Nigeria demographic report: the effect of overpopulation on life expectancy

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Abstract

Background: Nigeria is considered the most populous country in Africa with an estimated population of 181 million and a median age of 17.9. Nigeria's young population indicates that fertility rate may keep increasing with the total population increasing exponentially. However, life expectancy in Nigeria is very low accompanied by high mortality rate.

Data Source and methods: This study aimed at analysing Nigeria's demographic data and presenting how Nigeria's overpopulation is contributing to its low life expectancy. Secondary quantitative data from United Nations Population Division was analysed for the study.

Results: Findings showed increasing population growth from 108,011,465 recorded in 1995 to 200,963,599 recorded in 2020, high fertility, high mortality rate and low life expectancy at 53 years.

Conclusion: The study made recommendations on policies to regulate Nigeria's population growth and increase life expectancy of the country.

Keywords: Demography, Life expectancy, Birth rate, Death rate, overpopulation

Introduction

The world population is growing rapidly and there are concerns about the negative implications of this population growth for the future. A billion people were added to the planet in the 15 years between 1960 and 1975, increasing the population from 2.5 billion to 3.5 billion (Population Reference Bureau, 2011). Another billion was added in the following 13 years (Population Reference Bureau, 2011; Martinez, 2016). Today, there are about 7 billion people on earth and majority of the population is in third world countries.

Nigeria's population was approximately 181 million people in 2015 (United Nations, 2019), making it the most populous black nation. Her population is also about 3% of the world population with a population growth rate of about 2.62% annually alongside low GDP growth rate of -1.54% (World Bank, 2017). This implies that the current population growth rate in Nigeria exceeds the GDP growth rate.

This population growth has several social implication on Nigeria, According to Osam (2019), the high population in Nigeria in collaboration with poverty have led to protracted problems of violent crimes of different sorts, kidnappings for huge ransoms, kidnappings for rituals, frauds, corruption, day light robberies, etc. The social system is also unable to cater for this growing population, for instance, The National Health Insurance Scheme only covers about 4% of Nigerians (Osam, 2019), creating barriers to medical care for Nigerians who cannot afford expensive private hospitals. Literature have emphasized how the growing population is a serious problem to the future development of the country (Aidi, Emecheta & Ngwudiobu, 2016; Ashinze, 2015; Osam, 2019). This paper will present demographic indicators which are responsible for the continuous dramatic rise in Nigeria's population, and will add to existing literature on how overpopulation impacts Nigeria's life expectancy.

Literature review

The impact of overpopulation on life expectancy is paradoxical: improved life expectancy is responsible for population increase in high income countries while population boom in low income countries leads to reduced life expectancy (Renewable Resource Coalition, 2016). World population growth is concentrated in low income countries and this stretches low income countries' resources, leading to low access to medical care, fresh water, and food, all resulting in reduction of life expectancy (ibid). In the study by Ademoh (2017) on population growth and life expectancy using non parametric inference of the

relationship between life expectancy and population growth rate on historical data for about 194 countries of the world reported in 2013, he found a parallel relationship between overpopulation and reduction in life expectancy. His results indicate that countries that are overpopulated experience reduced life expectancy. Another study in 2018 by Oladayo, using the granger causality test, found that population growth could cause low life expectancy in Nigeria at least at 10% level of significant and therefore suggested a reduction in fertility rate.

Several other literatures on population studies show that overpopulation has impact on variables which affect life expectancy; variables such as medical care, the environment, economic growth, food and water, etc. For example, overpopulation has been linked to deterioration of the ecological system through pollution and greenhouse emissions (Mora & Sale, 2011). Bongaarts (1992) projected that the net production of greenhouse gases could be equivalent between high- and low-income countries due to the large consumption of the former and the large population growth of the latter. This production of greenhouse gases leads to environmental degradation which in collaboration with poverty, systemic corruption and other social problems plaguing Nigeria determine the number of years a person is expected to live depending on the age specific mortality rate of a population which in simple terms means the population's life expectancy (Population Reference Bureau, 2018).

