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Nutrition, Maternal Mortality, And Quality of Life in Nigeria.

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Abstract: *This paper investigates the impact of nutrition, maternal mortality on quality of life in Nigeria for the period of 1990 till 2017. Meanwhile, empirical studies exist that suggests that maternal mortality on the long-run, does not translateinto improved quality of life. In line with the foregoing, this study focuses on the role which adequate nutrition plays on the enhancement of the pregnant women quality of life. Meanwhile, the study used world development indicator (WDI) data and as well employs Autoregressive Distributed Lag Model estimation technique. However, the result concludes that maternal mortality impacted negatively on life expectancy and as well as statistically significant at 1%. Furthermore, the result also concluded that the depth of food deficit and vitamin A supplementation coverage rate are significant and as well as positively related to life expectancy. Based on the foregoing, from the result, the level of their diet if boosted will have a multiplier effect on life expectancy and will as well improve the quality of life of the pregnant woman as well as that of their babies, and in turn, reduce maternal mortality. In line with the above, this study concludes that a well-structured, effective, improved institutional management, as well as increased government long term expenditures on the health sector, will not only enhance the citizenry quality of life but as well improve their life expectancy.*

Keywords*: Quality of Life, Maternal Mortality, Income Level, Nutrition, Improved Sanitation Facility, Autoregressive Distributed Lag Model (ARDL).*
JEL Classification: I12, I31

I. Introduction

Despite the numerous policies, programs, declarations and contributions that have been put in place in the past few decades by the government agencies and non-governmental organizations, the quality of lives obtainable in Africa have remained far below expectations (Igboanugo & Dauda, 2019). This is because the developmental issues such as malnutrition,infant mortality, child mortality, maternal mortality and so on still prevail in Africa.

The provision of quality healthcare and nutritional support is very vital for all women, especially pregnant women for a healthy generation.Despite the substantial advancementin maternal healthcare over recent decades, roughly 300,000 women still die due to pregnancy-related complications every year(Peters et al, 2023; WHO, 2022; Alkema, 2016; Guttmacher Institute,2017).African countries seem to have lost their ground and the standard set by the World Health Organization's initiative on Safe Motherhood have not been met by most developing countries (Adusei-Mensah et al.,2023;WHO., 2014). The United Nation Declaration of 2000 is widespread evidence and agreement within the global community on what needs to be done to prevent these deaths and improve the health, nutrition,andwellbeing of women SDGs, 3(UN, 2015**)**.

Clinical interventions and health services need to be delivered across a continuum of care — before, during, and after pregnancy (Kim et al., 2021; WHO, 2011). There must also be an enhanced focus on the role that nutrition plays in saving lives and safeguarding the health of women, men, girls, and boys including newborns (WHO,2013). Good nutrition is essential for physical growth, mental development, performance, productivity, health, and wellbeing across the entire life-span, making nutrition a sound investment for any country(Save the Children,2012).

Irrespective of the policies, declarations, conferences and other efforts aimed at reducing the scourge or the rate of maternal deaths across the globe including free health care by the government including international agencies (WHO, UNICEF etc), only modest gains in maternal mortality reduction appear to have been achieved in many countries in the past 20 years (Shah & Say, 2007). Economies in Africa and other developing part have actually lost ground in terms of the standards set by the World Health Organization's initiative on Safe Motherhood in order to reduce maternal mortality. In Nigeria, the Federal Ministry of Health had set the Year 2006 as the target year that maternal mortality would have been reduced by 50%. However, Nigeria was only able to achieve 34.8% reduction in maternal mortality rate between 1996 and 2015 which is lower than the target set and as such she contributes above 10% to global maternal deaths (Urhie et al., 2020; Ogu & Ephraim-Emmanuel, 2018). Past efforts to reduce maternal mortality ratio in Nigeria were concentrated on making direct improvements to the health system. These efforts have not involved enough resources to successfully reduce maternal mortality in the country.

