Determinants of Healthy Aging in Internally Displaced Communities in Nigeria

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The main objective of this research article, is to assess the effect of socio-economic and environmental determinants on the healthy aging status amongst internally displaced migrants and non-migrants nestled within the environmentally stressed regions of Northeastern Nigeria. Methodologically the study utilized secondary data from the Nigerian IDP Survey 2018 (Location-Northeastern States; n-1293 adults aged ≥50; male n-63.1%, female n-36.9%) using a multi-stage stratified random sample. Varied statistical techniques such as cross-tabulation and binary logistic regression were used to analyze the dataset. The study results show a high mean prevalence of old-age disability within the study area, irrespective of migration status in Northeastern Nigeria. Secondly, socio-economic and environmental determinants were robust predictors of later-life health outcomes. In addition, the regression revealed that concomitant factors such as age, gender and sanitation have a negative effect on older adult wellness and well-being. Meanwhile, the migration status of internally displaced persons (IDPs), although in most cases forced, significantly improves the odds of aging healthily. Conclusively, the quality of life of the older adults, irrespective of migration status, is poorly impacted by diminishing familial supports, social exclusion, non-existent social security program and non-existence of healthcare infrastructure. Based on the study results, we recommend that the proposed Economic Community of West African States (ECOWAS) Sahelian "Green belt" afforestation project targeted, especially to areas around the Chad basin be fully implemented, as this project will help mediate the perennial conflicts between the herdsmen and farming communities. Furthermore, there is an urgent need to formulate an integration between migration and geriatrics which would be comprehensive, and evidence-driven. Study recommend that budgetary allocation for health should have a flooring capped at 20% of the national budget..

Keywords: environmental stress, forced migration, population aging, Nigeria, Sullivan method

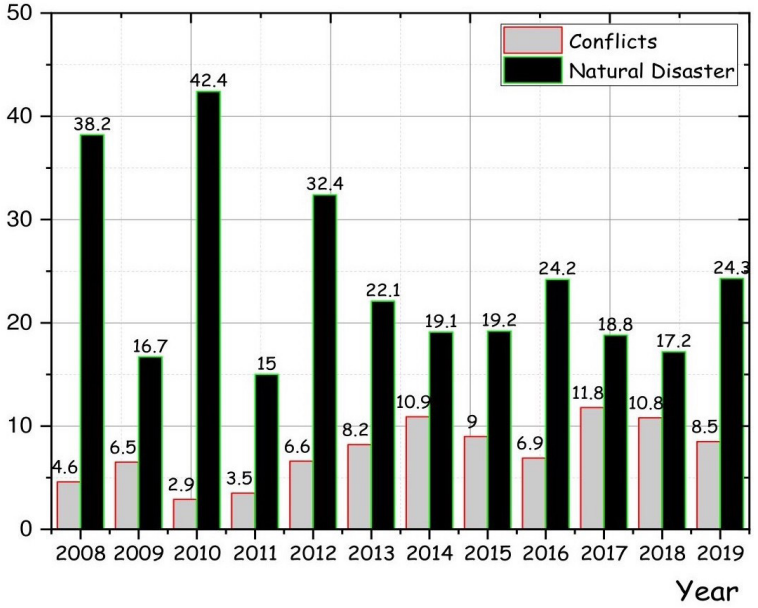
INTRODUCTION

The combined impacts of conflicts, environmental and climatic changes on socio-economic development as witnessed in the 21st century are complex (IOM, 2018; IDMC, 2019a; IDMC-GRID, 2020). This trident portends short- and long-term challenges to policy audiences and nations worldwide, in most cases precariously altering the demographic structures while also hindering the sustainable development drive of most countries. Increasingly more regions around the globe are experiencing unprecedented levels of habitat loss due to factors such as climate change, change in land use/land cover, desertification, and water pollution. This has devastating effects on the most vulnerable communities, particularly in least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS) (Hartter et al., 2015; IPCC, 2018; Strandberg and Kjellström, 2019).

In order to better comprehend the scale of this phenomenon, according to the IDMC-GRID (2020), 33.4 million people were recently internally displaced, making 2019 the year with the highest annual increase since 2012. A staggering 8.5 million of the internally displaced persons (IDPs) were driven by conflict and violence, while 24.9 million IDPs were triggered by around 1,900 recorded disaster events across 145 countries and territories. The status of 23.9 million of these IDPs was directly attributable to weather-related disasters (See in Figure 1). During 2019, a total of 75.5% of IDPs, which accounted for an estimated 34.5 million IDPs, were resident in just 10 countries. Of these IDPs, 18.3 million are children under the age of 15 years, while 3.7 million are persons aged 60 years and above (IOM, 2018; IDMC-GRID, 2020).

Climate-induced displacement is fluid and widespread, constantly reshaping migration patterns across different regions and most especially in the LDCs, LLDCs and SIDS nations. According to the UNHCR (2018) an estimated 79.5 million people are currently displaced worldwide, which constitutes about 1% of the human population derived from 28 million new humanitarian crises across 148 countries and territories. It is evident that the humanitarian crises abound and persist unabated (IDMC-GRID, 2020). The global migration picture must, therefore, be seen as a sum of many parts and it is important to put recent developments in specific regions into global and historical contexts.

Figure 1: Annual distribution of internal displacement by causation (2008-2019)



Source: Authors' compilation (2020)

Sub-Saharan Africa

In Africa, inter-tribal conflicts are the leading source of internal displacement[1] alongside the effects of environmental change. The continent at present houses over one-third of the global internally displaced population. This is in spite of the unanimous adoption by the different African states of the African Union Convention for the Protection and Assistance of Internally Displaced Persons plan in 2012 (AU, 2012). The sub-Saharan region which comprises 47 nations is still home to an estimated 16.8 million IDPs. Conflicts and violence within the sub-region contributed 4,590,000 new IDPs and 3,448,000 IDPs were displaced as a result of environmental stress. This is evidenced in the temporal escalation of violence and an overall deterioration of security, mostly within the Sahelian sub-regions, that are still ongoing in nations like Nigeria, Burkina Faso, Mali and Niger (World Bank, 2017a).