Economically, the effects of overpopulation on life expectancy have been shown in literature to vary, negatively. Bhargava (2003) found, in a study that utilised a parametric panel data specification, that the dynamics of demography indicators such as lagged life expectancy variable is a significant predictor of economic growth. Onwuka (2006) analysed the growing population from macro-economic perspective where mathematical formulations were correlated to economic development. His formulations indicated that the rapid population growth is inimical to national development and cannot be sustained. Charkraborty and Idrani (2010) also used parametric cross-country regression to discover that life expectancy has a strong and positive effect on capital accumulation. In addition to pressure on healthcare facilities, Uniyal, Paliwal, Saun and Sharma (2017) found that overpopulation makes it easier for the transfer of contagious diseases, especially in congested urban areas. The effect of overpopulation on life expectancy was further revealed by Ilori, Olalere and Babatola (2017) in a study which employed bounds testing co-integration and Autoregressive Distributed Lag (ARDL) procedures to determine the relationship between public spending on health and life expectancy in Nigeria using time series data that spanned between 1981 and 2014. The study averred that overpopulated school enrolment and carbon-dioxide emission caused by population growth significantly and directly influence life expectancy in Nigeria.

According to Osam (2019), overpopulation in Nigeria is caused by early marriages and procreation rates, insatiable desire for coitus, general ignorance and reluctance to adopt family planning measures, intense cultural pressure for male children, and polygamy among Muslim faithful and traditionalists. His study summarized the consequences as endemic poverty, the difficulties in feeding and sustaining a large family, overcrowding in markets, schools and hospitals, inability to afford healthcare, intense competition for few vacancies, high unemployment and underemployment, lack of adequate housing to accommodate millions, violent crimes including kidnappings for ransom, communal conflicts due to dwindling farmlands and grazing reserves caused by overpopulation; all of which contribute in reducing life expectancy. In addition, Ashinze (2015) identified the depletion of natural resources, environmental degradation attributed to exploration of the resources, high unemployment and crime rates, and high cost of living as serious problems arising from overpopulation.

Anchoring on the traditional Malthusian (1803) view, the population of Nigeria has run up against the resources, leading to falling wages, rising food prices, unemployment (increased labour force with limited labour opportunities). In addition, the availability of energy and minerals, the effects of rising environmental pollution, according to Thomas Malthus, will ultimately be checked by rising mortality.

The discourse on overpopulation is fading in importance throughout most endeavour and sectors of society despite the intense pressure the increasing population is putting on the earth (Mora, 2014) as humans now draw resources from the earth faster than the earth can replenish (Martinez, 2016). Nigeria is still experiencing rapid population growth with limited resources to cater for the increasing population, yet this issue has failed to receive the scholarly attention it deserves, causing a serious dearth in knowledge in the area of overpopulation and life expectancy. Therefore, this paper is aimed at adding to existing literature on overpopulation and life expectancy by clearly presenting the population demographics of Nigeria, using table, charts, graphs and pyramids, to show how population, birth rate and mortality rate continue to increase while life expectancy remains low.

This report will start by showing the population size of Nigeria from year 2000 to the projection in year 2030. This is followed by population age structure which will be shown using a population pyramid and then it will show the fertility, mortality rates and life expectancy of the population. Finally, using data from the population measures, the report will conclude by presenting a discussion of the contents of the report, making recommendations on policy priority for Nigeria.

Data and methods

The United Nations World Population Prospects 2019 dataset was used for this study. The data was generated by estimating historical demographic trends from 1950 to 2019. The estimates are based on all available sources of data on population size and levels of fertility, and mortality for Nigeria. In total, the dataset is based on information from: population and housing censuses; vital registration of births and deaths forms; surveys, including demographic and health surveys mostly administered in 2010 or later; official statistics reported to the Demographic Yearbook of the United Nations; population registers and other administrative sources on international migration statistics.

In addition to national data sources, the 2019 World Population Prospects dataset considered international estimates from sources such as: refugee statistics from the Office of the United Nations High Commissioner for Refugees (UNHCR); estimated time series of adult HIV prevalence and coverage of antiretroviral treatment from the Joint United Nations Programme on HIV/AIDS (UNAIDS); estimated time series of infant and under-five mortality from the United Nations Inter-agency Group for Child Mortality Estimation (UN-IGME); estimates of international migration flows and stocks of foreign-born persons from the United Nations; and some other series of international estimates produced by international and regional organizations, and academic research institutions.

The data sources presented above served to reconstruct population changes in Nigeria from 1950 to 2019. The Population Division subsequently used the cohort-component method to ensure internal consistency by age, sex and time, and between the three demographic components of change (fertility, mortality and migration) and the enumerated population. The cohort-component method was also used to project population trends until 2100 using a variety of demographic assumptions concerning the components of population change. The generated data was used to create tables, bar graphs, bar charts and population pyramid in Microsoft excel to illustrate the differences in the population demographic features of Nigeria.

