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Influence of Work Load and Feeding Pattern on the Nutritional Status of Rural Women Farmers in Nkwere LGA of Imo State, Nigeria

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Abstract

This study was conducted in 2016 to determine the influence of work load and food consumption pattern on the nutritional status of rural women farmers in Ukwuube in *Nkwere,* LGA Imo State, Nigeria. A cross-sectional survey with 106 sample size was conducted using both qualitative and quantitative data-collection methods. The study involved using a questionnaire to obtain information on food consumption pattern and farm work activities as well as anthropometry (weight and height measurements) of rural women farmers. Monogamous family setting was found to be predominant in the study area; more than seventy per cent (70%) of the respondents are from monogamous family with family members of 3-7 in number. No food taboos were found to exist in the area, though certain foods are not consumed by almost sixty per cent (59%) of the respondents due to food habit. It was observed that majority of the respondents (59 %) regularly skip breakfast meals while hurrying to get to the farm. About forty eight per cent (48 %) rarely consume three meals in a day. It was noticed that most of the respondents (57%) visits their farm on a daily basis and their lunch that constitutes high calorie were usually eaten in the farm. Generally, the women were involved in long hour working of 6-13 h daily in farm work activity. The BMI of the respondents positively correlates (α=0.01) with food consumption pattern but negatively correlates (α=0.01) with workload (farm activities). The results of the study revealed that farm work activities had no influence on the nutritional status (BMI) of the respondents. Due to the poor food habit observed among rural women farmers in the study area, there is need to further investigate the health (diabetes and blood pressure) of the respondents.

Keywords: Nutritional status; Rural women farmers; BMI; Fooding pattern

Introduction

Malnutrition is widespread in both rural and urban communities of Nigeria and low income group are more vulnerable to chronic food shortages, unbalanced nutrition, erratic food supply, poor quality foods, high food costs and even total lack of food [1]. This phenomenon has given rise to undernutrition (of both macro and micro nutrients) among all age groups and categories of individual especially the women, children and the elderly**.** Undernourishment is most often not due to enough high quality food available to eat WHO [2], it is often related to high food prices and poverty UNCF [3], as well as consuming foods that are not able to maintain energy balance. Malnutrition and being underweight in the rural communities and most homes are more common in adult women. Women are, thus, vulnerable to malnutrition for social and biological reasons [4].

The nutritional and health status of women is of great concern in the contemporary world, because the multiple roles played by women give rise to serious health and nutritional problems [5]. Research has revealed that the gaps between levels of under nutrition in men and women vary from region to region and from country to country [6]. Women generally have unique nutritional requirements, and in some cases may need more nutrients than men. Women in some societies are traditionally given less food than men since men are perceived to have heavier workloads [7]. According to Snyder [8], as the composition and structure of rural household's changes, gender responsibilities are under-going rapid change, typically with rural women becoming more responsible for household food security and children's welfare. One powerful indicator of these changes is the incidence of female-headed rural households, which is on the increase in most developing countries [9]. This analysis is not different from Nigerian situation which is estimated to be 15% from the same report.

The fact is that women are recently more involved in many activities that are capable of increasing their workloads even higher than men. Household chores and agricultural tasks which women are deeply involved in most rural communities in the underdeveloped countries can be strenuous and require additional energy and nutrients. However, physical activity, which largely determines energy requirements, is difficult to estimate and is most often neglected [6]. The report of FAO revealed that women are often responsible for preparing food and have the chance of educating their children on the benefit of food and health habits, giving mothers another chance to improve the nutrition of their children. There is need therefore to ensure that women are physically and nutritionally stable to conveniently carry out all the household responsibilities facing them. The present research tends to investigate the influence of work load and feeding pattern on the nutritional status (BMI) of rural women farmers in *Ukwuube Nkwere* LGA Imo State of Nigeria. Information gathered is expected to help educate rural women farmers on better approach for improving their health and nutritional status.

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Materials and Methods

Research area

The respondents were selected from *Ukwuube* community in *Nkwere* LGA, Imo state. The inhabitants are mostly famers and traders. The research respondents are local female famers who cultivate staple crops like cassava (*Manihot esculenta)*, different varieties of cocoyam (*Colocasia*), vegetables (pumpkin, sent leave, garden egg, better leaf, amaranths, etc.) as well as keeping livestock, such as goats and sheep. The agricultural system varies from small vegetable gardens around the home area to more permanent cultivation in the high-density area far from their homes. The farmers still use primitive tools, such as hoe and machete.

Population and sample-size determination

The study was conducted to determine the influence of work load and feeding pattern on the nutritional status of rural women farmers in *Ukwuube* community in *Nkwere* Imo State, Nigeria. Respondents were strictly selected from rural women farmers that showed their willingness to participate in research.