Causes of internal displacement in Nigeria (stylized fact)

The problem of forced migration and internal displacement in Nigeria persisted post-independence, and this has often been triggered by ethno-religious communal

[1] In this study the terms internal displacement and forced migration are used interchangeably.

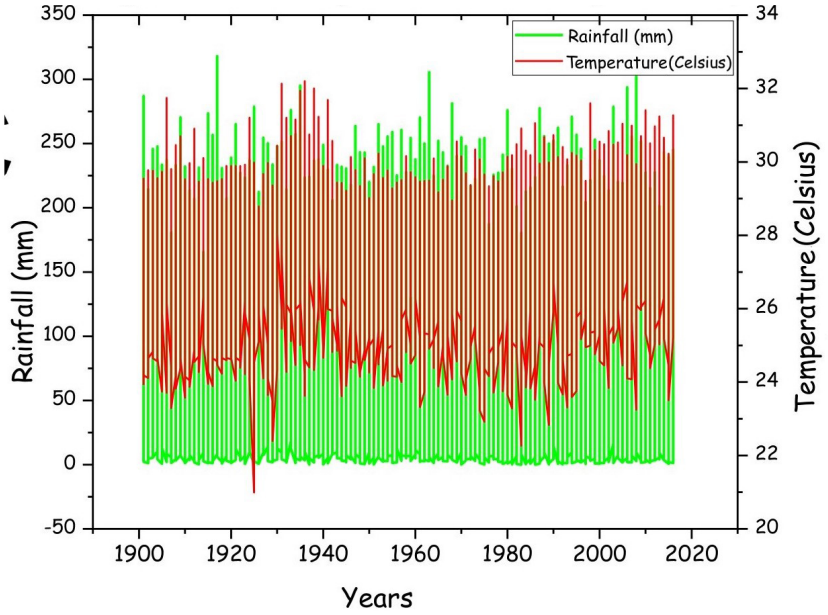
disputes, electoral violence, a civil war in 1967 and natural disasters such as flooding and desertification. Nigeria is currently ranked as one of the highest IDP-dense countries with one of the highest numbers of conflict-induced IDPs (IOM, 2018; GTI, 2019). Since 2013, the country has experienced an unprecedented spike in internal displacement due to the insurgency in the northern part of the country caused by Boko-Haram[2] (north-east) and Fulani herdsmen[3] (north-west). Together, they account for 78% of terror-related incidents and 86% of deaths from terrorism (Mohammed, 2017; GTI, 2019). The Displacement Tracking Matrix (DTM) Round 13 Report estimated 1,770, 444 IDPs in the northeastern parts alone. Displacement in this area is principally caused by conflict (1,770,444) attributed to the Boko-Haram Islamist group, coupled with the intensification of the conflict between pastoralists and the nomadic Fulani terrorist-facilitated further displacements leading to a total of 2,706,152 IDPs across 13 states in Nigeria (IOM, 2018).

Environment-induced migration is occurring at an increasing rate in Northern Nigeria, considering that 613,000 persons were recently displaced as a direct impact of environmental stressors (IDMC, 2019b). Studies have shown that the Sudano-Sahelian Ecological Zone (SSEZ) suffered from seasonal and inter-annual climatic variability as measured in most parts of the country (See in Figure 2). This led to increased droughts and the inevitable onset of the desertification processes, particularly since the 1960s decrease in rainfall in the range of about 3-4% per decade since the beginning of the 19th century (FRN, 2003; Abaje et al., 2011). The Sahelian droughts of the 1970s and the 1980s ravaged this zone and left farmers impoverished (Ati et al., 2007). This zone falls within the "Arc of Tension", a region burdened by successive disasters in the form of flash flooding, coupled with the slow onset of extreme drought and desertification (Abaje et al., 2011; Abaje et al., 2012).

2 Boko-Haram is known as the Islamic State in West Africa, and was formerly known as Jama'at Ahl as-Sunnah Lid-Da'wahwa'l-Jihad (Founded in 2002).

3 Fulani extremists are from the Fulani tribe in Northern Nigeria and from other neighboring countries in the Sahel, a tribe known for cattle herding.

Figure 2: Climatic Transition in Nigeria (1901-2016)



Source: Authors' compilation (2020)

