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# NUTRITIONAL STATUS EFFECT OF UNICEF NUTRITION AND HEALTH PROGRAMME ON RURAL WOMEN PARTICIPANTS IN SOUTH-EAST NIGERIA

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## ABSTRACT

*The study determined the level of participation in the UNICEF nutrition and health Programme of rural women in South-East Nigeria. A multi-stage random sampling was used to source for the 288 women. The data collected through questionnaire and scheduled interview sessions were analyzed using descriptive statistics such as mean scores, Body Mass Index (BMI), and ordinary least squares regression. The result showed that there was a high level of participation by the respondents ($\bar{x}$ =3.16) in the programme activities. They also actively participated in Immunization against killer diseases ($\bar{x}$ = 3.12). The BMI of the women showed that they were underweight having BMI=10.63. The regression results show that participation in the programme activities has significant effect on their nutritional status. The programme impacted positively on the nutrition and health status of rural women with an F-ratio of 24.92 and significance at 1% alpha level. The study recommended the upscaling of the training programme, using the trainees' sensitization and inclusion of more women in the programme while also advocating for the use of the participants as sensitizers to get other rural women aware and interested in the programme.*

**Keywords**: *Effect, Nutrition, Health, Rural Women, BMI (Nutritional Status), South-East.*

## INTRODUCTION

Increased food production and development start with a nutritional and healthy life. Women's nutrition and health status has been found to be veritable and germane to the successes of their roles in rearing children and contributions to food production activities. Women play an important role in Sub-Saharan Africa; they produce about 70-80 percent of the domestic food crops contributing to ensure household and national food security (Fatman, 2009). One of the greatest challenges of achieving household and national food security in Nigeria is the wellbeing of these rural women (farmers) which ought to enable them increase their food production at the household level to meet the ever increasing population of the people. This could be achieved by improving the rural women's health and nutritional status. Nutrition is the process of getting food into the body and using it as raw materials for growth, fuel for energy, and (vitamins and minerals) that keep the body healthy and functioning properly (Gropper *et al.,* 2005).

What constitutes a high-quality diet is what makes it matter to the wellbeing and health of the consumers. According to Global Panel (2017), WHO's range of criteria can be used to characterize high quality diets, which should; start early in life; notably with breastfeeding. Balance intake and expenditure of energy (calories), include fruits, vegetables, legumes, nuts and wholegrain. Adding at least 400g of fruit or vegetables per day (excluding starchy roots such as cassava and potatoes) and limiting fat to not more than 30% of total energy intake will bring balance (Global Panel, 2017). There should also be a shift from saturated to unsaturated fats and the elimination of industrial trans-fats. Limiting free sugars to less than 10% of total energy intake or less than 5% for additional health benefits would also be important. However, salt usage should be limited to less than 5g per day; to reduce the incidence of hypertension, heart disease, and stroke in adults (Global Panel, 2017). Poor diets and malnutrition fundamentally affect health and wellbeing throughout the life course. Six of the top nine risk factors driving the global burden of disease are now related to diet (Global Burden of Diseases Risk Factor Collaborators, 2017).

The poor are particularly at high risk of malnutrition, and also malnutrition fuels greater poverty. According to the 2017 Global Hunger Index (GHI), it is those with the least social, economic, or political power- those who are disadvantaged or discriminated against, including women, ethnic minorities, indigenous people, rural dwellers, and the poor- who suffer from hunger and malnutrition (IFPRI, 2017). To Holben, Shih, and Manogian (2004), nutrition and health are inextricable. They maintain that without good health, good nutritional status cannot be achieved and when nutritional status is poor, good health will remain elusive. The wellbeing of rural women has a systematic impact on agriculture through the loss of on and off-farm labour. This is because labour shortages lead to a decline in productivity, and household income declines too among other things. Poor wellbeing also causes an increase in household expenditure (medical treatment, transport to a hospital, special food for the infirm, etc). This is because there is an increase in disease attacks, for the immune system has become weak as a result of the denied nutrients. Good nutrition lowers disease levels, increases physical energy, income generating ability, and reproductive capacity, and gives access to knowledge, information, and power (Gropper *et al.,* 2005). In essence, both nutrition and agriculture are now recognizing that the sustainability and implementation of agricultural research benefits depend on understanding the complex relationship and interaction between the agricultural productivity of rural women (farmers) and the wellbeing they enjoy. This is where the issue of nutritional status comes into focus because if increased agricultural productivity or outputs are to be enjoyed and sustained in the future, it must be based on a firm understanding of this complex link: nutrition, nutritional status, agriculture, and food security. This study was therefore conducted to determine the effectiveness of UNICEF-assisted nutrition programme