Determination of sample size

The total population of the study group was not known. Method described by Scott [10] was used to determine the sample size for the study:

$$\text{Sample Size}=\frac{(\text{Z-score})^2 \times \text{StdDev}\times(1\text{-StdDev})}{(\text{margin of error})^2}$$

Where Z score=1645 (90%); Std Dev=0.5; 1-Std Dev=0.5 margin of errors=0.8 (0.0064) $SS=(1.645)^2 \times 0.5(0.5))=\frac{2.706 \times 0.25}{(0.08)^2}=\frac{0.6765}{0.0064}$

SS=105.7=106 respondents.

Sampling procedure

Information about the coming of the researchers was earlier announced to the community *Ukwuube* in *Nkwere* LGA Imo State, Nigeria, through the town crier, after taking permission from the village women leader. The researchers randomly selected 106 respondents from the rural women farmers that indicated interest to participate in the cross-sectional survey. Prior to commencement of data collection, the researchers addressed the farmers informing them of the objective of the research and what they stand to gain from the findings.

Study design

The study made use of primary and secondary data collection methods to collect both qualitative and quantitative data. The study involved, cross-sectional survey, the use of questionnaire, and anthropometry.

Data collection

Data collection: A well-structured questionnaire was designed to obtain information on the feeding pattern of the respondents and their daily farm work activities. The questionnaires were distributed to the women farmers. The few that can read completed the questionnaire under close supervision of the researchers. For the majority of the respondents that could not read or write, they answered the questions orally; their responses were filled in the questionnaire by the researchers. Some of the respondents left with the questionnaire and never returned to the venue, out of the 120 questionnaire distributed, 82 were completed and returned.

Anthropometry: weight and height measurements of each respondent were taken instantly and recorded in the questionnaire before issuing to the participants. Measurements for height and weight of the respondents were taken following the standard procedures outlined by Lohman et al. [11]. The body mass index (BMI) was calculated using the formula:

$$\text{BMI}=\frac{\text{Wt}\ (\text{kg})}{\text{H}\ (\text{m}^2)}$$

Where wt=Weight in kg, ht=Height in metres WHO/FAO/UNN.

Data analysis

Information on the questionnaire was analyzed using a statistical package for social sciences (SPSS version 20.0), result were later presented in a frequency table. The weight and height measurements were used to calculate the Body Mass Index (BMI) of the respondents and grouped in a table following the WHO reference standard for BMI status.

Results

Results obtained from this research work are presented in tables, chart (pie) and graphs below.

Discussion

Socio-cultural background

Result on the socio-cultural background of the respondent is shown in Table 1. The age bracket of the respondents ranges from, 18-25 years (7%); 26-33 years (18%); 34-41 years (23%); 42-50 years (23%), majority of the respondents are fifty years and above (28%). Sixty per cent (60%) were married out of which 35 % widows were meaning that they were heading their respective families. This finding corresponds with the analysis of FAO [9] that female- headed households in the rural communities of developing countries are on the increase. Most of the respondents depended on the sell from their farm produces for their livelihood as it was observed that 47% of their husbands were also farmers. Monogamous family setting was found to be predominant in this region; more than 70% of the respondents were from monogamous family with family members (including children) between 3 and 7 in number. This implies lesser work load for every family member and most importantly the rights of women in the family may be protected [12]. Duties and responsibilities are expected to be well distributed among members of monogamous family. The responsibility of the bread winner in monogamous family is lesser than in polygamous family system [13]. Majority of the respondents did not require special attention as regards to feeding since almost ninety per cent of the women were neither pregnant nor nursing a baby.

Food consumption pattern

Information on the food consumption pattern of the respondent is shown in Table 2. It was observed that no food taboo exist in the area though certain foods such as pork meat and snail were not consumed by the respondents for peculiar reasons mainly food habit (44%) as recorded from the respondents. The nutritional hazards and health implications of food taboos and preferences have been extensively discussed [14]. The result revealed that foods mostly consumed by the respondents were rice (22%), beans, and cassava-based products (garri

and fufu) eaten with traditional soup (18%) each. Frequent consumption of these foods could be attributed to their easy method of preparation, availability and affordability [15]. About 27% of the respondents maintained the regular meal consumption of three meals daily while 48 % consumed two meals a day (Figure 1). Table 2 showed that good number of the respondents (59%) skips meal (mainly breakfast) for some reasons. This finding corresponds with the report of Pendergas et al. [16], were the respondent mostly skipped breakfast compared to lunch and dinner. Consumption of breakfast has a lot of health benefits