Despite the administration of a wide array of maternal healthcare service and nutritional measures and strategies including free antenatal care, training of skilled birth attendants etc.; as well as the availability of resources, the situation of maternal health remains one of theworst in Africa as evidenced by prevailing maternal mortality ratios (Ogu & Ephraim-Emmanuel, 2018). This prevailing problem in Nigeria is strongly linked to the weak implementation of maternal health policies and services, high level of malnutrition of pregnant women especially in the northern part of the economy, as well as the presence of a number of cultural and socioeconomic factors including lack of funds, lack of birth preparedness,among others. From the perspective of malnutrition effect on maternal mortality in Nigeria, depth of food deficit was between 40 and 45 from 2014 to 2017 out of which women had a large proportion which thus leads to about 51% lifetime risk of maternal death between 2002 and 2017 and a low level of life quality (World Development Indicator (WDI), 2018).

Thisstudy seeks to examinethe impact of nutrition and maternal mortality on the quality of life in Nigeria. The study hinges on the capability theory to test the relationship between nutrition, maternal mortality, and quality of life in Nigeria. Specific objectives of this study are to examine the relationship between nutrition and maternal mortality may be causal and, if they are, whether amelioration is plausible as well as their impacts on quality of life in Nigeria. The method of analysis is the Autoregressive Distributed Lag (ARDL) and times series data that will be used are from 1990 to 2017 sourced from world development indicator (2018) and central bank statistical bulletin (2018). The remaining sections are divided into four sections which are; section two is the literature review; section three examines the theoretical framework and research methodology while the fourth section presents the analysis of the data employed. Section five concludes the study through summary and provision of the policy implications.

II. Review of Literature

This section of the study reviews the theories, empirical research works, and concepts that are in line with the area of study. Several theories abound which provides the link between nutrition, maternal mortality on the quality of life.The capability theory or approach to human welfare was postulated by Sen in 1979 and 1999 it appraised the other determinates of human development asides from economic growth, unlike other theories that view economic or income growth as the sole measurement of human development. He argued that people's ability to live and enjoy the kind of life they cherish, value, and the ability to make rational choices are the fundamentals of human development. The major fact is that people's quality of life is a function of human capabilities development. However, his 1999 human development explanation includes critical human development issues such as access to quality nutrition, healthcare, education, poverty, unemployment and income gapduo are not constrained by them. He further argued that income growth should be viewed from the point at which it helped people to develop or enhance their capabilities and choices and not as an indicator of human development. According to Robeyns (2005), the main focus of Sen's theory is how people can effectively do and become given the opportunities available to them. It is when mothers can be able to get adequate nutrition, maternal healthcare during and after pregnancy alongside employment (capabilities or functioning) that the nation can harness an amplequality of life (Igboanugo &Saibu, 2021). The assumption is that people's capability to function depends on socioeconomic and sociodemographic factors which are interrelated as well as interdependent. It is on this note that Dang (2014), concluded that, the level of human capital development, are all dependent on the effects of these factors.

Furthermore, the theory opined that people are economically crippled as a result of inadequate capabilities, and for them to break out of malnutrition cum maternal death and attain quality of life, there is a need to improve on their capabilities (De Muro & Tridico,2008). This brings the urgent need for the nation to drastically invest in human capital development via health and education to advance these capabilities as well as provide access to improved quality of life, as well as become socially included (Igboanugo & Dauda, 2019; Wigley & Akkoyunlu-Wigley,2006). The theory gave a clear understanding of human capital development asss well as welfare. Therefore, applying theory to nutrition, maternal mortality and the quality of life, Sen provided a convincing explanation that human capital development is not an end in the pursuit of adequate nutrition and maternal healthcare(development), but a means to the end (improve quality of life). To attain this objective, investment in human capital development is fundamental (a necessary and sufficient condition), (Shahani & Deneulin, 2009).

There are several studies that have considered the relationship between nutrition and maternal mortality and between nutrition and economic welfare in developing economies as well as a cross-country analysis. In examining the trend and the determinants of Indonesian's maternal mortality ratio between 2016 and 2020, Sejati et al., (2023) employing bivariateanalysis and found that there was a decline in maternal mortality rate between 20016 and 2019. However, in 2020 there was a rise in the rate of maternal mortality as a result of the number of healthcare personnel. The study suggested that an even distribution of health personnels and nutritionist among the various health cares in the country. In the same vein, utilizing expository style of investigation for the period of five months using 41 participants in Ghana, Adusei-Mensah et al. (2023) studied

the prospective health impact assessment on nutritional mhealth intervention on maternal mortality. The study found that, the intervention helped to boost nutritional outcomes of pregnant women and declined maternal mortality rate.