on rural women and under-5 children in the south-east Nigeria. The specific objective of the study was to ascertain the effect of the participation of rural women in the programme activities on their nutritional status.

**METHODOLOGY**

The study was conducted in South-East geo-political zone of Nigeria. The zone has five states namely; Abia, Anambra, Ebonyi, Enugu, and Imo states. The south-east zone is located within longitude $5^0$ 25'E and $8^0$ 51'E and latitude $4^0$ 20'N and $7^0$ 25'N. It is bounded in the West by the River Niger, in the South by the Atlantic Ocean, and in the North by Kogi and Benue states. The region is bordered in the east by Cross River and Akwa-Ibom states. The zone occupies a land mass area of about 109.524 square kilometers ($km^2$) representing 11.86% of the total land mass of Nigeria (Ekong, 2010). The south-east states are situated in the rainforest region of Nigeria.

The population of the study comprised all the women residing in rural communities in South–East geo-political zone of Nigeria, who participated in the programme activities in 2020. The programme activities of UNICEF nutrition and health are spread in the region.

A multi-stage random sampling was used for the study. In the first stage, 3 states (Abia, Ebonyi and Enugu), out of the 5 states in the region were purposively selected based on the fact that they all had the programme activities carried out in them. In the second stage of selection, two senatorial zones each were randomly selected, from Abia (Abia Central and Abia North), Ebonyi (Ebonyi South and Ebonyi Central), and Enugu (Enugu East and Enugu West). In the third stage, two Local Government Areas were purposively selected from each senatorial zone of Abia Central (Umuahia North and Ikwuano), Abia North (Bende and Isiukwuato), while in Ebonyi South (Afikpo North and Afikpo South) were selected, in Ebonyi Central (Ezza North and Ezza South) were selected. Enugu East (Nkanu East and Nkanu West) was selected while Enugu West (Awgu and Ani-nri) was selected. In the fourth stage, two communities each were randomly selected and from each Local Government Area, and this gives twenty-four communities. In the fifth stage, a village each was randomly selected from the twenty-four communities. In each village, 12 women participants were randomly selected bringing the total sample size to 288. Interviews and well-structured questionnaire were used to generate data in the study area. Data collected were analyzed using descriptive and inferential statistics. Specific objectives of the study were to:

1 ascertain the participation level of women participants in the programme activities;
2 determine the nutritional status of the women participants in the programme.

To ascertain the level of participation of the participants, a 4-point Likert-type rating scale of Always (A) =4, Often (O) =3, Seldom (S) =2, and Never (N) =1 was used. Thus any mean score greater than or equal to the upper limit of 2.55 (2.5 + 0.05) benchmark implies active participation and below 2.55, was regarded as poor participation.

The second objective was realized using body mass index (BMI). Their weight (kg) was measured with a weighing balance and height ($m^2$) was captured with a calibrated ruler. The model followed that used by Udensi (2014) stated:

$$BMI = \frac{\text{Body weight (kg)}}{\text{Height } (m^2)}$$

The classification of participants in states according to their nutritional status was based on the World Health Organization (WHO) standard for classification of adults according to BMI of underweight, Normal range (desirable), overweight, and obese**.** Thus stated according to WHO, 2018:

1. Participants' whose BMI was less than 18.50 were considered as underweight.

2. Participants' whose BMI was within 18.50-24.99, were considered as within the Normal range (desirable).
3. Participants' whose BMI was within 25.00-29.99 were considered as overweight, while any participant with a BMI higher than 30.00 was considered obese.

**Hypothesis testing**
It was hypothesized that Participation of Women in UNICEF nutrition and health programme activities has no significant effect on their nutritional status.
**Linear Function**
$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + .....\beta_n X_n + ei$
Where,
Y =Nutritional status of the women participants (BMI)
$X_1$-Xn=Programme activities (mean scores).
e =Error Term.

