
Household Decision Making and Malnutrition Status Among Urban Migrant Women in Nigeria

MICHAEL NDISIKA

*Department of Sociology and Anthropology,
Faculty of Social Sciences,
University of Benin, Benin City, Edo State, Nigeria.*

And

GODSON GODWIN OMIGIE

*Department of Social Work
Faculty of Social Sciences,
University of Benin, Benin City, Edo State, Nigeria.*

Abstract

The nutritional state of a woman is critical as an indicator of her overall health and as a predictor of both mother and child's pregnancy outcome. Diet and lifestyle choices, together with the maintenance of a healthy body weight, are critical for maintaining health for women in reproductive age. Migrant women to and live in high-income countries tend to be more prone to overweight and obesity than their indigenous counterparts. This study examined the household decision making and malnutrition status among urban migrant women in Nigeria. This study used women recode dataset from the 2018 Nigeria Demographic and Health Survey to analyze women's health (NDHS). The outcome variable was BMI that serves as a simple and inexpensive method of measuring body weight status for adult population. The explanatory variables of main interest were participation in making household decision whereby other confounders were women socio-demographic characteristics. The data were weighted before usage due to the cluster design sampling approach. Statistical analysis included descriptive analysis, Chi-square tests to ascertain significant association and Multinomial logistic regression model was employed in multivariate level to ascertain the relative risk associated with malnutrition at p-value less than 0.05 level of significant. The prevalence of overweight/obesity seem high among Urban-Urban migrant by 52.2% while underweight very high among Urban-Rural migrant by 8.7%. Urban-Rural migrant women that participated in making decision on purchases were more at risk of been overweight/obese. Urban-Urban migrant women that participated in making decision on health care were less likely at risk of been underweight and Urban-Urban migrant women that participate in making decision related to visitation to relatives were more at risk of been underweight. Other factors were age, level of education, wealth status and ethnicity.

This study enhanced evidence-based approach to developing Nigeria Migration Health policy and program processors on malnutrition. There is need to increase knowledge of nutrition in accordance with educational attainment and wealth status that will make them receptive to health interventions and improve their nutritional status. Also needs to gear towards solving overweight/obesity among Igbo Urban-Urban migrant women in Nigeria

Keywords: Undernutrition, Overnutrition/Obesity, Decision Making and Urban Migrant.

In developing nations such as Nigeria, the causes of maternal malnutrition and over nutrition are multifaceted and complicated (Adinma, Umeonihu, & Umeh, 2017; Lindsay, Gibney, & McAuliffe, 2012). The nutritional state of a woman is critical as an indicator of her overall health and as a predictor of both mother and child's pregnancy outcome. Adequate maternal nutrition is necessary for breastfeeding, recovering from pregnancy and labor stress, coping with child rearing and care, and also for preparing for future pregnancies (Senbanjo, Olayiwola, Afolabi, & Senbanjo, 2013). Malnourished moms are more likely to deliver low birth weight babies, who have a significantly greater risk of dying during childhood (Tebekaw, Teller, & Colón-Ramos, 2014).

Diet and lifestyle choices, together with the maintenance of a healthy body weight, are critical for maintaining health in all age groups, but are especially critical for women of reproductive age. Maintaining a healthy nutritional status has substantial health and wellness benefits, including delaying and reducing the risk of acquiring disease, preserving functional independence, and supporting prolonged independent living (Leslie & Hankey, 2015). The factors that contribute to overweight and obesity are numerous, with some subsets of the population appearing to be more vulnerable (Delavari, Snderlund, Swinburn, Mellor, & Renzaho, 2013).

Undernutrition and overnutrition may coexist in a particular community as a result of changing lifestyles brought about by urbanization, changing socioeconomic situations, and the addition of cultures (Adinma et al., 2017). By 2050, it is anticipated that 2.5 billion people, or two-thirds of the world's population, would live in cities. The majority of the predicted growth will occur in low- and middle-income groups (United Nation, 2015).

Through the UN General Assembly's High-Level Dialogue on International Migration and Development and the Global Migration Group, UN agencies have underlined the importance of explicitly including migration-related health determinants in the post-2015 Millennium Development Agenda (Brolan, Dagon, Forman, Hammonds, Latif & Waris, 2013). The International Organization for Migration (IOM) and the World Health Organization (WHO) have spearheaded global efforts to encourage member states to adopt migrant-sensitive health systems and to allow policies and practices that ensure migrant and mobile populations' rights to health are realized (International Organization for Migration, 2013). The United Nations Committee on the Rights of the Child has advocated for the protection of children's rights in the context of international migration, and the United Nations Children's Fund (UNICEF) has also expressed concern about the paucity of research on the effects of migration on women's and children's health and well-being globally (Bryant, 2005).

Individuals from low- to middle-income nations who migrate to and live in high-income countries tend to be more prone to overweight and obesity than their indigenous counterparts. This is true despite the fact that newly arriving migrants are generally healthier than the host population, a phenomenon referred to as the healthy migrant effect (Delavari et al., 2013). Despite this high proportion of underweight, low-income nations are also experiencing an increase in overweight and obesity, particularly in metropolitan areas (Shrimpton&Rokx, 2012). In low-income nations, demographic and epidemiological shifts have been accompanied by an increase in urbanization, overweight and obesity, and non-communicable diseases (NCD) (Popkin, 2010; Ziraba, Fotso&Ochako, 2009). Urbanization results in an increase in refined sugar and animal fat consumption, which is frequently accompanied by a more sedentary lifestyle; all of these factors contribute to obesity (Popkin& Gordon-Larsen, 2004). Nowadays, in low-income nations, overweight/obesity and underweight coexist in the same community or family (Caballero, 2005). In Sub-Saharan Africa, where between 20% and 75% of urban inhabitants are believed to be overweight or obese, the rates are increasing at an alarming rate (Akindele, Phillips, &Igumbor, 2016; Tebekaw et al., 2014).

