



Improving Maternal, Newborn and Child Health Care in Nigeria – A Medical Women’s Association of Nigeria Multi-centre Study

Bobola Iyabo Agbonle, Mininim Ibiere Oseji, Glory David Essien¹, Laadi Terrumun Swende², Ngozi Emma-Nzekwue³, Ezinwanne Eunice Idih⁴, Anisah Yahya⁵, Mosunmola Rafiat Folorunsho⁶, Mary Esin Dirisu⁷, Omolara Adenike Olusola-Taiwo⁸, Vetty Agala⁹, Fatimah Yalaraba Abdulqadir¹⁰

Abstract:

BACKGROUND: The adopted health facility pilot demonstration programme was targeted to achieve sustainable development goals 3 and 5. Nigeria is one of the countries with poor maternal, newborn/child health outcomes – over 800 maternal deaths per 100,000; under-5 mortality 113–200/1000 live births; NMR of 36/1000 live births. Improving health indices through clinical monitoring, reducing neonatal tetanus (NT) risk factors and health systems strengthening can improve MNCH indicators. These factors were considered in the program and indicators were related to Medical Women’s Association of Nigeria’s themes/subthemes.

METHODS: Interested states were given a letter of introduction to their selected health facility, a plaque to mount in the facility and a template for data submission. Data were sent from facility focal persons through the State Presidents to the National Coordinator, collated and analysed from January 2020 to December 2021. Data were used to track MNCH indicators and intervene. Interventions implemented included training on Strengthening Health Systems, supportive supervision, provision of commodities, for example, chlorhexidine gel, flier distribution and airing jingles. Monthly Monitoring/Evaluation Sessions started from January 2021 for dissemination to stakeholders and receiving feedback. A major intervention was sensitisation on family planning (FP), maternal/NT elimination, female genital mutilation, HIV/AIDS during 2021 World Population Day commemoration.

RESULTS: The project involved 16 health facilities in 14 states. The results of 12 health facilities from 10 States are being presented in this article. There was a marked reduction of NT cases from 16 in 2020 to 3 in 2021. After WPD activities, 10 states had increased contraceptive utilisation. Lack of FP commodities, insecurity and COVID-19 negatively affected FP uptake in four facilities. Facilities increased food demonstrations after supportive supervision.

CONCLUSION: This project demonstrates that instituting an efficient all-embracing monitoring/evaluation system in the health sector using objectively verifiable indicators, can contribute to improving health indices of African nations such as Nigeria.

Keywords:

Adopted facility, maternal health, Nigeria, pilot project, tetanus

Introduction

Medical Women’s Association of Nigeria (MWAN) is a non-political,

non-sectarian, non-profit making organisation of qualified and duly registered female Medical and Dental Doctors in Nigeria. The Association is

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Medical Women’s Association of Nigeria, National Secretariat, Abuja, ¹Medical Women’s Association of Nigeria, Akwa-Ibom, ²Medical Women’s Association of Nigeria, Benue, ³Medical Women’s Association of Nigeria, Delta, ⁴Medical Women’s Association of Nigeria, Imo, ⁵Medical Women’s Association of Nigeria, Kaduna, ⁶Medical Women’s Association of Nigeria, Kwara, ⁷Medical Women’s Association of Nigeria, Niger, ⁸Medical Women’s Association of Nigeria, Oyo, ⁹Medical Women’s Association of Nigeria, Rivers, ¹⁰Medical Women’s Association of Nigeria, Zamfara, Nigeria

Address for correspondence:

Dr. Bobola Iyabo Agbonle, Delta State University, Abraka, Delta State, Nigeria.
E-mail: bobolagbonle@gmail.com

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dedicated to the promotion and improvement of health, especially in women and children, improving professional development and personal well-being of her members and increasing the influence of women in all the aspects of the medical profession. The association has been carrying out programmes targeted at achieving the sustainable development goals (SDG) 3 and 5 (good health and well-being and gender equality).^[1]

Nigeria as of 2021 had a population of over 200 million people and is multicultural (over 250 ethnic groups and over 500 languages).^[2] Nigeria has six geopolitical zones with Muslims more in the Northern zones and Christians in the southern zones.

This project was a pilot programme that spanned 2 years – 2020 and 2021 in 12 facilities in 10 States of Nigeria where the Medical Women’s Association of Nigeria had State branches, with the following aims:

- To conduct needs assessment to identify where interventions are required using specific indicators including those of the SDGs
- To create the awareness of the prevention of HIV/AIDS and unwanted pregnancies in the places where facilities are located
- To implement relevant interventions at the facilities, such as training, provision of medical equipment and consumables, provision of fliers for health education, as well as supportive supervision
- To improve the indices of maternal, newborn and child health in 12 health facilities in 10 selected States of Nigeria between January 2020 and December 2021.

Methodology

A total of 16 health facilities in 14 States were chosen for the project based on the availability of the State President and focal person to access the facility. The results of the 12 health facilities from 10 States are being presented in this article.

A signage plaque bearing the name of the association was mounted in a visible area of the health facility for identification purposes. Letters requesting use of the facilities were duly presented to facility authorities for approval of the program to be carried out in the facility.

Facility focal persons were appointed by State Presidents and were then given a specific format to submit their data monthly. Although not all started the project the same time, they were all required to submit the full data for January 2020 to December 2021 latest by January 2022. Data were submitted by the Facility focal persons to the National Coordinator with the concerned

State President and National President being aware of submissions. Data were collated on a monthly basis and then posted online on MWAN WhatsApp group pages to allow members throughout the nation to be informed of the progress, and also disseminated through the monthly Monitoring and Evaluation (M and E) that took place virtually from January 2021 to September 2021 for dissemination of the findings to stakeholders and receiving feedback.

Activities carried out included:

1. Trainings and health information
2. Provision of medical commodities
3. Supportive supervision
4. Data accumulated from the reports for informed needs assessment.

