AWARENESS OF SAVING ONE MILLION LIVES PROGRAM FOR RESULTS AMONG WOMEN OF REPRODUCTIVE AGE AND THE APPLICATION OF DIFFUSION OF INNOVATIONS THEORY IN ACCELERATING ADOPTION OF THE PROGRAMME IN BAYELSA STATE, NIGERIA

Abisoye Sunday Oyeyemi,[*1,6] **Stella Ufuoma Rotifa,**[2,6] **Obioma Obiora Obikeze,**[2,6] **Ulunma Ikwuoma Mariere,**[2,6] **Numonyo Duabo Dambo,**[3,6] **Adedotun Daniel Adesina,**[4,6] **Ebikapaye Okoyen**[5.6]

[1]Department of Community Medicine, Faculty of Clinical Sciences, College of Health Sciences, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria; [2]Department of Community Medicine, Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria; [3] Department of Obstetrics and Gynaecology, Diete-Koki Memorial Hospital, Yenagoa, Bayelsa State, Nigeria; [4]The Medical Centre, The Nigerian Law School, Yenagoa Campus, Bayelsa state, Nigeria; [5]Bayelsa State Ministry of Health, Yenagoa, Bayelsa State, Nigeria; [6]Oasis Public Health Consulting Research Group, Yenagoa, Bayelsa State, Nigeria.

Correspondence: Abisoye Sunday Oyeyemi; **Email:** abisoyeoyeyemi@ndu.edu.ng; Tel: +234-8037049837

ABSTRACT

Background: Saving One Million Lives Program for Results (SOML PforR) is a relatively new intervention designed to improve maternal, newborn, and child health (MNCH) in Nigeria. This study aimed to determine awareness of SOML PforR and discuss the application of Diffusion of Innovations (DOI) theory to accelerate adoption of the programme.

Method: A cross-sectional descriptive study was conducted in all the 105 wards in the eight local government areas (LGAs) of Bayelsa State, Nigeria. A structured interviewer-administered questionnaire was used to collect data from a random sample of 1,250 women of reproductive age residing in communities where facilities offering SOML PforR services were located. Descriptive statistics were used to summarise the quantitative variables. The association between categorical variables was

determined using Chi-square test. Binary logistic regression was done to determine predictors of awareness of SOML in the state.

Results: Data were analysed for 1,223 women. The mean age (standard deviation) of the women was 28.5 (6.8) years. Most (81.8%) participants were married/cohabiting and 77.1% had at least secondary education. Only 7% of the women had heard about SOML PforR with radio as the predominant source of information (61.2%). Educational attainment was the only predictor of awareness among the women (Adjusted OR=2.26, 95%CI 1.03-4.95).

Conclusion: Awareness of SOML PforR was poor despite several months of implementation. Engaging early adopters and use of appropriate communication channels can accelerate adoption of the programme.

Keywords: awareness, adoption, diffusion, innovation, SOML PforR

INTRODUCTION

Nigerian women and children continue to suffer avoidable health disorders and deaths despite the availability of health products and services that can help them live long and healthy lives. A current estimate placed Nigeria as the 4th worst country (out of 187) for maternal death with a maternal mortality ratio (MMR) of 917/100,000 live births and 12th out of 228 countries with an infant mortality rate (IMR) of 59.8/1,000 live births[1,2]. The last four Nigeria Demographic and Health Surveys (NDHS)[3-6] show a progressive decline in maternal and childhood deaths. For instance, the under-five mortality rate declined from 201/1,000 live births in 2003 to 132/1,000 live births in 2018 while maternal mortality ratio declined from 545/100,000 live births in 2008 to 512/100,000 live births in 2018[6]. However, the attainment of related Sustainable Development Goal (SDG) - 3 targets seem uncertain. Several programmes like Integrated Management of Childhood Illness (IMCI)[7], Subsidy Reinvestment and Empowerment Programme Maternal and Child Health Project (SURE-P MCH)[8] and Midwives Service Scheme (MSS)[9], have been executed to address the poor maternal and child health indices but the gaps to close remain wide.