Results of Nigeria Demographics
Size and projection

Year	Population	Yearly % change	Net Migration	Median age	Density (P/Km²)	Urban Population	Urban pop%	Country's share of world population
2030	262,977,337	2.42%	-60,000	19.1	289	184,887,657	62.7%	3.32%
2025	233,323,112	2.51%	-60,000	18.5	256	130,312,056	59.4%	3.08%
2020	206,139	2.62%	-60,000	18.1	226	107,112,526	52.0%	2.64%
2019	200,963,599	2.60%	-60,000	17.9	221	102,805,995	51.2%	2.61%
2018	195,875,237	2.61 %	-60,000	17.9	215	98,610,801	50.3%	2.57 %
2015	181,181,744	2.70 %	-60,000	17.9	199	86,673,094	47.8%	2.45 %
2010	158,578,261	2.68 %	-60,000	17.9	174	68,673,094	43.5 %	2.28 %
2005	138,939,478	2.58 %	-34,000	18.0	152	54,288,918	39.1 %	2.12 %
2000	122,352,009	2.52 %	-19,005	17.9	134	42,627,440	34.9 %	1.99 %

| 1995	108,011,465	2.54 %	-19,154	17.7	119	34,785,545	32.3 %	1.88 %

Table 1: population size and projection of Nigeria
Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

The table above shows the population size and projected population size of Nigeria from 1995 to 2030. The population size of a country is the estimated midyear population of a country indicated in thousands (United Nations, 2019). From the data above which was derived from United Nations population prospects, one can observe that the population of Nigeria is on a steady growth; this can be attributed to the young median age of the population and the age structure of Nigeria shown in the population composition by age and sex below (figure 1) with high number of young persons of reproductive ages. This indicates that the population of Nigeria will keep growing rapidly as there will be more young people who will keep having children (United Nations, 2019). The table also shows that the population density per km² is increasing and the number of people in the urban area rising dramatically with over 51% of the population clustered in the urban areas. In addition to a low GDP growth rate of -1.54% in comparison to the population growth rate of 2.60%, the data in the table above clearly shows that Nigeria is overpopulated. The figures below (age structure, growth rate, and age specific fertility rate) provide data which show why Nigeria's population is on a steady rise.
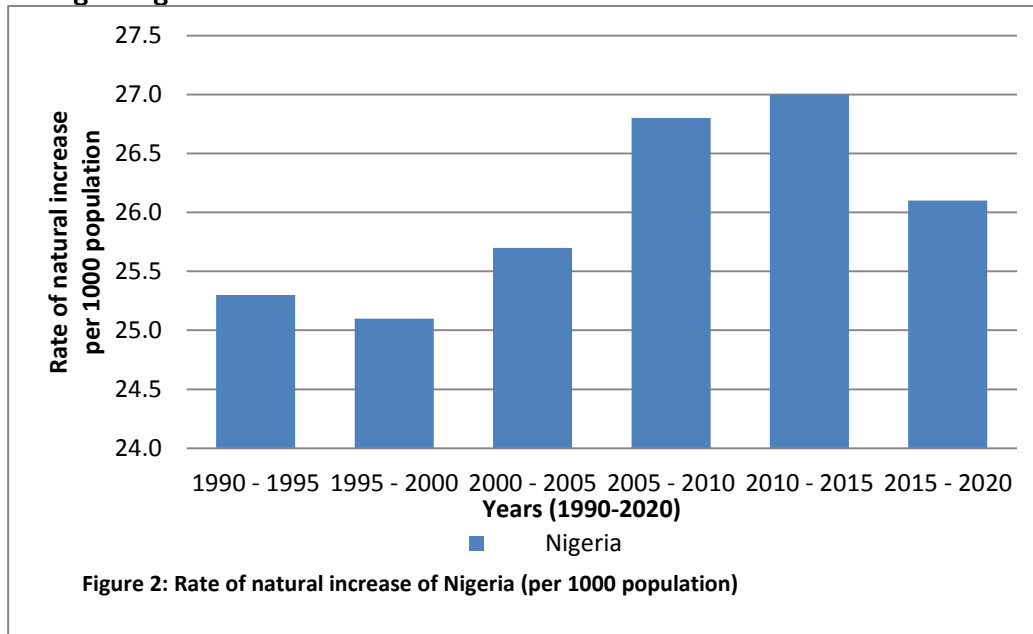
Age structure
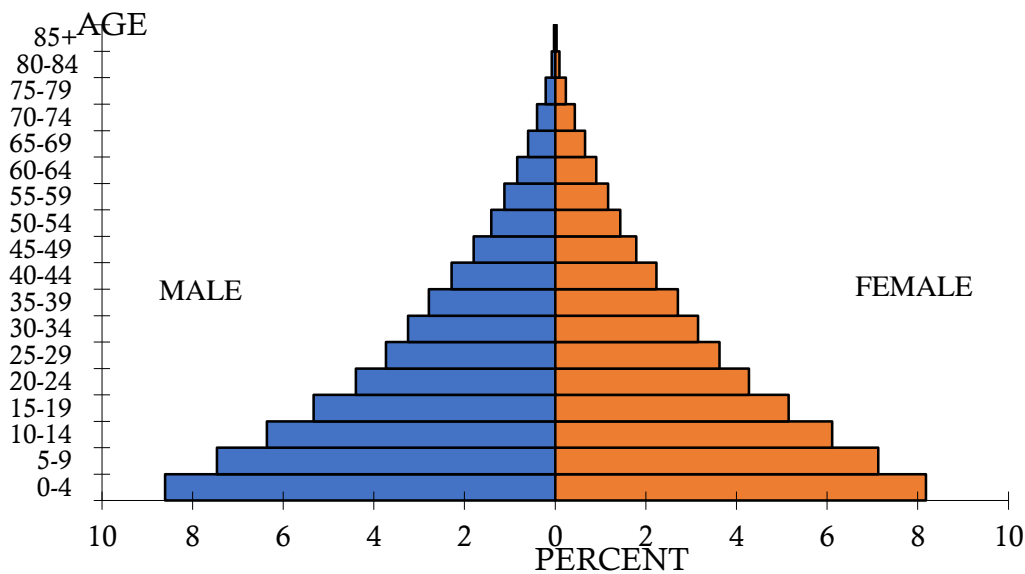
Figure 1: Population pyramid for Nigeria (2018)
Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