Each facility was given the following information, education and communication (IEC) materials:

- FLIERS
 - a. Family planning (FP) and its benefits
 - b. Don’t circumcise female children
 - c. How to be free of HIV/AIDS
 - d. About HIV/AIDS
 - e. The Nigerian Urban Reproductive Health Initiative 2 getting it together books
 - f. Facts about tetanus
 - g. Male involvement in maternal and child health
 - h. Gestational diabetes mellitus
 - i. Post-partum cardiomyopathy
 - j. Bagging waste
 - k. Managing medical waste.
- VIDEOS.
 - a. MWAN FGM jingle
 - b. MWAN HIV/AIDS Jingle
 - c. MWAN maternal and newborn tetanus elimination jingle
 - d. MWAN FP jingle.

Data from the pilot programme covered FP activities, tetanus indicators, births and infant and young child feeding practices, maternal and neonatal mortality and advocacy. FP activities included old and new FP users, along with sensitization on FP to the community/clinic/organisations. Births included live births and reports of neonatal deaths. The feeding practices included data on number of babies’ breast fed within 1 h of delivery and food demonstrations carried out in the facility [Annexure 1].

Interventions implemented included online training on Strengthening Health Systems for the facility focal persons, provision of commodities, for example, chlorhexidine gel to a State with high neonatal tetanus (NT) cases, provision of fliers to each facility for distribution to clients, provision of health jingles that

were aired in facilities, schools and places of worship and also supportive supervision. Advocacy on any of the findings above was also included. A major intervention was a facility wide sensitisation on FP, maternal/NT elimination, female genital mutilation, HIV/AIDS during the July 2021 World Population Day (WDP) commemoration.

Each focal person was supported with N2,000 (Two Thousand Naira) monthly to cover cost of sending information and to encourage them for gathering the data, starting from the month the project commenced in the health facility. All focal persons that attended the online training on Strengthening Health Systems were paid Two Thousand Naira only (N2000) for data usage.

Expedited ethical approval was obtained from the various States Research and Ethics Committees: Research and Ethics committee, Federal Medical Centre (FMC), Gusau, Zamfara State; Health and Research Ethics Committee (HREC), FMC, Owerri, Imo State; HREC, FMC, Markurdi, Benue State; HREC of Kaduna State Ministry of Health, Kaduna State; Oyo State Ethics Review Committee, Department of Planning, Research and Statistics Division, Oyo State Ministry of Health, Ibadan, Oyo State; Akwa-Ibom State HREC, Dept of Planning, Research and Statistics, Akwa-Ibom State Ministry of Health, Uyo, Akwa-Ibom State; Kwara State Ministry of Health ERC, Ilorin, Kwara State; Niger State Ministry of Health ERC, Minna, Niger State; Delta State Ministry of Health RHC, Asaba, Delta State; HREC Rivers State Hospitals Management Board, Port Harcourt, Nigeria.

Results

All facilities reported 24 months with the exception of Oyo reported 23 months due to inability to get data as the staff in charge was on maternity leave. The facilities included 8 Primary Health Care Centres, 2 Federal Medical Centres and 1 General Hospital. All results, intervention reports and world population activity reports here are from the needs assessments collated from these facilities.

Tables 1 and 2 present the adopted health facilities reports from 2020 January to December 2021.

Family planning

The grand total for new acceptors was 8,929 and FP revisits were 12,690 in 2020 as compared to 8,516 new acceptors and 13,539 revisits of 2021. For new acceptors that of 2020 was higher with a 4.6% drop in 2021 and 6.6% increase for revisits in 2021. Uptake increased in 9 out of the 12 facilities namely Kwara (36.4%), Delta (Idumuje –

Unor) (292%), Oyo (3.8%), Kaduna (7.2%), Benue (12.6%), Rivers (256.3%), Edo (68.1%), Akwa-Ibom (5.6%) and Delta (Utagba-Unor) (24.1%).

Four facilities (Niger [51.5%], Zamfara [14.1%], Imo [16.2%] and Delta (Ubeji) [45.5%]) experienced lower uptake.

FP revisits were increased in 7 centres Delta (Idumuje-Unor), Kaduna, Benue, Rivers, Akwa-Ibom, Imo, Delta (Ubeji).

Kwara, Oyo, Delta (Utagba-Unor), Niger and Zamfara had a drop in revisits.

Sensitization programmes on FP organised for community groups and faith-based organisations monthly.

Kwara had an improvement in the sensitisation as the clinic did sensitisations on a daily bases every week for 11 months in 2021 (totaling 220) as compared to none at all the previous year. Delta (Idumuje-Unor) doubled their sensitisation, while Rivers had 70 as against none the previous year. Akwa-Ibom had a 68.75% increase. A grand total of 122 in 2020 and 401 in 2021, which is an over 300% increase of sensitisation programmes.

Tetanus toxoid vaccination coverage

Almost all states had tetanus toxoid vaccination programmes. The challenge of reporting in disaggregated form (Td1 – Td5) was overcome by the second half of 2020 and all states reported in disaggregated form by 2021.

Number of secondary school girls from 15 years and above mobilised to take Td1 to Td5 – 6 facilities [Kwara, Delta (Idumuje-Unor), Oyo, Benue, Delta (Utagba-Unor) and Delta (Ubeji)] were involved in giving Tetanus toxoid to secondary school girls. These included mobilisation and some [at Delta (Ubeji)] were given as a result of injuries sustained by the students.

Maternal and neonatal tetanus

A total of 14 NT cases from Zamfara^[3] in 2020 with an 86% reduction in 2021-Zamfara.^[2] There was one case of maternal tetanus in Zamfara in 2020 none was reported in 2021.

Maternal and neonatal deaths

A total of 48 maternal deaths were seen in Benue, Zamfara and Imo in 2020, while 31 occurred in 2021 this indicated a 35.4% reduction in maternal deaths.

Neonatal deaths totaled 144 in 2020 and 180 in 2021 (25.0% increase).