The aforementioned programmes focused largely on input and had weak accountability framework. In recognition of this weakness, Saving One Million Lives Program for Results (SOML PforR) was launched in 2012 as an intervention to improve maternal, newborn, and child health (MNCH) and

represents "a shift in focus from inputs to focusing on results and outcomes"[10]. In 2015, the programme received a financial boost of US$500million International Development Association (IDA) credit from the World Bank to the Federal Republic of Nigeria[11]. After an initial take off grant to each state, further release of money to the states would depend on performance under the various disbursement linked indicators (DLIs)[10]. As enunciated in the programme manual, SOML PforR focuses on six important aspects of MNCH that can save lives and on two critical enablers. The aspects are: improving maternal, newborn and child health; improving routine immunization coverage and achieving polio eradication; elimination of Mother to Child Transmission of HIV; scaling up access to essential medicines and commodities; malaria control; and improving child nutrition. The two enablers are strengthening logistics and supply chain management and promoting innovation and use of technology to improve health services[10].

As elaborated in the Ottawa charter on health promotion, community participation is critical to the success of any public health programme[12]. A recent systematic review demonstrated its role in the success of many public health interventions[13]. SOML PforR involved utilization of services that made available at the primary health centres located in communities. Given the poor patronage of health facilities in Nigeria for key maternal and child health services as reported in previous studies[6,14,15], there is a need to create awareness and mobilize the community to actively participate and own the programme for its sustenance and success.

Diffusion of Innovation (DOI) theory is one of the theories of behaviour change. The theory defines innovation as an idea, process, or a technology that is perceived as new to individuals within a particular area or social system, while diffusion is the process by which information about the innovation flows from one person to another over time within the social system[16]. For successful adoption, different strategies will be needed to appeal to the different established adopter categories namely the innovators, the early adopters, the early majority, the late majority, and the laggards[17,18]. Thus, when promoting an innovation, it is important to understand the characteristics of the innovation, the target population, and the medium of communicating it to end users. All this may help or hinder adoption of the innovation. The theory has been applied to facilitate the uptake of many new health programmes[19-21].

The SOML PforR is viewed as a public health innovation that needs to be speedily promoted and quickly adopted by health personnel and communities to improve the current poor maternal and child health indices rapidly and sustainably. Bayelsa State began programme implementation in 2016 but funding of activities and services started in all the eight local government areas (LGAs) in April 2017. This study was conducted to determine the awareness of SOML PforR by community members and based on the findings, the paper discusses the application of the DOI theory to accelerate adoption of the new programme.

METHODOLOGY

Study area: Bayelsa State is one of the 36 states in Nigeria and one of the six states that make up Nigeria's south-south geopolitical zone. The state is divided into three senatorial districts (Bayelsa East, Bayelsa West and Bayelsa Central), eight LGAs and 105 political wards. The capital city is Yenagoa, in Yenagoa LGA. The state covers an area of 9,059 square kilometres and lies at latitude 4°45' north and longitude 6°05' east[22]. It has interstate boundaries with Rivers State to the west and northwest and Delta State to the east and southeast. The Gulf of Guinea lies to its south. It has a riverine and estuarine setting and a lot of its communities are almost (and in some cases completely) surrounded by water thus making these communities inaccessible by road. The population of the state was 1,704,515 in 2006 and is projected to be 2,332,787 in 2017[23]. The four main indigenous languages spoken are Izon, Nembe, Epie-Attissa, and Ogbia. The dominant religion in Bayelsa State is Christianity. The major occupations of the people are fishing, farming, palm oil milling, lumbering, palm wine tapping, local gin making, trading, carving and weaving.

Study design: The study was part of a larger cross-sectional descriptive facility and community survey which was designed to assess the level of functionality and preparedness of the selected health facilities to implement SOML PforR and to determine the baseline values of specific indicators for the programme in the state.

