Market Place Dietary Habits, Physical Activity Pattern and Anthropometric Status of Market Women in Abia State, Nigeria

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ABSTRACT

Background: Activities in the market place, an occupational environment where traders spend bulk of their productive years, has the capacity to influence the dietary/lifestyle habits and anthropometric status of market women.

Objectives: This study was designed to assess the market place dietary habits, physical activity level and anthropometric status of market women in Abia State.

Materials and methods: A descriptive cross-sectional study design was employed. A multi-stage sampling technique was used to select 1,360 female traders from eight (8) daily markets in Abia State. Pre-tested questionnaire was administered to elicit information on the respondents' market place dietary habits and physical activity level. Body Mass Index and Waist Hip Ratio was determined and categorized using recommended standards. All analysis was done using SPSS version 25.

Results: Results revealed that the dietary habits of female traders in Abia state were characterized by breakfast skipping (60.3%), eating out (63.4%), consumption of carbonated drinks (61.6%) and confectionaries/pastries (meatpie-77.2%, cake-69.9%, bread/doughnut-69.9%). Market place physical activity pattern mainly comprised the daily use of commercial/personal vehicles to work (84.0%), long hours spent in sitting (>3hours – 61.0%) and sitting to attend to customers (30.1%). More than a quarter of the respondents were obese (26.0%) or at high risk of obesity (30.9%).

Conclusion: The respondents had poor dietary habits and low/sedentary physical activity level in the market. Also a good number of them were obese. Increased awareness on the impact of market place activities on health and nutrition will stimulate healthier dietary and lifestyle practices.

Keywords: Dietary Habits, Physical Activity, Anthropometry, Market Women, Abia.

INTRODUCTION

The market place is an occupational environment, a meeting point for producers, distributors, consumers and traders. Traders represent an important productive sector of every economy (1). Women and girls make up 49% of the Nigerian population (2) and constitute 17.1% of Nigerians in gainful employment, with about 7% of them present in the industrial work force and about 10% in the service sector (3). It is apparent that women are highly concentrated in the informal sector of the economy with their lives revolving around the family, farm and market place. In Abia State, women constitute the greatest percentage of traders in the markets (4).

National Bureau of Statistics (3) reported that full time occupationally engaged Nigerians spend a minimum of 40 hours per week at work. Market women spend even longer hours in the market, their activities in the market range from standing, sitting, talking and engagement in other sedentary activities.

The burden of non-communicable diseases is as a result of lifestyle and dietary factors (5). Dietary habit evaluation of market women involves eliciting information on their fruit and vegetable consumption, snacking habits, meal time/frequencies, eating away from home etc. as described in several studies (6-8). Lifestyle interventions on the other hand comprise restrictions on alcohol/tobacco use and improved

physical activity (6, 9).

Market traders are a high-risk group for non-communicable diseases (7, 10-11). Evidence have shown that more than a quarter of market traders are obese and hypertensive (Obesity - 26.7-33.1%; Hypertension - 16.0 -34.8%) (7, 9, 11-13). This is attributed to their increased access to food away from home and the sedentary nature of their occupation (14). Market women consume diets with mean daily energy intake higher than their recommended levels (14).

Although, there are abundance of literatures on the dietary, lifestyle habits and obesity prevalence of market traders in Nigeria (7, 9-13), few of these studies were focused on market women (8, 14- 15). However there is dearth of literature on the market place dietary and lifestyle habits of market women. Therefore, this study aimed to investigate the market place dietary habits, physical activity level and anthropometric status of market women in Abia State.

MATERIAL AND METHODS
Study design: This study was descriptive cross-sectional in design.

Study Area: This study was carried out in selected major markets across the various senatorial zones in Abia State. Abia State is bound on the North by Anambra and Ebonyi States; on the South by Rivers State, on the East by Cross River and Akwa Ibom States and on the west by Imo State. It occupies a landmass of about 7,627.20 square meters covered with rainforest vegetation in the South and Central Zones with rich Savanna vegetation in the North. The people of Abia State are mainly farmers, traders and civil servants. The staple crops grown and consumed are cassava, yam, rice, cocoyam and maize. Oil palm is the main cash crop (16). The state has a population of over 2.8 million people (2).

