78	-1.458	Ns
Head circumference (X_{18})	78	51	52.36	50.89	3.81	5.13	1.887	Ns
Vertical trunk (X_{19})	78	51	104.86	103.27	8.78	12.62	0.952	Ns
Leg Base (X_{20})	78	51	18.50	18.77	1.67	3.08	-0.697	Ns
Foot (X_{21})	78	51	17.99	16.69	1.80	1.77	4.209	*

S_A = Umuahia Sample; S_B = Aba Sample; $\overline{X}_A$ = Mean for Umuahia ; $\overline{X}_B$ = Mean for Aba; SD_A =Standard Deviation for Umuahia; SD_B =Standard Deviation for Aba; Df = 127; P = 0.05; * =Significant; NS= Non significant.

Table 2 indicates that there are variations between the mean body measurements of the preschool children (3 years) in Umuahia and Aba zones. The differences were significant in nine body parts namely (t = 5.098), back width (t = 3.291), waist to hip (t = -1.995), cervical height (3.519), inside leg (t = 2.728), and foot (t = 4.209) while the rest recorded non- significant (at 0.05 level of significance).

Table 3: Comparison of Average body measurements of preschool children (4 years old) in Umuahia and Aba Zones in Abia State

S/N	Body Parts	Means						t-test	Remarks
		S_A	S_B	$\overline{X}_A$	$\overline{X}_B$	SD_A	SD_B		
	Height (X_1)	173	162	106.94	104.76	9.89	5.93	2.430	*
	Chest/Bust (X_2)	173	162	58.46	59.55	5.03	5.73	-1.858	Ns
	Waist (X_3)	173	162	55.97	57.12	3.74	4.67	-2.502	*
	Hip/seat (X_4)	173	162	59.14	60.48	10.37	4.69	-1.503	Ns
	Across Back/ Back Width (X_5)	173	162	22.98	22.83	3.13	4.52	.368	Ns
	Neck size (X_6)	173	162	30.31	31.88	3.75	3.54	-3.949	*
	Shoulder (X_7)	173	162	7.71	8.30	1.14	1.71	-3.746	*
	Upper Arm (X_8)	173	162	21.10	22.12	3.45	4.11	-2.482	*
	Wrist (X_9)	173	162	14.82	16.29	1.90	3.28	-5.079	*
	Scye Depth (X_{10})	173	162	12.68	11.44	9.73	2.00	1.589	Ns
	Neck to waist (X_{11})	173	162	25.57	25.03	2.90	3.74	1.485	Ns
	Waist to Hip (X_{12})	173	162	12.92	15.46	9.43	10.25	-2.630	*
	Cervical Height (X_{13})	173	162	88.94	89.19	9.39	5.36	-.303	Ns
	Waist to Knee (X_{14})	173	162	32.79	28.70	7.02	7.26	5.231	*
	Body Rise /crotch Depth (X_{15})	173	162	15.93	18.06	5.70	11.74	-2.134	*
	Inside leg (X_{16})	173	162	49.57	47.57	4.12	6.95	3.227	*
	Sleeve Length (X_{17})	173	162	41.68	44.04	4.66	4.06	-4.914	*

Head circumference (X_{18})	173	162	53.26	53.51	7.00	5.83	-.348	Ns
Vertical trunk (X_{19})	173	162	105.85	105.72	12.75	14.64	.085	Ns
Leg Base (X_{20})	173	162	18.56	18.64	2.28	2.28	-.302	Ns
Foot (X_{21})	173	162	18.09	17.84	2.14	2.02	1.113	ns

S_A = Umuahia Sample; S_B = Aba Sample; $\overline{X}_A$ = Mean for Umuahia ; $\overline{X}_B$ = Mean for Aba; SD_A =Standard Deviation for Umuahia; SD_B =Standard Deviation for Aba; Df = 127; P = 0.05; * =Significant; NS= Non significant.

Significant differences between the mean body measurements of the preschool children (4years) in Umuahia and Aba zones were obtained in their height (t = 2.430) waist (t= -2.502), neck size (t = -3.949), shoulder (t = -3.746), upper arm (= - 2.482), wrist (t = -5.079), waist to hip (t = -2.360), waist to knee (t= 5.231), body rise/crotch depth (t=-.134), inside leg (t = 3.227), and sleeve length (t = 4.914) as shown in Table 3.

Table 4: Comparison of Average body measurements of preschool children (5 years old) in Umuahia and Aba Zones in Abia State