## RESULTS AND DISCUSSION

The result presented in Table 1 reveals the different programme activities that women participants of the UNICEF nutrition and health programme engaged in. The result showed a generally active participation level ($\bar{x}$=3.16). The women actively participated in Vitamin A supplementation ($\bar{x}$= 3.69), Iron and folate supplementation ($\bar{x}$=3.39), and Breastfeeding ($\bar{x}$ = 3.18). Other activities that had the women participants actively participating in them include; Breastfeeding in children more than 6 months ($\bar{x}$= 3.16), Complementary feeding (after six months of exclusive breastfeeding) ($\bar{x}$= 3.53), Home gardening ($\bar{x}$= 3.12), and Attendance to nutrition health talks and training sessions ($\bar{x}$= 3.13). The women also recorded active participation in Immunization against killer diseases ($\bar{x}$= 3.12), Long lasting insecticide treated bed nets usage ($\bar{x}$= 3.12), De-worming of children ($\bar{x}$= 3.36), Screening for malnutrition and treatment ($\bar{x}$= 3.09), Birth registration ($\bar{x}$= 3.09), HIV counseling and testing ($\bar{x}$= 3.49) and Antenatal care (ANC) ($\bar{x}$=3.30). Others are Focused antenatal care (FANC) ($\bar{x}$= 3.19), Postnatal care (PNC) ($\bar{x}$=3.01), Treatment of diarrhea with ORS and zinc ($\bar{x}$= 3.20), and Personal hygiene (hand washing activities, bathing daily at least twice and washing of clothes once used) ($\bar{x}$= 3.46), Environmental sanitation (weeding the surroundings, proper disposal of faeces, etc) ($\bar{x}$=3.11), and Family planning ($\bar{x}$= 3.12), delivery by skilled birth attendants ($\bar{x}$= 3.32)and Anti-malaria drugs usage ($\bar{x}$= 3.19). However, the women poorly participated in Exclusive breastfeeding in children 0-6 months ($\bar{x}$ = 2.42). The poor participation of the women in exclusive breastfeeding implies a low participation level in the programme activity (Exclusive breastfeeding). This could likely be attributed to the women's lack of information on the benefits of exclusive breastfeeding to their health and that of their children. This notwithstanding, the general active participation level ($\bar{x}$= 3.16) of the women implies a high level of participation of the women in the programme activities.