Since the 1995 Beijing Women's Conference, increasing women's relative influence in the household, commonly referred to as women's negotiating power, has been a significant policy objective in developing nations. This readiness to empower women in developing nations is motivated by the belief that social justice is a critical component of human welfare, as evidenced by the conclusion that increasing women's authority compared to men helps both women and children's health (Lépine&Strobl, 2013).

In many civilizations, particularly in developing or low-income countries, women's status frequently inhibits their autonomy and ability to make important life choices (Osamor& Grady, 2016). Numerous such communities have strong social structures that rigorously define men and women's roles, which are typically codified in religious, tribal, and social traditions. These limits frequently characterize the circumstances in which women have or do not have the autonomy to make health care decisions for themselves. Women's autonomy in health care decision-making is critical for improving maternal and child health outcomes, as well as serving as a barometer of women's empowerment (Acharya, Bell, Simkhada, Van Teijlingen, &Regmi, 2010). Women's engagement in decision-making helps to alter the setting of a woman's existence, enhancing her capacity to live a fulfilling human life (Nayak&Mahanta, 2012). Gender-based power disparities can obstruct honest communication between partners regarding reproductive health choices and women's access to reproductive health treatments. This can result in adverse health outcomes.

Statement of Problem

Mothers who were malnourished as fetuses, small children, or adolescents are more likely to enter pregnancy stunted and malnourished. Her nutritional deficiency has a detrimental effect on her own children's health and nutrition. These intergenerational consequences have the potential to create a vicious cycle that perpetuates starvation from generation to generation (Senbanjo et al., 2013; Tebekaw et al., 2014). By and large, excess weight gain happens as a result of an energy imbalance. Excessive energy consumption, particularly of high-calorie meals [e.g., sugar-sweetened beverages

(SSB)], larger portion sizes, and sedentary behavior are frequently cited as the primary reasons of this health problem (Kanter& Caballero, 2012).

Malnutrition is associated with impaired cognitive development, diminished human capital, premature death, and other adverse health outcomes (Kimani-Murage et al., 2011). The primary nutritional concerns for women include maternal malnutrition and excess, as well as deficiency of critical pregnant micronutrients such as iron, foliate, calcium, vitamin D, and vitamin A. (Lindsay et al., 2012). Therefore, special attention should be paid to the issue of unhealthy BMI among women, in order to stop the intergenerational cycle of malnutrition and its repercussions (Ghose&Yaya, 2018). Migrants from low- and middle-income nations who relocate to high-income countries appear to be more prone to overweight and obesity than their native-born counterparts. 50 In Sub-Saharan Africa, it has been discovered that persons who relocate from rural to more urban areas are at a greater risk of malnutrition (Dake, Thompson, Ng, Agyei-Mensah, &Codjoe, 2016).

Significance of Study

Given the occurrence of the migration issue, assessing the impact of settlements and, more broadly, migration on development is critical (Antén, 2010). Additionally, poverty and, more specifically, malnutrition are significant and persistent issues in Nigeria, a phenomenon largely attributed to Nigeria's poor macroeconomic performance and subsequent increase in poverty rates since 1990, as well as low and poorly targeted social spending and a lack of well-designed nutritional programs. Acceptable nutritional status can be defined in terms of having access to a sufficient dietary intake and maintaining a healthy body weight structure. Numerous studies employed study-specific measurements, while others incorporated a set of standardized questions from their respective nations' national health surveys. The rise in obesity prevalence poses a challenge for the health care system, which has historically been burdened by underweight issues caused by famine, food insecurity, and infectious diseases, but now must contend with obesity-related NCDs, which are expected to account for 46% of all deaths by 2030. (Tebekaw et al., 2014). Nutritional optimization is important to preserve the mother's health, to aid in the delivery of a normal, healthy baby, and to reduce the risk of birth abnormalities, suboptimal foetal development, and chronic health problems in childhood (Lindsay et al., 2012).

Urbanization results in an increase in refined sugar and animal fat consumption, which is typically accompanied by a more sedentary lifestyle that promotes obesity. Despite the fact that migration has risen to prominence on the global development agenda (International Organization for Migration, 2013), the public health consequences for migrants and their families have received less attention. Additionally, analysts assert that global migration policy methods have failed to acknowledge and incorporate a family viewpoint (Guendell, Saab & Taylor, 2013). Women's malnutrition has reached epidemic proportions in metropolitan areas. This has been ascribed to shifting lifestyles, with inhabitants becoming more urbanized/westernized or agrarian (van der Sande, Ceesay, Milligan, Nyan, Banya, Prentice, et al, 2001; Ghose&Yaya, 2018). Something urgently needs to be done about this population's rising prevalence of obesity, which has a variety of negative health consequences (Baceviciene, Reklaitiene and Tamosiunas, 2009).