Table 1: Report of adopted health facilities as at December, 2021 (Part A)

From January 2020 to December 2021								
Serial number	State	Number of months	Total number of new acceptors for FP monthly since facility was adopted (%)	Total number of revisits for FP since facility was adopted (%)	Number of sensitisation programs on FP organized for community groups and faith-based organisations monthly	Monthly coverage of Td1–Td5	Number of secondary school girls from 15 years and above mobilized to take Td1 to Td5	Number of cases of maternal and NT reported
1	Akwa-Ibom	12	107	97	32	Missing booklet	-	0
1b	Akwa-Ibom	12	113 (5.6)	110 (13.4)	54	Td1=372 Td2=214 Td3=71 Td4=8 Td5=8	0	NT=0 MT=0
2	Benue	12	1653	384	7	2776	96	0
2b	Benue	12	1861 (12.6)	699 (82)	0	711 Td1=1841 Td2=1410 Td3=463 Td4=309 Td5=220	Td3=49	NT=0 MT=0
3	Delta (Idumuje-Unor)	12	13	50	7	1	273	0
3b	Delta (Idumuje-Unor)	12	51 (292)	105 (110)	6	Td1=177 Td2=142 Td3=0 Td4=0 Td5=0	54 Td1=102 Td2=63 Td3=28 Td4=0 Td5=0	NT=0 MT=0
4	Delta (Utagba-Uno)	12	58	241	0	Td1=150 Td2=146 Td3=1 Td4=0 Td5=0	Td1=30 Td2=20 Td3=10 Td4=15 Td5=20	0
4b	Delta (Utagba-Uno)	12	72 (24.1)	216 (10.4)	1	Td1=147 Td2=101 Td3=18 Td4=0 Td5=0	0	NT=0 MT=0
5	Delta (Ubeji)	12	77	138	0	Td1=54 Td2=51 Td3=4 Td4=6 Td5=1		0
5b	Delta (Ubeji)	12	42 (45.5)	145 (5.1)	0	Td1=61 Td2=40 Td3=8 Td4=1 Td5=5	Td1=3	NT=0 MT=0
6	Imo	12	735	3,031	0	3579	0	0
6b	Imo	12	616 (16.2)	3566 (17.7)	1	3730	0	NT=0 MT=0

Contd...

Table 1: Contd...

Serial number	State	Number of months	From January 2020 to December 2021					Number of secondary school girls from 15 years and above mobilized to take Td1 to Td5	Number of cases of maternal and NT reported
			Total number of new acceptors for FP monthly since facility was adopted (%)	Total number of revisits for FP since facility was adopted (%)	Number of sensitisation programs on FP organized for community groups and faith-based organisations monthly	Monthly coverage of Td1–Td5			
7	Kaduna	12	1324	2821	1	1670 Td1=1350 Td2=1282 Td3=303 Td4=98 Td5:40 (disaggregation in January and continued in July)	0	0	
7b	Kaduna	12	1419 (7.2)	3896 (38.1)	2	Td1=1292 Td2=636 Td3=158 Td4=135 Td5=111	0	NT=0 MT=0	
8	Kwara	12	917	1422	0	3526	332	0	
8b	Kwara	12	1251 (36.4)	1397 (1.8)	220	Td1=2033 Td2=1649 Td3=415 Td4=124 Td5=52	62	NT=0 MT=0	
9	Niger	12	2165	1350	24	3391	0	0	
9b	Niger	12	1049 (51.5)	864 (36)	24	Td1=2345 Td2=1102 Td3=133 Td4=26 Td5=10	0	NT=0 MT=0	
10	Oyo	12	1072	1640	24	82 Td1=348 Td2=311 Td3=74 Td4=21 Td5=2 (started in February)	14	0	
10b	Oyo	11 (Jan, March to Dec)	1113 (3.8)	1367 (16.6)	3	Td1=420 Td2=343 Td3=53 Td4=21 Td5=3	0	NT=0 MT=0	
11	Rivers	12	87	22	0	Td1=94 Td2=89 Td3=133 Td4=46 Td5=27	0		
11b	Rivers	12	310 (256.3)	69 (213.6)	70	Td1=93 Td2=111 Td3=72 Td4=22 Td5=36	0	NT=0 MT=0	

Contd...

Table 1: Contd...

Serial number	State	From January 2020 to December 2021						
		Number of months	Total number of new acceptors for FP monthly since facility was adopted (%)	Total number of revisits for FP since facility was adopted (%)	Number of sensitisation programs on FP organized for community groups and faith-based organisations monthly	Monthly coverage of Td1–Td5	Number of secondary school girls from 15 years and above mobilized to take Td1 to Td5	Number of cases of maternal and NT reported
12	Zamfara	12	721	1494	27	3491	0	NT=14 MT=1
12b	Zamfara	12	619 (14.1)	1105 (26)	20	991 Td1=1140 Td2=312 Td3=48 Td4=48 Td5=58 (June–December)	0	NT=2 MT=0
10 states 12 centres	Total		8929	12,690	122	18,516 (disaggregated Td1–Td5 were in Oyo, Kaduna, Delta - Utagba Unor and Ubeji, rivers states) Td1=1996 Td2=1879 Td3=515 Td4=171 Td5=70	715 Td1=30 Td2=20 Td3=10 Td4=15 Td5=20	NT=14 MT=1
10 states 12 centres	Total		8516 (4.6)	13,539 (6.6)	401	5432 Td1=8921 Td2=6060 Td3=1439 Td4=694 Td5=503	116 Td1=105 Td2=63 Td3=77 Td4=0 Td5=0	NT=2 MT=0

Keys: Blue - indicates data for 2020, Orange - indicates data for 2021, Red percentages indicate reductions, Black percentages indicate increases. NT: Neonatal tetanus, MT: Maternal tetanus, FP: Family planning

In 2020, there were 4129 live births recorded, while in 2021, there were 10,521 live births recorded. This gave a neonatal mortality rate (NMR) of 34.9 deaths/1000 live births for 2020 and 17.1 deaths/1000 live births for 2021.

Food demonstrations

Number of food demonstrations done per month increased in 2021. In 2020, the grand total was 1231 while in 2021 it rose to 3790 which was a 208% increase.

States that increased the food demonstrations include Kwara, Oyo, Kaduna, Benue, Zamfara, Rivers and Akwa-Ibom.

States that had the same frequency include Delta (Idumuje-Unor) and Niger.

Reduced number of demonstrations occurred in Cross River and Delta (Utagba-Unor) facilities.

