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Association of Sociodemographic Characteristics and Lifestyle Factors among Nigerian Women (18–60 Years) Based on Settlement Backgrounds

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ABSTRACT

Sociodemographic characteristics such as age, education, income, marital status, and occupation significantly influence lifestyle behaviors among women. These factors vary across settlement types (urban, suburban, and rural), shaping health outcomes and accessibility to healthcare. This study aimed to evaluate the association between sociodemographic characteristics and lifestyle factors among Nigerian women aged 18–60 years across different settlement types. A cross-sectional study involving 669 women (rural = 206, suburban = 219, urban = 244) was conducted in Kaduna State, Nigeria. Data were collected using a structured questionnaire and analyzed using SPSS version 23.0. Associations were tested using chi-square statistics at $p \leq 0.05$. Significant associations were observed between settlement and birth season ($p = 0.001$), marital status ($p = 0.001$), age at marriage ($p = 0.001$), education ($p = 0.001$), occupation ($p = 0.001$), and BMI ($p = 0.001$). Lifestyle factors, including general health perception ($p = 0.001$), meal frequency ($p = 0.001$), exercise ($p = 0.001$), and alcohol consumption ($p = 0.001$), also varied significantly. No significant association was found for smoking ($p = 0.669$). Settlement significantly influences both sociodemographic and lifestyle factors. Targeted public health interventions are required to address disparities across rural, suburban, and urban populations.

Keywords: Sociodemography, lifestyle, settlement, Nigerian women, public health

INTRODUCTION

Sociodemographic factors, such as age, level of education, income, marital status, and occupation, significantly influence lifestyle behaviors among women aged 18 to 60 years ^{1,2,3}. These characteristics vary across different settlements, namely: urban, suburban, and rural, shaping health-related behaviors, dietary patterns, physical activity levels, and healthcare access. Settlement type determines access to socioeconomic opportunities, influencing women's overall well-being ⁴.

Urban environments often provide better healthcare services, employment opportunities, and exposure to global lifestyle trends, but they also contribute to sedentary behaviors and unhealthy dietary habits, increasing the risk of non-communicable diseases (NCDs) such as obesity and hypertension ⁵. In contrast, rural areas, while promoting physically active lifestyles, often have limited access to

healthcare, leading to higher maternal mortality rates and infectious diseases ⁶.

The variation between rural, suburban, and urban living environments presents unique challenges and benefits that influence public health. Age, education, and income level are particularly strong determinants of health behaviors ⁷. Studies show that women with higher education levels are more likely to engage in healthier lifestyle choices, including balanced diets, regular exercise, and avoiding harmful substances like tobacco and alcohol ⁸. Conversely, women with lower education levels, more common in rural areas, are less aware of healthy lifestyle choices and are more likely to engage in unhealthy dietary habits ⁹. Also, women with higher incomes, often found in urban areas, can afford healthier diets, access quality healthcare, and engage in fitness activities ¹⁰. However, financial constraints in rural settlements often lead women to rely on high-calorie, low-nutrient foods and traditional medicine instead of modern healthcare services ¹¹. Settlement type strongly influences lifestyle behaviors among women. Urban environments expose women

to sedentary behaviors and processed food consumption, increasing the prevalence of obesity, cardiovascular diseases, and diabetes ⁵. In contrast, rural women engage in more physically demanding daily activities, including farming and household labor, leading to lower obesity rates ⁶. However, they also face higher risks of malnutrition, limited healthcare access, and higher maternal mortality rates due to inadequate medical infrastructure ¹².

Understanding the association between sociodemographic characteristics and lifestyle choices across different settlements is important in the health care management and general well-being of women. This study aims to evaluate the association of sociodemographic characteristics and lifestyle factors among women aged 18 to 60 based on different settlements.

MATERIALS AND METHODS

The study was conducted in Kaduna State, Nigeria, which is located between latitude 10°20'N and longitude 7°45'E, consisting of 23 local government areas, with a land mass of 46,053 km². The state has a population of 6,066,562 and a population density of 130 km² ¹³.

This study included a total of 669 participants: rural population (n = 206), suburban population (n = 219), and urban population (n = 244) from the urban region of Kaduna North and Kaduna South L.G.A., the suburban region of Chikun L.G.A., and the rural region of Kajuru L.G.A. of Kaduna State, Nigeria. The study subjects were aged between 18 and 60 years. It was a cross-sectional research using multistage/cluster sampling. Participants' sociodemographic information and lifestyle factors were captured using a structured questionnaire administered to participants.

