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Engaging Private Nursery and Primary Schools to Facilitate Catch - up Vaccination in Kosofe Local Government Area Lagos State Nigeria

Odis Adaora Isabella[1*], Ogbenna Ann[2], Adesina Adefunke[3]
[1]*WHO Fellow on Covid-19 Recovery for Routine Immunization Program, Lagos, Nigeria*
[2]*Senior Lecturer/Consultant Haematologist, College of The Medicine University of Lagos, Nigeria*
[3]*Public Health Physician/Field Epidemiologist, Lagos State Ministry of Health/Nigeria Field Epidemiology and Laboratory Training Program*

Abstract

Vaccination is very important to improve population health throughout life – but despite strong evidence, it is misunderstood and undervalued. Catch-up vaccination aims to provide optimal protection against disease as quickly as possible by completing a person's recommended vaccination schedule in the shortest but most effective time frame. This descriptive cross-sectional implementation Research was designed to solve problems for Covid–19 recoveries for routine immunization program in private Nursery and primary school in Kosofe Local Government Area Lagos (School-based intervention). The sample size of 135 was adopted with purposive sampling method from the target population. All data were coded, entered, cleaned, and then analyzed using the IBM PSPP. Children that missed vaccination were tracked out more (90) and vaccinated, demand generation with the help of vaccine demand pooling in school for secondary vaccines, the awareness of vaccine-preventable diseases were created more at different schools Parents Teachers Association's meetings. Implementation Research is one of the measures and a component in the Immunization Agenda 2030 (IA 2030) designed to achieve the Life course immunization. Creating awareness and sensitization is very important in schools, especially using the power of storytelling for positive change in vaccination uptake. There are parents who can afford to pay for secondary vaccines but don't have the information and there are parents who have the information but can't afford to pay for secondary vaccines due to economic hardship in Nigeria. We recommend that vaccine demand pooling in schools is championed to enable parents to afford secondary vaccines for their children.

Keywords: *Catch-up immunization, demand generation, life course, vaccine-preventable diseases, zerodose children.*

Introduction

Vaccination is very important to improve population health throughout life – but despite strong evidence, it is misunderstood and undervalued. A life-course approach requires that immunization schedules and access to vaccination respond to an individual's stage in life, their lifestyle, and specific vulnerabilities/risks to infectious diseases that they may face.

The goal is that all people benefit from recommended immunizations throughout the life course, effectively integrated with other essential health services. The objectives are.

1. Strengthen immunization policies and service delivery throughout the life course, including for appropriate catch-up vaccinations and booster doses.
2. Establish integrated delivery points of contact between immunization and other

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****Corresponding Author: arisdobel@yahoo.com***

public health interventions for different target age groups.

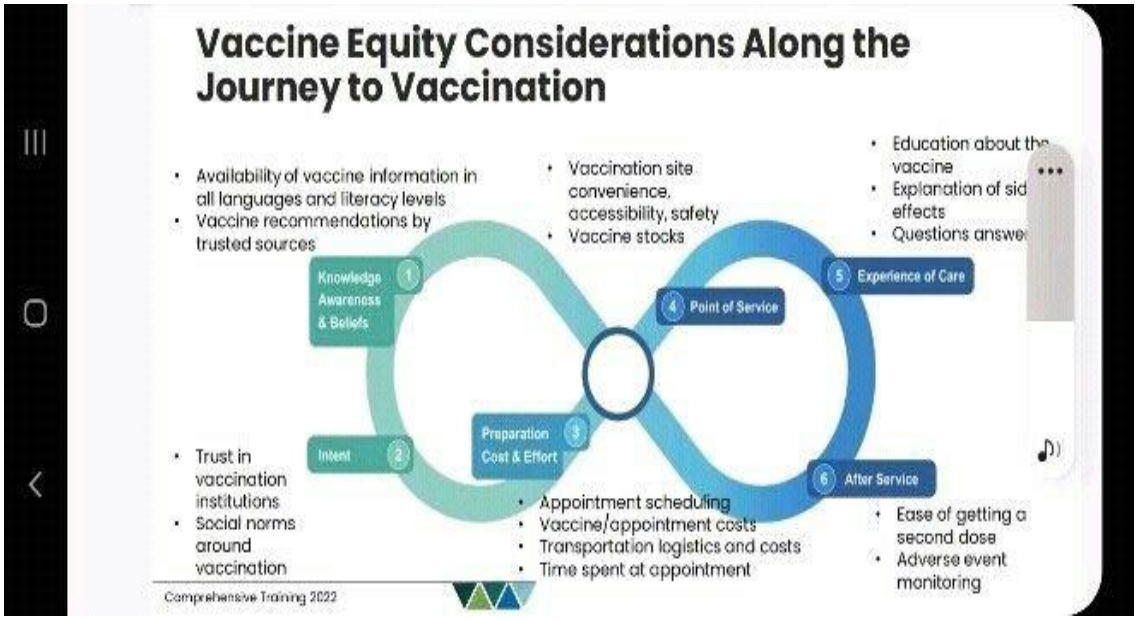

Figure 1. Vaccine Equity Consideration along the Journey to Vaccination

This is the reason why we should keep our children's vaccination cards properly. While in the field collecting data from Mothers in 2021 for my thesis, I championed this. While at Government health facilities some mothers thought once their children turn 2 years then they are done with immunization. I corrected that impression and asked them to keep abreast of current trends.