**Table 1: Level of participation of women in the activities of the UNICEF nutrition and health programme**

| The level of participation of women in UNICEF-Assisted programme activities | Abia (n =96) $\sum f(x)$ | $\bar{x}$ | Ebonyi (n =96) $\sum f(x)$ | $\bar{x}$ | Enugu (n =96) $\sum f(x)$ | $\bar{x}$ | S/E Pooled $\bar{x}$ |
|---|---|---|---|---|---|---|---|
| **NUTRITION ACTIVITIES** | | | | | | | |
| Vitamin A supplementation | 366 | 3.81 | 372 | 3.88 | 324 | 3.88 | **3.69** |
| Iron and foliate supplementation | 293 | 3.05 | 366 | 3.81 | 312 | 3.25 | **3.39** |
| Breastfeeding | 307 | 3.20 | 311 | 3.24 | 399 | 3.12 | **3.18** |
| Exclusive breastfeeding in children 0-6 months | 192 | 2.00 | 192 | 2.00 | 314 | 3.27 | **2.42** |
| Breastfeeding in children more than 6 months. | 288 | 3.00 | 299 | 3.11 | 324 | 3.38 | **3.16** |
| Complementary feeding (after six months of exclusive breastfeeding) | 327 | 3.41 | 331 | 3.45 | 359 | 3.74 | **3.53** |
| Home gardening. | 200 | 2.08 | 288 | 3.00 | 200 | 3.12 | **3.12** |
| Attendance of nutrition health talks and training sessions | 288 | 3.00 | 297 | 3.10 | 316 | 3.29 | **3.13** |
| **HEALTH ACTIVITIES** | | | | | | | |
| Immunization against killer diseases | 298 | 3.10 | 308 | 3.21 | 293 | 3.05 | **3.12** |
| Long lasting insecticide treated bed nets usage | 236 | 2.46 | 347 | 3.61 | 317 | 3.30 | **3.12** |
| De-worming of children | 317 | 3.30 | 326 | 3.40 | 324 | 3.38 | **3.36** |
| Screening for malnutrition and treatment | 236 | 2.49 | 337 | 3.51 | 314 | 3.27 | **3.09** |
| Birth registration | 309 | 3.22 | 288 | 3.00 | 292 | 3.05 | **3.09** |
| HIV counseling and testing (HCT) | 379 | 3.95 | 297 | 3.10 | 327 | 3.41 | **3.49** |
| Antenatal care (ANC) | 291 | 3.03 | 295 | 3.07 | 299 | 3.11 | **3.30** |
| Focused antenatal care (FANC). | 311 | 3.24 | 313 | 3.26 | 395 | 3.07 | **3.19** |
| Post-natal care (PNC) | 228 | 2.38 | 324 | 3.38 | 314 | 3.27 | **3.01** |
| Treatment of diarrhoea with ORS and zinc | 308 | 3.21 | 312 | 3.25 | 300 | 3.13 | **3.20** |
| Personal hygiene (hand washing activities, bathing daily at least twice and washing clothes once used) | 346 | 3.66 | 335 | 3.49 | 310 | 3.23 | **3.46** |
| Environmental sanitation (weeding the environment, proper disposal of faeces, etc) | 299 | 3.11 | 297 | 3.09 | 300 | 3.13 | **3.11** |
| Delivery by skilled birth attendants | 289 | 3.01 | 350 | 3.65 | 317 | 3.30 | **3.32** |
| Family Planning | 295 | 3.07 | 305 | 3.18 | 200 | 3.12 | **3.12** |
| Anti-malaria drugs | 308 | 3.21 | 312 | 3.25 | 300 | 3.13 | **3.19** |
| **Grand mean** | | **3.04** | | **3.19** | | **3.24** | **3.16** |

**Source: Field Survey.** (Benchmark=2.55)

Results in Table 2 showed that the women had BMI=10.62. However, the result shows an average weight (Kg) of the women participants in the three states Abia (69.7), Ebonyi (64.52), and Enugu (69.01). The average height ($m^2$) of the women participants in the states shows Abia (6.37), Ebonyi (6.30) and Enugu (6.46). The BMI of the states are Abia (10.95), Ebonyi (10.24) and Enugu (10.68). A BMI of 10.62 indicates that the women participants of the UNICEF-Nutrition and Health programme were underweight. The women being underweight could be attributed to the harsh economic realities on ground today. The nutritional status of the women being underweight implies that they are prone to such health risks as malnutrition, Vitamin deficiencies, or anemia, fertility issues, caused by irregular menstrual cycle, premature births, decreased immune function, increased risk of complications from surgery, slow or impaired growth (Rachel, 2018 and Ashley, 2017).

**Table 2: Nutritional Status of the Women Participants in the study area**

| Nutritional status | Abia | Ebonyi | Enugu | S/E | Decision |
|---|---|---|---|---|---|
| Average Weight (kg) | 69.76 | 64.52 | 69.01 | 67.76 | |
| Average Height ($m^2$) | 6.37 | 6.30 | 6.46 | 6.38 | |
| Body Mass Index (BMI) | 10.95 | 10.24 | 10.68 | 10.62 | |
| **BMI benchmark** | | | | **18.50** | **Underweight** |

**Source: Field Survey data.** Key: The BMI=Weight (kg)/Height ($m^2$)

The result in Table 3 shows the Ordinary Least Square Regression estimates of the relationship between the Participation of women in the UNICEF nutrition and health programme and their nutritional status. Four functional forms of multiple regressions were tried and the Linear functional form was selected based on the magnitude of the $R^2$value, number of significant variables, and F-ratio. The $R^2$(coefficient of multiple determination) value was 0.892, which implies that 89.2% of the total observed variation in the dependent variable (Y) was accounted for by the independent variable, while 10.8% of the variation was due to error. F statistic was significant at 5% alpha level indicating the fitness of the model used for the analysis.

