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MASS MEDIA EXPOSURE AND THE UTILIZATION OF MATERNAL HEALTH SERVICES IN NIGERIA

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Abstract
Reducing the depth and burden of maternal mortality, improving the quality of health, and making health services accessible for women is highly desirable particularly for developing countries such as Nigeria. And, one of those factors that can be used as a tool to spur the adoption of maternal health care is health information. The rationale for this research was to determine if and how the availability of Mass Media affects the uptake of maternal health care in Nigeria. Poisson regression was employed to choose the focus of the research in accordance with accepted statistical principles. The Nigerian Demographic and Health Survey (2018) provided the data that was that was utilized by the study. The usage of maternal health care was proxied by the average number of antenatal care visits. The result showed that those who owned a television, a radio and used the internet had significantly higher antenatal care visits than those who did not, showing that exposure to mass media significantly influences the adoption of maternal health care. However, the research concluded by emphasizing the need of understanding the ideas being sent by modern media, particularly with regard to health concerns. Additional suggestions are provided as well.

Key Words: Antenatal Care, Maternal Health Services, Media Exposure, Poisson Regression.

Introduction
Women contribute enormously to the development of any nation economically, socially and politically etcetera. Economically, women contribute to the generation of income both at macro and micro levels through participation in the labor market, income generating activities such as agriculture and petty trades. Politically, they serve as a source of voting power, leadership and governance especially in industrialized nations. In the social context, they help in child upbringing which is very important in the cognitive development of children, participate in household decision making process and wellbeing of the household. The role of women in the socioeconomic context and development of any nation and economy cannot be understated due to their population. According to World Bank (2017) women alone constitute about 50% of the global population.

One factor that has helped especially developed nations to utilize the vast potentials of women has not just been hinged on the increased participation of women at various levels, but favourable health conditions and environment provided. This is because, health is very povital to the development of any nation especially in terms of labor supply and productivity. Although there has been a global decline in health indicators such as maternal and female mortalities, the rate in most Subsaharan Africa countries and Nigeria in particular remains relatively high. According to data collected by the World Health Organization in 2018, the maternal death rate in underdeveloped countries was approximately 239 per 100,000 in 2015, whereas it was approximately 12 per 100,000 in industrialized countries. And in Nigeria, Izugbara, Wekesah, & Adedini (2016) states that the rate of maternal mortality stands at about 44, 000 per annum, which is the second largest in the world after india. Futhermore, the country accounts for 14% of the global maternal mortality rate. Hence, reducing the depth and burden of maternal mortality and improving the quality of health and health services for women becomes highly desirable. And, one of those factors that can be used as a tool, and which is very important to the health of individuals is health information. The WHO (2019) states that availability of information relating to health, such as risk factors, morbidities, mortalities, health service coverage and utilization, and health systems, is very neccesary to measuring and fastracking the progress towards universal health coverage and improving health outcomes. Although the major sources of health information has been through medical channels, in recent times, the mass media has grown to become a medium for an array of different forms information especially on health. Odesanya, Hassan, & Olaluwoye (2015) defines the mass media as"mass-based pathways to reaching a mass audience that comprises people of varying backgrounds, who need the media to keep up with the pace of events around them."

Despite the abundance of research on the factors that affect the well-being of mothers in the sample region, there is little empirical evidence on how life style factors such as access to the media influences maternal health and healthcare utilization. Odesanya, Hassan, and Olaluwoye (2015), and Atakiti and Ojomo (2015), two of the few research on the link between media consumption and maternal health in the study area, employed qualitative along with basic descriptive analytics in their investigations, hence, there is a need to gaze into the subject matter to determine whether causal relationship exist between these. Therefore, the study's primary goal is to investigate whether or not there is a connection between maternal media exposure and healthcare seeking behavior in Nigeria.

Literature Review

Theoretical Linkages and Empirical Evidence

The health of individuals is largely ascociated with their health behaviours. And the media has been used as a major medium for disseminating information which could shape the behaviour of individuals. One major theory that has been used to gain insight into the how the information individuals acquire can shape their behaviour is the social congnitive theory. It was advanced by Bandura (1999). One aspect of the the theoretical foundations of this theory that is important for justifying the nexus between media exposures and health is the proxy agency. The proxy agency points out the

possibility of an individual's interest and preferences been influenced by something or someone outside his/herself. Also, the theory states that human possess vicarious capabilities, that is, they could change their behaviours by acquiring informations from other sources other than their presumed choices; learning from the actions and consequences of others.