We also found out that most schools in Lagos do not request children's vaccination/immunization cards before enrolment but are requested for in Abuja. The most important factor parents consider when deciding to get their children vaccinated was not requirement by daycare and school which was only 49.87% of parents that think it was extremely important [1].

In a research conducted in Kosofe and Shomolu LGA in 2021, parents/guardians said no that their oldest child/children have not received Varicella - chicken pox (recommended at 12 months) (64.80%), Influenza/Flu (recommended 1 to 2 doses between 6 and 23 months) (78.93%), HPV - Human Papilloma Virus (recommended for girls in Grades 6 and 9) (95.47%), Cholera (from 12 months) (72.53%), Rotavirus (recommended 2 doses at 6 weeks and 10 weeks) (65.33%) [1].

While parents/guardians said no that their youngest child/children have not received Varicella - chicken pox (recommended at 12 months) (71.43%), Influenza/Flu (recommended 1 to 2 doses between 6 and 23 months) (76.79%), HPV - Human Papilloma Virus (recommended for girls in Grades 6 and 9) (96.43%), Cholera (from 12 months) (77.14%), Rotavirus (recommended 2 doses at 6 weeks and 10 weeks) (62.86%) (Odis et al, 2022). This requires catch up vaccination.

The reasons parents/guardians gave for not following the recommended Nigerian immunization schedule for their oldest child were: At Oworoshoki health centre some secondary vaccines were not available like Rotavirus, cholera, Flu, HPV, Hepatitis A, and Chickenpox vaccine. Some said because of their child's studies, some parents were ignorant, misinformed, and not aware of some vaccines like Cholera, Flu, and HPV. Some complained of cost, financial constraints, lack of funds and time to take permission from work, some could not find my child's vaccination card, a mother said that immunization is not very important, and lack of knowledge of rotavirus benefits. The

attitude of health workers discourages mothers from going to hospitals to vaccinate their children same as fear of contracting Covid–19. Some mothers had busy schedules, were tired, and had no time while some mothers said Pneumococcal was not available many years ago both at Oworoshoki health centre and General Hospital. Some could not get their children vaccinated because of the Covid-19 lockdown [1].

There is need the for Nigerian primary health care development agency (NPHCDA), the Ministry of Health, NCDC, NAFDAC, Public Health specialists, WHO, UNICEF, Non-Governmental Organizations and other agencies related to epidemics and vaccination to be directly or indirectly involved in the training of parents/guardians during Parents Teacher's Association's meeting on knowledge of epidemics and vaccination This training should involve use of posters, drama, songs, campaign and increasing frequency of calls /SMS vaccination reminders and social media (Twitter, Facebook, Instagram, Whatsapp, Youtube, Linkedin etc) to notify parents/guardians on epidemics and vaccination. Schools/Day cares in Lagos ensure that requirement of vaccination/Immunization card is requested for before admission is finalized [1].

This implementation Research for Covid–19 recovery of immunization program occurred in private Nursery and primary schools in Kosofe Local Government Area Lagos (School-based). There were new intakes into schools in September 2022, so headmasters/mistresses requested for a photocopy of pupils' immunization cards for parents willingly to participate. This enabled us to take every opportunity to review a school pupil's vaccination history and give them appropriate catch-up vaccines, as needed. If a pupil has not received the vaccines scheduled in the National Immunization Program appropriate for their ages, then we planned and ensured that the pupil gets the missed vaccines with their parents' consent in a health facility.

Prior to the commencement of the admission process, data collectors in various schools were be trained on the basic immunization requirement according to their ages. This enabled the data collectors to identify prospective pupils who need the catch-up immunization and also refer them to the health facility to complete their children's missed vaccination. We also identified a child of the zero-dose immunization category, because most children born in 2020 during the pandemic enrolled into schools September 2022 for KG 1 class.

The reason why schools were selected for this implementation Research is that this is where we can get direct contact with parents and also their children so as to monitor the children that need catch–up immunization and those in the zero-dose category. In Nigeria, you can't find children less than 6 years old in pupil primary schools, that is the reason we chose private nursery and primary schools where we can find infants in creche and who are a year old and above. During the pandemic, most mothers didn't deliver in the hospital as a result of fear of contacting Covid–19. Some were delivered in Traditional Birth homes where their children had no access to vaccination.

The primary objective is to Catch-up vaccination aims to provide optimal protection against disease as quickly as possible by completing a person's recommended vaccination schedule in the shortest but most effective time frame.

The secondary objective are as follows:

1. To take every opportunity to review school pupil's vaccination history based on the schedule for the National Immunisation Program in Kosofe Local Government Area Lagos, Nigeria.
2. To plan and document a catch-up schedule for pupils who missed routine vaccine doses for any reason can be identified and vaccinated at the earliest opportunity.