Women's nutritional status was evaluated in relation to sociodemographic factors (Ghose&Yaya, 2018), but other types of household characteristics were ignored. Food preparation is typically the responsibility of women in any household. Similarly, only Sola, Steven, Kayode, and Olayinka (2011) evaluated body mass index in rural and urban Nigerian residents. This means that their understanding of nutrition, or lack thereof, will have a significant impact on the health and nutritional status of the entire family. It is critical, therefore, to address malnutrition in women in order to maintain optimal health and enable them to fulfill the plethora of duties expected of them in terms of income generation, healthy childbirth, family care, and ultimately, societal progress.

The growth in undernutrition and overnutrition in Nigeria is mostly due to a 'nutrition transition,' or a shift away from traditional diets and lifestyles toward 'Western' diets high in saturated fats, sugar, and refined foods, combined with decreased physical activity and increased stress. This fills in additional gaps in the existing literature on migration-related topics. It is necessary to quantify the disparity in internal migration and household decision-making connected to women's nutritional health.

Research Methodology

Sources of data and sampling

This study used secondary data from the 2018 Nigeria Demographic and Health Survey to analyze women's health (NDHS). The 2018 NDHS sample was stratified in two steps. Each of the 36 states and the FCT was stratified into urban and rural areas. 74 strata of sampling were discovered. Every stratum had its own two-stage selection of samples. At each of the lower administrative levels, implicit stratifications were established by sorting the sampling frame before sample selection and applying a probability proportional to size selection during the first sampling step. 1400 EAs were chosen at random in the first stage. The EA's size was measured in homes. The results of the household listing operation were used as a sampling frame for the second step. In the second stage, equal probability systematic sampling was used to choose 30 households each cluster, for a total sample size of 42,000 households (Nigeria Population Commission, 2019). The interviewees were either permanent residents or visitors to the households the night before the study. In the households interviewed, 42,121 women aged 15-49 were identified for individual interviews, with a 99 percent response rate (Nigeria Population Commission, 2019).

Variables Description

The outcome variable was BMI which is defined as the weight in kilograms divided by the height in metres squared (kg/m^2). BMI serves as a simple and inexpensive method of measuring body weight status for adult population. As defined by WHO, respondents were categorized as being underweight if $\text{BMI} < 18.5 \text{ kg}/\text{m}^2$, normal weight if $= 18.5 - 24.9 \text{ kg}/\text{m}^2$ and overweight/obese if $\geq 25 \text{ kg}/\text{m}^2$.

The explanatory variables of main interest were participation in making household decision is a categorical variable from: person that decided on healthcare, person that decided on household purchases and person that decided on visitation to family or relatives. Responses was coded as, women not participate and participate in decision making.

Researcher conducted a literature review to facilitate the selection of potential confounders. Based on the review and availability on the datasets, the covariates were considered for inclusion in the study —Internal Migration: Urban-Urban and Urban-Rural, Age of respondent: 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49; Religious affiliation: Christian, Islam; Educational attainment: No formal education, Primary Secondary, Higher; Wealth index: Poorest, Poorer, Middle, Richer, Richest; Employment status: Not Working, Working; Husband level of educational: No formal education, Primary Secondary, Higher; Ethnicity: Hausa/Fulani, Igbo, Yoruba, Others; Family Type: Monogamous, Polygamous; Number of children ever born: 1-4 children, More than 4 children; Birth order: 1-2 children, 3-4 children, 5 children above; Modern contraceptive use: No, Yes; Mass Media: Not exposed, Exposed.

Data Analysis

The data were weighted before usage due to the cluster design sampling approach. To extrapolate and consider other locations omitted from the clusters during the survey, data weighting becomes critical. Weights are added to each instance in tabulations to correct for changes in probability of selection and interview according to the survey's cluster design. The survey sample was chosen with unequal probability to increase the number of instances available (and hence reduce sample variability) for certain areas or subgroups. The statistics were further weighted to account for probable regional disparities in response rates. Sample weights were estimated to six decimal places but are not shown in the standard recode files. So, to approximate the number of cases in the data set used in this investigation, the sampling weight was divided by 1,000,000. Because our outputs require standard errors, confidence intervals, and significance tests, we used cluster, stratification, and weight variables to compensate for the complicated sample design (Morakinyo, Adebowale, Obembe, & Oloruntoba, 2020)

The quantitative aspect involved using women recode dataset of the 2018 (Nigeria Demographic and Health Survey). Statistical analysis included descriptive analysis to determine demographic information and frequency of the exposure and outcome variables. Chi-square tests were performed to ascertain significant association among between independent variables and body mass index among internal migrant women in Nigeria. Multinomial logistic regression model was employed in multivariable analysis because the outcome variable (body mass index) had three categories i.e. underweight, normal and overweight/obese at p-value less than 0.05 significant level.