Study population: Women of reproductive age (15-49 years) who had at least a baby aged 0-59 months and had lived in the community for at least six months participated in the household survey.

Sample size estimation: We used Cochran's formula $n = \frac{Z^2 pq}{d^2}$ to estimate the sample size for the household survey[24]. n = minimum sample size, Z = standard normal deviate at desired confidence level (95%), which is 1.96, p = estimated proportion of attribute of interest in the population (here SOML indicators). This was taken as 43.4% (p=0.434) which was the vaccination coverage for PENTA 3 reported for Bayelsa State in 2015 SMART survey[25]. This proportion gave the highest minimum sample size of all the indicators reported by 2015 SMART survey for Bayelsa State, q=1-p (0.564), d = level of precision (5%). Cluster sampling was used to select the survey communities (clusters) in the LGAs and a design effect of 2.5 was used. Substituting the values gave 943.67 and to adjust for non-response, a non-response rate of 15% was assumed. Using N = n/(1-NNR) = 943.67/ (1-0.15) gave 1,110.2 which was increased to 1250 for a higher precision.

Sampling technique: The State Ministry of Health purposively selected 105 primary health centres (one per political ward) for the take-off of the programme. A cluster sampling technique was used to select communities (clusters) for the household survey. The communities selected were those where the facilities were located. Proportional allocation was done using population size and the number of geopolitical wards to ensure the bigger LGAs had more respondents. After locating the middle of selected community, the community was divided into four sectors and by swirling a pen on the ground, a sector was selected. A household listing was done in the selected sector and systematic random sampling was used to select eligible households. The sampling interval varied from community to community depending of the allocated sample and the number of households in the selected sector. In each household, a respondent who met the inclusion criteria was selected for the interview.

Data collection: Data collection took place for two weeks from 13th to 24th November, 2017 in the eight LGAs. This was preceded by a three-day training for Research Assistants (RAs) who served as supervisors and interviewers. A structured interviewer-administered questionnaire was used for the study. The questionnaire was divided into sections to capture data about the thematic areas of SOML

and to elicit awareness of SOML PforR. The trainees were taken through the concept of SOML, the objectives of the study, methods of data collection, and questionnaire administration for two days. Pretesting of the questionnaires was done on the third day in two communities which were not used for the survey proper and the tools were modified and finalized based on feedback from the exercise.

Data Analysis: Software Package for Social Sciences (SPSS) version 21 was used for data entry, cleaning, and analysis. Qualitative variables were presented as frequencies and proportions while quantitative variables were summarized using mean and standard deviation. For the purpose of bivariate and multivariate analysis, marital and employment statuses were dichotomized. Marital status became married/cohabiting and single/separated/divorced/widowed and employment status became employed and unemployed. A binary logistic regression analysis was done to identify predictors of awareness among respondents. Level of significance was set at $p < 0.05$.

Ethical Considerations: Bayelsa State Health Research Ethics Committee (BSHREC) granted ethical approval for the conduct of the study (BSHREC/Vol.1/18/078) and the research was carried out in compliance with the ethical standards of BSHREC. The methods used also conform to Helsinki Declaration of 1964 as revised in 2000. Communal consent was obtained from community leaders and written informed consent was obtained from respondents before interviews. Information provided by respondents was kept confidential and no names were written on the questionnaire to maintain anonymity.

RESULTS

A total of 105 communities and 1,250 households in the eight LGAs in the state participated in the study. Out of the 1,250 questionnaires administered, 1,223 were reasonably completed and useful for analysis giving a response rate of 97.8%.

Socio-demographic characteristics of respondents

Table 1 shows the distribution of respondents across the eight LGAs with Southern Ijaw and Yenagoa LGAs having 16.4% each. The mean age (standard deviation) of the women interviewed was 28.5 (6.8) years, ranging from 15 to 49 years and about half of them (49.8%) were aged 25 – 34 years. Most of them (81.8%) were married/cohabiting; almost all (98.8%) were Christians and most of

them (68.7%) attained secondary education. About 60% reported being employed with trading as the predominant occupation.