The population pyramid above shows the population distribution of Nigeria by age and sex in the year 2019. The population pyramid is a diagram designed to show the entire population divided by age (in 5years age groups) and sex. It shows population growth rate, for example, the pointy shape of the Nigeria population pyramid above shows that it is undergoing a rapid growth because it has the youngest ages at the largest age group which indicates that the number of women coming up to reproductive ages is still increasing and therefore even with a declining fertility rate, population will keep increasing (Population Reference Bureau, 2011). The shape of the pyramid indicates that Nigeria has a very young population with the highest population concentration in the 0 to 4 years age group and the top of the pyramid shows that not a lot of people survive to old age. This shows that few Nigerians survive to old age. It can also be observed that male population is higher at the base while women's population becomes higher towards the top end, indicating that women live longer than men in Nigeria (United Nations, 2019).

Changes in growth rate

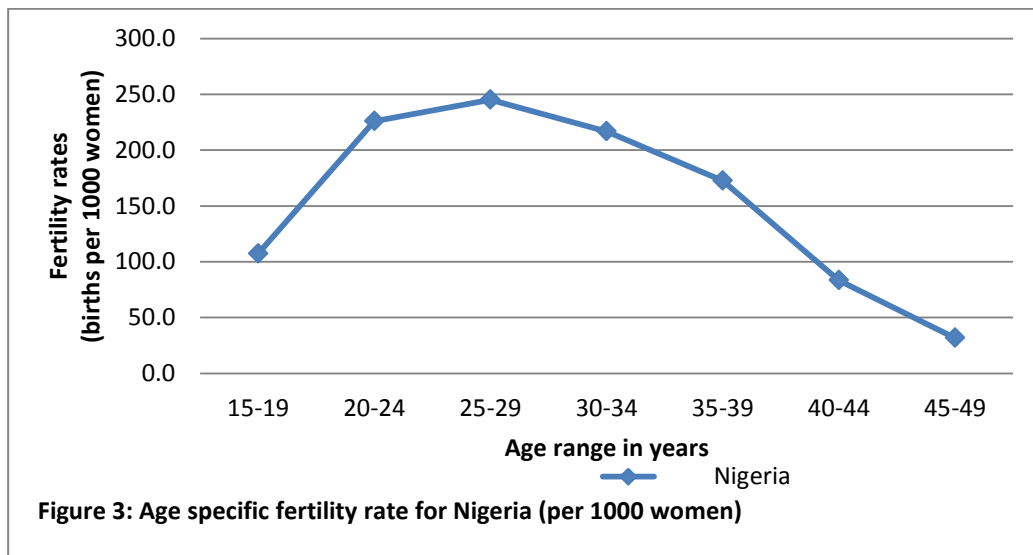**Figure 2: Rate of natural increase of Nigeria (per 1000 population)**

Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

The rate of natural increase which is a projected population growth calculated by subtracting death rate from birth rate (Population reference bureau, 2018) is also an important measure for understanding population size because it shows how a population changes in size over a given time period. The column chart above shows that the rate of natural increase of Nigeria's population declined between 1995 to 2000, afterwards it continued increasing until 2015 to 2020 when it witnessed another decline. However, the numbers are still high and because the population of Nigeria is very young, it expected that its population will keep growing even when the rate of natural increase declines.

Age specific fertility rates

Figure 3: Age specific fertility rate for Nigeria (per 1000 women)

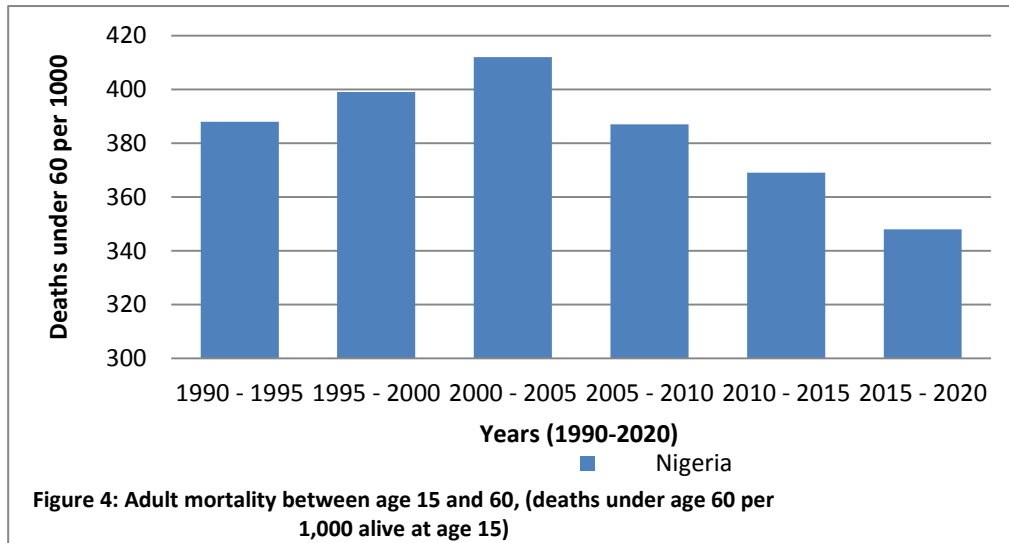Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

The age specific fertility rate gives a more accurate measure of fertility because it shows the exact number of women who are likely to give birth and shows at what age most women start giving birth. It can be observed that at every age group here, women in Nigeria give birth. The graph also shows that in Nigeria, many women start having kids at ages 15 to 19 which is quite young when compared to more advanced countries, producing nearly 107 children; and this may be because of cultural factors like early marriage among females and women spending less time in school and career (Population

reference bureau, 2011). Additionally, fertility rate in Nigeria peaks at ages 25-29 which indicates that Nigerian women do not delay births compared to more advanced countries. The age structure (Figure 1) of Nigeria may also affect the fertility rate because Nigeria has a young population with so many females at reproductive ages.

Adult mortality rates

**Figure 4: Adult mortality between age 15 and 60, (deaths under age 60 per 1,000 alive at age 15)**

Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

The adult mortality rate, which means the frequency at which adults aged between the ages of 15 to 60 who were alive at age 15 die within a time period, shows how people age in a life course, and life expectancy at old age. The column chart above shows that adult mortality in Nigeria is very high within the 30 years measuring time. For example, the bar chart above shows that between 2010 and 2015 about 410 per 1000 adults aged between 15 and 60 died in Nigeria, this is almost half the adult population and shows that not many people survive to old age.