The diffusion hypothesis provides another framework for understanding the association between media consumption and health. Propounded by Rogers (1962), the theory tries to suggest how a new idea or innovation can be spread, while its process heavily relies on human capital. Of the four elements that could influence the spread of an information: the innovation itself, time, a social system and communication channels. The communication channels as an element explains how information can be disseminated to a target audience in order to achieve a goal. It further gives high priority to awareness as the first of five stages involved in the individuals decision making process. Hence, it is theoretically justifiable to study how media exposures could influence maternal health. As opined by Atakiti & Ojomo (2015), "The mass media can be a powerful tool to raise public awareness on health issues and have been implicated as a factor influencing numerous health behaviours" There are numerous literatures especially outside the study area on how different kinds of media use relates with matenal health. Blom, van der Zanden, Buijzen, & Scheepers (2016) used the European Social Survey 2010, which covers 25 European countries with a sample of 36,692 individuals to investigate the impacts of various kinds of media exposures on health. The multilevel regression study showed that watching TV was inversely associated to health, but reading newspapers and listening to the radio had favorable effects. When looking at the effects of exposure to modern media, the results showed a positive correlation between time spent online. Noh, et al., (2019) investigated how health information sources affects the choice of the place of birth in Pakistan. Employing cross-sectional data estimated with a generalized linear model alongside log link as well as a Poisson distribution, the authors found that women who obtained their birthing information from doctors and nurses/midwives were more likely to give birth in a medical facility than women who obtained their information from low-level health workers or relatives/friends.

Ghosh (2006) also looked into whether or not maternal media consumption influenced their use of prenatal care in India. The 1998–1999 National Family Health Survey in India was analyzed using multivariate logistic regressions to determine prevalence rates. Findings indicated a correlation between maternal utilization of antenatal care and the frequency with which mothers consumed electronic media throughout pregnancy. Researchers in Malawi examined the impact of a community-driven media campaign called Phukusi la Moyo (tips of life) on the use of maternal health care services in a rural setting (Zamawe, Banda, & Dube, 2016). The correlation was hypothesized using data from 3825 women of reproductive age (15-49). Multivariate regression analyses revealed that women who were exposed to the initiative were more likely to use contraception, make use of antenatal care facilities, and sleep under mosquito nets compared to those who were not. Nevertheless, the location of delivery did not play a significant role.

The effects of media exposure on adolescents' sexual health behavior in Lagos Metropolis, Nigeria, were investigated by Wusu (2013). The data utilized in this analysis were collected from a survey administered to Lagos city teenagers between the ages of 12 and 19 between the months of November 2009 and also February 2010. Employing Logistic regression, the researchers estimated the extent to which exposure to sexual health information in the media affected variables like condom use, number of partners in sexual relationships, number of sexual partners, as well as self-reported instances of abortion. Demonstrating the significance of media influences in determining reproductive health. In a Cross-Sectional research, Bajoga, Atagame, and Okigbo (2015) examined the potential impact of the Media on Sexual Activity and Contraceptive Use amongst Young Women in Specified Urban Cities in Nigeria. While there were variations among cities, the multivariate analysis confirmed that being exposed to FP messages in the media was a significant predictor of both sexual activity and the utilization of modern contraceptive techniques. Tafawa, Viswanath, Kawachi, & Williams (2012) using the NDHS 2008 conducted a study using wieghted binary logistic regression to investigate the associations among media exposures as ell as tobacco use in Nigeria. The findings revealed statistically significant correlations between media exposure and cigarette usage. For men, the odds of using tobacco products increased with both low and high levels of exposure to radio waves. Smokeless tobacco usage was more common among men who read newspapers and magazines less regularly than those who did not. There was a significant inverse association between smokeless tobacco usage and newspaper/magazine reading frequency among women. Access to mass media messages about family planning and actual family planning behavior in Nigeria was studied by Ajaero, Odimegwu, Ajaero, and Nwachukwu in 2016. The study relied on data collected for NDHS 2013 to make its estimates, which were then analyzed using Univariate, bivariate, and binary logistic regressions, as well as Pearson correlation analysis. The modified analysis of regression demonstrated how having access to media like TV and radio may encourage people to use family planning.