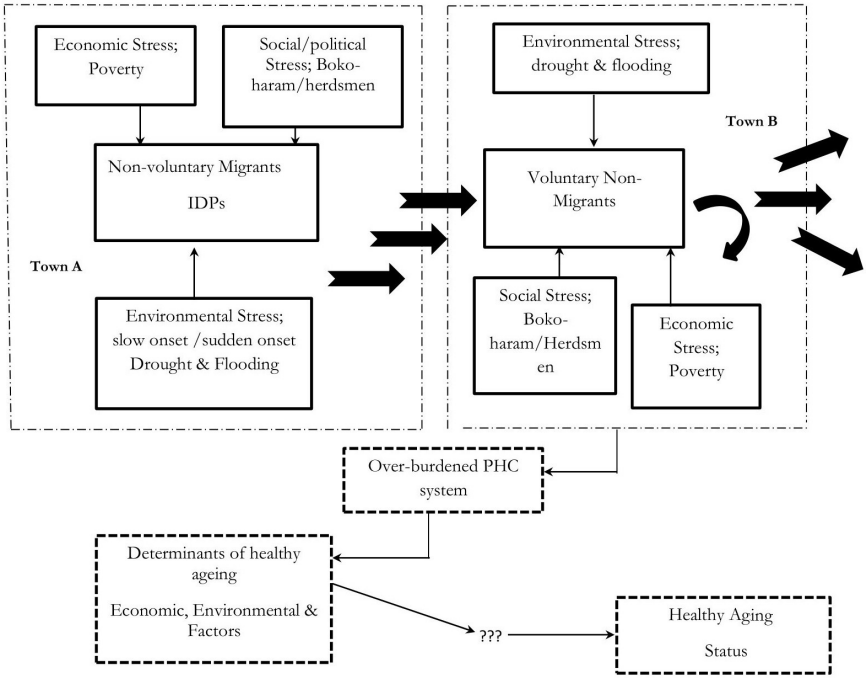
Northeastern Nigeria is being structurally transformed and overburdened by forced migration, triggered by conflicts and disasters resulting in clashes between host communities and the displaced population over scarce socio-economic resources. This humanitarian situation in the Northeast is deteriorating, with almost 8 million people heavily dependent on humanitarian aid. An estimated 823,000 people are out of the reach of aid organizations, and little is known about their health needs. According to the UN, 5.4 million people are in dire need of healthcare (UN OCHA, 2018).

There is a growing need to view the resultant problems associated with migration and non-migration within this region through new lenses, as they are far too complex to be characterized in just a binary perspective. In compositional terms, most people and households that face climate risks do not migrate, particularly in LDCs, LLDCs and SIDS. On the other hand, forced migration is increasingly recognized as a leading source of global health crises. Evidence shows that conflict-driven displacement has profound impacts on both the physical and mental health of those displaced persons, among which consist of older adults (Burns et al., 2018).

Older adults, irrespective of legal status, are more susceptible to social and healthcare exclusion, especially with the decline of the traditional familial support system. Despite their increased health risks, a large number of older persons within

this conflict-stricken region lack access to adequate levels and quality of health care. Older adults within host communities have to compete with older IDPs for the limited healthcare services and aid provided by often over-stretched local governments. This "double stress" puts additional strain on the scarce resources, further reducing their coping ability and weakening their resilience (Le Van et al., 2018; UNHCR, 2018; UN OCHA, 2018).

Figure 3: Conceptualizing the research problem



Source: Authors' construct (2020)

The adverse impacts of conflict-driven displacement on health outcomes are well-documented (see for example, Julca and Paddison, 2010; Heudtlass et al., 2016). This paper argues that inasmuch as some people migrate willingly and voluntarily, there are other forms of migration that occur under forced or coerced conditions as far as Nigeria is concerned. Some scholars refer to the voluntary–forced migration nexus as continuum (Oucho, 2009; Koppenberg, 2012). This work does not delve into the voluntary and involuntary migration nexus; rather, it focuses on internal displacement as a form of forced migration (Mooney, 2005; Terminski, 2013). In addition, less is known about the nexus between migration status and determinants of healthy aging in Nigeria. The main objective of this article is to assess the effect of socio-economic

and environmental determinants on healthy aging status among displaced migrants and non-migrants nested within the environmentally stressed region of Northeastern Nigeria. The study also seeks to contribute to the emerging body of literature on global population aging studies as impacted by migration, while also contributing to the discussion on the dynamics of internal displacement in Nigeria.

LITERATURE REVIEW

In the past few decades, the literature on migration has paid less attention to the subject of forced migration, although this sub-field in migration has its roots in the early writings of contemporary migration studies. Ernst Georg Ravenstein (1834–1913) propounded in the Laws of Migration that "bad or oppressive laws, heavy taxation and unattractive climate, uncongenial social surroundings, and even compulsion (slave trade, transportation) produce flows of migrants, but none of these flows can be compared in volume with that which arises from the desire inherent in the most men to 'better' themselves in material aspects" (Ravenstein, 1885:167-227; 1889:224-310.).

The voluntary form of migration enthused by economic causes propagated by Ravenstein has dominated and influenced major migration theories (see: mobility transition by Zelinsky, 1971; dual economy model, 1950/1960) throughout the twentieth century up to the present. The reduction of human mobility due to economic pull factors alone overlooks certain important immeasurable social factors in contemporary times such as environmental and climatic stressors (Terminski, 2013).

Healthy aging

Currently, more than 11.6% of global populations are persons aged 60+ years (about 901 million persons) and this number is projected to rise to about 1.4 billion people by 2050 (UN, 2015). Similarly, the eastern and south-eastern Asian sub-regions are anticipated to experience the largest demographic transition (312 million people), while sub-Saharan Africa is projected to experience the largest increase in life expectancy gain (11.4 years), rising from 49.1 years (1990-1995) to 60.5 years (2015-2020), and a further gain of 7.6 years is anticipated between 2015-2050 (UNDP, 2018; UN-DESA, 2020).

The global advancement in healthcare and living standard has translated into prolonging life expectancy of people worldwide. Thus, a person who turns 60 years old could expect to live an additional 17 years in 2015-2020, and this number could rise to 19 years in 2045-2050. Those living in sub-Saharan Africa are projected to live only an additional 14.2 years in 2045-2050 (Higo and Khan, 2014; UN DESA, 2020). However, more emphasis should be placed on the quality of life, rather than longevity alone, optimizing opportunities for health, participation and security in order to enhance the quality of life of older adults in society. The World Health Organization (WHO) defines healthy aging as, "the process of developing and maintaining the

functional ability that enables well-being in older age" (WHO, 2015).

