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NUTRITIONAL IMPLICATIONS FOR ANTHROPOMETRIC MEASUREMENTS AMONG PREGNANT TEENAGERS IN DELTA NORTH SENATORIAL DISTRICT OF DELTA STATE

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ABSTRACT

The study involved the anthropometric assessment of weight, height, arm circumference and triceps skinfolds of 180 pregnant teenagers that were randomly selected from 3 Local government Areas of Delta North Senatorial District of Delta State, to evaluate the nutritional implications of food consumption among them. Weighing was done after a full meal using a weighing balance, with minimal clothing after emptying the bladder. Height was measured against a wall using a calibrated measuring rod, arm circumference with a measuring tape and skin fold calliper was used for measurement of triceps skinfolds to determine the amount of subcutaneous fat. Result recoded for weight was (< 30kg=2.75%; 31.4kg=9.44%; 41-50kg=37.78%; 51kg- above=50%); height recorded (1.1-1.4m= 7.22%; 1.5-1.7m= 87.78%; 1.8m-above= 5%). The mean arm circumference of 24.8-25.2 cm was recorded among 37 respondents, while the range of triceps skinfolds from 9.2 to 9.5mm had the highest number of pregnant teenagers (29: 16.11%). Consequently, it was recommended that pregnant teenager should be counselled to eat enough balanced diet at the onset of pregnancy to lay down more fat stores in their early months.

Key words: Anthropometry, pregnant teenagers.

INTRODUCTION

The nutritional status of people refers to the condition of their health as determined by the metabolic conversion and assimilation of nutrients. The overall nutritional health of a body is determined by the total nutritional status with respect to each needed nutrient. Onyebueke and Souza (2003) identified three levels of nutritional statuses to comprise desirable nutrition, under nutrition and over nutrition respectively. They noted that the nutritional status of an individual for a particular nutrient is desirable when body tissues have adequate supply of the nutrient to sustain normal metabolic processes of the body with surplus for storage.

Pregnant teenagers refer to women (between 13-19 years) who have not reached legal adulthood, who become pregnant. It is believed that most pregnant teenagers lack basic nutritional knowledge of proper feeding habit towards their developing foetus as it relates to their health. Some pregnant teenagers however take pleasure in snacking, skipping meals, dieting, eating away from home. Good nutrition is important for the health and reproductive performance of women and healthy survival and development of their child. Malnutrition in pregnancy is not conspicuous and remains to a large extent uncounted and unreported. It has often been suggested that some highly publicized initiatives such as “child survival and safe motherhood” might not have impacted significantly, because too little attention had been given to the nutritional status of women especially the pregnant teenagers. (Mora and Nestel, 2000).

MEANING OF ANTHROPOMETRY

Anthropometry is a measurement technique employed in the evaluation of growth and development in neonates, children, adolescents and pregnant women. The technique is chiefly concerned with measurement of the various physical components of the body at different age levels and degrees of nutrition (Onyebueke and Souza, 2003). The writers asserted that the components measured to determine the nutritional status in anthropometric assessment include weight, height, head circumference, arm circumference and triceps skinfolds.

CONCEPTUAL FRAMEWORK

Poor feeding in childhood has both reproductive consequences as well as long term effects on adult physical and intellectual productivity when one grows up. The nutritional health of pregnant teenagers is determined by the sum of their nutritional status with respect to each of the nutrient required. The nutritional fitness is usually determined by carrying out a nutritional assessment of the pregnant teenagers.

One important assessment of the nutritional status of pregnant teenagers is the use of anthropometric measurements of height, weight, body skin folds and arm circumferences. Anthropometric measurements deal with the measurements of body weight, the heights, circumference and thickness of parts of the body. Such data becomes necessary when assessing the outcome of nutritional exposures of the pregnant teenagers.

