Journal of Biomedical Investigation, 2011 9(1 & 2): 32 - 36

ANTHROPOMETRIC CHARACTERISTICS OF LACTATING AND NON-LACTATING WOMEN IN A NIGERIAN OUT-PATIENT CLINIC

Ezeukwu A.O.*, Onuoha I.C.*, Nwankwo M.J.*Egwuonwu A.V.*,
*Department of Medical Rehabilitation, University of Nigeria, Enugu Campus
*Department of Medical Rehabilitation, Nnamdi Azikiwe University, Nnewi Campus.

***Corresponding Author**: A.O. Ezeukwu, Department of Medical Rehabilitation, Faculty of Health Sciences & Technology, University of Nigeria, Enugu Campus. E-mail: leo_ninus@yahoo.com*

ABSTRACT

Objective: The present study was aimed at comparing the anthropometric characteristics of postpartum lactating women and non-pregnant non-lactating women.

Materials and Methods: Data was obtained from lactating and non-lactating women attending Institute of Child Health (ICH), University of Nigeria Teaching Hospital (UNTH), Enugu. Weight, height, Body Mass Index (BMI), waist circumference, hip circumference, waist to hip ratio and percentage body fat were determined. Independent t-test was used to analyse the differences between the groups. Level of significance was set at $P<0.05$.

Results: The participants' age ranged from 18-32 years. There was no significant difference ($P>0.05$) in the Body Mass Index, waist circumference and hip circumference of lactating and non-lactating women. There was a significant difference in waist to hip ratio ($P=0.020$) and postpartum duration ($P=0.000$) of lactating and non-lactating women.

Conclusion: There is no significant difference in the BMI, waist circumference and hip circumference and percent body fat of lactating and non-lactating women. A significant difference exists between the waist-hip ratio of lactating and non-lactating women.

KEYWORDS: ***Anthropometric, Lactating, Non-Lactating, Out-Patient Clinic, Postpartum.***

INTRODUCTION

Lactation has been defined as the period after child birth during which milk is secreted from the breast (Steadman, 2000), which reaches its full functional capacity during this period (Geddes,2007). The average Nigerian adult will always believe that a breast feeding woman will naturally have more nutrients to enable her meet the challenges and needs of lactation. This implies that the woman may be anthropometrically or nutritionally disadvantaged when compared to her non-lactating contemporaries. During lactation dynamic changes occur in the body composition as the body reverts to its pre partum state (Wong et al,1989). Questions of relevance have always arisen when body composition techniques that are validated in normal adults are applied to post partum lactating women because of changes in fat distribution and metabolism that occur during lactation (Wong et al, 1989).

Anthropometry is fast becoming a household name on the lips of many human scientists and clinicians interested in physical activity or nutrition. In essence, anthropometric measurements are fast emerging as important

indicators of physical status of individuals and populations which in turn highlights their nutritional status and history of their economic development (Singh, 2002). It is frequently used as a valuable instrument to determine health and disease, to define nutritional status, to assess growth and development and to determine differences in body proportion between populations (WHO,1995). Failure to return to pre-pregnancy weight after childbirth is of great concern to women particularly those who gain weight excessively during pregnancy. Many women associate these anthropometric changes to one or more of their pregnancies (Ohlin & Rossner, 1990).

In the last two decades the energetic impact of lactation have continually been assessed by measuring the anthropometric changes or differences in breastfeeding women (Valeggia & Ellison,2003). Even though literature on the anthropometric characteristics of lactating women has remained controversial, there is no known visible literature among Nigerian women addressing this gap. Hence, the need to assess the anthropometric characteristics of lactating women with a view to comparing with their non-lactating counterparts.

MATERIALS AND METHODS

Research Design.

A case-control design was used.

Method of data Collection

Ethical approval was obtained from the Ethical Committee University of Nigeria Teaching Hospital, Ituku – Ozalla, Enugu. The study was carried out at the Institute of Child Health (ICH) of the University of Nigeria Teaching Hospital Enugu (UNTH, Old site). An informed consent was obtained from a convenience sample of lactating and non-lactating mothers. Weight in kilogrammes was measured without shoes by using digital scale and was recorded. Height in metres was measured with the subjects in a standing position against a wall without shoes and the shoulders in a normal anatomical position. BMI was calculated as weight in kilograms divided by the height in meter squared. Waist circumference was measured at the point halfway between the lower border of the ribs and the iliac crest in a horizontal plane (Dalton et al,2003), and hip circumference was measured at the widest level over the greater trochanters. The waist to hip ratio was calculated as the waist circumference divided by the hip circumference. Percentage body fat was calculated according to the method described by Lean et al (1996).

METHOD OF DATA ANALYSIS

The SPSS (version 15) software was used for statistical analysis. The independent t-test was used to compare the anthropometric characteristics of lactating and non-lactating women. Level of significance was set at $P<0.05$.

RESULTS

Participants

A total of 60 (30 lactating and 30 non-lactating) women aged between 18-32 years participated in this study. All the lactating women were married while 23 out of the non-lactating women were married. The highest educational attainment of majority of the participants was primary education (Table 1). The anthropometric characteristics of the participants are shown in (Table 2). There was a significant difference in the waist-hip ratio ($P=0.020$) and post-partum duration ($P=0.000$) of lactating and non-lactating women.

Table 1: Marital and Educational Characteristics of the Participants

Variable	Non-lactating n(%)	Lactating n(%)
Marital Status		
Single	7(23.3)	0(0)
Married	23(76.7)	30(100)
Highest Educational status:		
Primary	20(66.7)	18(60.0)
Secondary	7(23.3)	8(26.7)
Tertiary	3(10.0)	4(13.3)

Keys: n= number of respondents; %=Percentage.