In United States, Patterson et al., (2022) investigated maternal mortality rate using formal demographic techniques from 2015 to 2019 and found that blacks have a higher maternal mortality rate compared to their white counter part. The study therefore concluded that, there is a correlation between maternal mortality and racism.Véronique et al., (2016) carried out a study on the level and causes and mortality across the globe. They adopted out a descriptive study in the comparative study using the data of China and sub-Saharan African countries. They discovered that across the globe in 2013 289,000 maternal deaths was witnessed while maternal mortality declined by 45% between 1990 and 2013. They also observed that women face a higher risk of maternal death in South Asia and Sub-Saharan Africa and that the most important direct causes of this death are abortion, hypertension, sepsis, and haemorrhage. They, however, gathered that the proportion of deaths due to indirect causes is increasing everywhere and HIV has a big role to play for mortality in Africa. The most frequent complications are anaemia and depression, but prolonged and obstructed labour has the highest burden of diseases because of disabilities associated with fistulas. The study failed to recognize the role that proper nutrition pays in preventing maternal mortality and improved welfare.

It was also observed that the probability of maternal mortality is twice in mothers who are diagnosed with anaemia (Daru, 2018). The study by Daru (2018) extended the view by Abu-Saad &Drora, (2010) that poor maternal nutrition also increases the risk of premature delivery, low birth-weight, and birth defects.

From the report of World Bank Group (2018), it was discovered that as a result of inadequate nutrition during pregnancy, in 2017, more than 50 million children were had body mass indexes that were too low and approximately 150 million children around the world were stunted, which hampers the possibility of children being able to grow into healthy, active, and productive members of their families, communities, and countries. This is, therefore, an indication that if not further ameliorating policies are put in place to solve malnutrition in girls and women who are pregnant, the quality of their lives and those of their children will be hampered and there will also be further loss of productive lives.

In the findings of World Health Organization (2016) in their study on Africa, they argued that boosting girls' and women's nutritional status especially in Africa is critical to improving maternal life quality as well as the newborn. And that malnutrition is both a cause and effect of gender inequality, making nutrition investments one of the soundest investments to make today. Under-nutrition among pregnant women leads to increased risks of infection, anaemia, lethargy, and weakness, lower productivity, poor birth outcomes, maternal complications, and even death.

Gretchen (2013) investigated the role of nutrition in the women and their newborns in low-income and middle-income economies. They observed that poor nutrition also seemslike a significant risk to women and their newborns. Anaemia or iron deficiency affects about 500 million women who are of reproductive age (15-49) globally, while half of all pregnant women in low-income and middle-income countries (such as Nigeria) diagnosed with the condition.

Cetin &Laoreti (2015) also established the importance of maternal nutrition for healthy living. In their study, it was established that nutrition plays a major role in maternal and child health and it is widely recognized that optimum nutrition in early life is the foundation for long-term health. Therefore, a healthy maternal dietary pattern, along with adequate maternal body composition, metabolism and placental nutrient supply, reduces the risk of maternal, fetal and long-term effects in the offspring. They also argued that under-nutrition is mainly an issue of low-income countries, malnutrition, due to poor quality diet, is becoming a global health problem. They also established that poor maternal nutritional status, along with maternal body composition, metabolism and placental nutrient supply, is the main factors that can negatively or positively influence fetal development and have been strictly related to adverse pregnancy outcome and expression of fetal genetic potential.

Rush (2000) did a review that relates nutritional status to pregnancy-related death in the developing world, where maternal mortality rates are typically greater than one hundred folds higher than rates in the industrialized countries. In his analysis, it was observed that 100-fold. In the study, it was discovered that for the central causes of maternal mortality (induced abortion, puerperal infection, and pregnancy-induced hypertension), knowledge of the contribution of nutrition is too scanty for programmatic application. Hemorrhage and obstructed labor are different. The risk of death is greatly increased with severe anemia; there is little evidence of increased risk associated with mild or moderate anemia. Current programs of universal iron supplementation are unlikely to have much effect on severe anemia. There is an urgent need to reassess how to approach anemia control in pregnant women.