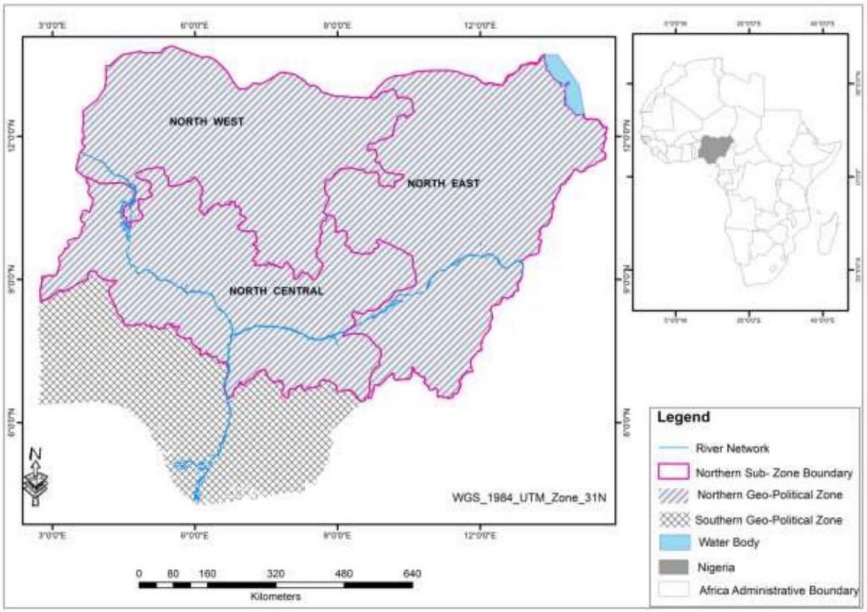
The Nigerian government confronts a major problem, optimizing health opportunities, social inclusion and security for older adult IDPs in order to promote healthy aging. Elder et al. (1994) showed the adverse effects of conflicts and war on the physical health of persons older than 30 years. In addition, Kuh et al. (2002), Shaw and Krause (2002), Krause et al. (2004) all revealed that early-life events are adversely related to health outcomes in middle- and older age. The WHO (2015b) report, points out that healthy aging status is significantly influenced by social determinants of health, for instance persons classified as socio-economically disadvantaged, such as in the case of most IDPs, who experience markedly poorer health in older age.

Furthermore, the review of some studies revealed problems of inequality in health status and well-being among older people, highlighting different factors, such as socio-economic status (Lindström et al., 2017), age (Aboderin, 2010; 2011), nationality (Axén and Lindström, 2002), educational status (Ibáñez and Moya, 2006), marital status and economic status (Kirchhoff and Ibáñez, 2002), emotional support (Ahs et al., 2006), the transformation of familial support (Higo and Khan, 2014; Khan et al., 2017; Khan, 2019), and not having a partner present. These factors are associated with poorer health and well-being, and in general lower quality of life (Gómez-Olivé et al., 2010; Phaswana-Mafuya et al., 2013).

METHODS AND DATA

The study utilized the Nigerian IDP Survey (FRN, 2018), a household survey with a multi-stage stratified random sample. Six Northeastern states were surveyed namely: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe (See in Figure 4). This region is characterized by harsh climatic conditions, poor infrastructure, poor service delivery and frequent epidemic outbreaks. The sampling frame consisted of a list of wards with IDP household counts in the six states, provided by the International Organization for Migration (IOM) Displacement Tracking Matrix (DTM) of 2017. The survey is representative for IDPs and host communities, defining host communities as the non-displaced population living in the Enumeration Areas (EAs) with displaced populations. All the households in the selected EAs were first listed and 12 IDP households and 12 (or multiples of it) host community households were randomly selected and surveyed per EA, to reach the designated sample size.

Figure 4: Nigeria showing its Northeastern geo-political zones



Source: Authors' compilation (2020)

Variable measurement

The WHO (2015b) notes that healthy aging is significantly influenced by the social determinants of health. This implies that people from socio-economically disadvantaged groups experience markedly poorer health in older age and have a shorter life expectancy. Social determinants of health (SDOH) encompass the social, economic and environmental factors that can affect an individual's health and quality of life. For older adults in particular, SDOH-related factors can have significant implications for their ability to live independently in advanced age.

We selected physical disability (B_3_3_disal_3) as a proxy of healthy aging status for the outcome. The study justification for this decision of selecting sensory impairment as a health status metric is based on the fact that it is a prevalent cause of unhealthy aging in low- and lower-middle-income countries like Nigeria. Environmental factors include the household's type of toilet (C_1_21_toilet), source of household drinking water (C_1_11_water_home), and type of waste disposal (C_2_21_waste_disposal). Economic factors consist of consumption quintile (Quintile_tc), labor participation status (Status), and household density (HH_sleep). Social factors include age (Age_cat_g), migration status (Migr_idp), educational status (edu_level_g_c), and household dependency status (Depend_share).

For the purpose of this study, we selected persons aged 50 and above, rather

than the generally utilized age of 65 years, for two reasons. Firstly, the life expectancy age of the average Nigerian is marginally greater than 50 years (Ex=54.49year; Male=53.79/Female=55.62). Secondly, the Northeastern region is considered the poorest in Nigeria, with socio-economically disadvantaged groups experiencing markedly poorer health in older age and shorter life expectancy.

In Nigeria ethnicity and religious identities are often intertwined, forming part of a complex pattern of social exclusion. Religious minorities experience social, political and economic exclusion, as a result of these differences (UNECA, 1991; World Bank, 2017b; Idris, 2018; Le Van et al., 2018). Interestingly, the majority of IDPs in Northeastern Nigeria relocate to places where they connect with host communities with shared ethnicity and religious beliefs.

Data analysis

We utilized descriptive statistics, alongside the disability-free life expectancy (DFLE) calculation, a health concept centered on the health expectancies proposed by Sullivan (1971). The Sullivan health expectancy reflects the current health of a real population adjusted for mortality levels and independent of age structure (Bone et al.,1995). The Sullivan health expectancy provides a means of comparing the health states of an entire population at two time-points or of two different populations at the same time-point. This stated merit helps advance scholarship in migrant studies, as in the case of this study, because it affords us the opportunity to determine health disparities between persons in internally displaced communities and persons in their host communities.