Table 2: Comparison of Characteristics of lactating and non-lactating women

Parameters	Non-lactating X±SD	Lactating Mean±SD	P value
Age (years)	25.33±3.86	25.00±4.00	0.860
Body Mass Index(kg/m^2)	24.79 ±4.05	24.09 ±2.62	0.430
Waist circumference(cm)	80.77±7.52	83.63±6.63	0.120
Hip circumference (cm)	98.87±7.91	98.50±7.27	0.850
Waist to hip ratio	0.82±0.04	0.85±0.06	0.020*
Percentage body fat	31.57±3.68	32.75±3.31	0.200
Parity	4.10±1.71	4.11±1.66	0.120
Last Postpartum duration (months)	19.12±3.41	3.40±1.11	0.000*

* = t-test is significant at P<0.05; SD=Standard Deviation

DISCUSSION

Anthropometric measurements are useful criteria for assessing nutritional status as well as extrapolation of health risks. BMI is increasingly being used as a measure of nutritional adequacy and is considered to be a better indicator of chronic energy deficiency (Readdy et al, 1992). The BMI values of the participants in this study fall within the limits of the normal range for BMI values in normal adults, that is 18.5-24.9 as described by WHO (1995). The waist circumference, hip circumference and also percentage body fat equally had no significant difference among the lactating and non-lactating women. However, there was a significant difference in the waist to hip ratio of lactating and non-lactating women. There is a general conception that pregnancy and lactation place extra demands on the woman's general body systems and thus there should be a great difference between the anthropometric characteristics of lactating and non-lactating women. It has been noted that lactating mothers will lose their body weight post partum if they do not compensate with additional food intake (Sarkar & Taylor, 2005). Also, exclusive breast feeding helps in

postpartum weight reduction (Marie et al, 1989). Hora and Roberts (2000) argued that the tendency of developing obesity at the postpartum period only arises in women who are already obese during pregnancy.

The only anthropometric index with a significant difference was the waist to hip ratio of lactating and non-lactating women. It is possible that this is due to the process of involution that is still taking place in the lactating women. This could also be accounted for by the fact that after child birth the abdominal muscles may become flabby resulting from abdominal stretch. Emphasis should be laid on the importance and practice of post partum exercises to reverse this trend during the lactating period. The results of this study should be interpreted with caution as comparing these findings with normal range values in normal healthy subjects may affect the validity of the findings. It has been noted that the alterations that occur during normal human pregnancy can affect the biological meaning of anthropometric measurements (Scholl et al, 1990).

CONCLUSION

There is no significant difference in the BMI, waist circumference and hip circumference and percent body fat of lactating and non-lactating women. A significant difference exists between the waist-hip ratio of lactating and non-lactating women. The results of this study should be interpreted with caution as they do not imply causal inferences. There may be a need to conduct prospective studies on anthropometric changes in lactating women. There is also a need to carry out population based studies on the anthropometric characteristics of lactating women as hospital patients may not be used to extrapolate or generalize to the entire population.

REFERENCES

1. Stedman TL (2000). Stedman's Medical Dictionary.27th edn. Baltimore: Lippincott Williams & Wilkins.
2. Geddes DT(2007). Inside the Lactating Breast: The Latest Anatomy Research. J Midwifery Women Health. 52:556-563.
3. Wong W W, Butte N F, Smith E O, Garza C & Klein P D (1989). Body Composition Of Lactating Women Determined by Anthropometry and Deuterium Dilution. British Journal of Nutrition. 61: 25-33
4. Singh SP (2002). Anthropometric Perspective on Nutritional Status. In Anthropology : Trends and Applications (M K Basin and S L Malik, eds.). Anthropologist.1: 73-82
5. World Health Organisation (1995). Physical Status: The Use and Interpretation of Anthropometry. Technical Report Series 854, Geneva.1995
6. Ohlin A & Rossner S (1990). Maternal Body Weight Development after Pregnancy. International Journal of Obesity.14:159-173.
7. Valeggia C R & Ellison P T (2003). Impact of breastfeeding on Anthropometric Changes in Peri-urban Toba Women (Argentina). American Journal of Human Biology. 15: 717-724.
8. Dalton M, Cameron AJ, Zimmet PZ, Shaw JE, Jolley D, Dunstan DW, Welborn TA; AusDiab Steering Committee (2003). Waist Circumference, Waist-hip Ratio and Body Mass Index and Their Correlation with Cardiovascular Disease Risk Factors in Australian Adults. J Intern Med; 254: 555-63.
9. Lean MEJ, Han TS & Decuenberg P (1996). Predicting Body Composition by Densitometry from Simple Anthropometric Measurements. Am J Clin Nutr. 63: 4 –14.
10. Ready V, Sheker M, Rao P & Gillespie S (1992). Nutrition on India. National Institute of Nutrition, Hydrabad.
11. Sarkar N R and Taylor R (2005). Weight Loss During Prolonged Lactation in Rural Bangladeshi Mothers. J Health Popul Nutr. 23(2): 177-183.

12. Marie M Brewer, Meredith R Rates and Linda P V (1989). Postpartum Changes in Maternal Weight and Body Fat Depots in Lactating vs non Lactating Women. Am J Gun Nutr. 49:259-65.
13. Hora S & Roberts BF(2000). A Longitudinal Study of Maternal Anthropometric Changes in Normal Weight, Overweight and Obese Women During Pregnancy and Postpartum. British Journal of Nutrition.84:95- 101.
14. Scholl T O, Hediger M L & Ances I G (1990). Maternal Growth During Pregnancy and Decreased Infant Birth Weight. American Journal of Clinical Nutrition. 51: 790-793.