Result of Analysis

Table 1: Distribution by Socio-Demographic Characteristics of Urban Migrant Women in Nigeria

Characteristics	Urban-Rural		Urban-Urban	
	Frequency	Percent	Frequency	Percent
Body Mass Index				
Underweight	41	8.7	64	3.8
Normal	258	54.2	739	44.0
Overweight/Obesity	177	37.1	875	52.2
Age				
15-19 years	14	2.9	14	0.9
20-24 years	50	10.6	134	8.0
25-29 years	121	25.4	376	22.4
30-34 years	105	22.1	379	22.6
35 years above	186	39.1	775	46.1
Religion				
Christianity	314	66.0	1,073	63.9
Muslim	160	33.5	602	35.8
Traditional	2	0.5	4	0.3
Level of Education				
No formal education	116	24.4	171	10.2
primary	91	19.1	267	15.9
secondary	212	44.6	855	50.9
higher	57	12.0	386	23.0
Wealth Status				
Poorest	39	8.2	43	2.5
Poorer	62	12.9	70	4.2
Middle	111	23.3	208	12.4
Richer	167	35.2	490	29.2
Richest	97	20.5	868	51.7
Currently Working				
No	129	27.0	341	20.3
Yes	347	73.0	1338	79.7
Husband Level of education				
No education	82	17.2	146	8.7
Primary	100	21.1	187	11.2
Secondary	220	46.3	860	51.3
Higher	74	15.5	485	28.9
Ethnicity				
Hausa/Fulani	99	20.8	221	13.2
Igbo	191	40.1	502	29.9
Yoruba	41	8.6	572	34.1
Others	146	30.6	383	22.8
Family Type				
Monogamous	367	77.2	1,450	86.4
Polygamous	109	22.8	229	13.6

Number of children ever born				
1-4 children	298	62.6	1,159	69.1
More than 4 children	178	37.4	519	30.9
Birth order				
1-2 children	89	18.8	336	20.1
3-4 children	208	43.8	823	49.0
5 children above	178	37.5	519	30.9
Modern contraceptive use				
No	403	84.5	1,259	75.0
Yes	74	15.5	420	25.0
Mass Media				
Not exposed	261	54.8	763	45.4
Exposed	215	45.2	916	54.6
Decision on women health care				
Not participate	232	48.8	507	30.2
Participate	244	51.2	1172	69.8
Decision on household purchases				
Not participate	255	53.6	642	38.3
Participate	221	46.4	1037	61.7
Decision on visitation to relatives				
Not participate	179	37.6	382	22.8
Participate	297	62.4	1297	77.2
Total	476	100.0	1,679	100.0

Source: Author Construct, 2022. (NDHS, 2018)

Distribution by Socio-Demographic Characteristics of Urban Migrant Women in Nigeria

The table above shows the distribution of migrant women by socio-demographic characteristics. It can be ascertained that more than half of Urban-Rural migrant women were overweight/obese (52.2%), followed by Urban-Rural migrant (37.1%). Underweight is more common among Urban-Rural migrant (8.7%) and the least reported were Urban-Rural migrant by 3.8%. Women age 25-29 years mostly participate in migration and this varies by Urban-Rural migrant (25.4%) and Urban-Rural migrant (22.4%). This is followed by women age 30-34 years and Urban-Rural migrants reported by 22.6% and Urban-Rural migrant by 22.1%. The least reported were women age 15-19 years that engaged in Urban-Rural Migration (2.9%) and Urban-Rural migration (0.9%). Furthermore, Christian women engaged more in Urban-Rural migration (66%) and Urban-Rural migration (63.9%), than Muslim and traditional religion. Women with secondary and higher education were Urban-Rural migrant (44.6% and 12% respectively) and Urban-Rural migrant (50.9% and 23% respectively).

More so, it was ascertained that richer women and those in middle wealth quantile were more of Urban-Rural migrant (35.2% and 23.3% respectively) and majority of Urban-Rural migrant were the richer and the richest by 29.2% and 51.7% respectively. Women that are currently working participate more in and Urban-Rural migration (79.7%), where those that are not currently working were Urban-Rural

migrant (27%). Husband with secondary and primary education were more Urban-Rural migrant (46.3% and 21.1%), whereby husband with secondary and higher education participate more in Urban-Urban migration (51.3% and 28.9% respectively).

In addition, Igbo and Hausa women were more Urban-Rural migrant (40.1% and 20.8% respectively) and Yoruba women were more Urban-Urban migrant (34.1%). Women in monogamous family were more Urban-Urban migrant and Urban-Rural migrant (86.4% and 77.2% respectively). Women that ever gave birth to 1-4 children were more Urban-Urban migrant (69.1%) Urban-Rural migrant mostly gave birth to 4 children above (37.4%). Mostly women having 1-2 children were Urban-Urban migrant, similarly those having 3-4 children were Urban-Rural migrant (49%) and women having 5 children above were Urban-Rural Migrant (37.5%). Majority of women not using modern contraceptive were Urban-Rural migrant (84.5%) and those using were Urban-Urban migrant (25%). Similarly, majority of women exposed to mass media were Urban-Urban migrant (54.6%) and those not exposed were Urban-Rural migrant (54.8%). Urban-Urban migrant women participate in decision on health care, purchases and visitation to relatives (69.8%, 61.7% and 77.2% respectively) than Urban-Rural migrant (51.2%, 46.4% and 62.4% respectively).