Employing data from the Kenya Demographic and Health Survey, Banke-Thomas, Banke-Thomas, Kivuvani, and Ameh (2016) investigated whether or not adolescent mothers in Kenya made use of maternity care. Using Skilled Birth Attendance (SBA) along with Antenatal Care (AC) visits, the results of the bivariate and multivariate analysis showed that along with other socioeconomic factors, media exposure was a significant predictor of both the SBA and AC. Employing data from two national surveys performed in 2010 and 2011, Rahmana, Curtisb, Chakrabortyc, & Jamil (2017) analyzed the correlation between women's TV viewing and five reproductive health behaviors while accounting for the influence of known confounders. Bivariate analysis, ordinary least squares, along with logistic regressions were used to estimate the data, and they revealed that people who watch TV are statistically more likely to want fewer children, to use contraception, and to have given birth in the two years prior to to the poll. They are more likely to use a skilled birth attendant and receive at least four prenatal visits.

The impact of the media on Ethiopian women's reproductive health behavior was

studied by Gurmu and Etana (2012), who analyzed data from the Ethiopian Demographic and Health Survey (2011) employing Kaplan-Meier evaluation, Cox regression, ordinary least square regression, binary logistic, along with ordered logit models. The findings demonstrated that having been exposed to mass media significantly influenced individuals' intentions to end childbearing, but mainly in metropolitan regions. Multivariate logistic regression was used by Ankomah et al. (2014) on a sample of 2348 pregnant women from 36 states in Nigeria to examine the effect of a media campaign encouraging the usage of insecticide-treated nets. The study found that the deployment of ITNs was heavily influenced by the radio.
The impact of a radio campaign in Burkina Faso on infant mortality was simulated using facility use data as well as the Lives Saved Tool (LiST) by Murray et al. (2018). The research employed a cluster randomized trial as its survey methodology. To evaluate the intervention's impact by period on pediatric visits for certain diagnosis groups, the media campaign's organizers used interrupted time-series analysis. According to the CRT, the number of visits to primary health centers by children under the age of five for treatment of malaria, pneumonia, and diarrhoea — the three most common causes of postnatal child mortality in Burkina Faso — increased significantly after the radio campaign began. It was calculated using the Lives Saved Tool that the media campaign's influence on healthcare seeking behaviors will lower annual under-five mortality by 7.1%.

The relationship between media exposure along with women's readiness for childbirth in rural Uganda was examined by Asp, Pettersson, Sandberg, Kabakyenga, and Agardh (2013). Using univariate and multivariate logistic regression to estimate data from a sample of 765 respondents, the result showed that high media exposures (regular access to TV and radio) showed no signifcant relationship with birth preparedness.

Methodology

This research relied on information collected as part of the 2018 Nigeria Demographic and Health Survey (NDHS), a national survey conducted every five years to generate statistics and keep tabs on the health of Nigeria's population. As a nationally representative poll, it was conducted with a sample size of over 100,000 women from randomly selected households between the ages of 15 and 49.
The number of antenatal care visits experienced by a pregnant woman is the dependent variable in this analysis. This variable was used to determine how often maternal healthcare services were really used. In this case, it's a cumulative count of the antenatal care appointments that a lady has had during her pregnancy. The average number of visits is calculated by dividing the total number of visits by the sum of a woman's live births (including her current child). The key independent variables are televison ownership which is measure as 1 if a person owns a television and 0 otherwise. This is the same for ownership of a radio. Similarly, the use of internet is measured as 0 for those who have never used the internet, 1 for those who have used the internet in the last 12 months and 2 for those who have used it before the last 12 months.
The education levels of the woman and her partner were also measured (zero for no education, one for primary school, two for secondary school, and three for college). The study also makes use of a wealth index, which is a measure of the value of a family's

assets. It is also a categorical variable, with levels of 1 (least affluent), 2 (less affluent), 3 (middle class), 4(more affluent) and 5 (most affluent). Also included is the woman's age, with the assumption being made that the older the woman, the more likely she is to receive antenatal care. However, we anticipate a cutoff in this correlation at some upper age limit, so we also accounted for age as a squared term, with the expectation that its sign would coincide with that of additional covariate, the age at which the woman gave birth for the first time. Furthermore, the employment variable was measured as 1 if the woman is employed and zero otherwise. Urban dwellers were measured as 1, while rural dweller were measured as 0.

Considering the variable that was dependent was a count contingent, Poisson regression was utilized for estimations. Because prenatal visits were the dependent variable, Ordinary Least Squares was employed as a robustness test. A count contingent is a "variable that takes on the form of non-negative integer values, where there are no upper bounds, meaning that the variables are strictly positive"(Wooldridge, 2010). The OLS sometimes is ineffecient in handling such variables since the least form the dependent variable can take is zero, as a result, the Poisson regression is preferred because it assumes strictly positive values for the dependent variable (Agbutun, Iheonu, Anyanwu, & Ineghenehi, 2020).