Questions	Frequency	Per cent (%)
Age		
18 - 25 years	6	8
26 - 33 years	15	18
34 - 41 years	19	23
42 - 50 years	19	23
50 and above	23	28
Total	82	100
Marital status		
Single	4	5
Married	49	60
Widow	29	35
Total	82	100
Husbands occupation		
Farmer	29	47
Trader	7	11
Civil servant	13	21
Others	13	21
MS	20	-
Total	82	100
Family structure		
Monogamy	55	71
Polygamy	22	29
MS	5	-
Total	82	100
Family size		
03-May	38	48
05-Jul	36	46
07-Sep	5	6
MS	3	-
Total	82	100
Physiological status of respondents		
Pregnant	6	7
Not pregnant	73	89
Nursing mother	3	4
Total	82	100

*MS: Missing System

Table 1: Socio-cultural background of the respondents.

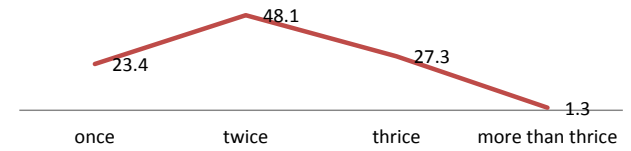

Figure 1: Frequency of daily feeding.

Questions	Frequency	Percent (%)
Type of food mostly eaten		
Rice	18	22
Beans	15	18
Garri	25	30
Fufu	15	18
Yam	6	7
Others	3	4
Total	82	100
Meal skipping		
Yes	48	59
NO	34	41
Total	82	100
Reason for skipping meal		
Hurrying to Farm	58	74
No food	7	9
No money	3	4
Health condition	7	9
Fasting	2	3
Others	1	1
MS	4	-
Total	82	100
Reason for not consuming certain foods (pork and snail)		
Custom	5	7
Religion	13	18
Allergies	8	11
Habit	44	59
Dislike	3	4
MS	8	-
Total	82	100
Do you eat in the farm		
Yes	34	49
No	29	41
Often	7	10
MS	12	-
Total	82	100
Type of meal eaten in the farm		
Breakfast	6	8
Lunch	48	68
Mid breakfast	3	4
Breakfast and lunch	8	11
Mid-lunch	6	8
MS	11	-
Total	82	100
Foods mostly consumed in the farm		
African salad	3	4
Jell of rice	35	46
Fufu and soup	6	8
Mineral with bread	25	32
Others	8	10
MS	5	-
Total	82	100

*MS: Missing System

Table 2: Food consumption pattern of the respondents.

ranging from boosting energy, improving concentration, to avoiding weight gain [17]. According to a research conducted in Harvard University School of Public Health, women who skip breakfast have

20 percent higher risk of being diagnosed with type 2 diabetes than those who eats breakfast on daily basis. The risk is even higher for full-time working women who missed their morning meal sometimes [18]. Skipping breakfast may lead to one or more risk factors, including obesity, high blood pressure, high cholesterol, and diabetes, which may in turn lead to a heart attack over time [19]. According to report on Diabetes.org, people who eat breakfast tend to take in fewer calories in a day than non-breakfast-eaters. It was observed that majority of the respondents (47%) carry meals to the farm which they consume at noon as their lunch in the farm. Foods mostly eaten in the farm includes jell of rice (46%), and snack such as bread with mineral (32%), other foods listed by the respondents included tapioca and groundnut/coconut, African salad and 'akara' (bean cake) and bread, which are mainly carbohydrate foods. It was observed that more than seventy per cent of the respondents that skips breakfast meal gave their reason as hurrying to get to the farm on time thereby consuming two meals per day. The habit of skipping meal is unhealthy feeding pattern that can be detrimental to health.

Research has it that meal skipping is unhealthy, can lead to drastic weight loss, elevated fasting glucose levels and a delayed insulin response, conditions that could lead to diabetes if persisted for a long term [20]. In a research it was found that the systolic and diastolic blood pressures were significantly lowered by about 6% in subjects that consumed three-meal-a-day compared to those that consumed one-meal each day. In a similar research, Store et al. [21], reported that subjects consuming one meal daily exhibits a significant reduction of fat mass and significant increases in levels of total LDL and HDL cholesterol. According to Carlson et al. [22], higher morning fasting plasma glucose levels was observed in subjects that consumed one meal a day as well as greater and more sustained elevations of plasma glucose concentrations and a delayed insulin response in the oral glucose tolerance tests (OGTT) compared to subjects consuming three meals per day.