The binary logistic regression technique was also utilized in order to actualize the aim of the study. This technique is one of the often-used machine-learning algorithms for binary classification that utilizes a performance baseline (Hosmer et al., 2013). This technique was used to determine the binary healthy aging outcome between the host and migrant communities, predicted by an assemblage of varied factors. Furthermore, this technique has significant importance in the measuring of migrant's health outcomes. The binary logistic regression model is given below,

$$Y=\beta_0+\beta_1 X_1+\beta_2 X_2 + \beta qXq \quad (1)$$

$$Logit\ (\pi) = \beta_0 + \beta_1 X_1 +\beta_2 X_2 + ... + \beta pXp \quad (2)$$

$$Logit(p(\pi))=log\left(\frac{p(x)}{1-p(x)}\right)=\alpha+\beta_x \quad (3)$$

(Then for $x=0$ (Healthy aging), $x=1$(Unhealthy aging))

Where; $\beta_1 \rightarrow \beta_q$=coefficient for q

$\beta_1 \rightarrow \beta_q$ are regression parameters; X_1, X_2…. Xq are explanatory variables, and π is the probability of success. β = Regression coefficient; α = Constant.

$$\ln\left[\frac{p}{1-p}\right]= \beta_0+\beta_1 X_1+\beta_2 X_2 \ +\beta_q X_q \quad (4)$$

Since the study was assessed at an individual level, the probability of an individual

aging in a healthy manner is needed, the binary logistic regression:

$$P= \frac{exp(\beta_0+\beta_1X_1+...\beta_qX_q)}{1+exp(\beta_0+\beta_1X_1+\beta_2X_2+...\beta qXq)} \quad (5)$$

Overview characteristics of the sample and to identify factors associated with healthy aging status p. The binary logistic regression analysis can be used to determine the relationship between a binary response and continuous or categorical explanatory variables (Vittinghoff et al., 2011; Long and Freese, 2014). In addition, logistic regression gives a discrete outcome, unlike other analytical techniques such as linear regression, that gives a continuous outcome.

$Y_i=$ 0 = Do not have Sensory Impairment
1 = Have Sensory Impairment

Outcome Variable (Healthy Aging Status)

Logit (Health Status) = β_0 + Social factor + Economic factors + Environmental factors+ X_n (6)

Predictor variables utilized: X_1-Age, X_2-migration status (non-migrants =1, migrants =2), X_3-educational status, X_4-gender (male=1, female=2), X_5-labor market participation, X_6-household dependency status, X_7-consumption quintile, X_8=communal participation, X_9- type of waste disposal, X_{10}-type of toilet, X_{11}-source of drinking water and X_{12}-household density.

RESULT AND DISCUSSION

Table 1: Basic demographic background of the aging

Variable	Host(N=692)	IDP(N=601)	Combined(N=1293)
Age			
50-54years	242(18.7%)	214(16.6%)	456(35.3%)
55-59years	120(9.3%)	112(8.7%)	232(17.9%)
60-64years	171(13.2%)	145(11.2%)	316(24.4%)
65-69years	15(1.2%)	20(1.5%)	35(2.7%)
70-74years	72(5.6%)	51(3.9%)	123(9.5%)
75-79years	33(2.6%)	29(2.2%)	62(4.8%)
>80years	39(2.6%)	30(2.3%)	69(5.3%)
Gender			
Male	420(32.5%)	396(30.6%)	816(63.1%)
Female	272(21.0%)	205(15.9%)	477(36.9%)
Gender of household head			
Men	449(34.7%)	384(29.7%)	833(64.4%)
Women	243(18.8%)	217(16.8%)	460(35.6%)
Religious Affiliations			
Christianity	58(6.4%)	23(2.5%)	81(8.9%)
Islam	414(45.5%)	413(45.4%)	827(91.0%)
Traditional	1(0.1%)	0(0%)	1(0.1%)
Literacy			
Yes	358(27.8%)	262(20.3%)	620(48.1%)
No	331(25.7%)	337(26.2%)	668(51.9%)
Highest Educational Attainment			
No education	299(23.3%)	306(23.9%)	605(47.2%)
Primary andIntermediate	36(2.8%)	30(2.3%)	66(5.1%)
Secondary	90(7.0%	47(3.7%)	137(10.7%)
University	33(2.6%)	12(0.9%)	45(3.5%)
Technical and Vocational	7(0.5%)	6(0.5%)	13(1.0%)
Religious	174(13.6%)	170(13.3%)	344(26.8%)
Others	47(3.7%)	25(2.0%)	72(5.6%)

Note: Mean age= 56±9, Standard deviation= 1.737

Source: Authors' computation (2020)

Table 1 presents the descriptive statistics of the socio-economic status of the respondents. Based on the study age distribution, the majority of the respondents were aged 50-59 (53.2%), followed those aged 60-69 (27.1%), those aged 70-79 (14.3%) and persons aged 80 and above (5.3%) had the lowest representation. The

adult mortality rate is 3.18 deaths per 1,000 of the populations among women and 3.25 deaths per 1,000 of the populations among men (NDHS, 2019).

Delineation by gender revealed that the population of male (63.1%) respondents was nearly double that of their female (36.9%) counterparts. This gender disparity could be a direct effect of cultural and religious norms, particularly where women are barred by their husbands/guidance to attend to male visitors. Similarly, 63.1% of households were headed by men, compared to 36.9% of households headed by women. Observers of the Islamic faith constituted 91.0% of the respondents, followed by Christians (8.9%) and African traditionalists (0.1%). Furthermore, based on the ability to read in any language, 48.1% of the respondents were literate compared to 51.9% who were non-literate. Additionally, 47.2% of respondents had no form of formal education, 26.8% had Islamic education (known as Karatu Islamiyah) and 26% had some form of western education (see Table 2).