None were done in four facilities-Imo and Delta (Ubeji).

The Kaduna State MWAN leadership taught mothers how to prepare a nutritious meal for weaning babies (young child feeding practices) and made an online video for circulation. The verbal report is that food demonstrations have continued in the Kaduna adopted facility without support of the initiators and mothers attending the centre know how to make nutritious meals for their infants with locally sourced affordable items.

Advocacy

Advocacy was achieved by State representatives in Kwara, Kaduna, Cross River, Benue, Niger, Zamfara, Rivers, Imo, Delta (Utagba-Unor).

Interventions

A series of interventions was carried out based on urgency, cost and schedule.

Table 2: Report of adopted health facilities as at December 2021 (Part B)

From January 2020 to December 2021							
Serial number	State	Number of months	Number of live births	Number of babies put to breast in 1 st h after delivery per month	MD/ND	Number of food demonstrations done per month	Number of advocacy activities to major stakeholders including press releases
1	Akwa-Ibom	12	69	69	MD=0 ND=0	0	4
1b	Akwa-Ibom	12	82	82	MD=0 ND=0	1	0
2	Benue	12	232 January only	2079	MD=2 ND=6	1	2
2b	Benue	12	3440	3236	MD=2 ND=5	3	6
3	Delta (Idumuje-Unor)	12	8 (from September)	37	MD=1 ND=0	6	0
3b	Delta (Idumuje-Unor)	12	42	42	MD=0 ND=0	6	0
4	Delta (Utagba-Uno)	12	72	72	MD=0 ND=0	11	12
4b	Delta (Utagba-Uno)	12	100	102	MD=0 ND=0	8	0
5	Delta (Ubeji)	12	0	0	MD=0 ND=0	0	0
5b	Delta (Ubeji)	12	0	0	MD=0 ND=0	0	0
6	Imo	12	2491	0	MD=3 ND=66	0	0
6b	Imo	12	2143	1722	MD=3 ND=38	0	15
7	Kaduna	12	-	1504	MD=1 ND=0	1	0
7b	Kaduna	12	848	2732	MD=1 ND=0	15	3
8	Kwara	12	-	446	MD=0 ND=0	25	8
8b	Kwara	12	763	788	MD=0 ND=0	327	0
9	Niger	12	1234	1234	MD=0 ND=0	19	12
9b	Niger	12	1321	1296	MD=0 ND=0	19	17
10	Oyo	12	-	224	MD=0 ND=0	3	0
10b	Oyo	11 (January, March–December)	127 (report of May and June)	183	MD=0 ND=0	20	0
11	Rivers	12	23	23	MD=0 ND=0	0	2
11b	Rivers	12	33	33	MD=0 ND=0	5	0
12	Zamfara	12		1715	MD=41 ND=72	1165	19
12b	Zamfara	12	1622	1622	MD=25 ND=137	3386	18
10 states	Total		4129	7403	MD=48	1231	59
12 centres	Total				MD=144		
12 centres	Total		10,521	11,838	MD=31	3790	54
					ND=180		

Keys: Blue - indicates data for 2020, Orange - indicates data for 2021. MD: Maternal deaths, ND: Neonatal deaths

A virtual training for focal persons of adopted health facilities on Health Systems Strengthening took place on 23rd January 2021 via zoom. Topics included Social Mobilisation for Health and Health Data Management; Mental health; Essential Newborn Care (ENC) and Chlorhexidine, Teething; ICT.

Supply of one thousand tubes of chlorhexidine gel to FMC, Gusau, Zamfara State (Zamfara Adopted health facility). This resulted in collaboration between the PHC Agency (PHCA) Zamfara state and MWAN. The Zamfara State Commissioner of Health, Executive Secretary PHCA and Director Public Health Zamfara State joined to receive the gel. It was distributed to 14 LGAs depending on the cases reporting to the facility.

Monthly M and E also by zoom were carried out from January 2021 to September 2021. Through this means stakeholders in health were provided information on the data received from the adopted facilities.

A breastfeeding support group was initiated in Delta (Idumuje-Unor) facility on 27th August, 2020. It was attended by 16 mothers and 16 babies and facilitated by 2 members of MWAN.

During a supervisory visit by the National President of MWAN, a baby with cleft palate was identified in Delta (Idumuje-Unor) facility and was supported with baby formula. The child was referred to the Smile Train program^[4] which provided corrective surgery for the child free of charge.

World Population Day activities

To mark the WDP 2021 all the 12 adopted health facilities participated. Each facility was provided with a banner, between 80 and 100 fliers each on FP and NT elimination (of which some facilities made more copies), 4 jingles – Female Genital Mutilation, HIV/AIDS, FP, elimination of NT (to be played for the participants), a letter of introduction for the school, and house of worship, and the National President’s address for the WDP 2021 (to be read out).

All the facilities participated and ran the program in either or all of three places viz: the health facility, a place(s) of worship and a school.

The program held from 12th July 2021 to 29th July 2021 in the different States/facilities. Indigenous languages were used at many of the places to read the letter and explain the purpose of marking the day.

A total of 8 schools, 11 health facilities (including the adopted facilities) and 9 places of worship. Due to religious restrictions, no mosque was visited.

A total of at least 2814 individuals were sensitised and at least 2212 fliers (maternal and NT elimination, FP) were shared.

Table 3 (WDP activity).

Discussion

In this discussion, each subheading addresses the needs assessment that was used in this study.