Work load (mainly on farming)

Majority of the respondents (57%) visited their farm on a daily basis (Figure 2). Results from Figures 3 and 4 revealed that the respondents spent between 6-13 h daily in the farm. Most of the respondents (58%) leave homes as early as 6 am each day and returns home by 5 pm (53%) some stay up to 6 pm (17%) and 7 pm (14%).

It was observed that majority of the women (45%) were overweight judging with the body mass index (BMI), regardless of the heavy work load (6-13 h daily farm work) they were engage in on a daily basis. It was noticed that the BMI of the respondents positively correlated with food consumption pattern at (α=0.01) for a two tailed test but negatively correlates with workload (Table 3). This could be attributed to the breakfast meal skipping observed among the respondents and maybe overconsumption of heavy carbohydrate foods later in the day. Individuals who do not eat breakfast tend to snack more on sugary or high-fat foods, overeat in the evening and are more likely to be overweight. Which may be due to the prolonged fasting state the body enters if one stays too long without eating and when the food finally comes, the body stores it as fat as a survival mechanism [23]. This result does not correspond with the findings of Ene-obong et al. [4], where more cases of chronic energy deficiency was observed among female farmers (16%) compared to traders (13%) and teachers (5%) in a similar research. It corresponds with the findings of Mekary et al. [18], where daily breakfast skipping accounted for high BMI in women workers.

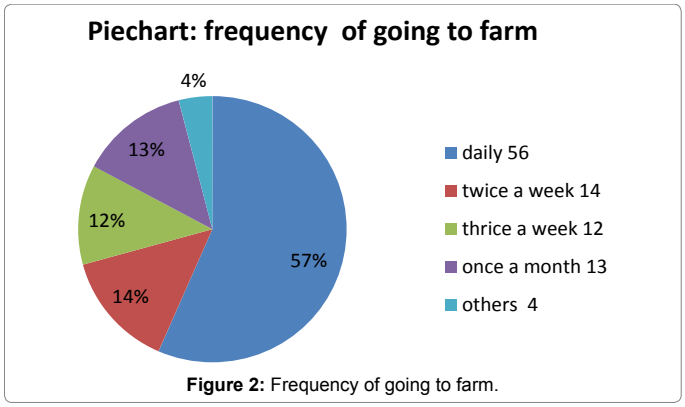

Figure 2: Frequency of going to farm.

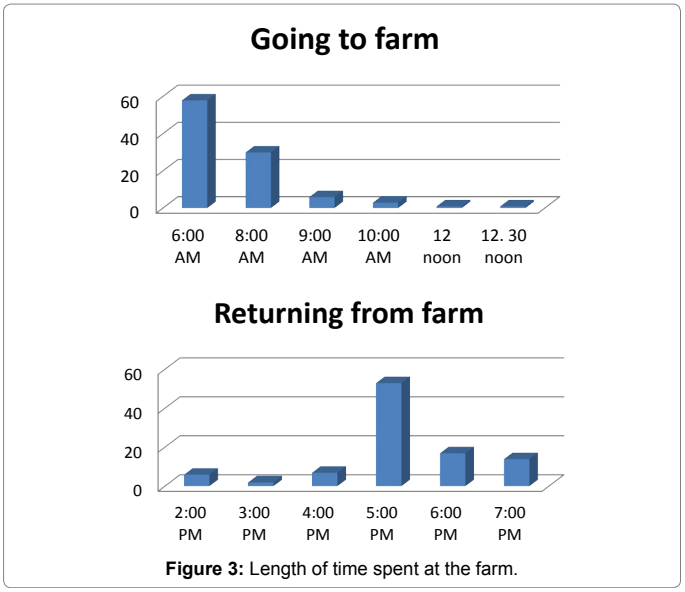

Figure 3: Length of time spent at the farm.

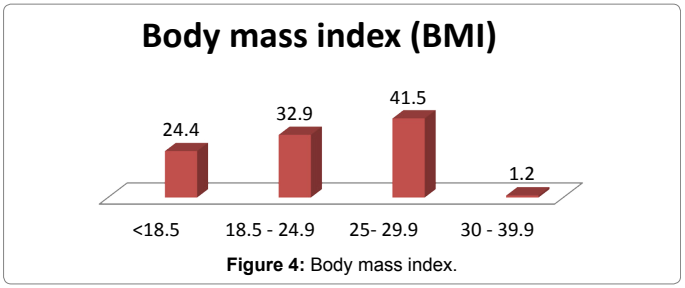

Figure 4: Body mass index.