3. To discuss this planned schedule with the parents/guardians of pupils who need the vaccine.
4. To lay out strategies for continuously implementing catch-up vaccination intervention as a component of routine immunization and as an integrated part of the healthcare system in private Nursery and primary schools in Kosofe Local Government Area.

Figure 2. A Picture of R Jolad Hospital Lagos Staff Catch – up Immunization Intervention in a Private Primary School in Kosofe Local Government Area Lagos

Literature Review

Evidence from other studies also emphasized that child immunization incompleteness within the north contributes significantly to the low immunization uptake in Nigeria. A number of the factors attributed to the current misconception about immunization (a situation where it's believed that after a baby receives polio vaccine, such child has been immunized against all childhood diseases), rejection of routine immunization (this is linked to the fear on the part of parents and caregivers that vaccines are harmful to the child) and political problems (this relates to lack of commitment from the government about the immunization policy and an excessive amount of centralization of the immunization programme) [2].

The immunization program in Nigeria has been marred by several factors including religious, socio-cultural barriers and myths, and misconceptions. Myths and misconceptions regarding immunization are still rife in most Nigerian communities. It is important to debunk them through health education so as to confirm the success of the country's immunization program [3].

Nigeria is one of the ten countries in the world where most of the incompletely immunized children live despite the massive investments in immunization programmes by governmental and non-governmental organizations. There's a disparity in the rate of immunization incompleteness between the north and south of the country with the previous having an increase in proportion. This disparity may be explained by the factors that operate at individual, community, and state levels. Low level of educational attainment, high level of poverty, poor antenatal care attendance and hospital delivery, and a higher population of rural inhabitants including poor socioeconomic status are more pronounced across the northern region [4]. Timely vaccination is key to maintaining population immunity against vaccine-preventable diseases (VPDs), ensuring populations are fully protected against life-threatening illnesses as early as possible, and preventing large outbreaks of VPDs. However,

scheduled vaccinations may be missed for a number of context-specific reasons (e.g. difficulty accessing health services and other health system barriers, health worker practices, stock outs, beliefs held by caregivers and community members about vaccination, etc.) [5]. The majority of parents/guardians in Kosofe and Shomolu Local government area (55.47% + 29.87%) strongly agree plus agree that media reports on vaccination programmes encourage them to vaccinate their children. 32.80% strongly agree, and 22.40% agree that the media exaggerates reports about disease outbreaks. The level of education plays an important role in the level of knowledge and attitude towards epidemics and vaccination. Income and Cost of vaccines affect vaccination uptake because of the present economic situation in Nigeria. Media plays a key role in vaccination campaigns, awareness, and intervention and should be promoted more to achieve the goal of ensuring all children are vaccinated properly. Doctors and Public Health Nurses have a major role to play in terms of influencing parents/guardian's vaccination uptake [1]. The Nigeria Centre for Disease Control has announced a total of 19,228 suspected cases of cholera, including 466 deaths, so far in November 2022 [6]. According to the November 2022 Cholera Situation weekly epidemiological report posted on its official website, 31 states have reported suspected cholera cases in 2022 [6]. Cholera is an acute diarrhea disease caused by Vibrio cholerae, a gramme-negative rod-shaped bacterium. In Nigeria, cholera is an endemic and seasonal disease, occurring annually mostly during the rainy season and more often in areas with poor sanitation [6]. While conducting this implementation research, there was an outbreak of Mumps and chicken pox in some schools in Kosofe Local Government Area Lagos between October and November 2022.

Risk Characterization

Type of threat: Epidemics occur in population groups where the number of susceptible becomes higher than the number of the birth cohort. Diphtheria or Measles outbreaks can result in many deaths in unvaccinated individuals, especially among young, malnourished children. The risk of death is greatly reduced in people who are vaccinated; therefore, in areas with high vaccination coverage, the risk of death is also lower as most cases are in vaccinated individuals.

Methods

Implementation Design

This descriptive cross-sectional implementation Research was designed to solve problems for Covid–19 recovery for routine immunization program in private Nursery and primary school in Kosofe Local Government Area Lagos (School-based intervention). The implementation research was carried out to assess vaccination status based on the schedule for the National Immunization Program among private school pupils in Kosofe Local Government Area Lagos.

Description of Implementation Area

This study was conducted in private Nursey and primary schools, Kosofe Local Government Area in Lagos State, Nigeria.

Implementation Research Population

The population comprised of all the pupils in Kosofe LGA Private Nursery and primary schools. The study subjects were pupils with their parents/guardians. This comprised of incoming pupils and other pupils already admitted in the past.

Inclusion Criteria

Mothers/Fathers/Child caregivers/Guardians that bring their children for admission into private nursery and primary schools and existing parents/caregivers of the schools in Kosofe Local Government Area in Lagos State, Nigeria with their consent.