The study shifts attention to the study by World Health Organisation (2017) which claimed that an increased risk of malnutrition, death, and illness during the postnatal period has been linked to poor and inadequate feeding practices. The evidence clearly indicates the benefits of early initiation and exclusive breastfeeding for the first six months of life, which has been on the increase over the past decade. An increased

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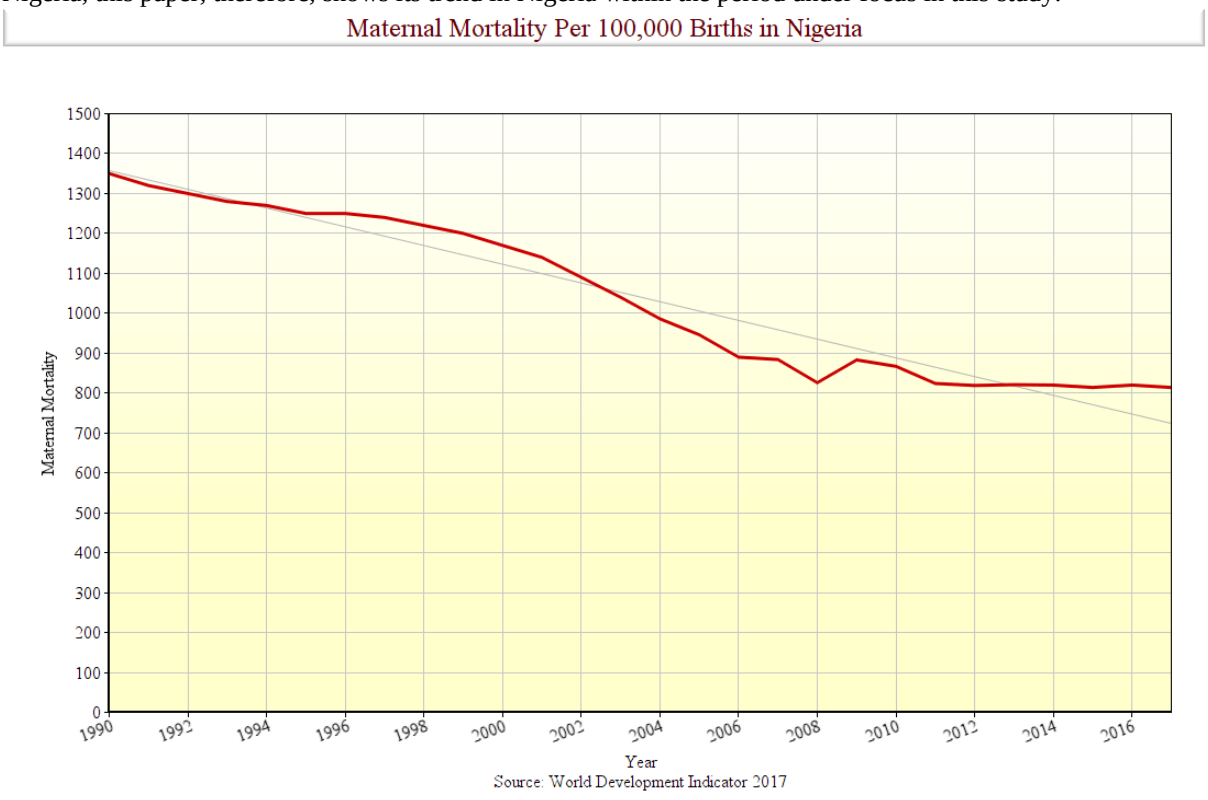
2.1 Maternal Mortality in Nigeria

Maternal mortality which is also known as maternal death is a concept or issue that has been a source of concern to every nation of the world. It is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO, 2016). According to the British Medical Bulletin (2003), maternal death is first defined as the death of a woman while pregnant or within 42 days after which a pregnancy has been terminated.

The maternal health care system in Nigeria is one which is characterized by traditional, faith-based and orthodox health providers. The presence of factors such as traditional and faith-based health providers linked with the socioeconomic and deleterious cultural determinants of maternal health can be implicated as a plausible reason for the seemingly weak health system. This implication is evident in the number of pregnancies being managed by these non-orthodox methods; the inability to recognize danger signs in pregnancy and the ensuing high maternal death rates (Ikhioya, 2014 and Okonofua, Ntoimo& Ogu, 2018).