The basic regression model in it log-linear is as presented below:
$\mu_i = E(X_i) = exp(\beta^T Xi)$

Where X_i represents ownership of a television or radio, internet access, the mother's level of education, the family's socioeconomic situation, the mother's age, the father's level of education, and her employment status which are all examples of regressors. and β^T represents a set of coefficients of regression that are unknown, Y_i represents the dependent variable which is antenatal care visits.

Result and Discussion

Table 1: Descriptive Statistics

Variable Name	Mean	SD	Min	Median	Max
Average antenatal visits	2.134	2.893	0.00	1.20	20.00
Television ownership	0.414	0.493	0.00	0.00	1.00
Radio ownership	0.588	0.492	0.00	1.00	1.00
Internet Use	0.074	0.294	0.00	0.00	2.00
Maternal Education	0.864	0.983	0.00	1.00	3.00
Household Wealth	2.723	1.354	1.00	3.00	5.00
Marital Age at First Birth	18.787	4.069	11.00	18.00	48.00
Age	35.678	7.857	15.00	35.00	49.00
Agesquared	1334.672	557.510	225.00	1225.00	2401.00
Spousal Education	1.242	1.345	0.00	1.00	8.00
Employment Status	0.741	0.438	0.00	1.00	1.00
Place of Residence	0.346	0.476	0.00	0.00	1.00

Source: Author's computation from NDHS (2018) using STATA 15

Table 1 provides a concise overview of all the research variables. It shows that average number of antenatal visit that women had during pregnancy was about two visits. It also shows that there were women who had no antenatal visit during pregnancy. For media access it showed that more people had access to radio services than television. Less than half of the sample owned a television as against more than half who had a radio. For internet use, the descriptive statistics shows that a vast number of individual in the data did not use internet services in the last year before the survey. This may be due to issues such as coverage and supply of services. Both maternal education and spousal education was significantly low among the individuals in the study population. The mean of maternal education showed that most women had no education or just a primary education. However, for their spouses, the figure shows most of the spouses had primary education or secondary education. The mean of the household wealth status showed that most individuals were still relatively poor. However, majority of the women were employed with a mean score of 0.7. Most individuals use for the analysis after data cleaning procedures resided in rural areas while the average age of women in the sample was 35, with the age at first been 18.7 is suggestive of early marriages.

Table 2: Regression Estimates

	Poisson 1 Antenatal visits	Poisson 2 Antenatal visits	OLS Antenatal visits
Television Ownership	0.612***	0.0796*	0.0735
	(0.0204)	(0.0354)	(0.0777)
Radio Ownership	0.0655***	0.0687	0.139*
	(0.0198)	(0.0272)	(0.0567)
Internet Use	0.519***	0.0525*	0.700***
	(0.0182)	(0.0292)	(0.123)
Maternal Education		0.198***	0.416***
		(0.0157)	(0.0355)
Household Wealth		0.0833***	0.147***
		(0.0168)	(0.0372)
Age at First Birth		0.105***	0.204***
		(0.00344)	(0.00905)
Age		-0.187***	-0.441***
		(0.0149)	(0.0306)
Agesquared		0.00158***	0.00481***
		(0.000246)	(0.000460)
Spousal Education		0.0450***	0.0827***
		(0.00961)	(0.0198)
Employment Status		0.173***	0.257***
		(0.0279)	(0.0613)
Place of Residence		0.156***	0.374***
		(0.0286)	(0.0718)
_cons	0.304***	1.713***	5.324***
	(0.0162)	(0.212)	(0.495)
R^2			0.334

AIC	95410.3	28600.3	36054.2
BIC	95442.2	28683.9	36137.9
F			243.0
N	21194	7869	7869

Source: Author's computation from NDHS (2018) using STATA 15

The result in table 2 shows the estimate of the objective of study. Three estimations are done and presented. The first model is the pure effects model where the key variables in the study are used. In the second estimation, other covariates are added to the model, while the third estimation was the OLS estimates which was used as a robustness check. The first model shows the pure effects of media factors and internet use on the adoption of services relating to maternal health in Nigeria. Here the variables used are television ownership, radio ownership and internet use. The result of this model showed that increasing those who owned a television, a radio and used the internet had significantly higher antenatal care visits.