The importance and interest in Maternal Neonatal and Child Health (MNCH) is increasing with Nigeria having 800 maternal deaths per 100,000 live births;^[5] an under-5 mortality of 113–200/1000 live births;^[6,7] and a NMR of 36/1000 live births^[8] despite efforts at reduction from government, international organizations, professional bodies and non-governmental organizations. The WHO has laid down indicators and strategies which this project focused on, so as to ultimately improve the present Nigerian health indices. The WHO indicators and strategies include global elimination of maternal and NT,^[9] SDG 3.1 – reducing the global MMR to <70/100,000 live births, with no country having a maternal mortality rate of more than twice the global average^[10] and SDG 3.7 by 2030 ensure universal access to sexual and reproductive healthcare services, including FP, information and education and the integration of reproductive health into national strategies and programmes.^[11]

A systemic review by Kana *et al.*^[12] noted that MNCH indicators in Nigeria had been poor in the 1990s and while most interventions took place from 2000 there was not much improvement. The M and E efforts to improve MNCH indices using available data is accepted as an important intervention^[13,14] as well as health system strengthening programs^[14]/clinical mentoring.^[15] Unfortunately, M and E in most African countries is problematic due to poor data collection and analysis.^[3,11] Friberg *et al.*^[14] estimated that nearly 4 million mothers, neonates and children could be saved by MNCH interventions in sub-Saharan Africa if 90% of families were reached and facility-based interventions could result in 26% decrease in maternal and neonate deaths.^[14]

MWAN is dedicated to the improving of lives of women and children and thus the attention to maternal, neonatal and child health was given through this simple but wide reaching project touching on FP, maternal and NT elimination, breast feeding, maternal and neonatal mortality, food demonstrations, data analysis and advocacy.

Family planning

FP is addressed under SDG target 3.7 and indicator 3.7.1 which refer to access to FP, information and education;

Table 3: World Population Day activity table (arranged according to dates of activities)

Serial number	State	Date of activity/facilitators	Fliers distributed	Adopted facility	School	Place of worship
1	Zamfara	12 July 2021: Dr. F. Abdulqadir, Dr. J. Dike, Dr. R. Idris, Dr. B. Agbonle (virtual)	In English/Hausa Pictures and videos sent. 150 students attended and 50 fliers each shared	PHC Old Airport Road, Minna	Government Girls Secondary School Tundun Wada Gusau	
2	Niger	12 July 2021: Haj. Fatima Saidu	In Hausa Pictures and videos of the event were sent. 100 fliers shared	Federal Medical Centre, Owerri		
3	Imo	13 July 21: Dr. Azubuike, Dr. Idih, Dr. Opara, Dr. Anthony-Eweputanna, Dr. Udah, Dr. Ebube, Dr. Eronini, Dr. Etuefeotor, Dr. Ogbonnaya	50 fliers on MNTE and FP. explanation was in English/Ibo			
4	Delta (Idumuje-Unor)	11 July 2021: 13 July 2021 and 15 July 21: Dr. M. Oseji, Mrs. E. Imafidon Dr. N. Ezeobi, Mrs. E. Imafidon 14 July 2021: Dr. N. Ezeobi, Mrs. E. Imafidon	130 fliers shared in both churches 80 fliers on MNTE and 28 fliers on FP distributed	CHC Idumuje-Unor, Delta during the immunization clinic and ante-natal clinic Nkwor Market, Idumuje-Unor	Idumuje-Unor mixed Secondary School	St. Matthew's Catholic Church Idumuje-Unor Philippian Baptist Church Idumuje-Unor
5	Delta (Ubeji)	16 July 2021: Mrs. M. Okeh	45 mothers were sensitised and given fliers on MNTE and FP	Ubeji PHC Immunization clinic		Insight Bible Church Abak road Uyo
6	Akwa-Ibom	11 July 2021: Dr. E. Johnson, Dr. G. Essien, Dr. 15 July 2021	35 fliers of MNTE and FP (sensitization done in English). Jingles were also aired	Health Centre Ikot Ada Idem, Ikono LGA		
7	Benue	12 July 2021: Dr. L. Swende, Dr. P. Okpeh, Dr. M. Daniel, Dr. Alapa David, Dr. Abah Godwin, Dr. Edache George, Mrs. M. Tyionzu, Mrs. H. Onche, Mrs. T. Onoja, Mrs. E. Akogwu, Mrs. J. Tar (all in attendance) 13 July 2021 17 July 2021 20 July 2021: Dr. P. Okpeh, Dr. O. Bamidele, Dr. W. Abwa., Mrs. J. Adukwu	75 patients in attendance 75 students in attendance Jingles were used 30 patients in attendance (1 medical woman, 3 nurses) 200 women/men reached (3 nurses, 3 medical women, some community health workers in attendance) 70 family planning fliers distributed the remaining 30 were given to the Matron in charge to distribute	General out-patient Benue State University Teaching Hospital Benue State University Teaching Hospital PHC Center Tsar, Vandekya	Aveco Model College, Markurdi	
8	Utagba-Unor (Delta)	18 July 2021: Mrs. P. Ossaiga 19 July 2021: Mrs. P. Ossaiga 19 July 2021: Mrs. P. Ossaiga	Summary for the 4 churches - 17 pastors, over 300 congregants in the 4 churches sensitised 22 women were reached Number of students 500: Females - 350, Males - 150	Antenatal clinic at PHC Utagba-Unor, Ndokwa-west LGA	Ebologu Grammar School, Utagba-Unor	UCC, Utagba-Unor Living Faith Church (Winners' Chapel) Utagba-Unor God of Holy Land Church, Utagba-Unor Church of God Mission, Utagba-Unor

Contd...

Table 3: Contd...