Apart from the problems posed by these factors, maternal health is also plagued with problems of poverty, illiteracy, lack of knowledge, delay in reaching health facilities either due to inaccessibility, poor roads, poor communication networks, poor transportation systems or long distances to be covered as well as delays in receiving appropriate care at health facilities which is characterized by absence of quality maternal health services, inadequacy of skilled birth attendants, inadequate medical supplies during labour, delivery and after the delivery; There is thus the need to focus on prevention of maternal deaths in Nigeria by tackling these problems affecting the ability of pregnant women to access timely and quality maternal health services (Uzoigwe, 2016). Due to the need to proffer appropriate policy to ameliorate the issue of maternal mortality in Nigeria, this paper, therefore, shows its trend in Nigeria within the period under focus in this study.



The above graph was plotted by the researchers using the data was gotten from the world development indicator (2017). The graph shows the trend of maternal mortality per 100,000 live births in Nigeria from 1990 to 2017. The graph, therefore, shows that the trend of this menace called maternal mortality had declined for the most part of the study but in a decreasing state. It is, therefore, an indication that though there had been some policy implications such has not been effective in the economy. For instance, there the curve was steep from 1990 to 1995 which implies that the policy put in place such as investment in healthcare facilities but such only

brought about a little reduction in the number of maternal deaths during these periods. From 1996 to 1998, the strategies became devasted which led to a further rise in the deaths of materials in Nigeria. The curve was concave from 1996 to 2004 as a result of a reduction in the number of maternal deaths in an increased manner which is better than the ones witnessed from 1990 to 2005. The reduction was due to the interventions from international economic donors like United nations through UNICEF, World Health organization and world bank through grant towards health care facilities and research into the causes of maternal deaths in developing economies including Nigeria. There was a sharp rise in maternal deaths from 2008 due to poor nutrition and other factors while the rate has not witnessed a significant fall since then.

2.2 Nutrition in Nigeria

Nutrition as a macroeconomic and microeconomic concept plays a major role in maternal health. It is a global standard that optimum nutrition in the early stage of life is the foundation for long-term health. Therefore, a healthy maternal dietary pattern in relation to adequate maternal body composition, metabolism and placental nutrient supply reduces the risk of maternal, fetal and long-term effects in the offspring. It should, therefore, be noted that malnutrition-cum-undernutrition is mainly an issue of which is a source of concern to low-income economies (sub-Saharan Africa), malnutrition, due to poor quality diet, is becoming a global health problem (Cetin &Laoreti, 2015).

It is defined literarily as the process of providing or obtaining the food necessary for health and growth. It is also the branch of science that deals with nutrients and nutrition, particularly in human. In the Global Nutrition report (2018), it reveals that the global burden on malnutrition has remained unacceptably high which has thus negatively affected almost every economy of the world. It, however, showed that if more conscious efforts are made now, it is never too late to put an end to malnutrition in all ramification. As such there are numerous opportunities and ways of putting an end to malnutrition in the world as put forward by Global Nutrition Report (2018)

According to UNICEF (2015), the states in northern Nigeria are the most affected by the forms of malnutrition which are stunting and wasting. High rates of malnutrition bring about significant public health and development challenges for the economy which is mostly witnessed by women and children. Stunting, in addition to an increased risk of death, also triggers a multiplier effect on poor cognitive development, poor quality of life (through poor life expectancy), a lowered performance in education and low productivity in adulthood, all of which have contributed to economic losses for as much as 11% fall in Gross Domestic Product.

III. Theoretical Framework and Methodology

This paper is built on the framework of the capability to function and perform the required activities through improved living standard. This background, therefore, results to the adoption of the theory of capability approach by Sen. This is because as for the functioning of a human being in respect of their capabilities to perform their responsibilities, it is required that they feed properly. For instance, women who are the most vulnerable human beings in the world need to be properly fed and taken care of in order to enhance proper health situations during conception as well as to prevent or reduce the chances of death during pregnancy and after 42 days of giving birth (maternal mortality). Good nutrition is expected to be a conscious effort by human beings in order to bring about a high level of quality of life in an economy with a specific focus on Nigeria.