Table 1: Sociodemographic characteristics of participants in the household survey

Characteristics	Frequency N=1223	Percent (%)
Local Government Area of Residence		
Brass	130	10.6
Ekeremor	150	12.3
Kolokuma/Opokuma	140	11.4
Nembe	133	10.9
Ogbia	130	10.6
Sagbama	140	11.4
Southern Ijaw	200	16.4
Yenagoa	200	16.4
Age Group		
<25 years	370	30.3
25-34 years	609	49.8
>35 years	244	20.0
Marital Status		
Single	210	17.2
Married/Cohabiting	1001	81.8
Separated/Divorced	10	0.8
Widowed	2	0.2
Religion		
Christianity	1208	98.8
Islam	15	1.2
Educational attainment		
No formal education	94	7.7
Primary	188	15.2
Secondary	840	68.7
Post-Secondary	103	8.4
Employment Status		
Unemployed	481	39.3
Professional	19	1.6
Trading	429	35.1

Artisan	32	2.6
Farming	124	10.1
Fishing	46	3.8
Civil Servant	49	4.0
Other	43	3.5

Awareness of SOML PforR

Only 7% (85/1223) of the women interviewed in all the eight LGAs had heard about SOML PforR. Figure 1 shows that awareness was highest among women of Kolokuma (21/85, 25%) and lowest among Ekeremor women (2/85, 2%).
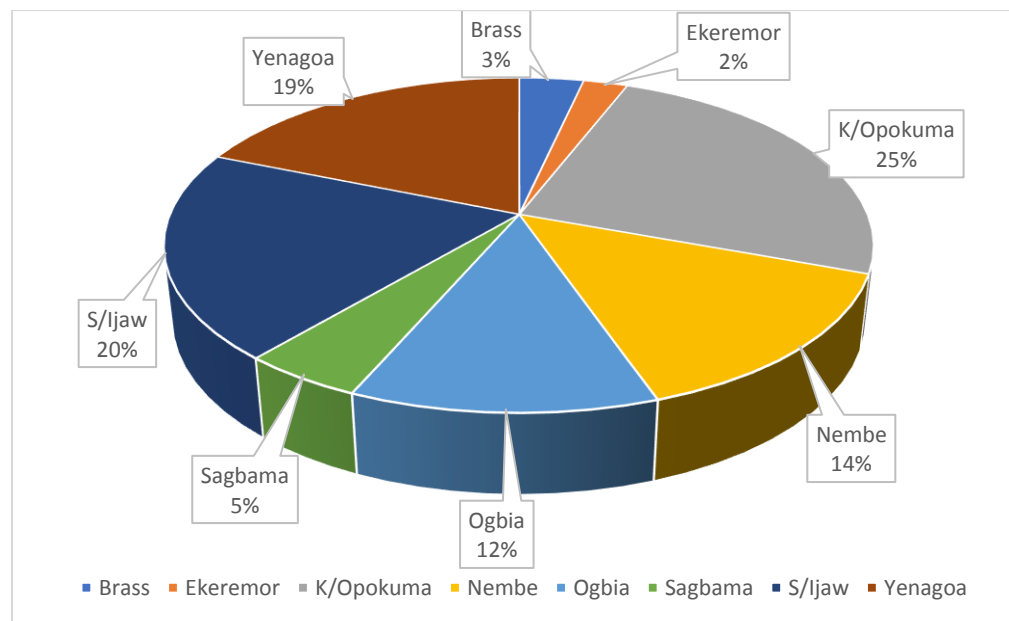

Figure 1: Awareness of SOML PforR by Local Government Area

Source of information about SOML PforR

Table 2 shows the responses of participants to a multiple response question which was asked to know the various sources of information about SOML from those who were aware. Radio was the predominant source - mentioned by 61.2% (52/85) of respondents, followed by television 29.4%