S/N	Body Parts			Means				t-test	Remarks
		S_A	S_B	$\overline{X}_A$	$\overline{X}_B$	SD_A	SD_B		
	Height (X_1)	173	162	109.53	106.36	6.57	5.89	5.341	*
	Chest/Bust (X_2)	173	162	59.90	59.45	5.07	5.06	0.989	ns
	Waist (X_3)	173	162	57.91	57.78	4.32	5.23	0.274	ns
	Hip/seat (X_4)	173	162	61.99	60.46	4.65	6.38	2.740	*
	Across Back/Back Width (X_5)	173	162	24.48	23.08	2.82	5.04	3.670	*
	Neck size (X_6)	173	162	32.05	31.86	3.47	3.49	0.686	ns
	Shoulder (X_7)	173	162	8.12	8.61	1.16	1.01	-5.264	*
	Upper Arm (X_8)	173	162	23.17	22.71	2.85	4.33	1.330	ns
	Wrist (X_9)	173	162	16.03	16.27	1.83	3.24	-0.967	ns
	Scye Depth (X_{10})	173	162	12.15	12.97	2.14	2.41	-3.744	*
	Neck to waist (X_{11})	173	162	26.12	25.79	2.54	3.55	1.145	ns
	Waist to Hip (X_{12})	173	162	12.10	12.98	6.07	6.39	-1.545	ns
	Cervical Height (X_{13})	173	162	92.63	89.08	9.79	10.34	3.789	*
	Waist to Knee (X_{14})	173	162	32.92	30.07	7.44	7.45	3.966	*
	Body Rise /crotch Depth (X_{15})	173	162	17.00	15.79	7.92	4.56	2.108	*
	Inside leg (X_{16})	173	162	49.53	48.92	4.31	5.36	1.389	ns
	Sleeve Length (X_{17})	173	162	43.91	44.30	4.40	4.56	-0.921	ns
	Head circumference (X_{18})	173	162	54.30	54.30	4.60	6.23	-0.017	ns
	Vertical trunk (X_{19})	173	162	109.83	107.50	9.21	11.22	2.433	*
	Leg Base (X_{20})	173	162	19.50	19.35	2.45	2.23	0.719	ns
	Foot (X_{21})	173	162	19.09	18.58	2.10	2.01	2.716	*

*Significant S_A = Umuahia Sample; S_B = Aba Sample; $\overline{X}_A$ = Mean for Umuahia ; $\overline{X}_B$ = Mean for Aba; SD_A =Standard Deviation for Umuahia; SD_B =Standard Deviation for Aba; Df = 127; P = 0.05; * =Significant; NS= Non significant.

Table 4 indicates that the mean body measurements of the preschool children (5 years old) in Umuahia zone were higher than those of their age mates in Aba zone in most of the body parts that were measured. The same mean (54.30cm) was recorded for the head circumference, for the two groups of preschool children. Also, significant values were recorded in ten body parts while the rest had non-significant values (at 0.05 probability level).

Findings of the Study

The following findings were made:

1) The mean body measurements of the preschool children increased as the ages of the subjects increased for all the variables that were measured. (See Tables 1, 2, 3 and 4).
2) Preschool children (ages 2, 3 and 5) in Umuahia zone had higher average body measurements in a greater number of body parts that were measured compared to their age mates in Aba zone (See Tables 1, 2, 3 and 4).
3) The subjects who were 4 years old in Aba zone had higher mean measurements in a greater number of body parts that were measured compared to their age mates in Umuahia zone (See Table 3) .
4) The differences in the average body measurements of the subjects in the two zones were non significant (at 0.05 probability level) in most of the body parts that were measured for all the age groups with the exception of 4 year old preschool children as presented in Tables 1, 2, 3 and 4.

Discussion

The grand mean body measurements of preschool children (2 to 5 years) in Umuahia and Aba zones of Abia State, Nigeria were established for the following variables: height, chest/bust, waist, hip/seat, across back/back width, neck size, shoulder, upper arm/biceps, wrist, scye depth, neck to waist/back waist length, waist to hip, cervical height, waist to knee, body rise/crotch, inside leg, sleeve length, head circumference, vertical trunk, leg base, foot, skirt length and trouser length. Results from this study revealed that the average body measurements of the preschool children increased as the ages of the subjects increased for all the variables measured. A similar report were made by Aldrich (1999) and Schlenker *et al.* (1996) who recorded an increase in the mean body measurements of British preschool children as the ages of the children increased. According to Santrock (2005) changes in body proportion and appearance will be attributed to the growth of muscles and bones. Hence, bone growth results in increased stature. In view of this, Halliburton and Gable (2002) also reported that in early childhood, changes in bone proportions are prominent. Hence, a gradual lengthening of the body occurs as bone and muscle growth progress. The individual therefore changes from appearance of a baby to that of a young child.

Results from the study showed that there were variability in the mean body measurements of preschool children in

the various locations that were used for the study. Preschool children (2, 3, and 5years) in Umuahia zone had higher mean body measurements in a greater number of body parts that were measured compared to their age mates in Aba zone. Alternatively, the subjects who were 4 years old in Aba zone had higher mean body measurements in a greater number of body parts that were measured compared to their age mates in Umuahia zone. However, non significant values (at 0.05 probability level) existed in the mean body measurements of the subjects in the two zones in most of the body parts that were measured with the exception of 4 year old preschool children as shown in Tables 2,3,4 and 5. The null hypothesis which states that there are no significant differences in the mean body measurements of the different parts of the body for preschool children (2 to 5 years) in Umuahia and Aba zones was therefore rejected for variables with significant values (at 0.05 probability level) in their average body measurements. However, the null hypothesis was accepted for other variables where comparable values were obtained. Research studies have shown that individual differences become observed more frequently in early childhood. These characteristics are based on biological, cultural and social factors and are very noticeable in the difference between females and males for example, differences occur in the rate of growth, height, weight, motor skills, sex-role development, aggression and other related aspects (Lloyd and Lederman, 2002; WHO, 2000; Peisner-Feinberg, 2004). Other aspects where unique differences in development occur involve broader social class and ethnic group characteristics, personality difference due to birth order among siblings and expressions of creativity. In the study of the development of infants and children , it has been shown that all children are different. (Bigner, 1983; Huston, Mcloyd and McColl, 1994). Similarly, Okeke; Madukwe; Eme and Nwagbo (2013) investigated the anthropometric and nutrient intake of pre-school children (2-5years) in Nsukka Local Government Area of Enugu State, Nigeria and reported that socio-economic/ cultural factors do affect child growth. Therefore, individual differences occur in the rate of growth, height, weight, and other related aspects of preschool children.