Serial number	State	Date of activity/facilitators	Fliers distributed	Adopted facility	School	Place of worship
9	Rivers	14 July 2021: Dr. N. Harrison-Douglas, H. Ordu (SCHEW), M. Garricks (SNO), O. Barigbara (CHO) 25 July 2021: Dr. Harrison-Douglas H. Ordu (SCHEW), M. Garricks (SNO), O. Barigbara (CHO)	250 students were reached Sensitisation to 140 adults. Videos were played and fliers were distributed		Oginigba Community Secondary School	RCCG Livingstone Parish, Woji
10	Kaduna	14 July 2021: Haj. Adama Usama 26 July 2021: Haj. Adama Usama 28 July 2021: Haj. Adama Usama	Sensitisation of students. 100 FP fliers and tetanus fliers shared Sensitisation of women during Antenatal clinic. 87 fliers shared (sensitisation in Hausa) Sensitisation of women during immunisation clinic. 45 fliers were shared (sensitisation in Hausa) Sensitisation on WPD given to 43 students and 9 teachers	PHC Layin Sarki Tudun Wada, Zaria PHC Layin Sarki Tudun Wada, Zaria	Government Secondary School, Zaria	
11	Kwara	27 July 2021: Drs. BW Alatishe-Muhammad, K. Yusuf, Nurses Y. Akinloye, Muhammad Talatu, Mr. Abdulganiyu Hussein			Hill Stone Academy Oke Ogun, Ilorin South	
12	Oyo	18th July 2021: Dr. Odofin, Mrs. Fatunmobi (Matron in charge), Mrs. Fatoke (adopted Facility staff) 19 July 2021: Dr. O. Olusola-Taiwo, Dr. O. Adeyemi, Mrs. Fatunmobi (Matron in charge) 29 July 2021: YDF Coordinator, Dr. Ade-Onojobi	About 60 worshippers. 50 fliers of FP, FGM and tetanus were distributed. In attendance, 1 medical woman, 2 health workers About 70 fliers on FP and 80 NT fliers were shared to 80 participants. Video was played. In attendance 4 members of PHC staff, 2 MWAN members, 2 males A talk was delivered on healthy population to 96 participants 2814 participants 2212 fliers	Idi Ogungun PHC during Immunisation clinic	All Saints College, Gbekuba, Jericho, Ibadan	C.A.C. Church, Palace of Praise, Elewura Ibadan
Total				11 facilities+1 market place	8 schools	9 places of worship

Compiled by Dr. B. Agbonle. FP: Family planning, UCC: Universal Church of Christ, RCCG: Redeemed Christian Church of God, PHC: Primary health care, NT: Neonatal tetanus, MNTE: Maternal and NT elimination, CHC: Community health centre, LGA: Local government area, MWAN: Medical Women's Association of Nigeria, FGM: Female genital mutilation, WPD: World Population Day, CHO: Community health officer, SCHEW: Senior community health extension worker, SNO: Senior nursing officer

and FP needs met with modern methods of FP.^[11] Better access to modern FP methods reduces the risk of maternal mortality,^[14] and the more contraceptive needs are met there are fewer deaths.^[11] There is also an inverse relationship between wealth of countries and FP access,^[11] inferring that low-income countries tend to have less FP access.

As at 2018 Nigeria had a total demand for FP among married women of 36%,^[16] which is still considered low. The data generated from our pilot study give some information about the problems women have accessing FP methods in 4 of the facilities with reduced uptake in 2021. Niger state facility experienced lack of commodities especially the long acting contraceptives which women preferred over other methods, while Imo State experienced insecurity and noted the possible effects of the National Association of Resident Doctors' Strike action. Zamfara also experienced a drop in new cases due to insecurity, COVID-19, and emigration from the State. The facility focal person in Delta (Ubeji) could not proffer reasons for the decline at the time.

The FP data of 2021 improved in 9 of the States (increases ranging from 3.8% to 292%), this was attributed to the facility wide sensitization done in July 2021 to mark WDP and is in agreement with other studies.^[17,18] The WDP activities were an intervention used to improve uptake and spread information on FP and other health issues (understanding of FP, Maternal and NT elimination, Female Genital Mutilation and HIV/AIDS). According to the United Nations Population Fund, about 12 million women experienced disruption in accessing FP in March 2020, and this was mainly due to the COVID-19 pandemic.^[19] In the words of the United Nations Secretary-General Antonio Guterres "These gaps in access to health rights are unacceptable. Women cannot be alone in this fight. As we mark WDP, let us pledge to ensure the reproductive rights of everyone, everywhere."^[19]

Marking the international days gives an opportunity to educate on issues of concern, advocate and mobilize political will, as well as to celebrate and reinforce achievements of humanity.^[19]

The FP activity in our pilot study was measured by the number of individuals reached, fliers shared and the increase in the uptake of FP at the various facilities.

Though our pilot programme addressing FP did not seek other reasons for reduced uptake in FP from clients, there are known or related factors associated with high uptake such as interests of mothers and that of fathers.^[17,20]

High knowledge, positive perception and education do not have a positive effect on uptake as shown by studies done in Enugu, Lafia, Benin and in sub-Saharan Africa.^[3,18,20-22] This was however not the case in a study in Osogbo, Nigeria where there was a significantly positive relationship between education, media and attitude to FP among facility based participants which was related to the high number of enlightenment programmes.^[23]

Other studies cited religion as a major barrier^[18,20,24] which was noted in our WPD sensitisation programme as female health workers could not go into the Mosques to sensitise congregations (where males are) about FP. Another challenge noted is the lower rural uptake in comparison to urban uptake.^[20,25]

The political will of African nations has been noted as a challenge to the attainment of FP.^[14,24] Although there has been a notable increase in FP uptake as indicated by Aliyu^[3] which we also achieved as seen in various levels of increased new acceptors in 10 of the facilities, various authors noted the importance for a continued use of health education and IEC to address social and cultural barriers of FP,^[17,20,21,25] male involvement^[3,22,25] and religious leaders^[20,25] as well as the motivation of users to avoid pregnancy by continued follow-up from providers.^[26]

Tetanus

The elimination of NT as a public health problem is defined as having less than one NT case per 1000 live births in every district or similar administrative unit in the country each year.^[9] Tetanus is proven to be a vaccine preventable disease, with the administration of at least 2 doses of tetanus toxoid containing vaccine to the pregnant mother with an interval of 4 weeks;^[9,27] or primary infant series and booster doses in adolescence, or 5 doses if vaccinated after 1 year of age/during adolescence/adulthood including during pregnancies.^[9] The fourth international target date to eliminate NT was 2020, the process began in 1989 with World Health Assembly calling for the elimination in 59 priority countries by 1995.^[9] By the end of 2018, 14 countries remained^[9] and as at 2019 only 12 countries remained to eliminate maternal and NT (MNT) of which Nigeria has a partial elimination (elimination in south-east and south-west regions).^[28] As indicated in one study, Tetanus was still a major cause of death in a facility.^[29] Inability of a country to eliminate MNT means that country has been unable to attain at least 80% coverage for women of reproductive age with respect to five factors (1) at least 2 doses of tetanus toxoid containing vaccine; (2) protection at birth; (3) skilled birth attendance; (4) antenatal care visits and (5) health facility delivery.^[28] Worldwide as a result of implementation of these recommended strategies the global estimates declined by 96%.^[9] Immunization

coverage as at 2018 (including three doses each of DPT-HepBHib) was at 31% for all children 12–23 months of age.^[16] Basic vaccination coverage was <10% in Zamfara (7%), Kebbi (6%) and Sokoto (5%) states and highest in Anambra (76%).^[16]