The Nigerian Health Journal, Volume 22 No 2, April to June 2022
www.tnhjph.com
A Publication of Nigerian Medical Association, Rivers State, Nigeria

215

(25/85) and health workers 18.8% (16/85). The table also shows the proportion of respondents in each LGA who reported the respective medium as their source of information. The largest proportion (26.9%) of respondents who heard from the radio were from Yenagoa LGA, while none in Brass or Ekeremor reported radio as their source. About a third (32.0%) of respondents who heard from the TV resided in Southern Ijaw LGA. Respondents that reported hearing about SOML from a health worker/health facility mostly resided in Kolokuma/Opokuma LGA (37.5%) and Southern Ijaw LGAs (25.0%). In response to an open-ended question in the questionnaire, most of the respondents who claimed to have heard about the programme could not say what they heard about it as they mostly said, "no idea" "not sure." The few that responded said it was a programme for women and children; that government would provide health equipment and better services for the community; and that it was a way of preventing sickness and diseases.

Table 2: Source of information about SOML PforR

LGA	Radio	TV	HW/HF	FR/RL	NP	BCC	RB	CR	TA
Brass	0	2(8.0)	0	0	0	0	0	0	0
Ekeremor	0	0	1(6.3)	0	0	0	0	0	0
K/Opokuma	6(11.5)	4(16.0)	6(37.5)	3(33.3)	1(16.7)	0	3(75.0)	0	0
Nembe	9(17.3)	1(4.0)	2(12.5)	1(11.1)	0	0	0	0	0
Ogbia	7(13.5)	4(16.0)	2(12.5)	0	2(33.3)	1(25.0)	0	1(33.3)	0
Sagbama	3(5.8)	1(4.0)	1(6.3)	1(11.1)	0	0	0	0	0
S/Ijaw	13(25.0)	8(32.0)	4(25.0)	3(33.3)	3(50.0)	1(25.0)	1(25.0)	2(66.7)	1(100.0)
Yenagoa	14(26.9)	5(20.0)	0	1(11.1)	0	2(50.0)	0	0	0
Total	**52**	**25**	**16**	**9**	**6**	**4**	**4**	**3**	**1**

TV=Television, HW/HF=Health worker/Health facility, FR/RL=Friend/relative, BCC=Behaviour change communication material, RB=Religious body, CR=Community radio, TA=Town announcer

Factors influencing awareness of SOML PforR among study participants

Table 3 shows that age group, religion, and education attainment were significantly associated with awareness of the programme ($p<0.05$) on bivariate analysis using chi square test. However, with multi-variable logistic regression, only education attainment remained a predictor showing that

respondents with post-secondary education were about twice more aware than those with primary education which was the reference (Adjusted OR=2.26 95%CI 1.03 4.95) (Table 4).

Table 3: Association between sociodemographic characteristics and awareness of SOML PforR

Characteristics	Awareness		Total	Chi-square	p-value
	Yes N = 85 (%)	No N = 1138 (%)	N = 1223 (%)		
Age Group					
<25 years	18 (4.9)	352 (95.1)	370 (30.3)	6.59	0.037
25-34 years	42 (6.9)	567 (93.1)	609 (49.8)		
>35 years	25 (10.2)	219 (89.8)	244 (20.0)		
Marital Status					
Single/Separated/Widowed	13 (6.2)	209 (93.8)	222 (17.2)	0.50	0.479
Married/Cohabiting	72 (7.2)	929 (92.8)	1001 (81.8)		
Religion					
Christianity	82 (6.8)	1126 (93.2)	1208 (98.8)	3.99	0.046
Islam	3 (20.0)	12 (80.0)	15 (1.2)		
Educational attainment					
No formal education	0	94 (100.0)	94 (7.7)	25.02	0.001
Primary	13 (7.0)	173 (93.0)	186 (15.2)		
secondary	54 (6.4)	786 (93.6)	840 (68.7)		
Post-Secondary	18 (17.5)	85 (82.5)	103 (8.4)		
Employment Status					
Employed	58 (7.8)	684 (92.2)	742 (60.7)	2.19	0.139
Unemployed	27 (5.6)	454 (94.4)	481 (39.3)		