Informed consent

All participants were duly informed of the procedures carried out on them, and only those who gave their consent were used for this study.

Ethical consideration

Ethical approval was obtained from Ahmadu Bello University Ethical Committee on the use of human

subjects in accordance with the Helsinki declaration (1952). Approval No: ABUCUHSR/2020/016

Statistical analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. The association of sociodemographic information and lifestyle factors among the women aged 18 to 60 years was determined using the chi-square test.

RESULTS

Sociodemographic Characteristics of the Study

Population based on settlement

There was a significant association in birth season ($p=0.001$), number of siblings ($p=0.040$), marital status ($p=0.001$), age at marriage ($p=0.001$), educational status ($p=0.001$), and occupation ($p=0.001$) across the rural, suburban, and urban participants.

The BMI categories show significant association with settlement, BMI ($p=0.001$), with rural participants having a higher percentage of underweight women, BMI of less than 18 and normal weight women, BMI ranging from 18-24.5, suburban participants having more overweight, BMI ranging from 25-29.5 and obese individuals, BMI that is equal to or greater than 30 and urban participants also exhibit similarity with suburban, but with a notable percentage of obesity.

The study found no significant association ($p=0.857$) between the number of elder brothers, elder sisters, handedness, and residential location (Table 1).

Lifestyle factors of the participants based on the settlements

The study found a significant association in general health perceptions ($p=0.001$), meal frequency ($p=0.001$), exercise frequency ($p=0.001$), alcoholism ($p=0.001$), and settlement. The urban participants reported improved general health perception and higher meal frequencies than women in the rural and suburban regions, while, in the aspect of alcohol consumption, the rural women consumed more than their counterparts in the suburban and urban regions. The study found no significant association ($p = 0.669$) between smoking habits and settlement (Table 2).

Table 1: Variation of Sociodemographic characteristics among Rural, Suburban, and Urban participants

Characteristic		Rural n (%) 206 (30.8)	Suburban n (%) 219 (32.7)	Urban n (%) 244 (36.5)	χ^2 -value	p-value
Birth season	Dry	51 (24.7)	61 (27.9)	140 (57.4)	190.434	0.001
	Rainy	33 (16.0)	124 (56.6)	104 (42.6)		
Number of siblings	<3	21 (10.2)	16 (7.3)	13 (5.3)	13.177	0.040
	3-5	69 (33.5)	89 (40.6)	111 (45.5)		
	>5	116 (56.3)	114 (52.1)	120 (49.2)		
Elder brothers	<3	172 (83.5)	175 (79.9)	201 (82.4)	1.324	0.857
	3-5	29 (14.1)	36 (16.4)	37 (15.2)		
	>5	5 (2.4)	8 (3.7)	6 (2.5)		
Elder sisters	<3	168 (81.6)	167 (76.3)	195 (79.9)	2.603	0.626
	3-5	35 (17.0)	45 (20.5)	43 (17.6)		
	>5	3 (1.5)	7 (3.2)	6 (2.5)		
Marital status	Married	167 (81.1)	152 (69.4)	192 (78.7)	56.110	0.001
	Unmarried	0 (0.0)	43 (19.6)	23 (9.4)		
	Widowed/Divorced	39 (18.9)	24 (11.0)	29 (11.9)		
Age at marriage	<20	95 (46.1)	68 (31.1)	50 (20.5)	70.286	0.001
	20-25	66 (32)	83 (37.9)	129 (52.9)		
	26-30	9 (4.4)	24 (11)	46 (18.9)		
	>30	2 (1)	4 (1.8)	3 (1.2)		
Educational status	Primary	53 (25.7)	51 (23.3)	31 (12.7)	161.868	0.001
	Secondary	50 (24.3)	93 (42.5)	79 (32.4)		
	Tertiary	0 (0.0)	47 (21.5)	90 (36.9)		
Occupation	Civil servant	0 (0.0)	31 (14.2)	66 (27)	295.110	0.001
	Entrepreneur	11 (5.3)	49 (22.4)	99 (40.6)		
	Farmer	130 (63.1)	87 (39.7)	2 (0.8)		
	Housewife	65 (31.6)	42 (19.2)	68 (27.9)		
	Student	0 (0.0)	10 (4.6)	9 (3.7)		
	>18 (underweight)	57 (27.7)	10 (4.6)	6 (2.5)		
BMI	18-24.5 (normal)	140 (68)	112 (51.1)	140 (57.4)	160.449	0.000
	25-29.5 (overweight)	9 (4.4)	64 (29.2)	81 (33.2)		
	≥30 (obese)	0 (0.0)	33 (55.1)	17 (7.0)		