Conclusion

Food consumption pattern was found to negatively influence the body mass index of the rural women farmers investigated. Researchers in nutrition and related field needs to work extra hard in helping people change their wrong food consumption pattern (especially those in the rural communities) to prevent future epidemic of nutrition related disorders. This can be achieved through organizing nutrition education, nutrition awareness campaign, nutrition counseling and follow-up for the rural dwellers. Based on the finding of the present research, further research is recommended to investigate the health status (especially diabetes) of the rural women farmers in Ukwuegbu communities in Nkwere LGA of Imo State.

		Body Mass Index	Duration in farm	Weight (kg)	Height (m)
Body Mass Index	Pearson Correlation	1	0.031	0.858**	-0.003
	Sig. (2-tailed)	-	0.811	0	0.977
	N	82	62	82	82
Duration in farm	Pearson Correlation	0.031	1	0.053	0.061
	Sig. (2-tailed)	0.811	-	0.685	0.636
	N	62	62	62	62
Weight (kg)	Pearson Correlation	0.858**	0.053	1	0.503**
	Sig. (2-tailed)	0	0.685	-	0
	N	82	62	82	82
Height (m)	Pearson Correlation	-0.003	0.061	0.503**	1
	Sig. (2-tailed)	0.977	0.636	0	-
	N	82	62	82	82

**Correlation is significant at the 0.01 level (2-tailed)

Table 3: Correlations analysis.

Acknowledgement

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Contributions of Co-authors

Agugo UA and Onuador L developed the concepts and also designed the experiment. Uchegbulam ANP handled the statistical analysis of the work. Okere TO and Iheme GO assisted in collecting reliable data.

References

1. Abdullateef U, Ijaiya A (2010) Agricultural trade liberalization and food security in Nigeria. J Econ Int Finance 2: 299-307.
2. http://www.who.int/maternal_child_adolescent/en/
3. United Nations Children's Fund (2010) Facts for life (4th edn.). NY, USA pp: 61-75.
4. Ene-Obong HN, Enugu GI, Uwaegbute AC (2001) Determinants of health and nutritional status of rural Nigerian women. J Health Popul Nutr 19: 320-330
5. McGuire JS, Popkin BM (1988) The zero-sum game: a framework for examining women and nutrition. Food Nutr Bull 10: 27-32.
6. Nubé M, Van Den Boom GJM (2003) Gender and adult under nutrition in developing countries. Ann Hum Biol 30: 520-537.
7. Gender and Nutrition (2001) Food and Agriculture of the United Nations.
8. Snyder M (1990) Women: The key to ending hunger. The Hunger Project Papers.
9. Food and Agricultural Organization (FAO) (1993) Agricultural extension and farm women in the 1980s. Rome.
10. Scott S (2013) Determining sample size: how to ensure you get the correct sample size.
11. Lohman TG, Roche AF, Martoreth R (1988) Anthropometric standardization reference manual. Illinois: Human Kinetics Books p: 177.
12. Amnesty International (2006) The Protocol on the Rights of Women in Africa: Strengthening the promotion and protection of women's human rights in Africa.
13. http://informationparlour.com/article-education-more-about-monogamous-and-polygamous-families
14. Meyer-Rochow VB (2009) Food taboos: their origins and purposes. J Ethnobiol Ethnomed 5: 18.
15. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, et al. (2008) Maternal Child Under nutrition Study Group . «What works? Interventions for maternal and child under nutrition and survival. The Lancet 371: 417-440.
16. Pendergast FJ, Livingstone KM, Worsley A, McNaughton SA (2016) Correlates of meal skipping in young adults: a systematic review. Int J Behav Nutr Phys Act 13: 125.
17. http://awomanshealth.com/breakfast-has-benefits-it-might-even-help-prevent-type-2-diabetes/
18. Mekary RA, Giovannucci E, Cahill L, Willett WC, van Dam RM, et al. (2013) Eating patterns and type 2 diabetes risk in older women: breakfast consumption and eating frequency. Am J Clin Nutr 98: 436-443.
19. Cahill L, Chiuve S, Mekary RA, Jensen MK, Flint A (2013) Skipping breakfast may increase coronary heart disease risk. American Heart Association (AHA) Journal Circulation.
20. http://www.healthyandnaturalworld.com
21. Stote KS, Baer DJ, Spears K, Paul DR, Harris GK, et al. (2007) A controlled trial of reduced meal frequency without caloric restriction in healthy, normal weight middle-aged men and women. Am J Clin Nutr 85: 981-988.
22. Carlson O, Martin B, Stote KS, Golden E, Maudsley S, et al. (2007) Impact of reduced meal frequency without caloric restriction on glucose regulation in healthy, normal weight middle-aged men and women. HHS Author Public Access Metabolism 56: 1729-1734.
23. http://healthyeating.sfgate.com/reasons-not-skip-breakfast-5761.html