Table 2: Distribution by Household Decision Making, Socio-Demographic Characteristics and Body Mass Index among Urban Migrant Women in Nigeria

Characteristics	Urban-Rural			Urban-Urban		
	Underweight	Normal	Overweight/Obesity	Underweight	Normal	Overweight/Obesity
Decision on women health care						
Not participate	71.0	52.0	38.9	55.2	35.3	24.1
Participate	29.0	48.0	61.1	44.8	64.7	75.9
Statistics	$\chi^2=15.97$		P=0.0046	$\chi^2=36.70$		P=0.0000
Decision on household purchases						
Not participate	67.1	58.7	42.9	53.7	45.1	31.4
Participate	32.9	41.3	57.1	46.3	54.9	68.6
Statistics	$\chi^2=13.77$		P=0.0025	$\chi^2=32.29$		P=0.0000
Decision on visitation to relatives						
Not participate	55.3	39.1	31.2	24.1	26.2	19.7
Participate	44.7	60.9	68.8	75.9	73.8	80.3
Statistics	$\chi^2=8.75$		P=0.0437	$\chi^2=8.01$		P= 0.0884
Age						
15-19	3.2	4.2	1.0	1.8	1.4	0.4
20-24	24.8	11.6	5.7	14.8	11.3	4.7
25-29	15.0	31.7	18.5	30.1	27.3	17.8
30-34	23.9	18.4	27.2	26.1	21.8	23.0

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35 years above Statistics	33.1 $\chi^2= 33.43$	34.1	47.6 P= 0.0007	27.3 $\chi^2= 63.68$	38.3	54.2 P= 0.0000
Religion Statistics						
Christianity	37.0	61.4	79.6	39.8	55.5	72.9
Muslim	62.1	38.4	19.7	60.2	44.2	27.0
Traditional	0.9	0.2	0.8	0.0	0.4	0.1
Statistics	$\chi^2= 33.80$		P= 0.0000	$\chi^2= 58.92$		P= 0.0000
Level of Education Statistics						
No formal education	47.8	30.7	9.6	22.7	11.0	8.5
primary	8.0	19.6	21.0	14.2	18.7	13.7
secondary	44.2	42.3	48.1	41.5	51.9	50.8
higher	0.0	7.5	21.3	21.7	18.4	27.0
Statistics	$\chi^2= 54.80$		P= 0.0000	$\chi^2= 27.75$		P= 0.0062
Wealth Status Statistics						
Poorest	18.3	11.4	1.0	9.5	4.0	0.8
Poorer	20.0	16.3	6.5	6.7	6.9	1.7
Middle	27.4	24.6	20.4	19.5	17.3	7.7
Richer	30.6	32.6	39.9	31.4	32.6	26.2
Richest	3.7	15.1	32.2	33.0	39.2	63.6
Statistics	$\chi^2= 52.62$		P=0.0000	$\chi^2= 121.08$		P= 0.0000
Currently Working Statistics						
No	39.3	28.8	21.6	22.1	21.9	18.8
Yes	60.7	71.2	78.4	77.9	78.1	81.2
Statistics	$\chi^2=6.08$		P=0.1773	$\chi^2= 2.12$		P= 0.4108
Husband Level of education Statistics						
No education	34.1	22.1	6.1	17.9	10.3	6.7
Primary	9.2	21.5	23.3	4.8	12.7	10.3
Secondary	46.3	42.6	51.6	50.5	54.0	49.0
Higher	10.4	13.9	19.0	26.8	23.0	34.0
Statistics	$\chi^2=30.32$		P= 0.0017	$\chi^2= 30.04$		P= 0.0085
Ethnicity Statistics						
Hausa/Fulani	54.3	25.1	6.7	21.7	17.7	8.8
Igbo	17.2	34.6	53.5	5.8	21.6	38.7
Yoruba	0.0	10.1	8.3	41.5	40.3	28.3
Others	28.6	30.2	31.6	31.0	20.5	24.2
Statistics	$\chi^2=60.33$		P=0.0000	$\chi^2= 85.72$		P= 0.0000
Family Type Statistics						
Monogamous	72.2	72.2	85.6	73.0	84.6	88.8
Polygamous	27.8	27.8	14.4	27.0	15.4	11.2
Statistics	$\chi^2=11.21$		P=0.0128	$\chi^2= 13.56$		P= 0.0131
Number of children						

ever born	70.4	59.8	55.6	74.4	69.5	68.3
1-4 children	29.6	40.2	44.4	25.6	30.5	31.7
More than 4 children	$\chi^2= 6.06$		P=0.098	$\chi^2= 0.93$		P=0.7229
Statistics			7			
Birth order						
1-2 children	15.3	14.2	15.6	22.8	21.3	18.7
3-4 children	55.1	45.6	40.1	51.5	48.1	49.6
5 children above	29.6	40.2	44.3	25.6	30.6	31.7
Statistics	$\chi^2=7.53$		P=	$\chi^2=2.24$		P=0.8151
			0.2318			
Modern contraceptive use						
No	88.5	83.1	82.0	79.2	78.2	72.0
Yes	11.5	16.9	18.0	20.8	21.8	28.0
Statistics	$\chi^2=1.93$		P=0.521	$\chi^2=7.39$		P=0.0774
			0			
Mass Media						
Not exposed	79.4	56.9	46.1	53.9	48.1	42.5
Exposed	20.6	43.1	53.9	46.1	51.9	57.5
Statistics	$\chi^2=15.71$		P=0.004	$\chi^2= 5.85$		P= 0.1332
			3			

Source: Author Construct, 2022. (NDHS, 2018)

Distribution by Household Decision Making, Socio-Demographic Characteristics and Body Mass Index Among Urban Migrant Women in Nigeria.