Exclusion Criteria

Mothers/Fathers/Child caregivers/Guardians

that do not bring their children for admission into private schools and existing parents/caregivers of the schools in Kosofe Local Government Area in Lagos State, Nigeria.

Sample Size

The Cochran formula was used to calculate the sample size was determined in order to have 95% confidence limits of 5% maximum error of the estimate when the probability is 64.53% [1]. This led to a requirement of 352 pupils but only 135 immunization cards from parents who were willing to allow their children to participate in Kosofe Local Government area of Lagos were recruited for the study in the aforementioned time period (August 2022 – March 2023) through probability sampling.

Sampling Technique

The technique of multi-stage sampling was used to obtain cross-sectional data for this implementation research in Lagos state. The Lagos state will be divided geographically into 37 Local governments Area namely:

1. **Badagry Division**: Ajeromi-Ifelodun, Nigeria, Amuwo-Odofin, Nigeria, Badagry, Nigeria, Ojo, Nigeria.
2. **Epe Division:** Epe, Nigeria, Ibeju-Lekki, Nigeria.
3. Ikeja Division: Agege, Nigeria, Alimosho, Nigeria, Ifako-Ijaiye, Nigeria, Ikeja, Nigeria (capital of Lagos State), Kosofe, Nigeria, Mushin, Nigeria, Oshodi-Isolo, Nigeria, Somolu, Nigeria (aka Shomolu).
4. **Ikorodu Division:** Ikorodu, Nigeria.
5. **Lagos Division:** Apapa, Nigeria**,** Eti-Osa, Nigeria (Victoria Island and Ikoyi, formerly the residence of the Nigerian federal government)**,** Lagos Island, Nigeria**,** Lagos Mainland, Nigeria**,** Surulere, Lagos State, Nigeria.

Stage 1: The balloting method of simple random sampling was used to select a local government from the list of LGAs in Lagos state.

Stage 2: Simple random sampling method using list of private nursery and primary schools in the selected Local governments of Lagos state, Nigeria. The second stage involved random sampling of private nursery and primary school from the list of schools obtained from the Kosofe LGA unit of the Ministry of Education in Lagos State.

This implementation research was school based and conducted in seven private nursery and primary schools of Kosofe Local Government Area Lagos state. Out of the 7 private nursery and primary schools, 3 in Ifako Gbagada (Twinkle Star Nursery and primary school, Pelade Nursery and Primary school and living Faith Nursery and primary school), 1 in Soluyi Gbagada (Janet and John nursery and primary school) 1 in Sawmill (Labeo school Creche, Nursery and primary school), 1 in Oworoshoki (Pelade Nursery and primary school) and 1 in Ogudu (Bethany Hall Creche Nursery and Primary School. The rationale behind the selection of both Ifako, Sawmill, Soluyi Gbagada, Oworoshoki and Ogudu locations for the research was to support in generating evidence to determine if geographical location would be a barrier to the support provided on COVID - 19 Recovery for routine immunization programs. We also reviewed immunization cards from St. Gerald Catholic Church Soluyi Ggagada and immunization cards from An NGO Joy foundation Gbagada.

The third stage: Purposive sampling was used to get sample size of 135 immunization cards from parents who were willing to allow their children to participate in the implementation Research. Data was collected, analysed and interpreted from each of the location that was selected to achieve the research goal.

Method of Data Collection

The vaccination card was our research instrument. Data was collected from the vaccination card so as to ensure that every child that has missed vaccination is vaccinated and the zero – dose children can be identified and properly vaccinated with their parents' consent.

The investigator explained the study to the

participants, including the conditions for participating, as well as privacy and confidentiality for data collection. Although the study was free from any serious ethical issues, the principal researcher designed a participant's information sheet that explained the voluntary nature of the study in detail and the anonymity and confidentiality of the study. Necessary translation of the contents of the tools for this research was done to assist the less learned but with care not to influence or distort the judgment of the participants. The principal researcher, through trained health workers for data collection, gave the participant's information sheet to eligible and willing participants at the various schools designated for data collection.

This was an immunization card intervention, that enabled us to take every opportunity to review a school pupil's vaccination history and give them appropriate catch-up vaccines, as needed. If a pupil has not received the vaccines scheduled in the National Immunization Program appropriate for their age, we planned and ensured this the pupil got the missed vaccines with their parent's consent in a health facility.

We orientated and trained data collector and School PTAs on the national immunization guidelines.

We monitored, followed – up and had one on one coaching for parents, phone-based counselling focus on Father's engagement for their children's immunization.

We provided information on the immunization clinics with hospital services sites and hours.

We conducted follow up with parents regarding measles vaccine status and some secondary vaccines.

Children that missed vaccination were tracked out more and vaccinated, demand generation increased with the help of vaccine demand pooling in school for secondary vaccines like cholera, chicken pox, and mumps vaccines, the awareness of vaccine-preventable diseases that were created more at different schools Parents Teachers Association's meetings, all these outputs and many more achieved with our implementation will go a long way, and directly or indirectly increase the immunization outcome. This is one of the measures (Implementation Research) and a component in the Immunization Agenda 2030 (IA 2030) stated/designed to achieve the Life course immunization we are all preaching globally.