Our pilot project noted that all facilities had regular tetanus vaccination for pregnant women but only 6 facilities were also involved in routine vaccination of secondary school girls. Moreover, at that only one (6.25%) facility (Delta – Idumuje-Unor) was consistent, the other 5 carried out vaccinations between one month and 10 months. This is evidence of our inability to get adequate coverage, which also depends on adequate knowledge of health care providers.^[9,28]

A study noted that knowledge of Tetanus vaccination for adolescents among school girls from Ibadan North LGA (where cases of NT had come from 2 years preceding the study) was low.^[30] Suggestions have been made for improving Tetanus vaccination uptake by increasing campaigns in Nigerian high schools and primary schools,^[30,31] as the major but wrong reason given by the adolescents for taking the vaccine was injuries.^[30] This corroborates with information given by the Delta (Ubeji) facility contact person that adolescents came to the facility to take Tetanus vaccination only for injuries. For adolescents booster doses are recommended to give life-long immunity and also protect their babies.^[9] It would also result in fewer pregnant women needing the vaccine, as most would be vaccinated as adolescents.^[9]

Tetanus vaccination of pregnant women^[7,31,32] and a strong NNT surveillance system^[32] and improved immunisation coverage in rural areas^[31-33] are all means of reducing the incidence of tetanus in Nigeria. A National report of the National Primary Health Care Development Agency (Nigeria)^[34] noted the difficulties in achieving high tetanus toxoid coverage due to low ANC coverage, low post-natal coverage and low facility deliveries. Poor funding to achieve subsequent rounds of Tetanus Toxoid Supplemental Immunisation Activities after that of 2014 was also a setback.^[34] There had been a gradual reduction in the number of states reporting NT cases and by 2014 only 17 states reported,^[34] although the plan was to meet the global and regional MNT disease elimination target by 2018. This is yet to be achieved. A strong case surveillance for NT was initiated in 2008, but noted under reporting as a constraint.^[34]

Our pilot programme demonstrated the importance of these interventions when 14 NT cases in one state (Zamfara) were identified in 2020 and promptly given attention through advocacy to Federal Ministry of Health and necessary stakeholders, and the donation of Chlorhexidine gel by MWAN through the Zamfara

Adopted facility and subsequent distribution to the Local Governments in that state. In 2021, only 2 cases were reported, revealing a plunge as a result of implementation of effective interventions. Most of these cases were brought to the facility as deliveries were un-booked cases. Yusuf *et al.*^[28] noted that Zamfara state had only 22% likelihood of being protected against Tetanus which aligns with our project findings.

Chlorhexidine is a broad-spectrum antiseptic used as an adjunct to the 5 basic clean practices for cord care.^[35] 7.1% Chlorhexidine digluconate was included in the WHO essential drug list of essential medicines for children in 2013 and introduced by the WHO in 2014.^[36] It was introduced in Nigeria through USAIDS in 2012 Targeted States High Impact Project thereafter, Nigeria launched a National Chlorhexidine Scale up Strategy in 2016 to increase its use.^[37] It can be safely used in settings where unhygienic applications to the cord are common and it is proven to reduce infant mortality from tetanus.^[9,27,36,37] An earlier study in 2015 noted that the introduction of 7.1% Chlorhexidine gel in two Nigerian states was seen to be more successful in health facilities where it replaced methylated spirit for cord care. However, unfortunately, a high percentage of births (75.2% and 83.9%) were home based or by traditional birth attendants who used hot compress, cow dung or local herbs for cord care.^[38]

Maternal mortality

Maternal mortality has been a topic of great interest to many researchers for the obvious reason of its importance in reducing the maternal mortality rates in different hospitals, states and geopolitical zones in Nigeria. Although the association did not directly intervene due to limited funds, it is of note that the information gathered gave a picture of what was happening in various facilities.

Maternal mortality worldwide as at 2017 was 211 maternal deaths per 100,000 live births.^[39] According to world rankings in 2017 on maternal mortality, Nigeria ranked 179 out of 182 countries, with Chad having the highest values of 1140 and Nigeria 917. Other countries in Sub-Saharan Africa like Mali (576), Niger (509) and Togo (396) were slightly better off. Egypt had 37, Algeria 112 and South Africa 119. Developed countries such as Norway, Italy, Poland had better indices of 2; Iran had 16, USA 19.^[40] As at 2015, MMRs were the highest in WHO African region where one woman died for every 185 children born and highest in low-income countries where one woman died for every 202 children born with a 29 times higher chance of maternal mortality occurring in a low income than high income country.^[11]

As at 2015 in Nigeria had about 58,000 maternal deaths, accounting for 19% of maternal deaths

worldwide.^[41] Okaro *et al.*^[42] compared two 10-year periods (1976–1985 and 1991–2000) in a facility and attributed the significantly higher MMR (1406/100,000 live births) of 1991–2000 to institutional delays and diminished standard of living among Nigerians which were also mentioned by Ebeigbe.^[43] Abe and Omo-Aghoja^[44] had a ten-year review and attributed maternal mortality to low literacy, high poverty, extremes of parity and non-utilisation of antenatal services. Several studies noted various rates in maternal mortality and commonly occurring direct causes of hypertensive disorders (eclampsia and pre-eclampsia), obstetric (including postpartum) haemorrhage, sepsis, unsafe abortions, embolisms, ectopic pregnancies, uterine rupture, obstructed labour^[44-54] and indirect causes included institutional difficulties^[44] AIDS, anaemia, anaesthesia, thyrotoxicosis and diabetes mellitus.^[48] Other factors influencing maternal death include un-booked cases,^[52] poverty, lack of freedom over reproductive health choices, and lack of command of resources, women's educational attainment and economic empowerment.^[11] An important factor to reduce maternal mortality is the presence of skilled provider-assisted deliveries,^[11] this was measured as low (<30% in the North) to high (>60% in the South) in Nigeria.^[14] According to Nigerian Demographic Health Survey (NDHS),^[16] the total skilled provider-assisted delivery was at 43% by 2018. Unfortunately, the WHO African region has delivery coverage of only 59% as compared to over 90% seen in the Americas, European and Western Pacific regions.^[11]