Conclusion

The mean body measurements of preschool children (2 to 5 years) in Umuahia and Aba zones in Abia State have been established in this study. Home Economics teachers and lecturers as well as their students in tertiary institutions can use the average body measurements in drafting patterns for different body sizes of preschool children. This is necessary for meeting the heavy demand for Nigerian children's clothing following the ban on importation of clothing. Hence, Nigeria can export children's commercial patterns and garments to other African countries with similar body structure.

Recommendations

The following recommendations were made based on the findings of this study:

1. The mean body measurements of preschool children in Umuahia and Aba zones should be provided to students who are undertaking courses in textiles and clothing for use in pattern drafting.
2. the mean body measurements of preschool children in Umuahia and Aba zones should form data base for commercial pattern production in Nigeria which is necessary for large scale garment production. Hence, Nigeria can export children's commercial patterns and garments to other African countries with similar body structure.
3. the mean body measurements of the preschool children (2 to 5 years) in Umuahia and Aba zones can serve as anthropometric data that can be useful in evaluating the nutritional and growth status of preschool children in Abia State.

References

Aldrich, W (1999). *Metric Pattern Cutting for Children's Wear and Babywear.* Britain Blackwell Science.5-192.

Aldrich, W (2006). *Metric Pattern Cutting.* Britain Blackwell Science. .5-189

Bigner, J.J (1983). *Human Development. A lifespan Approach* ,New York; Macmillan Publishing Company Incorporated.1-486.

Cock, V.I. (2003) *Dressmaking Simplified.* Oxford: Blackwell Science Limited.48-50.

Duncan, B.T (2004) *Sewing Clothes for Children.* Mississippi State University Extension Service Co-operating with U.S. Department of Agriculture File :/ ^ /Access 03\shared Doc.s\CC.htm.

Halliburton, A and Gable; S (2002) How Children Develop During the Preschool Years. Missouri-Columbia: Mu Extension Publications Missouri-Columbia University, DMCA 1-8.

Hosegood, B. (2006) (Ed). *The Complete Book of Sewing* : London Dorling Kindersley Limited

Huston, A.C; Mcloyd, V.C; McColl, C.G. (1994). *Children and Poverty Issues: In Contemporary Research. Child Development Journal* (65) 275-282.

Igbo, C.A. and Iloeje, C.I (2012) *The Basics of Dress Pattern Drafting*: Nigeria Inselberg (Nigeria) Limited. 1-35.

Lloyd, M.E.and Lederman, S.A. (2002). Anthropometry and Moderate Malnutrition in Pre-School Children. *Indian Journal Pediatrics*, (69) 771-774.

Okeke, E.C.; Madukwe, E.U.; Eme,P.E.and Nwagbo E.C (2013) *Anthropometric Status and Nutrient Intake of Pre-school Children (2-5 Years) in Nsukka Local Government Area of Enugu State, Nigeria. Journal of Home Economics Research (JHER)*(19), December,2013.

Papalia, D.E, Old, S.W and Feldman, R.D (2002). *A Child's World: Infancy Through Adolescence* New York. McGraw Hill Companies .210-262.

Peisner-Feinberg ES, Child Care and its Impact on Young Children's Development Montreal Queber: Center of Excellence for Early Childhood Development; 2004 Retrieved from http :// www.excellence-early childhood.ca/documents/ Peisner-Feinberg ANGxp.pdf

Santrock, J.W (2005) *Children.* United States of America. McGraw Hill Companies Incorporate .275-374.

Schlenker, E.D; Pipes,P; Trahms, C.M (1996) *Nutrition Through the Life Cycle* Worthington-Roberts and Williams, C.R (Ed) U.S.A. McGraw Hill. 278-309.

Simplicity Patterns (2004) Simplicity Sewing Patterns-The Home Sewing resource for Fashion, Crafts, Costumes and Home Decoration. Simplicity Pattern Company Incorporated File:/^\Access 03\ Shared Docs\ a.htm. 1-3.

Weber, J (1990) *Clothing: Fashion. Fabrics. Construction*: New York. McGraw-Hill. 12-18, 58, 240-247, 255-258.

WHO (2000). *Global Database on Child Growth and Malnutrition: Forecast of Trend*. Document WHO/NHD. Geneva: WHO.