All data was coded, entered, and then analysed using PSPP. Descriptive results were expressed as frequencies, percentages for categorical variables, and as means ± SD for continuous variables.

Ethical Considerations

Ethical approval was be obtained from the Research and Ethics Committee of Lagos University Teaching Hospital [7]. Permission was obtained from the Lagos state ministry of Education and Lagos state Ministry of Health [8] before the commencement of the research (intervention). Participation was voluntary, all the participants were required to provide written informed consent, and they were assured of the confidentiality regarding information collected from them.

Results/Outcomes

We achieved our objectives. Our success was **measured** by the number of admitted pupils in schools whose immunization were up to date as a result of my intervention. What we **achieved** for COVID-19 recovery through our activities were to ensure that every child that has missed vaccination was vaccinated and the zero – dose children can be identified and properly vaccinated with their parents' consent.

Impact: Reduced the number of missed vaccinations in private nursery and primary school of Kosofe Local Government area. We found only one zero dose child that required immunization through her older siblings.

Indicators: I used to monitor progress and measure impact [9,10]:

1. Proportion of children whose immunization are up to date (e.g., DPT1 Measles second dose, etc).
2. Number of zero – dose children identified and followed up on their routine immunization.
3. Proportion of parents who can correctly identify the benefit of immunization (pre/post).

Outcomes

1. Identified, prioritized, and vaccinated populations that are underserved by routine immunization services.
2. The target age group was expanded in school based intervention, which rapidly helped to vaccinate children who were overdue for vaccination.
3. The intervention rapidly increased demand for measles first and second doses and other routine immunization services.
4. The implementation research strengthened microplanning skills to ensure inclusion of populations at high risk of under-vaccination like Oworoshoki.
5. In Ogudu the vaccine demand pooling helped parents who had twins or triplets to be able to afford to pay for some secondary vaccines to prevent Cholera, Chicken pox and Mumps (pulse immunization).

Table 1. Year of Birth

Value Label	Value	Frequency
-	2011	1
-	2012	3
-	2013	6
-	2014	3
-	2015	9
-	2016	5
-	2017	19
-	2018	19
-	2019	24
-	2020	29
-	2021	11
-	2022	6
Total		135

The total number of immunization cards reviewed was 135, The mean, median, modal year of birth and standard deviation of respondents were 2018, 2019, 2020 and 2.46. The youngest respondent was born in 2011 and the oldest respondent were born 2022.

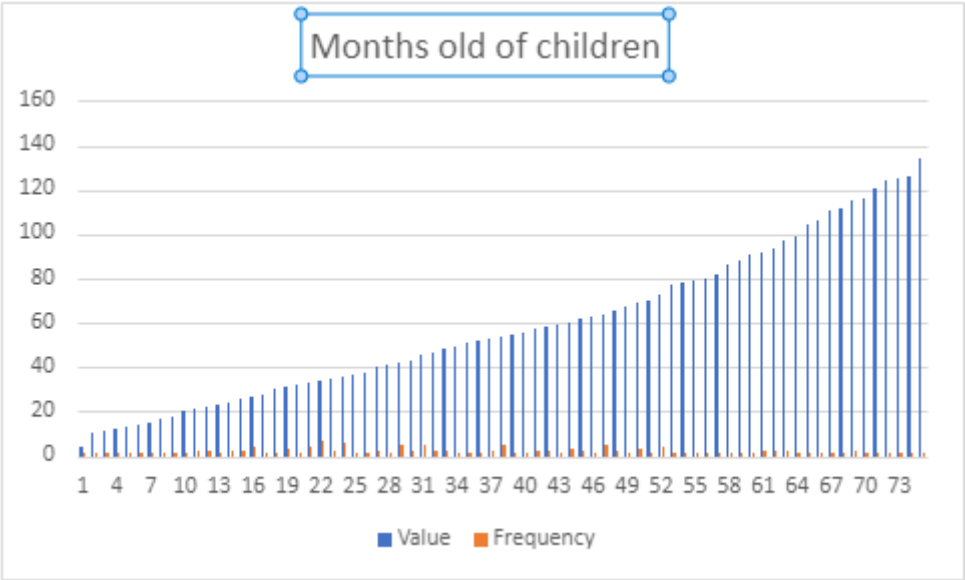

Figure 3. Months Old of Children

The modal months old of respondents were 34 months. The youngest respondent was 4 months old, and the oldest respondent was 134 months old.

Children that are females were 48.89% and 51.11% were males.