Table 2: Disability-free life expectancy (DFLE) using an abridged life table

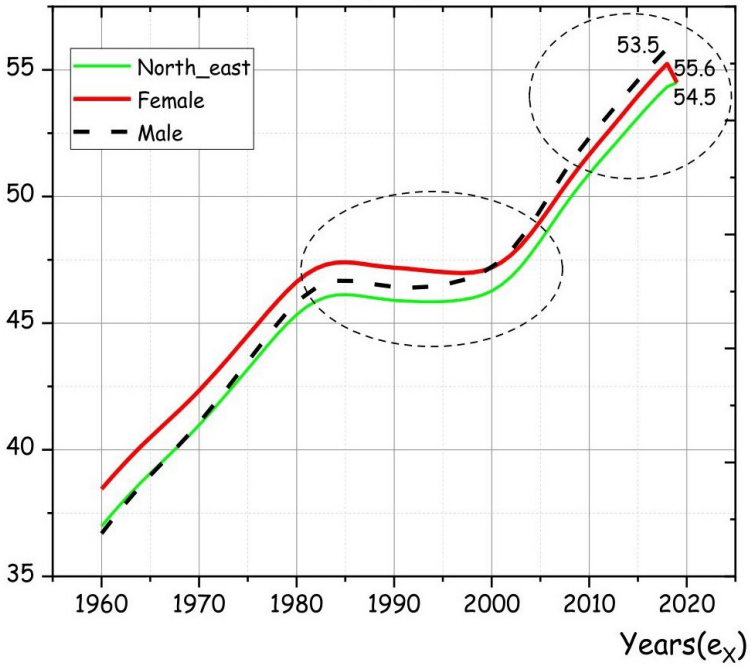
	Host N=(692)			**IDP N=(601)**			**North-West (Combined) N=(1293)**			
Age (*x-x+n*)	Life expectancy (e_x)	Deaths (D_x)	Survival (l_x)	Life expectancy (e_x)	Deaths (D_x)	Survival (l_x)	Life expectancy (e_x)	Deaths (D_x)	Survival (l_x)	Proportion disability (N_x)
50-54	19.8	242	0.6503	18.1	214	0.6042	20.5	456	0.6473	46.4%
55-59	16.1	120	0.4769	14.6	112	0.4576	17	232	0.4679	56.5%
60-64	12.7	171	0.2298	11.3	145	0.2163	13.7	316	0.2235	69.9%
65-69	9.7	15	0.2081	8.6	20	0.1830	10.7	35	0.1964	80.0%
70-74	7.1	72	0.1040	5.9	51	0.0982	8	123	0.1013	73.7%
75-79	4.9	33	0.0564	3.7	29	0.0499	5.8	62	0.0534	85.3%
>80	2.9	39	0.0000	2.0	30	0.0000	4.1	69	0.0000	89.9%

Source: Authors' computation (2020)

Life expectancy at a specific age is the number of additional years that a person of that age can expect to live, if current mortality levels observed for higher ages continue for the rest of that person's life. Thus, based on the result of the study's abridged life table (Sullivan method), aged persons in the host communities are expected to live 4±9 years more than IDPs. Along cohort delineation, a host person aged 50-59 has a mean life expectancy of 17±9 years compared to IDPs (mean 16.4± years; a host person aged 60-69 (mean 11±2 years) > IDPs (mean 10 years); a host person aged 70-79 (mean 6 years)>IDPs (mean 4±8 years); and host persons aged 80 and above (mean 2±9 years) > IDPs (mean 2 years) respectively (see Table 2). Longer lives are an incredibly valuable resource, both for individuals and for society more

broadly. Older people participate in, and contribute to society in varied ways. This social engagement may in turn reinforce the health and well-being of older people themselves.

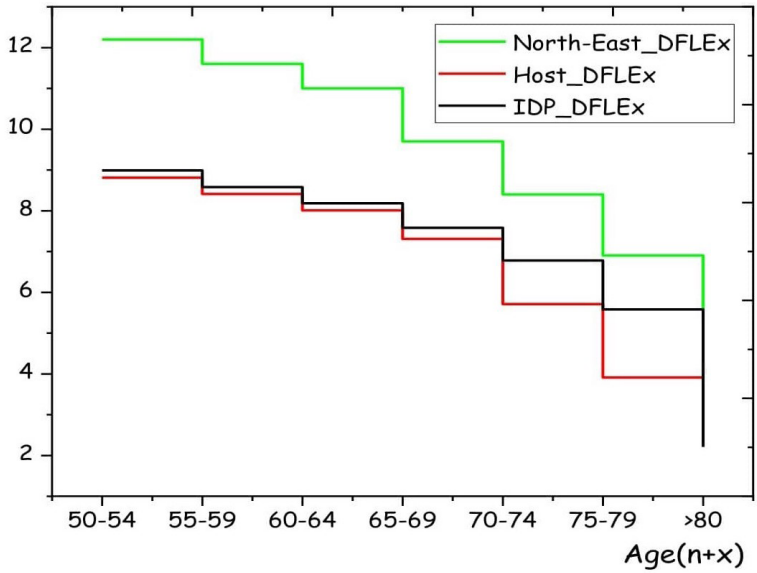
Figure 5: Nigeria's LIfe expectancy (ex) Transition (1960-2019)



Source: Adapted from World Bank (2020)

The results show that Nigeria has experienced a progressive trend, growing at an average annual life expectancy growth rate of 0.60%. Interestingly, during the onset of the economic recession in the early 1980s, the country experienced a decline (1980(45.3)-1990(45.9)-1998(45.9)) in its life expectancy status, and this remained so until the re-adoption of democratic governance in 1999 (46.1-2010(50.9)-2019(54.5)). Coincidentally, the 21st century has also ushered in an increase in global life expectancy due to concomitant factors (see Figure 5).