Significance at $p \leq 0.05$

Table 2: Variation in lifestyle factors and health indices among Rural, Suburban, and Urban dwellers

Characteristic		Rural 206 n (%)	Suburban 219 n (%)	Urban 244 n (%)	χ^2 -value	p-value
General health	Poor	30 (14.6)	23 (10.5)	17 (7.0)	37.395	0.001
	Fair	91 (44.2)	55 (25.1)	64 (26.2)		
	Good	58 (28.2)	88 (40.2)	100 (41.0)		
	Excellent	27 (13.1)	53 (24.2)	63 (25.8)		
Meals/day	Once	0 (0.0)	1 (0.5)	1 (0.4)	72.169	0.001
	Twice	51 (24.8)	15 (6.8)	13 (5.3)		
	Thrice	133 (64.6)	136 (62.1)	144 (59.0)		
	>Thrice	22 (10.7)	67 (30.6)	86 (35.2)		
Exercise frequency	Never	129 (62.6)	41 (18.7)	0 (0.0)	415.919	0.001
	Sometimes	51 (24.8)	103 (47.0)	244 (100.0)		
	Used to	22 (10.7)	20 (9.1)	0 (0.0)		
	Everyday	4 (1.9)	55 (25.1)	0 (0.0)		
Smoking habit	Smoker	0 (0.0)	0 (0.0)	0 (0.0)	0.669	0.669
	Non-smoker	206(100.0)	219 (100.0)	244 (100.0)		
Alcoholism	Alcoholic	117 (56.8)	6 (2.7)	18 (7.4)	229.806	0.001
	Non-alcoholic	89 (43.2)	213 (97.3)	226 (92.6)		

Significance at $p \leq 0.05$

DISCUSSION

The result from the present study indicates a significant variation in birth seasons based on the different settlements, which is in agreement with findings by ^{14,15,16}. In Zaria, a study revealed that monthly birth rates are affected by sociodemographic factors, which can vary between rural and urban populations ¹⁵. This could be attributable to better access to family planning services by urban and suburban women than their rural counterparts. In South-eastern, Nigeria, a study has shown that temperature variations can influence conception and birth patterns. Results from the study indicate that certain months exhibit higher birth rates, suggesting a link between climatic conditions and reproductive behavior ¹⁴. This pattern may differ in rural settings due to varying climatic conditions and their impact on daily life. Another probable reason for this variation could be the agricultural cycles that are more pronounced in rural settings, which often dictate daily life and can influence conception patterns. For instance, during planting and harvest seasons, the physical demands and time constraints may lead to reduced sexual activity, resulting in lower conception rates during these periods. Conversely, post-harvest periods, which are typically less labor-intensive and associated with festivals and celebrations, may see increased conception rates. This claim is supported by a study analyzing birth patterns in southeastern Nigeria, where a peak in births between April and June was observed, corresponding to conceptions during the post-harvest period ^[11]. This trend is more pronounced in rural areas, where traditional practices are more deeply rooted. However, urban and suburban areas, while also hosting cultural events, may experience less pronounced seasonal birth variations due to a blend of cultural influences and lifestyles. This is supported by a study in Makurdi, Benue State, Nigeria, by Idom¹⁶, who observed two major peaks in birth rates: March to June and September to October.

The study also reveals a variation in the timing of marriage based on settlements, with rural women marrying earlier than their urban and suburban counterparts. This is in agreement with findings by Ononokpono *et al.*, in their study of modelling determinants of geographical patterns in the marital statuses of women in Nigeria ¹⁷. This trend could be attributed to extended educational pursuits, career development, and shifting societal norms that prioritize personal and professional growth before marriage. In contrast, contributing factors for the early marriage in rural women could be traditional cultural practices, limited access to higher education, and economic structures that may encourage earlier family formation ¹⁷.