Table 2. Sex of Children

Value Label	Frequency	Percent
Female	66	48.89
Male	69	51.11
Total	135	100

Table 3. Name of School

Value Label	Frequency	Percent
Twinkle Star School Ifako Gbagada	20	14.81
Pelade School Ifako Gbagada	16	11.85
Pelade School Oworoshoki	32	23.70
Living Faith school Ifako Gbagada	8	5.93
Labeo school Sawmill Gbagada	14	10.37
Bethany Hall school Ogudu	20	14.81
Janet and John School Soluyi Gbagada	10	7.41
St. Gerald Catholic church Soluyi Gbagada	9	6.67
Joy Foundation NGO Gbagada	6	4.44
Total	135	100.0

The school we reviewed highest number of immunization cards was Pelade school Owroshoki (23.70%), followed by Twinkle star school Ifako Gbagada and Bethany Hall school Ogudu (14.81% respectively).

Table 4. Location

Value Label	Frequency	Percent
Ifako Gbagada	50	37.04
Sawmill Gbagada	14	10.37
Soluyi Gbagada	19	14.07
Oworoshooki	32	23.70
Ogudu	20	14.81
Total	135	100.0

We reviewed 37.04% of immunization cards from Ifako Gbagada, 23.70% of immunization cards from Oworoshoki, and the least immunization cards reviewed were from Sawmill Gbagada.

Vaccine uptake from 0 – 9 years.

Table 5. Cholera Vaccine @ 12 Months Before and After Intervention

Before Intervention				After intervention			
Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	127	94.07	No	0	115	85.19
Yes	1	8	5.93	Yes	1	20	14.81
Total		135	100.0	Total		135	100.0

Before intervention, 5.93% of school children took Cholera vaccine @ 12 months and after intervention 14.81% took the first dose of cholera vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 12 months cholera vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 6. Cholera Vaccine @ 12.5 Months Before and After Intervention

Before intervention				After intervention			
Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	127	94.07	No	0	115	85.19
Yes	1	8	5.93	Yes	1	20	14.81
Total		135	100.0	Total		135	100.0

Before intervention, 5.93% of school children took Cholera vaccine @ 12.5 months and after intervention 14.81% took the second dose of cholera vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 12.5 months cholera vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 7. Measles Vaccine @ 9 Months Before and After Intervention

Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	9	6.67	No	0	2	1.48
Yes	1	126	93.33	Yes	1	133	98.52
Total		135	100.0	Total		135	100.0

Before intervention, 93.33% of school children took Measles vaccine @ 9 months and after intervention 98.52% took the first dose of measles vaccine with the help of follow-up calls and referral to a health facility.

Table 8. Measles 2nd Dose Vaccine @ 15 Months Before and After Intervention

Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	44	32.59	No	0	27	20.00
Yes	1	91	67.41	Yes	1	108	80.00
Total		135	100.0	Total		135	100.0

Before intervention, 67.41% of school children took Measles vaccine @ 15 months and after intervention 80% took the second dose of measles vaccine with the help of follow-up calls and referral to a health facility.

Table 9. Meningococcal Conjugate Vaccine @ 9 Months Before and After Intervention

Before intervention				After intervention			
Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	35	25.93	No	0	28	20.74
Yes	1	100	74.07	Yes	1	107	79.26
Total		135	100.0	Total		135	100.0

Before intervention, 74.07% of school children took Meningococcal vaccine @ 9 months and after intervention 79.26% took the first dose of meningococcal vaccine with the help of follow-up calls and referral to a health facility.

Table 10. Meningococcal Conjugate Vaccine @ 12 Months Before and After Intervention

Before intervention				After intervention			
Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	121	89.63	No	0	119	88.15
Yes	1	14	10.37	Yes	1	16	11.85
Total		135	100.0	Total		135	100.0

Before intervention, 10.37% of school children took Meningococcal vaccine @ 12 months and after intervention only 11.85% took the second dose of meningococcal vaccine with the help of follow-up calls and referral to a health facility. This is because at 12 months meningococcal vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 11. MMR Measles Mumps Rubella Vaccine @ 12 Months Before and After Intervention

Before intervention				After intervention			
Value Label	Value	Frequency	Percent	Value Label	Value	Frequency	Percent
No	0	115	85.19	No	0	100	74.07
Yes	1	20	14.81	Yes	1	35	25.93
Total		135	100.0	Total		135	100.0

Before intervention, 14.81% of school children took MMR Measles Mumps Rubella vaccine @ 12 months and after intervention 25.93% took the first dose of MMR Measles Mumps Rubella vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 12 months MMR vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 12. MMR Measles Mumps Rubella Vaccine @ 13 Months Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	119	88.15	No	0	104	77.04
Yes	1	16	11.85	Yes	1	31	22.96
Total		135	100.0	Total		135	100.0

Before intervention, 11.85% of school children took MMR Measles Mumps Rubella vaccine @ 13 months and after intervention 22.96% took the second dose of MMR Measles Mumps Rubella vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 13 months MMR vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 13. Hepatitis B Vaccine @ Birth Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took Hepatitis B vaccine @ birth and after intervention 100% took the first dose of hepatitis B vaccine because we identified a zero dose and referred to a health facility.