Nigeria has introduced some interventions to improve maternal health indices. These include State based free maternal health programs,^[55] Saving One Million Lives Project (SOML),^[56,57] Basic health care Provision Fund (BHC PF),^[58] 2nd National Strategic Health Development Plan,^[57] and National Health Insurance Scheme (NHIS) which included Bauchi, Ogun, Cross River, Akwa-Ibom, Rivers, Edo, Taraba, Adamawa, Kaduna, Zamfara, Kebbi, Sokoto, Katsina, Nassarawa, Anambra, Jigawa, Imo, and Kogi as at September 2009.^[59]

Neonatal mortality

Our report is facility based and therefore the neonatal deaths covered the first 7 days of life giving values in early neonatal deaths and not late neonatal deaths.

SDG 3 also addresses child mortality in Target 3.2.^[11] Though neonatal death rates have declined globally,^[11,39] Sub-Saharan Africa had the highest values in 2020 at 27 deaths per 1,000 live births followed by South Asia with 25 deaths per 1,000 live births.^[39] Globally neonatal death rates fell by 41% between 2000 and 2017, but they are still highest in the WHO African region and low-income countries. According to the 2018 NDHS Nigeria had a

NMR of 39 deaths per 1,000 live births in 2018, but the rate was considered stagnant between 1990 and 2018.^[16]

Food demonstrations

The increase in the number of food demonstrations in 2021 as compared to 2020 is proof of the positive effect of supervision. The increase was notable after the virtual training that took place for the facility focal persons in January 2021. The training generated questions directed at understanding food demonstrations and answers given helped participants understand that food demonstrations were simple, inexpensive ways to teach mothers at facilities to prepare meals for infants and reduce malnutrition. According to Masters *et al.* programs aimed at altering preferences, programs to alter prices of food and improved access to healthy foods are identified as cost effective ways to promote behavior change, as they are less costly per child. This study agrees with our method of food demonstrations carried out in the Kaduna facility as it altered preferences and its cost-effectiveness. Other methods such as food and cash (resource) transfers were found to be more expensive per child.^[60]

Other studies on food demonstrations noted the importance of food demonstrations during Ante-natal visits to introduce dietary sources of energy, iron, vitamin A and folic before and during pregnancy so as to improve maternal and neonatal/child outcomes this is also in line with our pilot study.^[16,61] Lutter *et al.* agree with our method of food demonstration and its online circulation as an effective way to reach out to large numbers as it is a programme-specific key message using multiple platforms, and it agrees with the use of locally available foods which are important in achieving long-term sustainability.^[62] The study also suggests that designs for nutrition programs should be comprehensive, transdisciplinary and with rigorous evaluation, noting this, such aspects of the pilot program can be further looked into to improve its impact as we were unable to do so during the allotted time of two years. Zamfara center had a nutritionist attending to individuals not groups which was to suit the individual challenges, a method which according to Lutter *et al.* is considered demanding on the part of the health personnel, requiring training and investments in time thus affecting the quality of counselling.^[62]

Breast feeding support groups

WHO recommends exclusive breast feeding for the first 6 months of a baby's life.^[16] In 2018 Nigeria had a rate of 29%.^[16] The aim of starting the breastfeeding support group at the Delta (Idumuje-Unor) facility was to promote proper infant and young child feeding practices including exclusive breast feeding to enable growth, health and development of the newborn to

their full potential which was seen in other studies.^[63,64] The study by Flax *et al.* started with training of health personnel on Baby Friendly Hospital Initiative and the pregnant women received breastfeeding messages through texts, WhatsApp and WhatsApp groups, foldable messages at the facilities, information at the Health facilities through LED screens.^[63] Our support group was formed including mothers that had babies coming for immunization and did not get texts or WhatsApp messages, but were given pamphlets and health talks on breastfeeding. The study by Nyati *et al.* notes that breastfeeding requires a lot of motivation from mothers and clinicians.^[64]

Cleft palate child

The baby with the cleft palate was identified during the supervision of the project in Idumuje-Unor (Delta) by the National President. This shows the importance of supervision by a clinical mentor/senior health personnel,^[15] who in this case was able to guide the child and parents to a cost effective method of treatment.

Limitations to the study

The study was limited by the fact that not all the 36 States of the Federation and the Federal Capital Territory were represented, as participation was based on the interest of the leaders of the MWAN State Branches. This may affect generalizability of some of the findings.

Conclusion

This project demonstrates that instituting an efficient all-embracing monitoring/evaluation system in the health sector using objectively verifiable indicators, can contribute to improving health indices of African nations like Nigeria.

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Conflicts of interest

There are no conflicts of interest.

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Annexure

Annexure 1

State Adopted Health Facility Report

1. Name of Health Facility
2. Date that the MWAN 2019 -2021 Biennium Plaque was mounted
3. Total number of New Acceptors for Family Planning monthly since facility was adopted
4. Total number of Revisits for Family Planning since facility was adopted
5. Number of sensitization programmes on family planning organised for Community Groups and Faith-Based Organisations monthly
6. Monthly coverage of Td1 –Td5
7. Number of Secondary School Girls from 15 years and above mobilised to take Td1 to Td5:
8. Number of cases of Maternal and Neonatal Tetanus reported
9. Number of babies put to breast in first hour after delivery per month
10. Number of food demonstrations done per month
11. Number of advocacy activities to major stakeholders including Press Releases.

SDG Indicators

GOAL 3

- a. Maternal Mortality Ratio for Adopted Health facility
- b. Neonatal Mortality Rate for Adopted Health facility.