Table 4: Predictors of awareness of SOML PforR among study participants

Characteristics (reference group)	B	OR	95%CI		p-value
			Min	Max	
Age Group (<25 years)					
25-34 years	0.29	1.33	0.73	2.41	0.346
>35 years	0.63	1.88	0.95	3.74	0.071
Religion (Christianity)					
Islam	0.73	2.07	0.44	9.78	0.360
Educational attainment (Primary)					
Secondary	-0.15	0.86	0.46	1.61	0.633
Post-Secondary	0.81	2.26	1.03	4.95	0.043*

DISCUSSION

SOML PforR is an innovation, a new health "product" which the government was trying to "sell" to the people. Awareness is an essential first step in the adoption of an innovation[17]. This study was conducted seven months after the rollout of the programme and reveals that only a small proportion of the intended end users were aware of the programme. The finding is typical of new interventions and fits the diffusion S-curve in the Diffusion of Innovations model, which shows a progressive increase in awareness and adoption of a new behavior with time[18]. Only education turned out to be a predictor of awareness - those with post-secondary level of education were better aware compared to those with primary education. High literacy has often been found to be associated with a high level of awareness, knowledge, and utilization of health programmes[6,15]. Generally, people with a higher level of education seek to be current and avail themselves of different sources of information.

The awareness level, though poor state-wide, shows a wide variation across the LGAs. The LGAs farthest from the capital city of Yenagoa (Brass and Ekeremor) were most poorly informed about the programme. This suggests that distance was a barrier and would need to be quickly overcome to ensure that all areas were well informed and properly mobilized for optimal service uptake. Communication channel is another factor that influences the diffusion of an innovation[18]. Our study

shows that community members were reached through multiple channels with some channels being more important in certain LGAs. This demonstrates that one size does not fit all; understanding of available and most effective media of communication in each LGA and community is a *sine qua non* for awareness creation and effective social mobilization. Just about a fifth of respondents had heard about the programme from health workers/facilities. The healthcare workers themselves might not have been well informed about the programme or it may be that poor utilization of facilities denied people the opportunity to know about the new intervention. Poor utilization of health facilities in Bayelsa State is a recurrent challenge that hinders and impacts negatively on the effectiveness of many programmes/services that are facility-based[26,27]. At the time of the study, circulation of behavioural change communication (BCC) materials was poor. BCC materials are a good tool that can aid dissemination of information about health product and services. Having posters, billboards, and other graphic representation of SOML in strategic places in the communities may accelerate awareness and point people to the facilities where SOML services are rendered.

A community is usually a mix of the five different adopter categories[17]. The poor awareness found after more than half a year of programme implementation suggests inefficient/ineffective communication with the communities or a state with a preponderance of late majority and laggards. This study did not assess SOML's effect on service utilization but if people were poorly informed, it is most likely uptake of services would equally be poor at the time of the study. The frequent disruptions in service delivery due to strike action by healthcare workers, absenteeism, and poorly equipped facilities may have discouraged people from seeking care at facilities. These supply-side factors deserve prompt attention for the programme to achieve the intended results.

The small proportion of persons that showed awareness may be a subset of early adopters, early majority or even innovators[17]. These people need to be identified and introduced to the full package of the programme. When convinced, they can exert a positive influence on the late majority and laggards and facilitate the rapid diffusion of information about the programme in their communities. Traditional/community leaders, for example, have been found to be supportive of maternal and child health programmes[28,29]. They can be sensitized and enlisted to enhance awareness creation and implementation of the programme. Presumably they are early adopters according to the DOI theory

and their attitude (either endorsement or rejection) may have a significant influence on the rate of adoption of SOML services by their community. Ward and Community Development Committees have important role to play in this effort but anecdotal evidence suggests that the committees were yet to be formed in many LGAs or not functioning in LGAs where they existed. Many previous laudable and promising programmes failed due to poor community ownership; SOML may suffer similar fate if this critical component is not properly addressed.