Table 14. Hepatitis A Vaccine @ 18 Months Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	119	88.15	No	0	117	86.67
Yes	1	16	11.85	Yes	1	18	13.33
Total		135	100.0	Total		135	100.0

Before intervention, 11.85% of school children took hepatitis A vaccine @ 18 months and after intervention only 13.3% took the hepatitis A vaccine @ 18 months with the help of follow-up calls and referral to a health facility. This is because at 18 months Hepatitis A vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 15. Hepatitis A Vaccine @ 2 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	122	90.37	No	0	120	88.89
Yes	1	13	9.63	Yes	1	15	11.11
Total		135	100.0	Total		135	100.0

Before intervention, 9.63% of school children took hepatitis A vaccine @ 2 years and after intervention only 11.11% took the second dose of hepatitis A vaccine @ 2 years with the help of follow-up calls and referral to a health facility. This is because at 2 years Hepatitis A vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 16. Yellow Fever Vaccine @ 9 Months Before and After Intervention

Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	10	7.41	No	0	2	1.48
Yes	1	125	92.59	Yes	1	133	98.52
Total		135	100.0	Total		135	100.0

Before intervention, 92.59% of school children took yellow fever vaccine @ 9 months and after intervention 98.52% took the second dose of yellow fever vaccine with the help of follow-up calls and referral to a health facility, the 1.48% that haven't received yellow fever vaccine were not up to 9 months old.

Table 17. Typhoid Vaccine @ 2 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	122	90.37	No	0	120	88.89
Yes	1	13	9.63	Yes	1	15	11.11
Total		135	100.0	Total		135	100.0

Before intervention, 9.63% of school children took typhoid vaccine @ 2 years and after intervention only 11.11% took the second dose of typhoid vaccine @ 2 years with the help of follow-up calls and referral to a health facility. This is because at 2 years typhoid vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 18. Typhoid Vaccine @ 5 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	133	98.52	No	0	131	97.04
Yes	1	2	1.48	Yes	1	4	2.96
Total		135	100.0	Total		135	100.0

Before intervention, 1.48% of school children took typhoid vaccine @ 5 years and after intervention only 2.96% took the second dose of typhoid vaccine @ 5 years with the help of follow-up calls and referral to a health facility. This is because at 5 years typhoid vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 19. Varicella Vaccine @12 Months Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	116	85.93	No	0	108	80.00
Yes	1	19	14.07	Yes	1	27	20.00
Total		135	100.0	Total		135	100.0

Before intervention, 14.07% of school children took varicella vaccine @ 12 months and after intervention only 20% took the second dose of varicella vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 12 months varicella vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 20. Varicella Vaccine @ 13 Months Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	121	89.63	No	0	111	82.22
Yes	1	14	10.37	Yes	1	24	17.78
Total		135	100.0	Total		135	100.0

Before intervention, 10.37% of school children took varicella vaccine @ 13 months and after intervention only 17.78% took the second dose of varicella vaccine with the help of vaccine demand pooling discounts from R Jolad hospital Gbagada. This is because at 13 months varicella vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 21. Vitamin A @ 6 Months Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	2	1.48	No	0	1	0.74
Yes	1	133	98.52	Yes	1	134	99.26
Total		135	100.0	Total		135	100.0

Before intervention, 98.52% of school children took vitamin A @ 6 months and after intervention 99.26% took the vitamin A @ 6 months with the help of follow-up calls and referral to a health facility, the 0.74% that haven't received vitamin A were not up to 6 months old.

Table 22. Vitamin A @ 12 Months Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	18	13.33	No	0	10	7.41
Yes	1	117	86.67	Yes	1	125	92.59
Total		135	100.0	Total		135	100.0

Before intervention, 86.6% of school children took vitamin A @ 12 months and after intervention 92.59% took the vitamin A @ 12 months with the help of follow-up calls and referral to a health facility, the 7.41% that haven't received vitamin A were not up to 12 months old.

Table 23. BCG Vaccine @ Birth Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took BCG vaccine @ birth and after intervention 100% took the BCG vaccine because we identified a zero dose and referred to a health facility.

Table 24. Dtap - IPV - HepB - Hib Vaccine @ 6 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took Dtap - IPV - HepB - Hib vaccine @ 6 weeks and after intervention 100% took Dtap - IPV - HepB - Hib vaccine @ 6 weeks because we identified a zero dose and referred to a health facility.

Table 25. DTaP - IPV - HepB – Hib Vaccine @ 10 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took Dtap - IPV - HepB - Hib vaccine @ 10 weeks and after intervention 100% took Dtap - IPV - HepB - Hib vaccine **@** 10 weeks because we identified a zero dose and referred to a health facility.

Table 26. DTaP - IPV - HepB - Hib Vaccine @ 14 Weeks Before and Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took Dtap - IPV - HepB - Hib vaccine @ 14 weeks and after intervention 100% took Dtap - IPV - HepB - Hib vaccine **@** 14 weeks because we identified a zero dose and referred to a health facility.