In the second model, we find that television ownership, radio ownership and internet use were sensitive to the inclusion of other variables in term of coefficient sizes. The variables included in the model are the maternal education, status of household wealth, residence place, spousal education, age, employment status and age during first birth. The result showed that all the covariates included significantly influenced adoption of services relating to maternal health. The result shows that higher levels of both maternal and spousal education, household wealth and age at first birth were associated with increased maternal health services utilization. Furthermore, the result shows that those women who were employed and resided in urban areas had higher utilization of maternal health service (antenatal visits) than those who were not employed and those who lived in rural areas. Finally, age shows a non-linear but U shaped relationship with antenatal visits. That is lower ages are associated with reduced visits, while higher ages are associated with increased visits.

The result from the estimations showed that those who owned a television, a radio and used the internet had significantly higher antenatal care visits. This shows that public awareness raised through the media has the potential to enhance the use of maternal health care and, ultimately, improve health outcomes. There are several ways in which this relationship in plausible, for instance, through the social cognitive theory. The theory, at its most general, holds that people acquire knowledge by exposure to the media. The theories of reasoned action and planned conduct also provide viable explanations for the observed associations between the media and health. These theories postulate that one acquires the fundamental convictions that govern behavior by either firsthand experience or inferential learning. Hence,"Individuals who do not have first-hand experience will learn and make inferences from the media. Also, according to these theories, the impact of media content depends on the message's ability to change (or reinforce) behavioral, normative, and control beliefs that underlie specific behaviors"(Fishman & Casarett, 2006).

Another channel which media can influence the uptake of health services is through

health promotions and information campaigns. Many research investigations have demonstrated that the majority of adults get their health information from the media. In addition, Rogers(1973) and Schramm (1971) pointed out that traditional studies of health communication show that the media is more influential than personal interaction in raising people's understanding of and engagement with health concerns. Most times many information regarding health campaigns, new interventions, and even disease preventive measures are usually undertaken through messages. Our result for contemporary media (internet use) also shows that it influences adoption of maternal health care. For example, Social media has currently led to radical changes in the interaction between community actors, the public and traditional news media. Facebook, Instagram, Twitter, and YouTube have all been actively used by organizations and ordinary people to promote views, participate in discussions or just to show up during the COVID-19 pandemic. Journalists also make use of the social media space as avenues for the production of news, publishing channels, and as direct communication channel with sources and audiences.

Conclusion and Recommendations

The health of individuals particularly true their behaviours can be influenced by the Mass media. Mass media can be used to also promote health behavior change. Individuals' attitudes, opinions, and perceived norms can be influenced by the nature and quantity of information they encounter in the media environment. Because there are so few empirical research on the topic, this study set out to determine whether or not access to the Mass Media environment influenced the use of maternal health care in Nigeria. The Nigerian Demographic and Health Survey (2018) provided the information used in the study. The Poisson regression method was employed to identify the goal of the investigation, which is in keeping with accepted statistical theory. As a surrogate for maternal health service consumption, the average number of prenatal care visits was used. The findings demonstrated that exposure to mass media strongly increases the utilization of maternal health services, as those who owned a television, a radio, and utilized the internet had considerably greater visits to antenatal care compared to those who did not. Government officials and policymakers should therefore investigate the potential of the media as a means of communicating with the public about health concerns. However, the study continues by emphasizing the need of understanding the information being sent by modern media, particularly with regard to matters of health. It's important to be aware of and comprehend the effect that particular mass media messages have on one's mind, heart, soul, and body.

References

Agbutun, S., Iheonu, O., Anyanwu, C., & Ineghenehi, P. (2020). "What determines fertility among women in Nigeria? A disaggregated analysis using Poisson Regression". *Economics Bulletin, 40*(4), 30463060.

Ajaero, C. K., Odimegwu, C., Ajaero, I. D., & Nwachukwu, C. A. (2016). Access to mass media messages, and use of family planning in Nigeria: a spatiodemographic analysis from the 2013 DHS. *BMC Public Health*.

Ankomah, A., Adebayo, S., Arogundade, E., Anyanti, J., Nwokolo, E., Inyang, U., et al. (2014). The Effect of Mass Media Campaign on the Use of Insecticide-

Treated Bed Nets among Pregnant Women in Nigeria. *Malaria Research and Treatment*.

Asp, G., Pettersson, K. O., Sandberg, J., Kabakyenga, J., & Agardh, A. (2013). Associations between mass media exposure and birth preparedness among women in southwestern Uganda: a community-based survey. *Global Health Action*.