Nevertheless, it is also important to identify the trend of adult mortality in Nigeria which peaked between 2000 and 2005, and has been on a very slow decline since then. Between 2015 to 2020, the adult mortality rate reduced to 347 per 1000, although still quite high but it shows a great decline from the peak years. This indicates that more adults are now living longer compared to the five years between 2000 and 2005. This may be attributed to improvement in medicine and will likely increase the life expectancy of Nigerians.

Life expectancy at different ages
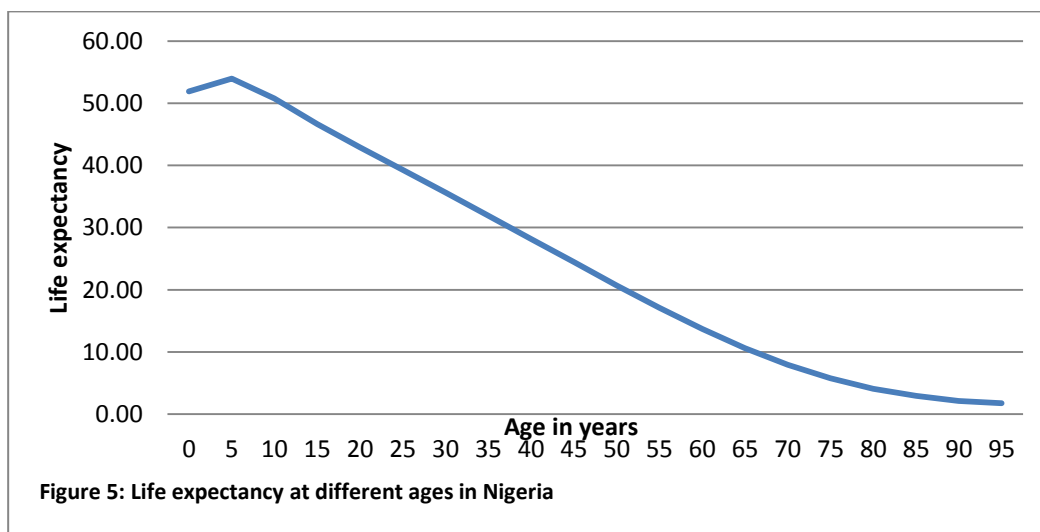
Figure 5: Life expectancy at different ages in Nigeria

Source: United Nations, Department of Economic and Social Affairs, Population Division (2019)

Life expectancy means the number of years a person is expected to live, depending on the age specific mortality rate of a population (Population Reference Bureau, 2018). The most used measure of life expectancy is life expectancy at age zero, that is, Life Expectancy at Birth (LEB), which can be defined in two ways: Cohort Life Expectancy at Birth and Period Life Expectancy at Birth. It is important because it shows the survival rate at different ages. The graph above shows life expectancy of Nigeria at different ages. The life expectancy at birth in Nigeria is 51.9. The graph also shows that life expectancy increases slightly after birth before it starts declining, this might be because of the vulnerability of children to infections and other health challenges in Nigeria and other sub Saharan African countries (Population Reference Bureau, 2011), therefore when children survive the birth period, their life expectancy increases slightly. The graph further indicates that the peak life expectancy in Nigeria is 53.4 which is very low and should be a source of worry for Nigerians. This shows that not many Nigerians live over the age of 53 years whereas the life expectancy of a country like the UK is 82 years (United Nations, 2019).

Discussion of findings

This paper set out to present Nigeria's demographic features which provides insight on the population growth and the reason for the population growth, as well as the mortality rate and life expectancy. The report reveals that the country's population is predominantly young; and while this would be good for the prospects in growing its military, economy and other areas of intensive human resources, the country is unfortunately yet to maximize the utility of its young population.

The 2019 United Nations prospects data on Nigeria shows population concentration at 0-24, and very high fertility rate: women start reproduction at 15 and peak at 25-29. Osam (2019) found that overpopulation in Nigeria can be attributed to factors such as early marriage, less time spent in school, and high emphasis on childbearing. This result means that the country has a young population that is more reproductive than it is productive. This in addition to limited opportunities available to young people to strive towards productivity. At 24, young people in Nigeria have barely acquired educational training to contribute to the country's economy; meanwhile, many of the females within this age group would have already started giving birth. With the country's adult mortality rate not being commensurate to the birth rate, the result is seen in overpopulation, low life expectancy necessitated by lack or poor health care services, biodegradation and global warming, which

in turn contribute to poor standard of living and severe limited resources.