LIMITATIONS

The study did not determine awareness and adoption of the programme by the health staff of the participating facilities. In rural areas where many dwellers are illiterate and lack access to electronic/print media for information about health, health workers are the dominant source of information. It is probable that the staff that were the implementers of the programme lacked awareness themselves or were yet to adopt it, hence the poor awareness in the community. The study is limited to selected communities that host SOML PforR facilities. It is likely that the awareness would even be lower in other communities.

CONCLUSION

SOML PforR is a shift in MNCH programming and is expected to achieve better results than earlier interventions. Awareness of the programme by end users was poor after seven months of programme implementation thus casting a cloud over early adoption and attainment of the goal of the innovation. By identifying and engaging early adopters/early majority in the community, winning the commitment of health staff, and maximizing and fitting communication channels to what works best in each community, we believe that awareness will progressively increase with time and lead to adoption and uptake of SOML services. We recommend a study to determine the perception of the programme by the implementing staff and periodic evaluation of programme adoption in the community in order to adjust where necessary.

CONFLICTING OF INTERESTS: The authors declare that they have no competing interest.

CRITERIA FOR INCLUSION IN THE AUTHORS' LIST (CONTRIBUTION DETAILS)

ASO, SUR, OOO conceptualized and designed the study; ASO, SUR, UIM defined the intellectual content and did literature search; UIM, SUR, NDD, ADA, OOO, EO supervised data collection; ADA and ASO analysed the data; ASO drafted the manuscript; all authors revised, read, and approved the final manuscript. ASO is the guarantor of the manuscript.

REFERENCES

1. Central Intelligence Agency. The World Factbook. Country comparison: maternal mortality rate [Internet]. [cited 2020 Aug 29]. Available from: https://www.cia.gov/library/publications/resources/the-world-factbook/fields/353rank.html

2. Central Intelligence Agency. The World Factbook. Country comparison: infant mortality rate [Internet]. [cited 2020 Aug 29]. Available from: https://www.cia.gov/library/publications/resources/the-world-factbook/fields/354rank.html

3. National Population Commission (NPC) [Nigeria], ORC Macro. Nigeria Demographic and Health Survey 2003. Calverton, Maryland; 2004.

4. National Population Commission(NPC)[Nigeria] and ORC Macro. Nigeria Demographic and health Survey 2008. 2010;1–630.

5. National Population Commission (NPC) [Nigeria] and ICF International. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. 2014;1–566.

6. National Population Commission (NPC) [Nigeria] and ICF. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.; 2019.

7. World Health Organization. Technical updates of the guidelines on the Integrated Management of Childhood Illness (IMCI): Evidence and recommendations for further

adaptations [Internet]. 2005. Available from: https://apps.who.int/iris/bitstream/handle/10665/43303/9241593482.pdf?sequence=1

8. EpiAfric. An Evaluation of the Maternal and Child Health Project of the Subsidy Reinvestment and Empowerment Programme (SURE-P MCH) [Internet]. 2015 [cited 2020 Aug 29]. Available from: http://epiafric.com/wp-content/uploads/2019/05/An-Evaluation-of-the-Maternal-and-Child-Health-Project-of-the-Subsidy-Reinvestment-and-Empowerment-Programme-SURE-P-MCH.pdf

9. National Primary Health Care Development Agency. Nigeria Midwives Service Scheme [Internet]. [cited 2020 Aug 29]. Available from: https://www.who.int/workforcealliance/forum/2011/hrhawardscs26/en/

10. Federal Ministry of Health. Program Implementation Manual (PIM): Saving One Million Lives Program for Results. Abuja, Nigeria; 2016.