Atakiti, I. O., & Ojomo, O. W. (2015). Influence of Television Health Programmes on Maternal Health. *International Journal of Humanities and Social Science , 5*(8(1)).

Bajoga, U. A., Atagame, K. L., & Okigbo, C. C. (2015). Media Influence on Sexual Activity and Contraceptive Use: A Cross Sectional Survey among Young Women in Urban Nigeria. *African Journal of Reproductive Health / La Revue Africaine de la Santé, 19* (3), 100-110.

Bandura, A. (1999). Social cognitive theory: An agentic perpective. *Asian Journal of Social Psychology, 2*, 21-41.

Banke-Thomas, A., Banke-Thomas, O., Kivuvani, M., & Ameh, C. (2016). Maternal Health Services Utilisation by Kenyan Adolescent Mothers: Analysis of the Demographic Health Survey 2014 . *SRHC*.

Blom, N., van der Zanden, R., Buijzen, M., & Scheepers, P. (2016). Media Exposure and Health in Europe: Mediators and Moderators of Media Systems. *Soc Indic Res, 126*, 1317–1342.

Fishman, J., & Casarett, D. (2006). Mass Media and Medicine: When the Most Trusted Media Mislead. *Mayo Clin Proc., 81*(3), 291-293.

Ghosh, D. (2006). Effect of Mothers' Exposure to Electronic Mass Media on Knowledge and Use of Prenatal Care Services: A Comparative Analysis of Indian States. *The Professional Geographer, 58*(3), 278-293.

Gurmu, E., & Etana, D. (2012). The Impact of Mass Media on Women's Reproductive Health Behaviour in Ethiopia. *Centre for Population Studies, Addis Ababa University, Ethiopia*.

Izugbara, C., Wekesah, F. M., & Adedini, S. A. (2016). Maternal Health in Nigeria: A Situation Update. , . *African Population and Health Research Center (APHRC)*.

Murray, J., Head, R., Sarrassat, S., & et al. (2018). Modelling the effect of a mass radio campaign on child mortality using facility utilisation data and the Lives Saved Tool (LiST): findings from a cluster randomised trial in Burkina Faso. *BMJ Glob Health*.

Noh, J.-W., Kim, Y.-m., Akram, N., Yoo, K.-B., Cheon, J., Lee, L. J., et al. (2019). Impact of Socio-Economic Factors and Health Information Sources on Place of Birth in Sindh Province, Pakistan: A Secondary Analysis of Cross-Sectional Survey Data. *International Journal of Environmental Research and Public Health, 16*, 1-10.

Odesanya, A., Hassan, S., & Olaluwoye, D. (2015). Mass Media and Maternal Healthcare: A Critical Discourse. *New Media and Mass Communication, 34*.

Rahmana, M., Curtisb, S. L., Chakrabortyc, N., & Jamil, K. (2017). Women's television watching and reproductive health behavior in Bangladesh. *SSM - Population Health, 3*, 525–533.

Rogers, E. (1973). . Communication Strategies for Family Planning. New York, NY:

Free Press.

Rogers, E. M. (1962). *Diffusion of Innovations.* New York: Press of Glencoe.

Schramm, W. (1971). Communication in family planning. . *Rep Popul Fam Plann., 7*, 1-43.

Tafawa, A. O., Viswanath, K., Kawachi, I., & Williams, D. R. (2012). Mass media exposure, social stratification, and tobacco consumption among Nigerian adults . *Cancer Causes & Control*, 45-55 .

Wooldridge, J. (2010). *Econometric Analysis of Cross Section and Panel Data.* Massachusetts London, England: The MIT Press Cambridge.

World Bank. (2017). *United Nations Population Division's World Population Prospects 2017*. Retrieved from http://datacatalog.worldbank.org/public-licenses#cc-by.

World Health Organization. (2019, April 27). *Health Systems: Health information and resources*. Retrieved April 27, 2019, from World Health Organization: www.who.int/healthsystems/topics/information/en/

World Health Organization. (2018, December 26). *Maternal Health.* Retrieved December 26, 2018, from World Health Organization: who.int/maternal-health/en/

Wusu, O. (2013). Exposure to Media Content and Sexual Health Behaviour among Adolescents in Lagos Metropolis, Nigeria. *African Journal of Reproductive Health, 17*(2).

Zamawe, C. O., Banda, M., & Dube, A. N. (2016). The impact of a community driven mass media campaign on the utilisation of maternal health care services in rural Malawi. *BMC Pregnancy and Childbirth, 16*(21).