Based on the time series nature used in this paper which is integrated from different order I(1) and I(0), we apply the Autoregressive Distributed Lag (ARDL) approach, a method to co-integration as outlined by Pesaran and Shin (1998) to achieve the objective of the paper. The purpose of adopting the ARDL model is because it accepts variables of different order, it takes a sufficient number of lags to capture the data generating process from a general to specific modelling framework and it yields superior estimates of long-run coefficient, the diagnostic tests of the estimated equation are more reliable, from the ARDL model, one can derive a dynamic error correction model (ECM) through a simple linear transformation, and the model is a more appropriate measure in the case of a smaller sample as indicated by (Khalaf & Sanhita, 2009).

The model is stated below;

$Le_t=\alpha_0+\alpha_1 DFD_t+\alpha_2 VA_t+\alpha_3 MM_t+\alpha_4 IL_t+\alpha_5 ISF_t+\alpha_6 ILF_t+\propto_7 LTRM_t+\varepsilon_t$ .....(3.1)

$\Delta LE_t = \alpha_0+\Sigma\gamma C_1 LE_{t-i}+\Sigma\gamma_2 \Delta DFD_{t-i}+\Sigma\gamma_3 \Delta VA_{t-i}+\Sigma\gamma_4 \Delta MM_{t-i}+\Sigma\gamma_5 \Delta IL_{t-iF}+\Sigma\gamma_6 \Delta ISF_{t-i}+\Sigma\gamma_7 \Delta ILF_{t-i}+\Sigma\gamma_8 \Delta LTRM_{t-i}+\varepsilon_t$ .....(3.2)

The variables are described using the table below showing a *priori* expectations and sources of data.

Table 3.1: Measures, Sources and Appriori Expectations of Variables Employed

Variables	Definition	Measures	Proxy	A *priori*	Source of data
LE	Life expectancy at time t	It is measured in years	It serves as a proxy for quality of life	It is the explained/ dependent variable	World Development Indicator, 2017.
DFD	Depth of food deficit	It is measured in	It is the major proxy for nutrition	+ve	World Development Indicator, 2017.
MM	Maternal mortality per 100,000 live births	It is measured in a unit	It is the proxy of maternal mortality	-ve	World Development Indicator, 2017.
VA	Volume Supplementation coverage rate	It is measured in percentage	It is used as one of the proxies for nutrition	+ve	World Development Indicator, 2017.
LTRM	The lifetime risk of maternal death	It is measured in percentage	It is a supportive explained variable	-ve	World Development Indicator, 2017.
IL	Income level	GDP per capita income in 2010 price measured in US dollars	It is a supportive explained variable	+ve	World Development Indicator, 2017
ILF	Illiteracy level female		It is a supportive explained variable	+ve	World Development Indicator, 2017
ISF	Improved sanitation facility		It is a supportive explained variable	+ve	World Development Indicator, 2017
Δ	The 1st difference of a variables				
λ_1, λ_2, λ_3, λ_4 and λ_5	correspond to the long-run relationship,				
γ_1, γ_2, γ_3, γ_4, and γ_5	represent the short-run coefficients (error correction dynamic),				

Source: Constructed by the Author,2023.

IV. Result Presentation and Interpretation

Unarguably, this section presents the expected results of the analysis, with the data that was drawn from the world development indicator. Based on the above,it starts with the variables' descriptive statistics. Furthermore, table 4.1 reveals that depth of the food deficitwithin the period of study 1990-2017 averaged 59.680, as it rallies between 53.000 and 140.000. However, the table revealed that income level on the average was 1841.241, it also increased from 1347.892 to 2563.092, while illiteracy level female increased from41.386 to 43.729 and as well averaged 43.146,in the same manner, improved sanitation facility raised from 29.000 to 38.100while its average is 33.261. Meanwhile, life expectancy, the lifetime risk of maternal death, maternal mortality per 100,000 birth and vitamin A supplementation coverage rate raised from 46years to 54years, 4.508 to 8.144, 814.000 to 1350.000 and 0.000 to 91.000 respectively. Notwithstanding, the value of the probability will give a better interpretation for the Jarque-Berra statistics test, as it can be concluded from the table that asides from depth of food deficit and illiteracy level female that are not normally distributed as they exhibit probabilities that are less than 5% level of significances, which led to the rejection of the normality null

hypothesis. Meanwhile, from the table, it did not reject the null hypothesis of income level, improved sanitation facilities, life expectancy, the lifetime risk of maternal death maternal mortality per 100,000 birth and vitamin A supplementation coverage rate, as they exhibit probability values that are more than 5% level of significance.