The table above showed the association between socio-demographic characteristics and body mass index of urban migrant women in Nigeria at p-value less than 0.05 level of significant. The distribution of household decision making and body mass index revealed that there is significant association between decision making on health care and body mass index among Urban-Rural and Urban-Urban migrants ($\chi^2= 15.97$, $P= 0.0046$; $\chi^2= 36.70$, $P= 0.0000$), urban migrant's women that do not participate in decision on health care are more underweight (71% and 55.2% respectively) whereby those that participate in health care decision are more overweight/obese (61.1% and 75.9% respectively). There is significant association between decision on household purchases and body mass index among urban migrant women ($\chi^2= 13.77$, $P= 0.0025$; $\chi^2= 32.29$, $P= 0.0000$), likewise urban migrant women (Urban-Rural and Urban-Urban) that do not participate in household purchases were more underweight by 67.1% and 53.7% respectively, also those that participated were more overweight/obese by 57.1% and 68.6% respectively. There is significant association between decision on visitation to relatives and body mass index among Urban-Rural migrants' women ($\chi^2= 8.75$, $P= 0.0437$); migrant women that do that participate in decisions related to visitation to relatives are more underweight (55.3%) whereby those that participated were more overweight/obese (68.8%).

More so, there is significant association across other socio-demographic characteristics and body mass index among Urban-Rural and Urban-Urban migrant women, this include age of respondents ($\chi^2=33.43$, $P= 0.0007$; $\chi^2= 63.68$, $P= 0.0000$) respectively, religion ($\chi^2= 33.80$, $P= 0.0000$; $\chi^2= 58.92$, $P= 0.0000$) respectively, level of education ($\chi^2= 54.80$, $P=0.0000$; $\chi^2= 27.75$, $P= 0.0062$) respectively, wealth status

($\chi^2= 52.62$, $P=0.0000$; $\chi^2= 121.08$, $P=0.0000$;) respectively, husband education ($\chi^2=30.32$, $P= 0.0017$; $\chi^2= 30.04$, $P= 0.0085$) respectively, ethnicity ($\chi^2=60.33$, $P=0.0000$; $\chi^2= 85.72$, $P=0.0000$) respectively, family type ($\chi^2=11.21$, $P=0.0128$; $\chi^2= 13.56$, $P= 0.0131$) respectively.

Table 3 Distribution of Relative Risk Ratio Using Multinomial Logistic Regression of Household Decision Making, Socio-Demographic Characteristics and Body Mass Index among Urban Migrant Women in Nigeria

Normal	Urban-Rural				Urban-Urban			
	Underweight		Overweight/ Obesity		Underweight		Overweight/ Obesity	
	RRR	Lower- Upper Confide nt Interval	RRR	Lower- Upper Confide nt Interva l	RRR	Lower- Upper Confident Interval	RRR	Lower- Upper Confide nt Interval
Decision on women health care Not participate Participate	1.00 0.45	0.11-1.75	1.00 0.62	0.29-1.30	1.00 0.34**	0.15-0.76	1.00 1.10	0.75-1.62
Decision on household purchases Not participate Participate	1.00 2.70	0.82-8.96	1.00 2.19*	1.10-4.34	1.00 1.05	0.48-2.27	1.00 1.40	0.94-2.09
Decision on visitation to relatives Not participate Participate	1.00 0.49	0.19-1.28	1.00 0.88	0.38-2.03	1.00 2.67*	1.21-5.88	1.00 0.80	0.52-1.24

Age	1.00		1.00		1.00		1.00	
15-19 years	2.47	0.37-16.66	1.64	0.20-13.11	0.81	0.07-9.48	1.87	0.41-8.56
20-24 years	0.57	0.08-4.26	2.09	0.31-14.11	0.67	0.06-7.31	2.57	0.58-11.37
25-29 years	2.46	0.31-19.82	5.21	0.74-36.69	0.73	0.07-7.85	3.72	0.83-16.74
30-34 years	1.86	0.26-13.47	5.62	0.83-38.09	0.44	0.04-5.31	5.89*	1.30-26.66
35 years above								
Religion	1.00		1.00		1.00		1.00	
Christianity	2.43	0.49-12.07	1.65	0.69-3.95	1.48	0.6-3.20	0.88	0.58-1.34
Muslim	4.51	0.55-37.19	2.69	0.16-43.80	0.00	0.00-0.00	0.23	0.03-1.96
Traditional								
Level of Education	1.00		1.00		1.00		1.00	
No formal education	0.71	0.20-2.47	2.10	0.81-5.45	0.39	0.13-1.16	0.55	0.27-1.12
primary	4.96*	1.30-18.93	2.06	0.73-5.79	0.35*	0.13-0.94	0.54	0.27-1.10
secondary	0.00	0.00-0.00	5.33*	1.48-19.14	0.48	0.15-1.53	0.46	0.21-1.04
higher								
Wealth Status	1.00		1.00		1.00		1.00	
Poorest	0.57	0.19-1.65	3.54	0.92-13.60	0.55	0.12-2.59	1.08	0.33-3.56
Poorer	0.40	0.10-1.66	5.19*	1.29-20.84	0.68	0.21-2.22	2.25	0.95-5.33
Middle	0.29	0.07-1.19	6.90*	1.73-27.52	0.60	0.19-1.92	4.57*	1.94-10.77
Richer	0.11	0.01-1.31	*	2.43-41.22	0.57	0.16-2.02	*	3.30-18.02
Richest			10.01**				7.71**	
Currently Working	1.00		1.00		1.00		1.00	
No	1.10	0.37-3.25	0.92	0.47-1.77	1.09	0.50-2.38	1.04	0.72-1.51
Yes								
Husband Level of education	1.00		1.00		1.00		1.00	
No education	0.85	0.26-2.76	1.56	0.53-4.63	0.48	0.13-1.84	0.62	0.30-1.29
	3.36*	1.17-9.63	1.51	0.54-4.22	1.34	0.50-3.55	0.69	0.35-1.35
	1.83	0.37-9.03	0.94	0.29-	1.34	0.42-4.22	1.14	0.60-2.15