A significant variation in educational level and occupation of the participants based on settlements

was also observed. A study suggested that women in rural settings are disadvantaged, which negatively affects educational achievements and may push them towards being more housewives, entrepreneurs, and/or farmers, while those in the urban and suburban settings are more advantaged due to easier access to schools, educational resources, and opportunities ¹⁸.

The BMI values of the urban women were observed to be higher, followed by the suburban, than those of their suburban and rural counterparts. This agrees with a study by Anyawu *et al.*, who documented that the urban women had higher adiposity indices than their rural counterparts ¹⁹, and another study by Neuman *et al.*, who examined urban-rural disparities in BMI within low and middle-income countries ²⁰. The findings suggest an increase in adiposity with advancing urbanization, attributed to variations in socioeconomic status (SES). Urban women in Nigeria often have higher SES, which correlates with increased BMI. This association is attributed to greater access to calorie-dense foods and sedentary lifestyles prevalent in urban settings. Conversely, rural women typically engaged in more physically demanding activities and, with limited access to processed foods, tend to have lower BMI. Another study analyzing data from the 2018 Nigeria Demographic and Health Survey found that household wealth significantly contributed to the disparities in overweight and obesity rates between urban and rural women ²¹. A study in Sub-Saharan Africa indicates that physical inactivity is more prevalent among urban dwellers, correlating with increased obesity rates ²². Educational attainment influences health awareness and practices. Urban women generally have better access to education and health information, which can impact their dietary choices and lifestyle behaviors. However, despite higher awareness, urban women still exhibit higher BMI, suggesting that knowledge alone may not translate into healthier practices without supportive environments ²¹.

Lifestyle factors such as Perceptions of general health among Nigerian women vary significantly across rural, suburban, and urban settings, as supported by results from the present study, attributable to a combination of socio-economic, cultural, and systemic factors. Urban areas typically offer better access to healthcare facilities and services compared to rural regions. A study by Shehu *et al.* revealed that urban Nigerian women are more likely to utilize maternal healthcare services due to the proximity and availability of healthcare facilities ²³. In contrast, rural women often face challenges such as distance to health centers and inadequate healthcare infrastructure, leading to lower utilization rates and potentially poorer health perceptions. Another study by Okeibunor *et al.* reported that individuals in urban and suburban

areas of southeastern Nigeria rated public health services more favorably and utilized them more frequently than those in rural areas²⁴. This disparity suggests that urban and suburban women may perceive their health status more positively due to better experiences with healthcare services than their rural counterparts. SES also plays a crucial role in health perception. Urban women often have higher educational levels and income, enabling better access to healthcare services and information. In contrast, rural women may experience lower socio-economic status, limiting their access to quality healthcare and contributing to a perception of poorer health²⁴. Physical activity levels defined by exercise frequency differ between urban, suburban, and rural populations as revealed by results from the present study. This is supported by Ekpenyong *et al.*, who documented that 25 to 65 % of Nigerians are physically inactive, with rapid urbanization as the driving force²⁵. Most urban homes have limited space to exercise due to overcrowding in residential areas, and trek less, due to available and affordable transport systems, and most tasks are performed by machines, while rural settlers farm more, trek more, and engage in more strenuous domestic routines, and hence, are less prone to being overweight and obese even in genetically predisposed individuals²⁵. Nutritionally, urban dietary patterns favor processed food rich in animal-source fat, salt, and sugar, as opposed to the natural and more locally sourced food of the rural settlers²⁶.

Variation in alcohol consumption based on settlements, with higher alcoholism recorded in rural women. This finding is in contrast to a study by the National Institute on Alcohol Abuse and Alcoholism, which documented that urban residents generally have higher rates of alcohol consumption compared to their rural counterparts. The study also documented that urban and rural residence interacts with other demographic factors such as age, region, and race/ethnicity, which can influence alcohol use patterns²⁷.

CONCLUSION

There exists a significant association between sociodemographic and lifestyle factors of Nigerian women aged 18 to 60 based on settlement. Urban women benefit from better healthcare access but are prone to sedentary lifestyles and diet-related diseases, while rural women engage in more physically demanding lifestyles but lack adequate healthcare and are more prone to alcoholism. Addressing these variations will improve healthcare accessibility in rural areas and policies promoting healthier urban lifestyles.

Conflict of interest: The authors have no conflict of interest to declare.

Authors' contributions: GKA: research conception, design, and data collection; BMK: Data

analysis and interpretation; JAT, SAA & BD: Revising the manuscript

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