Table 4.1: Descriptive Statistics

Statistics	DFD	IL	ILF	ISF	LE	LTRM	MM	VA
Mean	59.68000	1841.241	43.14653	33.26154	49.34035	6.124531	1057.808	52.70588
Median	53.00000	1735.738	43.44080	33.10000	48.29350	5.999143	1065.000	64.00000
Maximum	140.0000	2563.092	43.72920	38.10000	54.22200	8.144554	1350.000	91.00000
Minimum	35.00000	1347.892	41.38676	29.00000	46.98000	4.508853	814.0000	0.000000
Std. Dev.	27.78597	447.8778	0.704335	2.790280	2.521200	1.278421	196.0180	30.96119
Skewness	1.388797	0.359851	-1.432833	0.138269	0.618757	0.132564	0.018691	-0.712061
Kurtosis	4.272481	1.537543	3.712730	1.809924	1.873739	1.436975	1.354304	2.064670
Jarque-Bera	9.723159	3.099543	6.540023	1.617151	3.033229	2.618062	2.935522	2.056269
Probability	0.007738	0.212297	0.038006	0.445492	0.219454	0.270082	0.230441	0.357674
Sum	1492.000	51554.75	776.6375	864.8000	1282.849	153.1133	27503.00	896.0000
Observations	25	28	18	26	26	25	26	17

Source: Author's Computation using World Development Indicator

In the same light, it is important that the study conducts a correlation test to observe the magnitude of the relationship between the variables. Meanwhile, the essence of the investigation is to make sure that a perfect relationship does not exist between them; as this will result in multicollinearity econometric problem. Evidently, from table 4.2, the results from depth of the food deficit, income level, illiteracy level female, improved sanitation facilities, life expectancy, lifetime risk of maternal death maternal mortality per 100,000 birth and vitamin A supplementation coverage rate showed that the variables are not perfectly related; hence it is safe to run the model estimation.

Table 4.2: Correlation Test Result

Variables	DFD	IL	ILF	ISF	LE	LTRM	MM	VA
DFD	1.00	-0.95	0.94	0.98	-0.98	0.95	0.98	-0.33
IL		1.00	-0.92	-0.98	0.99	-0.97	-0.99	0.32
ILF			1.00	0.91	-0.97	0.85	0.93	-0.26
ISF				1.00	-0.98	0.98	0.99	-0.35
LE					1.00	-0.95	-0.99	0.32
LTRM						1.00	0.97	-0.29
MM							1.00	-0.37
VA								1.00

Source: Author's Computation using World Development Indicator

Evidently, it is of significance to estimate the unit root test. This is to evade the problem of spurious regression. Meanwhile, the Augmented Dicky-Fuller unit root technique follows the null hypothesis that the series has a unit root against the alternative hypothesis of no unit root. More so, table 4.3 revealed that improved sanitation facility and vitamin A supplementation coverage rate are stationary at level out of the eight variables used, while depth of the food deficit, income level, illiteracy level female, life expectancy, lifetime risk of maternal death, as well as maternal mortality per 100,000 births, are stationary at first difference.

Table 4.3 Unit Root Test Result

Variables	**Unit Roots at Level**		**Unit Roots at first difference**	
	Statistical value	**Probability**	**Statistical value**	**Probability**
DFD	-2.761844	0.0794	-4.551064*	0.0016
LOG(IL)	-0.749278	0.8167	-3.575319*	0.0107
ILF	0.750973	0.9892	-3.564076*	0.0432
ISF	-7.378042*	0.0000		
LE	-1.125233	0.6867	-3.676638*	0.0386

LTRM	-1.193305	0.6600	-4.252137*	0.0032
LOG(MM)	-0.512546	0.8729	-4.769864*	0.0009
VA	-3.160224*	0.0421		

*Implies Statistically significant at 5%

Source: Author's Computation using World Development Indicator

Based on the foregoing, Autoregression Distribution Lag Model (ARDL) bound test is adapted in estimating the model's cointegration for integrated variables at different orders. Equally, this prompts the study to estimate bounds cointegration test for the models specified earlier. In addition, table 4.4 is in line with Pesaran and Shin (2001) recommendation that ifARDL F-statistic is lower than the I(0) lower bound critical value, the model is concluded to be cointegrated at level, however if the ARDL bound F-statistic is greater than the upper bound of I(1), the modelis concluded to be cointegrated at first difference and if the ARDL bound F-statistic falls in between the I(0) and the I(1), the result is inconclusive. In line with the above argument, it can, therefore, be concluded from table 4.4 that the variables are cointegrated.