n Primary Secondary Higher				3.02				
Ethnicity	1.00		1.00		1.00		1.00	
Hausa/Fulani	0.21 0.00	0.03-1.65 0.00-0.00	1.76 0.61	0.45- 6.99	0.63 1.57	0.12-3.43 0.56-4.42	3.04* *	1.61-5.74 0.65-1.85
Igbo	0.32	0.07-1.45	1.53	0.15- 2.40	1.91	0.73-5.01	1.10 2.04*	1.15-3.61
Yoruba				0.47- 5.03				
Family Type	1.00		1.00		1.00		1.00	
Monogamous	0.46	0.17-1.26	0.94	0.48- 1.83	1.96	0.89-4.32	0.95	0.56-1.61
Polygamous								
Number of children ever born	1.00		1.00		1.00		1.00	
1-4 children	3.25	0.60- 17.74	1.00	0.39- 2.58	0.65	0.22-1.95	1.27	0.73-2.22
More than 4 children								
Birth order	1.00		1.00		1.00		1.00	
1-2 children	2.59 1.00	0.62- 10.85	1.59 1.00	0.78- 3.25	1.06 1.00	0.46-2.47 -----	1.27 1.00	0.86-1.88
3-4 children		-----		-----				
5 children		-		--				
above								
Modern contraceptive use	1.00		1.00		1.00		1.00	
No	0.59	0.13-2.77	1.59	0.85- 2.98	0.98	0.46-2.12	1.37	0.97-1.92
Yes								
Mass Media	1.00		1.00		1.00		1.00	
Not exposed	0.47	0.21-1.06	1.18	0.71- 1.95	1.10	0.58-2.10	1.13	0.84-1.51
Exposed								

*** p < 0.001; ** p < 0.01; * p < 0.05.

Source: Author Construct, 2022. (NDHS, 2018)

Distribution of Relative Risk Ratio Using Multinomial Logistic Regression of Household Decision Making, Socio-Demographic Characteristics and Body Mass Index Among Urban Migrant Women in Nigeria

The table 3 above shows the relative risk ratio using multinomial logistic regression of household decision making, socio-demographic characteristics and body mass index among urban migrant women at p-value less than 0.05 level of significant. Urban-Rural migrant women that participated in making decision on purchases were 2.19 times at risk of been overweight/obese than those that do not participate in decision making on visitation to relatives (RC). Urban-Urban migrant women that participated in making decision on health care were 66% less likely at risk of been underweight to those that do not participate (RC). Urban-Urban migrant women that participate in making decision related to visitation to relatives were 2.67 more likely at risk of been underweight than those that do not participate (RC).

Also, Urban-Urban migrant women age 35 years above were 5.89 more at risk of been overweight/obese than women in age 15-19 years (RC). Urban-Rural migrant women with secondary and higher education were 4.96 and 5.33 more at risk of being underweight and overweight/obese respectively than women with no formal education (RC). Urban-Urban migrant women with secondary education were 0.35 less likely at risk of been underweight than women with no formal education (RC). Urban-Rural migrant women in the middle wealth quantile were 5.19 more at risk of overweight/obese than poorest women (RC). Richer Urban-Rural and Urban-Urban migrant women were 6.90 and 4.57 more at risk of been overweight/obese than poorest migrant women (RC). Similarly, richest Urban-Rural and Urban-Urban migrant women were 10.01 and 7.71 more at risk of been overweight/obese than poorest migrant women (RC). Urban-Rural migrant women that reported husband have secondary education were 3.36 more at risk of been underweight than those reported husband have no formal education (RC). Igbo Urban-Urban migrant women were 3.04 more at risk of been overweight/obese than Hausa/Fulani women (RC).

Discussion of Findings

Rising prevalences of malnutrition along with low levels of physical activity represent major public health concerns in both the industrialised and newly industrializing countries. The underweight and overweight/obesity scenario is particularly problematic for countries like Nigeria due to the simultaneous and widespread prevalence of undernutrition in the population (Ghose & Yaya, 2018), which warrant the need for evidences on this growing, epidemic especially from a behavioural health perspective. This report and other reports from developing nations have buttressed the observation that the prevalence rates of malnutrition in developing countries changing rapidly with urban and rural variations (Iloh, Amadi, Nwankwo, & Ugwu, 2011). This urban-rural variation is attributed to the observation that the urban population is usually associated with modernization of lifestyle, which is largely characterized by a change in the dietary pattern and lower physical activity, including personal, instrumental and domestic activities of daily living, when compared with the rural population.