Sampling/Sampling techniques
Sample size determination
The minimum sample size was estimated at 396 using the statistical formula for calculating sample size of infinite population (17), 39.6% as the prevalence of overweight/obesity among adult women in Nigeria (18), precision level of 5% and an anticipated response rate of 95%. Sample size was adjusted to 1,360 to take care of any attrition that may occur in this study.

Sampling Technique
A multi-stage sampling technique was employed. At the first stage, four major towns/zones were purposively selected from the acronym ABIA (Aba, Bende, Isuikwuato and Afikpo now replaced with Umuahia). In the second stage, a daily market was selected from a list of 3-4 daily markets available in each of the zones, , except Aba where five daily markets were selected from twenty (20) daily markets. A random (balloting without replacement) sampling technique was employed at this stage. The third stage involved the stratification of trading points in the market into open sheds, lock up stores etc in such a way that sellers of different items were captured. The final stage was the random selection of market women from the various stratas. One hundred and seventy (170) respondents were selected from each of the selected daily market sites - Ariaria Market Aba, Ahia Ohuru Aba, Cemetery market Aba, Shopping Centre Aba, Relief Market Aba, Ubani Market Umuahia, Ahia Akara Junction Isuikwuato, Ahia Ukwu Alayi.

Data Collection
Eight research assistants were recruited and trained on the use of survey instruments. A pilot study was conducted on 100 market women in Orji Uzor World Bank Housing Estate Market, Aba and Omezi Ebiri Igbere Market to refine the content and approach of the questionnaire.
Preliminary visits were made to the L.G.A chairmen, community councilors and market leaders to seek permission to conduct this survey.

Data on the market place lifestyle and dietary habits were collected using an interviewer administered structured questionnaire.

Anthropometric Measurement
Weight and height were assessed using standard procedures (19). The body mass index (BMI) of Quetelet was calculated using weight in kilogram divided by the square of the height in metre. The BMI was classified using the WHO classification of BMI (20).
Waist circumference was measured midway between the iliac crest and the lower most margin of the ribs with bare belly and at the end of normal expiration, and the hip girth was measured at the intertrochanteric level according to the WHO guidelines. The waist and hip ratio was determined and compared with standard categories; > 0.85 for females and > 0.90 for

males were considered abnormal/at risk (21).

Ethical Considerations

Approval for the study was obtained from the Ethics and Research Committee of Abia State University Teaching Hospital, Aba Abia State.

Written informed consent was obtained from the respondents. The objectives of the study, assurance of no harm, confidentiality and freedom to participate were clearly explained to them.

Statistical Analysis

All statistical analysis were done using statistical package for social sciences (SPSS) for windows version 25. Descriptive statistics was computed for the continuous and categorical variables.

RESULTS

Information on the socio-demographic characteristics of market women is summarized in Table 1. Results revealed that majority of the respondents were Christians (96.3%) and aged 20-35 years (70.1%). There were more married (49.6%) than single (47.4%) and other categories (widowed/divorced - 3.1%). Most of them had a family size of 4-6 (48.5%) and above 6 (17.3%) members. The respondents mainly had secondary (49.4%) and tertiary educational qualification (38.1%).

Results from Table 2 showed the market activities of respondents. The market women mostly engaged in retailing (42.5%) and wholesale (37.0%) form of trading. With exception to Sundays, most (64.9%) of them spent every day of the week in the market. Trading was the only source of income for 63.8% of the traders.

Raw foods (25.1%), clothing material/accessories (22.9%) and cooked foods (17.3%) were the common good/products sold by the respondents. These products were sold in lock up shops (20.4%), air conditioned shops (18.9%), open shops (17.1%), trays /tables/glass boxes (13.6%), under the tree with umbrella (11.4%).