Table 4.4: ARDL Bound Co-integration Test Result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significant	I(0)	I(1)
F-statistic	2225.863	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9

Source: Author's Computation using World Development Indicator

Summary of Regression Result
Method: Autoregressive Distributed Lag Model (ARDL)
Dependent Variable: ΔLE

Table 4.5: ARDL Regression Result

Variable	Coefficient	t-Statistic	Prob.
DFD	0.075738**	11.85574	0.0070
VA	0.000925*	5.905712	0.0275
LOG(MM)	-5.822767**	-12.43905	0.0064
LTRM	-0.922389**	-12.74653	0.0061
LOG(IL)	-4.130484*	-8.465627	0.0137
ILF	-1.071669**	-24.29770	0.0017
ISF	-0.490078**	-14.35233	0.0048
C	183.3630**	22.75875	0.0019

R-squared	0.999946	Mean dependent var	48.92480
Adjusted R-squared	0.999757	S.D. dependent var	1.378063
oS.E. of regression	0.021472	Sum squared resid	0.000922
Long-run variance	5.26E-05		
Jarque-Bera Statistics	0.756871		
Jarque-Bera Probability	0.684932		

** Implies Statistically significant at 1% and ** implies statistically significant at 5%*
Source: Author's Computation using World Development Indicator.

Obviously, table 4.5 above reveals that maternal mortality in the long run impacted negativelyon life expectancy and as well statistically significant at 1%.Unarguably, this implies that maternal mortality cannot translate into improved quality of life, as it has a direct impact on life expectancy as well as an impact factor of -5.822. Basically, this can be attributed to inadequate fund allocation to the health sector, lack of adequate obstetric and gynaecological care facilities and personnel, abortion, hypertension, sepsis, haemorrhage, HIV, anemia,prolonged, obstructed labour,institutional or sectorial distortion, government general deficiencies, structural, infrastructural, malnutrition, corruption, carelessness on the part of the pregnant women as well as the health practitioners, and frequent strike actions by health workers which need to be drastically minimized.In line with the above, the result also reveals that the depth of food deficit is positively related to life expectancy, and it

has the impact factor of 0.075 in the long run although statistically significant at 1%. More so, vitamin A supplementation coverage rate is positively related to life expectancy and is statistically significant at 5%. Evidently, this implies that the level of their diet if boosted will have a multiplier effect on life expectancy and will as well improve the quality of life of the pregnant woman as well as that of their babies, reduce maternal mortality in another hand.

Additionally, lifetime risk of maternal death, illiteracy level female,improved sanitation facility and income level are all negatively related to life expectancy and statistically significant at 1%. However, this implies that they have an indirect effect on life expectancy as their impact factor are -0.922, -1.071, -0.490 and -4.130 respectively.

Based on the foregoing, the post-diagnostic analysis results show that the variations in the dependent variable are well explained by the variations in the independent variable for the models as 99.9% are explained.

V. Conclusion and Policy Implication

This paper investigated the impact of nutrition and maternal mortality on the quality of life in Nigeria. However, the result concludes that maternal mortality impacted negatively on life expectancy and as well as statistically significant at 1%. Furthermore, the result also concluded that the depth of food deficitand vitamin A supplementation coverage rate are significant and as well as positively related to life expectancy. Based on the foregoing, from the result, the level of their diet if boosted will have a multiplier effect on life expectancy and will as well improve the quality of life of the pregnant woman as well as that of their babies, and in turn, reduce maternal mortality. In line with the above, this study concludes that a well-structured, effective, improved institutional management, as well as increased government long term expenditures on the health sector,will not only enhance the citizenry quality of life but as well improve their life expectancy.

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CONFLICT OF INTEREST STATEMENT

We, Ifunanyachukwu N. Igbanugo and Ngozi M. Nwakeze mutually agreed to publish our paper (Nutrition, Maternal Mortality and Quality of Life in Nigeria) with your publication outlet and there is no conflict of interest of any kind. Please kindly, go ahead with our paper publication, thanks.