The present study, we have shown the prevalence of underweight and overweight/obesity among urban migrant women in Nigeria, as well as investigated whether or not household decision making, increases the likelihood of having below or higher than normal body weight among the participants. Results showed that the prevalence of overweight/obesity seem high among Urban-Urban migrant by 52.2% while underweight very high among Urban-Rural migrant by 8.7%. This finding thus corroborates earlier studies that that examined a multi-country study among women of same age range (15–49 years) in Africa reported a combined prevalence of overweight and obesity to be 22.6%, which indicates that the prevalence of women with higher-than-normal BMI in Nigeria is slightly higher than that of African country average (Neupane, Prakash and Doku, 2016). The underweight reported is within the range of 5 to 20% reported for African women (Senbanjo et al., 2013). However, it is lower than the 25% reported for Ethiopian women (Woldemariam&Genebo, 2000), over 60% for Indian women (Bamji, Murthy, Williams &Rao, 2008) and 43.7% for women in Bangladesh (Rahman&Nasrin, 2009). However, the prevalence of obesity has been reported to be higher in urban than in rural communities (Iloh et al., 2011). In addition, Adediran et al, in their recent study of anthropometric differences among natives of Abuja, Nigeria living in urban and rural communities, found that all anthropometric indices of overweight and obesity considered in their study were significantly higher in the urban than in the rural population (Adediran, Adebayo &Akintunde, 2013).

The predictors of body mass index among migrant women shows that Urban-Rural migrant women that participated in making decision on purchases were more at risk of been overweight/obese. This is due to westernization with high consumption of high-fat diets, greater availability and affordability of packaged foods, choice of processed foods over naturally occurring non-processed ones that urban migrants are more accustomed with which might be difficult to totally adapt to rural consumption pattern. Ekezie, Anyanwu, Danborn, & Anthony, (2011) supported that the influence of westernization and improved social and economic factors is the reduction of physical activities amongst the urban dwellers. The presence of available and affordable transportation systems, sedentary jobs, dish washers, laundry machines and remote controlled appliances have reduced physical activities. Similarly, Urban-Urban migrant women that participated in making decision on health care were 66% less likely at risk of been underweight. Urban-Urban migrant women that participate in making decision related to visitation to relatives were more at risk of been underweight.

Also, Urban-Urban migrant women age 35 years above were 5.89 more at risk of been overweight/obese, than women age 15-19 years (RC). Amugsi, Dimbuene, & Kyobutungi, (2019) supported that older woman become the more likelihood that suffer from malnutrition. The consequential effect of this may be poor health outcomes, as being exposes women to higher risks of morbidity and mortality during pregnancy and child birth.

Urban-Rural migrant women with secondary and higher education were more at risk of being underweight and overweight/obese. Thus, a higher number of years of education is a risk factor for Urban-Rural migrant women to have unhealthy weight. This could be due to lifestyles changes as one achieve more years of education, which may include sedentary lifestyles and poor dietary patterns (Kautzky-Willer, Dornier&Jensby, 2012). It could be that people who are already overweight or obese

have higher propensity of adding more weight relative to those who have normal weight. These findings are in line with previous studies. In Ghana, higher education was associated with overweight and obesity among women (Doku&Neupane. Double, 2015).Urban-Urban migrant women with secondary education were 0.35 less likely at risk of been underweight.

Urban-Rural migrant women that are richest, richer and middle wealth quantile were more at risk of overweight/obese. Similarly, Urban-Urban migrant women that are richer and richest were more at risk of been overweight/obese than poorest migrant women (RC). In general, the three rich quintiles: middle, richer and richest were associated significantly and positively with overweight and obesity among Urban migrant women. This may be due to obesogenic effects of increased household wealth as dietary pattern changes (Aitsi-Selmi, Bell, Shipley, et al., 2014), and the fact that there is a documented positive correlation between household wealth and unhealthy body weight (Bishwajit, 2017).

Urban-Rural migrant women that reported husband have secondary education were 3.36 more at risk of been underweight than those reported husband have no formal education (RC). Igbo Urban-Urban migrant women were 3.04 more at risk of been overweight/obese.

Conclusion

In conclusion, this study reveals high prevalence of overweight/obese among urban-urban migrant while underweight was highly reported among urban-rural migrant. It also confirms relationship between household decision making and maternal malnutrition, women that participate in household purchases, visitation to and relative among Urban-Rural and Urban-Urban migrants respectively, were more malnourished than others who do not participate. In addition, urban-urban migrant women that participate in visitation to health facility were less likely to be underweight. In order to reduce malnutrition and mortality among women to the barest minimum, every effort must be made by the government to improve maternal nutritional status among older women age 35 years above, highly educated women, both poor and wealthy family and mostly among Igbo Urban-Urban migrant women. This enhanced evidence-based approach to developing Nigeria Migration Health policy and program processors on malnutrition. Likewise, interventional measures should also be considered by health planners and policy makers in their formulation of policies and designing of programmes toward reducing the burden of malnutrition among internal migrant women in Nigerian by providing interventions that will target proper dietary intake among migrant women that participate in household decision related to purchases and visitation to relatives. There is also need to increase knowledge of nutrition in accordance with educational attainment and wealth status that will make them receptive to health interventions and improve their nutritional status. Lastly, needs for more research finding gear towards solving overweight/obesity among Igbo Urban-Urban migrant women in Nigeria.

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