11. The World Bank. Nigeria - Program to Support Saving One Million Lives [Internet]. [cited 2020 Sep 22]. Available from: cts-operations/project-detail/P146583?lang=en

12. World Health Organization Europe. Ottawa Charter for Health Promotion [Internet]. 1986 [cited 2020 Sep 2]. Available from: https://www.euro.who.int/__data/assets/pdf_file/0004/129532/Ottawa_Charter.pdf?ua=1

13. Koh H, Seng CK, Id HL. Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. PLoS One. 2019;14(5):1–25.

14. Yaya S, Bishwajit G, Uthman OA, Amouzou A. Why some women fail to give birth at health facilities : A comparative study between Ethiopia and Nigeria. PLoS One. 2018;13(5):1–11.

15. Inuwa J. Barriers to facility-based delivery in Niger State, North Central Nigeria. Int J Percept Public Heal. 2018;2(2):108–14.

16. Dearing J, Cox J. Diffusion Of Innovations Theory, Principles, And Practice. Health Aff. 2018;37(2):183–90.

17.   LaMorte WW. Behavioral Change Models [Internet]. [cited 2020 Sep 19]. Available from: https://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html#headingtaglink_1

18.   Health Communication Capacity Collaborative. Diffusion of Innovations: an HC3 Research Primer [Internet]. [cited 2020 Sep 19]. Available from: http://www.healthcommcapacity.org/wp-content/uploads/2014/03/diffusion_of_innovations_kim.pdf

19.   Lien AS-Y, Jiang Y-D. Integration of diffusion of innovation theory into diabetes care. J Diabetes Investig. 2017;8(3):2016–7.

20.   Zhang X, Yu P, Yan J, Spil ITAM. Using diffusion of innovation theory to understand the factors impacting patient acceptance and use of consumer e-health innovations : a case study in a primary care clinic. BMC Health Serv Res. 2015;15(71):1–15.

21.   Dearing JW, Smith DK, Larson RS, Estabrooks CA. Designing for Diffusion of a Biomedical Intervention. AMEPRE [Internet]. 2013;44(1):S70–6. Available from: http://dx.doi.org/10.1016/j.amepre.2012.09.038

22.   National Bureau of Statistics. Annual Abstract of Statistics 2016 [Internet]. 2017 [cited 2020 Oct 1]. Available from: https://www.nigerianstat.gov.ng/pdfuploads/ANNUAL ABSTRACT STATISTICS VOLUME-1.pdf

23.   National Bureau of Statistics. 2017 Demographic statistics bulletin. 2018.

24.   Araoye MO. Research methodology with statistics for health and social sciences. Ilorin: Nathadex Publishers; 2004.

25.   National Bureau of Statistics. National Nutrition and Health Survey (NNHS) 2015. Abuja, Nigeria; 2015.

26.   Deinne CE, Ambakederemo E. Accessibility and patronage of healthcare in Bayelsa State, Nigeria. Int J Healthc Manag. 2017;13(3):222–8.

27. Olayinka OA, Achi OT, Amos AO, Chiedu EM. Awareness and barriers to utilization of maternal health care services among reproductive women in Amassoma community , Bayelsa State. Int J Nurs Midwifery. 2014;6(1):10–5.

28. Hamer DH, Herlihy JM, Musokotwane K, Banda B, Mpamba C, Mwangelwa B, et al. Engagement of the Community , Traditional Leaders , and Public Health System in the Design and Implementation of a Large Community-Based , Cluster-Randomized Trial of Umbilical Cord Care in Zambia. Am J Trop Med Hyg. 2015;92(3):666–72.

29. Walsh A, Matthews A, Manda-taylor L. The role of the traditional leader in implementing maternal , newborn and child health policy in Malawi. Health Policy Plan. 2018;0(0):1–9.