Nigeria's high mortality rate coupled with the low life expectancy of less than 55 years have negative implications for the country, one of which is how it interferes with the creation of a social environment which fosters the solidarity needed to have a welfare state to provide a safety net for citizens. A functional welfare state depends on taxation – the contribution of earning citizens – (Esping-Andersen, 1990); however, people will be less willing to pay taxes and contribute to a pension fund when the chances for them living past retirement age (65 years) to benefit from the pension fund is incredibly low considering that the retirement age is higher than the average life expectancy. Also, younger workers will be less enthusiastic about supporting the retired and aged when, looking at the statistics, they have very little faith in living to be that age.

Overpopulation in Nigeria has resulted in congestions in hospitals and caused the health care facilities and services available to be insufficient for the provision of healthy living (Uniyal, Paliwal, Saun & Sharma, 2017). Patients have to stand in line in relatively good hospitals not only because there are not nearly enough well-equipped standard hospitals but also because the carrying capacity of these hospitals cannot accommodate the population utilizing them. This affects the quality of health care services provided and contributes to the poor life expectancy. The hospitals are not the only institutions that face the challenge of a large population competing for limited resources and facilities. Schools in Nigeria are also overcrowded and have limited teaching staff and facilities, yet there are still a huge number of young people seeking enrolment into schools.

The scarce resources which should be used by a reasonably sized population have had to be managed by a much larger one. This creates developmental and leadership problems that overshadow the relevance of resolving the country's overpopulation problem. Nigeria needs drastic measures to contain its population growth rate, increase life expectancy, focus on economic growth, welfare services and implementation of the 2030 Agenda for Sustainable Development Goals 1, 2, 3, 4, 5 and 10 addressing poverty eradication, combating hunger and malnutrition, strengthening the coverage and quality of health and education systems and achieving greater equality (United Nations' World Population Prospects 2019 revision).

Conclusion and recommendation

This report has shown the demographic dynamics of Nigeria's population, demonstrating how the nation's

population is growing at an exponential rate and will continue to grow faster if measures are not taken by individuals, groups and the government to curb the population boom. The Malthusian explanation predicts a fast and steady population growth for countries with an abundance of natural resources until the point where abundance turns to scarcity since the production growth would be linear and population growth exponential until the exponential function would return the linear production function and lead to famine or other disasters (Bussolo, Koettle, & Sinott, 2015). This shows that Nigeria is heading for disaster if nothing is done about the country's excess population growth, especially considering the limited resources.

The problem of overpopulation is made more difficult because aside from it being a problem that the average person feels hardly responsible for, there are poor family planning measures supported by the strong believe that children are blessings from God. This paper therefore recommends on individual level the increase in use of contraceptives and other family planning measures to reduce the fertility rate in Nigeria. However, for this to be achieved, sex education in schools should enlighten students on this issue of population growth and teach them the importance of contraceptives (Ugal & Ushie, 2013) as this study has shown that female reproduction in Nigeria starts at the age of 15 and peaks at the age of 25 which is relatively young. Therefore, there should be focus on getting young people informed. Professionals such as social workers, counsellors and other human welfare professionals should create awareness on the use of contraceptives and waken people's consciousness to the reality of the effects of overpopulation.

At the macro-level, legislators should make policies that would reduce fertility rate as well as mortality rate. When fertility reduction policy is mentioned, no example of legal initiatives to curtail human overpopulation is as well-known as China's 1979 One-Child policy enforced through fines, pressure to abort, and even forced sterilization. Despite a source of controversy with allegations of human rights violations, the policy is estimated to have lowered the population in the first 20 years of the policy by 300 million and helped position China as an economic giant. The policy ended in 2015 and was updated to allow for up to two children per couple. Nigeria policy makers should also create policy initiatives that will reduce fertility for all citizens of the country. Although a policy like the Chinese one-child policy may be impossible and against human rights, a strategic policy that leads to collective cultural change in the values of society as a whole and a voluntary effort from the individual, not a mandated

order from the collective may go a long way. There is, in addition to controlling fertility rate, urgent need for better and improved health care services: the rehabilitation and construction of well-equipped hospital facilities that would help improve quality of life for the young and the elderly.

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