Information on the market place dietary habits of respondents is summarized in Table 3. Results revealed an irregular breakfast consumption habit among most of the market women (60.3%). Only 59.3% of the respondents had breakfast

Table 1. Socio-demographic characteristics of respondents

Variables	Frequency (N=1,360)	Percentage
Age		
20-35	954	70.1
36-55	340	25.0
56-75	66	4.9
Religion		
Christianity	1309	96.3
Islam	26	1.9
Traditional	25	1.8
Marital Status		
Married	675	49.6
Single	644	47.4
Widowed	28	2.1
Divorced	13	1.0
Family Size		
1-3 members	465	34.2
4-6 members	660	48.5
7-9 members	209	15.4
>9 members	26	1.9
Highest Educational Qualification		
No formal education	90	6.6
Primary education	80	5.9
Secondary education	672	49.4
Tertiary education	518	38.1

meals at home while 40.7% of them consumed breakfast meals/snacks in the market.

In addition, 63.4% of the traders patronized food vendors/restaurants for the cooked meals, while 27.1% consumed home prepared meals in the market. Water (91.9%) and carbonated soft/malt drinks (61.6%) were found to be the common fluids/beverages consumed in the market. Meat pie (77.2%), cakes (69.9%), bread/doughnut (65.0%) and chin-chin (56.9%) dominated the list of snacks often consumed in the market. A little below half (45.2%) of the respondents often had lunch in the market while for a good number (30.9%) of them, the foods consumed in the market were complementary/additional meals or snacks (in-between meals). Time availability and presence of varieties influenced the consumption of breakfast (Time -58.2%; varieties- 24.1%), lunch (Time -50.1%; varieties -39.0%) and dinner (Time -36.2%; varieties -24.8%) meals in the market.

Results from Table 4 shows the market place physical activity pattern of respondents. More than half (59.1%) of the respondents estimated that the distance from the house to the market is ≥ 1km

Most of the respondents use either their public

Table 2. Market Activities of the respondents

Variables	Frequency (N=1,360)	Percentage
Type of trading		
Retailing	578	42.5
Wholesaling	503	37.0
Hawking/petty trading	279	20.5
Number of days per week spent in the market-		
Everyday of the week	182	13.4
Everyday except Sunday	883	64.9
Everyday except Saturdays	76	5.6
Monday to Friday	219	16.0
Respondents' Source of income		
Trading only	868	63.8
Trading and farming	377	27.7
Trading and civil servant	51	3.8
Trading and pension	38	2.8
Trading and gifts from family/friends	26	1.9
Major good sold by respondents		
Raw foods	342	25.1
Clothing items/accessories/materials	312	22.9
Cooked foods	235	17.3
Vegetables/Fruits	137	10.1
Drinks	131	9.6
Stationeries	92	6.8
Household wares/utensil	59	4.3
Medical supplies	9	0.7
Others (cosmetics, electronic, plastics etc)	43	3.2
Mode of marketing goods		
Sell in a lock up shop	278	20.4
In an air conditioned shop	258	18.9
Sell in open shops	233	17.1
Sell goods in a tray/tables/glass boxes	185	13.6
Sell under the tree/with umbrella	155	11.4
Sell on passage-ways/veranda/garages	132	9.7
Hawk goods in wheel barrow	89	6.5
Sell on bare ground under the sun	30	2.2

transport (64.5%) or personal vehicles (14.6%) while only 14.6% of them trekked to the market. Moderately/hyper active nature of marketing goods (hawking) was observed in 15.7% of the market women, about half of them were engaged in light activities such as standing to sell (26.3%) or combined intervals of sitting, standing and walking (27.9%). Also good number of them mainly sit to attend to customers (30.1%). Most of the respondents spent more time sitting (3-5 hours -61.0%) than walking around (<3 hours - 29.3%)

However, most of them perceived/rated their physical activity level as very active (38.9%) and moderately active (32.4%) individuals.