Figure 6: Disability-free life expectancy (DFLEx) of the study area



Source: Computed by authors from NGA-IDP data (2018)

The Sullivan health expectancy was utilized to determine the current health status of persons aged 50 years and above, adjusted for mortality levels and independent of age structure. The study calculated the number of remaining years, at a particular age, that an individual can expect to live in a healthy state, void of sensory disabilities (see Figure 6), considering that almost one-third (32.8%) of people aged 60 or older in Nigeria are reported to have at least one form of disability (NDHS, 2019). The study's results showed healthy aging disparities, considering that IDPs were more susceptible to sensory disabilities. This means that this cohort was projected to have a far less disability-free life compared to their peers in the host communities across the entire age cohort (aged 50-80 and above).

Table 3: Result of the Binary Logistic Regression Model (IDP and host population)

VARIABLES	Model 1 IDP population				Model 2 Host population			
	β	**Wald**	**Sig.**	**Exp(β)**	**β**	**Wald**	**Sig.**	**Exp(β)**
Age								
50-59	-.604	43.691	<.002	.547	-.792	5.296	<.001	.453
60-69	-.545	43.334	<.010	.661	.439	5.122	<.001	.527
70-79	-.451	41.223	.052	1.232	-671	4.992	<.002	.531
>80	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Educational Status								
No Education	.017	.122	.001	1.017	-.168	.738	<.002	.845
Pry Education	-0.29	.164	<.002	1.040	-.271	2.124	<.001	.743
Sec education	.071	2.177	<.001	.575	-.283	1.341	<.001	.447
vocation								
University	.098	.434	.510	.767	-.099	1.291	<.006	.751
Religious	.373	2.115	.075	.918	-.282	3.418	<.001	.847
Others	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Gender								
Male	-.404	3.177	.<.001	.668	-.980	.784	<.001	.375
Female	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Labour Force Participation								
Active	.488	10.879	.001	1.629	1.055	2.988	<.001	2.871
Non-active	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Household Dependency Status					.			
High	.832	1.139	<.001	.856	.226	.362	<.004	1.253
Low	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Household Consumption Quintile								
Poorest Q1	.668	2.566	<.001	1.950	-.655	.192	<.001	.520
SecondQ2	.831	3.288	.003	2.296	-.301	.039	<.002	.740
Middle Q3	.631	1.654	<.001	1.880	-2.936	2.889	<.004	.053
FourthQ4	.383	.648	<.001	1.467	-1.741	1.321	<.001	.009
Highest Q5	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Level of Communal Engagement								
High	.241	3.651	0.56	1.272	.019	.003	<.003	1.019
Low	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Type of Waste Disposal								
Discrete	-0.13	.438	.508	.987	.217	4.81	<.000	1.242
Indiscrete	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Type of household Toilet								
Unimproved	.081	.100	<.001	.922	-.905	1.303	<.002	.404
Improved	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref

VARIABLES	Model 1 IDP population				Model 2 Host population			
	β	Wald	Sig.	Exp(β)	β	Wald	Sig.	Exp(β)
Household Density High Low	-.154 Ref	1.085 Ref	.005 Ref	.857 Ref	.760 Ref	2.114 Ref	<.001 Ref	2.138 Ref
Constant	8.602	48.133	.000	5439.928	10.243	4.258	.000	28073.768
Model Summary	-2 Log likelihood 554.219a Cox and Snell R^2 .116 Nagelkerke R^2 .368 Hosmer and Lemeshow Test .802				2 Log likelihood 68.196a Cox and Snell R^2 .237 Nagelkerke R^2 .368 Hosmer and Lemeshow Test .815			

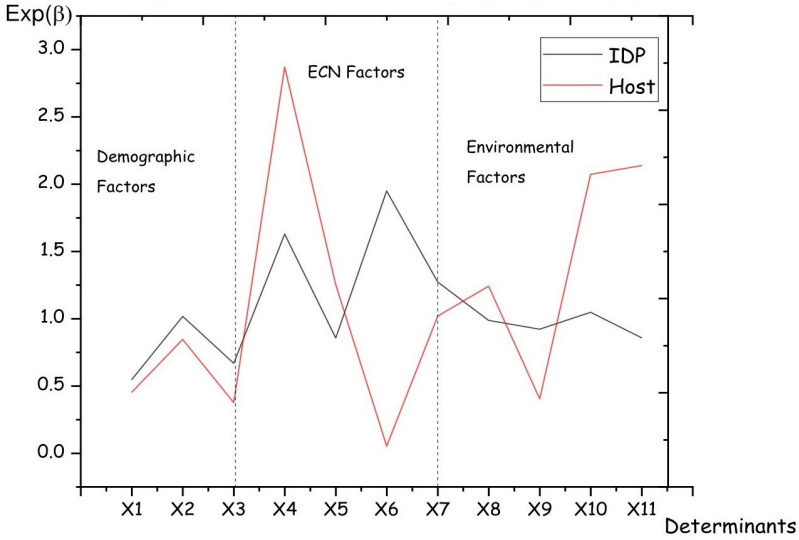
Source: Computed by authors from NGA-IDP data (2018)