The coefficient of Breastfeeding was statistically significant at 1% alpha level and positively related. This implies that any increase in the participation of the rural women in breastfeeding of their children will lead to a corresponding increase in their nutritional status in the study area.

The coefficient of Exclusive breastfeeding in children was statistically significant at 1% and positively related. This implies that any increase in the participation of rural women in exclusive breastfeeding of their children will lead to a corresponding increase in their nutritional status. This could be attributed to the perceived benefits to both the women and their children.

The coefficient of Breastfeeding in children more than 6 months was statistically significant at 1% alpha level and positively related. This implies that any increase in the participation of rural women in Breastfeeding of their new born babies will lead to a corresponding increase in their nutritional status in the study area.

The coefficient of complementary feeding (after six months of exclusive breastfeeding) was statistically significant at a 5% alpha level and positively related. This implies that any increase in the participation of rural women in complementary feeding for their children after six months of exclusive breastfeeding will lead to a corresponding increase in their nutritional status. This is due to the introduction of natural food items with natural nutrients, which relieves the woman of the task of breastfeeding the baby as the only source of feeding acceptable

The coefficient of Iron and foliate supplementation was statistically significant at 10% alpha level and positively related. This implies that any increase in the participation of rural women in iron and folate supplementation activities will lead to a corresponding increase in their nutritional status. This relationship implies that as the rural women participate in iron and foliate supplementation, their nutritional status increases.

The coefficient of Home gardening was statistically significant at a 5% alpha level and positively related. This implies that any increase in the participation of rural women in Home gardening will lead to a corresponding increase in their nutritional status.

The coefficient of Immunization against killer diseases was statistically significant at 1% alpha level and positively related to their nutritional status. This implies that any increase in participation of rural women in immunization against killer diseases will lead to a corresponding increase in their health status.

The coefficient of Antenatal care (ANC) was statistically significant at 1% alpha level and positively related. This implies that any increase in the participation of rural women in antenatal care activities will lead to a corresponding increase in their health status.

The coefficient of Deworming in children was statistically significant at a 10% alpha level and positively related. This implies that any increase in participation of the rural women in De-worming children will lead to a corresponding increase in their nutritional status. This relationship implies that as rural women participate in De-worming in children activity, their health status increases.

The coefficient of Environmental sanitation was statistically significant at a 5% alpha level and positively related. This implies that any increase in the participation of rural women in environmental sanitation will lead to a corresponding increase in their health status.
The F-ratio of 24.92 shows that the result was statistically significant at 1% alpha level and positively related. The null hypothesis which stated that participation of women in UNICEF-Nutrition and health programme has no significant effect on their nutritional status in the study area was therefore rejected. Then, it was concluded that the participation of rural women in the programme activities has significant effect on their nutritional status in south-East, Nigeria.

**Table 3: OLS Regression estimates of the effect of participation of women in UNICEF-Nutrition and health programme activities on their nutritional status**