Results from Figure 1 revealed the anthropometric status of respondents. Results revealed that the obesity and overweight prevalence of market women were 26.3% and 8.3%, respectively. Waist hip ratio values showed the preponderance of at risk individuals (medium risk -62.5%; high risk -30.9%)

Table 3: Market Place Dietary Habits of Respondents

Variables	Frequency	Percentage
Breakfast consumption (N=1,360)		
Regular (everyday)	540	39.7
Irregular (skip breakfast)	820	60.3
Place of breakfast consumption (N = 540)		
Before going to the market in the morning	320	59.3
At the market	220	40.7
Market place cooked meals consumption (N=1,360)		
Patronize food vendors/restaurants	862	63.4
Bring food from home	369	27.1
Do not eat in the market	129	9.5
Common fluid/beverages consumed in the market		
Water (N=1,360)	1250	91.9
Carbonated -malt and soft drinks (N=1,360)	838	61.6
Alcoholic drinks (N=1,360)	179	13.2
Coffee/chocolate/ milk drink (N=1,360)	137	10.1
Common snacks consumed in the market		
Meat pie (N=1,360)	1050	77.2
Cake (N=1,360)	950	69.9
Bread/doughnut (N=1,360)	884	65.0
Chin-chin (N=1,360)	774	56.9
Pop-corn (N=1,360)	554	40.7
Moi-moi (N=1,360)	430	31.6
Meals often consumed in the market (N= 1,360)		
Breakfast	220	16.2
Lunch	615	45.2
Dinner	105	7.7
In between meals/snacks	420	30.9

Reasons for consuming foods in the market				
Variables	**Breakfast**	**Lunch**	**Dinner**	**Snacks/Drinks**
Have more time	128 (58.2)	308 (50.1)	38 (36.2)	81 (18.8)
There are varieties to choose	53 (24.1)	240 (39.0)	26 (24.8)	96 (22.9)
It is cheaper	30 (13.6)	46 (7.5)	20 (19.1)	198 (47.1)
Others (accessible)	90 (4.1)	21 (3.4)	23 (21.9)	47 (11.2)
Total	220 (100.0)	615 (100.0)	105 (100.0)	420 (100.0)

Table 4: Market Place Physical Activity Pattern of Respondents

Variables	Frequency (N=1,360)	Percentage
Distance from house to the market		
Near (<1 km)	325	23.9
Far (1-2 km)	592	43.5
Very far (3-4 km)	212	15.6
Do not know	231	17.0
Means of transport to market		
Use public transport	877	64.5
Trek to market	209	15.4
Use personal vehicle	199	14.6
Sometimes trek, sometimes use transport	8	0.6
Means of marketing goods		
Sitting mainly to attend to customers	409	30.1
Sit, stand and walk around at intervals	379	27.9
Standing mainly to attend to customers	358	26.3
Walk around to hawk goods	214	15.7
Time spent sitting in the market		
<3 hours	446	32.8
3-5 hours	829	61.0
$\geq$ 6 hours	85	6.3
Time spent walking in the market		
<3 hours	708	52.1
3-5 hours	399	29.3
$\geq$ 6 hours	253	18.6

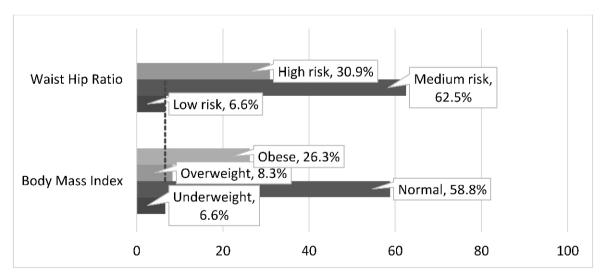

Fig 1: Anthropometric characteristics of market women

DISCUSSION

The age distribution in the study corroborates with reports from several studies (1, 8, 22-23) where most of the market traders were less than 40 years.

The high involvement of Christians could be attributed to the fact that the study was conducted in a South Eastern State of Nigeria who are predominantly Christians. Other studies conducted within the same study location

reported similar observations (1, 8).

The preponderance of married respondents compares well with the findings of Ukegbu *et al.* (8). The evidence is strengthened by authors who posited that marriage confers access to resources for young women to start their own businesses and support their family (24-25).