STATEMENT OF THE PROBLEM

An undisclosed number of teenagers become pregnant each year in Delta North Senatorial District. Many of these pregnant teenagers suffer from both ongoing nutrition deficiencies and the long-term cumulative consequences of under nutrition during childhood. Pregnancy-related health and nutritional problems affect a woman's life, that of her unborn baby and neonates well beyond delivery. The impact of women's prenatal health and nutritional status on child growth, health, survival and development is both through their reproductive performance and survival and through foetal growth and development. Poor health and nutrition are associated with repeated, closely spaced pregnancies that progressively reduce women's nutritional reserves to the point of nutritional depletion known as **maternal depletion syndrome** (MDS) which can predispose them to anaemia or pregnancy complications such as high blood pressure as well as premature labour. With a steadily growing underage female population that is highly vulnerable to poverty and unprotected sex, their food consumption habit may be affected. This could lead to under nutrition and its adverse effects on the health, social, and economic development of the pregnant teenagers. The implications of food consumption habit on the pre-natal nutrition of underage pregnant teenagers provide a compelling rationale for systematic stronger action in Delta North Senatorial District.

FEEDING PATTERN OF PREGNANT TEENAGERS

The feeding habit of pregnant teenagers entails their attitude towards their feeding, frequency of eating, choice of food and mode of preparation which may vary from once a day to three times daily (Uddoh, 1988). Sometimes they show preference for peppery and over spiced food. Generally, the mothers' appetite usually increases during pregnancy. Where there is abundance of food, excessive eating and undue weight gain are not uncommon, although there is in fact a normal physiological tendency to lay down more fat stores in the earlier months (Sci-Tech Encyclopedia, 2009). Appetite for particular foods and drinks, or rejection of others, can be sudden. Occasionally the nausea of morning sickness, which is common in early pregnancy, may extend to other times of the day, may be more severe than usual, and may be accompanied by vomiting.

During pregnancy, the pregnant teenager is eating for both herself and her baby. At least in the later stages of pregnancy she needs to consume more energy than usual, but this does not mean twice as much (StorkNet, 2010a). The average weight gained during pregnancy is about 10-12kg. There is no merit in putting on less than that, but there are disadvantages in gaining much more. Carrying excess weight is tiring. It can also increase the risk of problems such as backache, diabetes and varicose veins (StorkNet, 2010a).

On the other hand the nutritional needs of pregnant teenagers are the greatest at a time when it is most difficult to meet them (Gutierrez and King, 1993). Pregnant teenagers have a higher rate of poor eating habit than older women and are less likely to take recommended daily prenatal multivitamins to maintain adequate nutrition during pregnancy. Teenagers are more likely to smoke cigarettes, drink alcohol, or take drugs during pregnancy, which can cause health problems for the baby (Swierzewski, 2007). Gutierrez and King (1993), further reported that dieting, skipping meals, snacking, eating away from home, consuming fast foods, and trying unconventional diets are common eating habits among adolescents, which relate to their changing lifestyle of increased independence, busy schedules, search for self-identity, peer influence, group conformity and body image dissatisfaction. On balance, the total nutritional needs of teenagers who are at least 2 years post-menarche are similar to those of the pregnant adult. Unfortunately most of the teenagers usually enter pregnancy with reduced nutrient stores and increased risk of nutritional deficiencies because of their poor dietary habits.

THE CONCEPT OF PREGNANCY

According to National Research Centre for Women and Families (2001) teenage pregnancy is defined as a teenage or underage girl (usually within ages 13-19) becoming pregnant. The term in everyday speech refers to women who have not reached legal adulthood, who become pregnant. Studies show that around 34% of girls become pregnant in their teens. Teenage pregnancy in developed countries is usually outside of marriage, and carries a social stigma in many communities and cultures. In other countries and cultures, especially in the developing economies, teenage pregnancy is usually within marriage and does not involve a social stigma. This is true of Northern Nigeria where teenagers are married off early in life and bear children. In other parts of Nigeria like southern and eastern Nigeria, teenage pregnancy is a social issue that causes enormous concern and involves a major social stigma. Worldwide rates of teenage pregnancy range from 143 per 1000 in some sub-Saharan African countries to 2.9 per 1000 in South Korea (Wikipedia, 2010). It is reported that the teenage birth rate in the United States is the highest in the developed world, with an attendant abortion rate that is also high. In Nigeria and Niger, teenage pregnancy is put at 103 and 233 respectively per 1000 women aged 15-19 (Wikipedia, 2010).