| Parameters | Linear + | Exponential | Semi-log | Double log |
|---|---|---|---|---|
| **NUTRITION ACTIVITIES** | | | | |
| Constant | 4.71<br>(5.67)*** | 4.443<br>(5.735)*** | 3.500<br>(3.111)*** | 1.435<br>(.850) |
| Breastfeeding | .080<br>(3.141)*** | .078<br>(2.788)*** | .023<br>(.534) | .138<br>(4.111)*** |
| Exclusive breastfeeding in children 0-6 months | .108<br>(3.383)*** | .002<br>(.060) | .020<br>(.480) | .056<br>(.864) |
| Breastfeeding in children more than 6 months. | .797<br>(5.005)*** | .642<br>(-3.683)*** | 1.600<br>(6.010)*** | .485<br>(2.323)** |
| Complementary feeding (after six months of exclusive breastfeeding) | .273<br>(2.327)** | .140<br>(.949) | .064<br>(.306) | .004<br>(.012) |
| Vitamin A supplementation | .199<br>(1.559) | .144<br>(-1.037) | .085<br>(.402) | .393<br>(2.363)** |
| Iron and foliate supplementation | .013<br>(1.930)* | .003<br>(.373) | .030<br>(2.639)*** | .015<br>(1.715)* |
| Home gardening. | .252<br>(2.32)** | .193<br>(1.915)** | -.089<br>(-.581) | .361<br>(1.646) |
| Attendance of nutrition health talks & training sessions | .114<br>(.573) | .281<br>(1.522) | .183<br>(.702) | 1.100<br>(2.73)** |
| **HEALTH ACTIVITIES** | | | | |
| Immunization against killer diseases | 1.891<br>(2.843)*** | 1.392<br>(1.905)** | .463<br>(2.4170)** | 1.843<br>(2.106)** |
| Antenatal care (ANC) | .033<br>(3.58)*** | .022<br>(2.542)*** | .027<br>(2.220)** | .007<br>(.396) |
| Long lasting insecticide treated bed nets usage | .130<br>(1.504) | .091<br>(.956) | .004<br>(.026) | .116<br>(1.022) |
| De-worming of children | .020<br>(1.778)* | -.021<br>(-1.691) | .010<br>(.512) | -.023<br>(-1.540) |
| Screening for malnutrition and treatment | .039<br>(.919) | .103<br>(2.227)** | .095<br>(1.348) | .166<br>(3.007)*** |
| Birth registration | .014<br>(1.870) | .001<br>(.144) | .030<br>(2.406)** | .007<br>(.741) |
| HIV counseling and testing (HCT) | .122<br>(1.179) | -.100<br>(-.879) | .684<br>(3.974)*** | .094<br>(.684) |
| Focused antenatal care (FANC). | 3.192<br>(.868) | 4.796<br>(1.400) | 2.855<br>(.594) | 2.093<br>(2.803)*** |
| Post-natal care (PNC) | .004<br>(.279) | .023<br>(1.742)* | .036<br>(1.946)** | -.009<br>(-.315) |

| | | | | |
|---|---|---|---|---|
| Treatment of diarrhoea with ORS and zinc | -.046<br>(-.880) | .065<br>(1.334) | .075<br>(1.103) | .134<br>(1.259) |
| Personal hygiene | .001<br>(.104) | .002<br>(.282) | .010<br>(.935) | -.014<br>(-.837) |
| Environmental sanitation | .309<br>(2.403)** | .069<br>(.578) | .580<br>(3.31)*** | .747<br>(2.859)*** |
| Delivery by skilled birth attendants | 7.629<br>(.260) | 1.024<br>(.317) | 9.616<br>(1.943)** | 2.705<br>(.697) |
| Family Planning | .228<br>(1.080) | .010<br>(.052) | .132<br>(.480) | .417<br>(.974) |
| Anti-malaria drugs | .087<br>(.581) | .051<br>(.363) | .495<br>(2.483)** | .281<br>(.925) |
| $R^2$ | 0.892 | 0.782 | 0.654 | 0.861 |
| R Adjusted | 0.856 | 0.735 | 0.633 | 0.832 |
| F – Ratio | 24.919*** | 22.813*** | 11.942*** | 20.412*** |

**Field Survey, data.**

**Key: * Significant at 10%, ** Significant at 5%, *** Significant at 1%, + = Lead Equation and the values in parenthesis are the t-value; $H_o$ was rejected at 5% alpha level.**

## CONCLUSION

Nutrition and Health remain pivotal and fundamental for women's full contributions to the development of their families and society at large. The study has revealed that the rural women participants of the UNICEF-Nutrition and Health programme in the South-east region of the country were underweight. More so, the women's participation in the programme activities has significant effect on their nutritional and health status.

## RECOMMENDATIONS

Taking cognizance of the fact that the rural women in the South-east region of Nigeria were underweight, it was recommended that the attendant consequences of health risks such as malnutrition, Vitamin deficiencies, or anemia, fertility issues, caused by irregular menstrual cycle, premature births, decreased immune function, increased risk of complications from surgery, slow or impaired growth be factored into plans, looked out for promptly and timely, and to be tackled proactively by health practitioners operational in the region. In addition, since the participation of the women in the programme has an effect on their nutrition and health status, more women should be made aware, sensitized, and encouraged to participate in, so as to harness the attendant benefits. The women participants should be used as sensitizers to reach others yet to participate.

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