The respondents attainment of secondary (49.4%) and tertiary (38.1%) educational status exceeds findings of secondary (48.4%) and tertiary institution (23.8%) completion among textile market women in Southern Nigeria (26). Similarly, United Nations Population Fund Report (UNFP) reported that Abia State has a high female literacy rate of 83.0% (27).

The almost daily (six times per week) visit to the market by most (64.9%) exceeds reports by Ukegbu *et al.* (8) which observed that 36.7% of market women go to the market six times in a week. It is therefore not surprising, given that trading was the sole income of 63.8% of the respondents in this study.

The engagement of most women in retail marketing (63.0%) in this study compares well with reports by Akanle *et al.*, (28) who posited that wholesale marketing in urban markets are mostly male dominated while retail shops and open markets are usually dominated by women. The trading of mainly agricultural produce/foods (29-30) and clothing materials (31) by market women were well documented in literature.

One plausible explanation to the preponderance (60.7%) of the trading activities of women in open and unconducive shops or market systems is the observation by several studies that women participate in less economically competitive market ventures owing to various socio-cultural limitations (30, 32). Therefore their inability to own lock up shops and complex trading facilities/structures reflects the quality of income generated and nature of business.

Most (60.3%) of the respondents skipped breakfast meals and this agrees with reports of several studies (7, 8) that breakfast is the most frequently skipped meals amongst female traders. Okpala and Okponibuot (33) had reported that skipping breakfast is an unhealthy food habit which leads to energy depletion as a result of glucose deprivation that may result in rapid disturbances and malfunctioning of the body thus predisposing an individual to non-communicable diseases. Several longitudinal studies have confirmed the effect of meal skipping particularly breakfast omission on elevated risk of obesity (34-35), diabetes (36), cardiovascular disease (37).

The inability of a good number (40.7%) of the respondents to consume their breakfast meals at home is consistent with expectation of the occupation as Ukegbu *et al.*, (8) affirmed that more than half of market women in Umuahia, Nigeria commenced business within 6:30-7:00am.

The high (63.4%) proportion of respndents patronizing commercially prepared ready to eat foods corroborates the reports from Ekpenyong and Akpan (38) which found that eating out in restaurants was common for occupationally engaged adults.

It is also not surprising that soft drinks and confectionaries/junk foods dominated the list of fluids/beverages and snacks consumed in the market as numerous studies (39-42) confirmed that eating away from home predisposes an individual to increased consumption of high energy, fat, salt and sugar content and reduced nutrient dense foods. Therefore, efforts to ensure that market food environment is laden with healthy food options should be encouraged.

Majority (84.0%) of the respondents in this study utilized a means of transportation to the market, this exceeds finding from Awosan *et al.*, (7) where more than half of the traders reportedly got to work in motor vehicles. Sitting was a predominant form of activity engaged by the respondents in the market, similarly Afolabi *et al.*, (14) reported that market men and women spend most hours of the day sitting down. Considering WHO recommendation of engagement in 150-300 minutes of moderate intensity aerobic physical activity (43), the sedentary nature of the females traders by virtue of their daily use of motor vehicles for an about 2km or less distance and sitting for long hours in the market is of great concern. This has implication for their health as Ekpenyoung *et al.*, (44) and Lee *et al.*, (45) revealed that physical inactivity increases the risk of several non-communicable diseases such as coronary heart disease (CHD), type 2 diabetes, cancers and reduces life expectancy.

The prevalence of obesity (26.3%) amongst study respondents compares well with findings from Ulasi *et al.*, (1) but lower than that revealed by Enwerem *et al.*, (46) where 22.5% and 49.0%

respectively of their selected market population were obese. The high burden of obesity and non-communicable disease risk observed in this study may be attributed to the poor dietary habits and sedentary lifestyle pattern of market women at their place of business.

CONCLUSION

This study inferred that although bulk of female traders' productive hours were spent in the market, they had poor market-place dietary habits and sedentary physical activity. This may have contributed to elevated obesity prevalence. Therefore, efforts by relevant stakeholders to provide an enabling environment for the engagement of health promoting market place activities should be encouraged.

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