PURPOSE OF STUDY

The main purpose of the study was to use anthropometric studies to examine the nutritional efficiency among pregnant teenagers in Delta North Senatorial District of Delta State.

Specifically, the study seeks to:-

1. Measure the weight and height of pregnant teenager from Ukwani, Aniocha and Ika South Local Government areas of Delta State.
2. Determine the arm circumference and tricep skin fold of the pregnant teenagers.

METHODOLOGY

The study comprised of an ex-post-facto research designed to assess the nutritional efficiency among pregnant teenagers through the use of anthropometric measurements. 180 respondents were sampled from a population of 236 pregnant teenagers aged between 13 – 19 years, identified from 25 communities from 3 Local Government Areas of Delta North Senatorial District and used in the study. The anthropometric measurements were manually carried out. Weighing was done after a full meal using a weighing balance. It was done with minimal clothing on, and after the bladder had been emptied. Height was measured against a wall using a calibrated measuring rod, with the respondents standing upright on a level ground without raising their feet. Skin fold callipers were used to measure the skin folds to determine the amount of subcutaneous fat.

RESULTS AND DISCUSSION

Table 1: Weight of the pregnant teenagers

Weights(Kg)	Ukwani	Aniocha	Ika South	Σ
\leq 30kg	-	2 (3.28%)	3 (4.05%)	5 (2.78%)
31.40kg	2 (4.44%)	5 (8.20%)	10 (13.51%)	17 (9.44%)
41-50kg	18 (40.00)	26 (42.62%)	24 (32.43%)	68 (37.78%)
51- above	25 (55.56%)	28 (45.90%)	37 (50.00)	90 (50.00%)

From Table 1 only 2.78% of the pregnant teenagers pooled from Aniocha and Ika South Local Government Areas weighted about 30kg. Most pregnant teenagers from Ukwani 25 (55.56 percent), Aniocha 28 (45.9 percent) and Ika South 37 (50 percent) weighted between 51 kg and above, the highest weight range among the respondents, while a comparable percentage weighed between 41.50kg, suggesting that most of the pregnant teenagers are not underweight. The table further revealed that most pregnant teenagers had normal weights, with 90 percent weighing between 51kg and above as against the standard weight of 54kg for females of 16-18 years of age. This implied that most pregnant teenagers studied had normal eating habit, in contrast to the suggestions of Swierzewski (2007).

Table 2: Height of the pregnant teenagers (meters)

Heights(m)	Ukwani	Aniocha	Ika South	Σ
Less than 1m	-	-	-	-
1.1-1.4m	2(4.44%)	4 (6.56%)	7 (9.45%)	13 (7.22%)
1.5-1.7m	38 (84.44%)	57 (93.44%)	63 (85.14%)	158(87.78%)
1.8 m-above	5 (11.11%)	-	4 (5.41%)	9 (5.00%)

From Table 2, the height of 158 respondents from the Delta North senatorial district was comparable. 38 (84.44%); 57 (93.44%) and 63 (85.14%) respondents from Ukwani, Aniocha and Ika South Local Government Areas respectively were between 1.5 to 1.7 meters tall. Only 5 pregnant teenagers from Ukwani L.G.A and 4 from Ika South L.G.A recorded heights reaching 1.8 meters and above. It was also noted that pregnant teenagers of below average height were recorded in the 3 L.G.A namely Ukwani 2, Aniocha 4 and Ika South 7 with heights ranging from 1.1 – 1.4 meters. Furthermore, only 7.22 percent of the respondents measured below the standard height of 1.63 meters.