In Model 1, all the explanatory data was found to be statistical predictors of the healthy aging status among older IDPs. Based on demographic predictors, age was negatively correlated to the healthy aging status of IDPs (p-value.000<0.05). There is a 0.55 odds of unhealthy aging with advanced age; more educated persons were 1.017 times more age-healthy in comparison with their less-educated peers. Males were .668 times more likely to age healthily, compared to females with 1.497 greater odds of aging healthily (see Table 3). Economic variables were all statistically significant and made unique contributions to the prediction of the healthy aging status in the full model. People actively involved in the labor force were 0.614 times more likely to experience unhealthy aging while those outside the labor force were 1.629 times more likely to experience less wellness as they age. Consumption patterns appear to be quite skewed among the IDP population – persons grouped in the lowest consumption were 1.950 times more likely to experience prolonged health complications, as they age. In addition, environmental predictors were all statistically significant. Older adults who were more socially engaged, were 0.78 times less likely to age in poor health, compared to the less-engaged ones who had a 1.272 higher likelihood of aging in poor health. Improved waste disposal: host persons were .987 times more likely to experience healthy aging, compared to those residing in households with unimproved waste disposal methods, with 1.085 greater odds to age poorly. Unimproved toilets: elderly IDPs were .922 times more likely to experience unhealthy aging, compared to persons resident in households with improved toilets, who were also 1.085 times more likely to age in good health. Likewise, older persons in households with an unimproved source of drinking water, were .857 times more likely to age in poor health (see Table 3).

In model 2, the p-value for each regression effect is smaller than .05; thus, all the predictors in the model were statistically relevant. The results show that there is a .453 times increase in the odds of aging in poor health among persons in the host community. Males were .375 times more likely to age in poor health compared to females (2.667 better odds of healthy aging); older persons in the labor force were

2.871 times more likely to age in poor health compared to their peers who are still active (0.348 better odds of healthy aging). Older adults resident in households with the lowest consumption profile, were expected to age in poorer health, by .520 times. The environmental factors were also found to be unique predictors of healthy aging status. The findings in Table 3 show that persons residing within households with unimproved waste disposal methods (odd ratio=1.242), using unimproved toilet types (odd ratio=.404), drinking water from non-sanitary sources (odd ratio=2.072), and sleeping in densely populated housing (odd ratio=2.138), are highly likely to experience unhealthy aging (see Table 3).

Figure 7: Logistic regression graph showing propensity to healthy aging



NB: X_1-age, X_2-education, X_3-gender, X_4-labor participation, X_5-dependency ratio, X_6-consumption quintile, X_7=communal participation, X_8- waste disposal, X_9-toilet type, X_{10}-drinking water source, X_{12}-household density.

Source: Computed by authors from NGA-IDP data (2018)

Figure 7 presents the projected odds ratio of older adults aging in an unhealthy way, in both the host and IDP households, by determinants. The demographic determinants appear to be uni-directional across both groups, which might be a result of the normalized distribution of respondents by age. Unlike the demographic factors, the effects of the economic factors exhibit more variance. Out-of-labor older adults in the host communities, be it due to retirement or unemployment, were projected to be less active while aging, accompanied with predicted higher morbidity in later life. IDPs without employment or any work would also experience the same fate, but with much lower odds. In terms of consumption rate, more IDPs were projected to

experience more health crises in later life in comparison to their host community peers.

CONCLUSION AND RECOMMENDATIONS

Nigeria has benefited immeasurably from the socio-economic and technological evolution of the 20th century, resulting in improved standard of living and life expectancy. This success can be attributed to migratory processes, be it human resource migration, technological transfer and data/information transfer. Interestingly, older adults, often referred to as the "invisible population", have also been development actors. However, recent estimates indicate that the aging population in Nigeria now constitutes more than 10% of its national population, with a doubling time of a few decades. Interestingly, the failure to ensure that extra years of life gained are enjoyed in the best possible health, is avoidable. However, this mega-demographic change has become a macro-level concern, mainly due to the accompanying economic and social costs, culminating in the absence of a geriatric healthcare policy to cater for the healthy aging needs.

Contemporary Nigeria is being battered by phenomena such as environmental stressors – such as floods and drought – and widespread conflict, notably in its most disadvantaged region, the Northeastern part of the country. Therefore, households' decisions on whether to migrate or not, now has later life health implications on the older adult cohort within this region. Our study makes a valuable contribution to the literature on population aging in Nigeria. In particular, the goal of this study is to better understand the impact of socio-economic and environmental determinants on the healthy aging status among later-life migrants and non-migrants within both IDp and host communities in Northern Nigeria. The study's findings revealed a much higher prevalence of sensory impairment among IDPs than for residents in the host communities. In general, the mean prevalence was significantly higher in the Northeastern region. Secondly, the socio-economic and environmental determinants were significantly associated with the healthy aging status outcomes in Northeastern Nigeria. In addition, combinations of this factor, or the lack of it, were also associated with healthy aging. Inclusion of the decisions on the part of the IDPs to migrate to neighboring towns and cities in Northeastern Nigeria, has significantly improved their odds of aging in an active and healthy manner. This is probably due to competing with residents in these communities for limited resources and services, such as healthcare, employment and farming space. Alternatively, these residents had slightly greater odds of aging healthily. However, factors such as the increased inflow of more migrants, increased desertification, poor governance, the trade-off for non-migration, may impact on their healthy aging trajectory in the long run, which may fall lower than that of the IDPs.

Based on our findings, we conclude that the older people's lives are characterized by growing inadequacies in customary family supports, social exclusion and non-existent social security programs targeted at them, thus rendering them vulnerable to

poverty and diseases. We recommend that the proposed ECOWAS Sahelian "Green belt" afforestation project, especially areas around the Chad basin, be expedited, as this project will help reduce perennial conflicts between herdsmen and farmers. In addition, the government needs to improve security by defeating Boko-Haram and other Islamist militias. Furthermore, there is an urgent need to formulate an integrated migration–adult health policy or plan that is both comprehensive and evidence-driven. Finally, the budgetary allocation for health should have a flooring capped at 20% of the national budget.

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