Table 3: Arm circumference of the pregnant teenagers (cm)

i=0.5	Ukwani	Aniocha	Ika South	Σ	Percent
22.3-22.7	3	-	3	6	3.33
22.8-23.2	5	13	6	24	13.33
23.3-23.7	5	5	7	17	9.44
23.8-24.2	8	13	12	33	18.33
24.3-24.7	7	3	6	16	8.89
24.8-25.2	9	13	15	37	20.56
25.3-25.7	8	6	6	20	11.11
25.8-26.2	-	5	8	13	7.22
26.3-26.7	-	1	9	10	5.56
26.8-27.2	-	2	2	4	2.22
=	45	61	74	180	

Table 3 revealed that most pregnant teenagers from Delta North Senatorial District have arm circumference far above the standard 90%. Onyebueke and Souzey, (2003) stipulated that female adolescents of 13-17 years should have arm circumference of 22.4 to 24.9cm. It is observed that 37 respondents representing a model percentage of 20.56 have arm circumference ranging between 24.8 – 25.2 cm. Variable arms circumferences were noted among other respondents with 2.22 percent recording the highest of 26.8 to 27.2 cm. The overall results in Table 3 suggest that the pregnant teenagers are nutritionally not malnourished. Most respondents had arm circumference above the standard (22.4-24.9). It showed that there was adequate deposit of body fat which further indicated that they were well fed before or at onset of pregnancy.

Table 4: Triceps skin fold of the pregnant teenagers.

(mm) i=0.4	Ukwani	Aniocha	Ika South	Σ	Percent
8.0-8.3	2	6	5	13	7.22
8.4-8.7	6	8	6	20	11.11
8.8-9.1	7	4	8	19	10.56
9.2-9.5	8	10	11	29	16.11
9.6-9.9	3	7	6	16	8.89
10.0-10.3	4	12	10	26	14.44
10.4-10.7	5	2	6	13	7.22
10.8-11.1	2	3	10	15	8.33
11.2-11.5	4	5	7	16	8.89
11.6-11.9	4	4	5	13	7.22
	45	61	74		

Table 4 revealed that the range of triceps skin fold from 9.2 – 9.5 mm have the highest number of pregnant teenagers (29; 16.11%). The triceps skin fold measurement among other respondents was variable, with 13 of them representing 7.22 percent having the highest skin fold of 8.6-8.9 mm suggesting a nutritional balance among most of the respondents. The studies on the triceps skin fold showed that there was adequate body fat indicating that the nutrition of the pregnant teenagers was normal.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study was an investigation of the nutritional implications for anthropometric measurement among pregnant teenagers in Delta North Senatorial District. Anthropometric measurements were carried out using the appropriate instrument and the results were recorded and analysed. A number of the respondents (22 percent) weighed below 41kg which indicated substandard level of nutritional outcome. Similarly, 7.22 percent of the pregnant teenagers were short, measuring below 1.5 meters in height. However, the arm circumference as well as the triceps skin fold measurement showed adequate deposition of body fats among most of the respondents, indicating that the level of nutrition of the pregnant teenagers was adequate.

Recommendations

Based on the results recorded in the study, the following recommendations are suggested:-

1. Pregnant teenagers in Delta North Senatorial District should be counselled to eat enough balanced diet at the onset of pregnancy so as to lay down more fat stores in their early months. This will also enable them to attain the desired body weight to sustain the effective development of their unborn babies.
2. Female children should be generally encouraged to consume nourishing foods from infancy to adulthood so that they could attain standard height before the onset of puberty.
3. Health care facilities should be made available and assessable to pregnant teenagers to reduce risks of pregnancy complications such as high blood pressure, anaemia as well as premature labour which could lead to maternal mortality.

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