Table 27. DTaP - IPV - HepB - Hib Vaccine @ 18 Months Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	103	76.30	No	0	102	75.56
Yes	1	32	23.70	Yes	1	33	24.44
Total		135	100.0	Total		135	100.0

Before intervention, 23.70% of school children took Dtap - IPV - HepB - Hib vaccine @ 18 months and after intervention 24.44% took Dtap - IPV - HepB - Hib vaccine **@** 18 months**.** This is because at 13 months varicella vaccine is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 28. Flu Vaccine @ 6 Months Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	127	94.07	No	0	124	91.85
Yes	1	8	5.93	Yes	1	11	8.15
Total		135	100.0	Total		135	100.0

Most of the children (94.07%) @ 6 months did not receive flu vaccine before intervention and only 8.15% received flu vaccine after intervention.

Most of the children (94.07%) @ 7 months did not receive flu vaccine before intervention and after intervention.

Table 29. Flu Vaccine @ 7 Months Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	127	94.07	No	0	127	94.07
Yes	1	8	5.93	Yes	1	8	5.93
Total		135	100.0	Total		135	100.0

Table 30. Flu Vaccine @ 2 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	133	98.52	No	0	131	97.04
Yes	1	2	1.48	Yes	1	4	2.96
Total		135	100.0	Total		135	100.0

Most of the children (98.52%) ages 2 and above did not receive flu vaccine before intervention and only 2.96% received flu vaccine after intervention.

None of the children aged 3 and above received flu vaccine before intervention and only 1.48% received flu vaccine after intervention.

Table 31. Flu Vaccine @ 3 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	135	100.00	No	0	133	98.52
Yes	1	0	0	Yes	1	2	1.48
Total		135	100.0	Total		135	100.0

Table 32. Flu Vaccine @ 4 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	135	100.00	No	0	135	100.00
Total		135	100.0	Total		135	100.0

None of the children aged 4 and above have received flu vaccine, this is because of high cost and lack of awareness by some parents that flu vaccine exits, and which health facility has flu vaccine.

Table 33. Flu Vaccine @ 5 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	135	100.00	No	0	135	100.00
Total		135	100.0	Total		135	100.0

None of the children aged 5 and above have received flu vaccine, this is because of high cost and lack of awareness by some parents that flu vaccine exits, and which health facility has flu vaccine.

Table 34. HPV Human Papillomavirus Vaccine @ 9 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	135	100.00	No	0	135	100.00
Total		135	100.0		Total	35	100.0

None of the children aged 9 and above have received HPV vaccine, this is because of high cost and lack of awareness by some parents that HPV vaccine exits, and which health facility has HPV vaccine.

Table 35. OPV @ Birth Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took OPV @ birth and after intervention 100% took OPV **@** birth because we identified a zero dose and referred to a health facility.

Table 36. OPV @ 6 Weeks Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took OPV @ 6 weeks and after intervention 100% took OPV **@ 6** weeks because we identified a zero dose and referred to a health facility.

Table 37. OPV @ 10 Weeks Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took OPV @ 10 weeks and after intervention 100% took OPV **@ 10** weeks because we identified a zero dose and referred to a health facility.

Table 38. OPV/1PV @ 14 Weeks Before and After Intervention

Before intervention				**After intervention**			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	1	0.74	No	0	0	0
Yes	1	134	99.26	Yes	1	135	100.00
Total		135	100.0	Total		135	100.0

Before intervention, 99.26% of school children took OPV/IPV @ 14 weeks and after intervention 100% took OPV/IPV **@ 14** weeks because we identified a zero dose and referred to a health facility.

Table 39. PCV Pneumococcal Conjugate Vaccine @ 6 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	22	16.30	No	0	21	15.56
Yes	1	113	83.70	Yes	1	114	84.44
Total		135	100.0	Total		135	100.0

Before intervention, 83.70% of school children took PCV Pneumococcal Conjugate Vaccine @ 6 weeks and after intervention 84.44% took PCV Pneumococcal Conjugate Vaccine @ 6 weeks.

Table 40. PCV Pneumococcal Conjugate Vaccine @ 10 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	22	16.30	No	0	21	15.56
Yes	1	113	83.70	Yes	1	114	84.44
Total		135	100.0	Total		135	100.0

Before intervention, 83.70% of school children took PCV Pneumococcal Conjugate Vaccine @ 10 weeks and after intervention 84.44% took PCV Pneumococcal Conjugate Vaccine @ 10 weeks.

Table 41. PCV Pneumococcal Conjugate Vaccine @ 14 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	22	16.30	No	0	21	15.56
Yes	1	113	83.70	Yes	1	114	84.44
Total		135	100.0	Total		135	100.0

Before intervention, 83.70% of school children took PCV Pneumococcal Conjugate Vaccine @ 14 weeks and after intervention 84.44% took PCV Pneumococcal Conjugate Vaccine @ 14 weeks.

Table 42. Rotavirus Vaccine @ 6 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	82	60.74	No	0	79	58.52
Yes	1	53	39.26	Yes	1	56	41.48
Total		135	100.0	Total		135	100.0

Before intervention, 39.26% of school children took rotavirus Vaccine @ 6 weeks and after intervention 41.48% took rotavirus Vaccine @ 6 weeks.

Table 43. Rotavirus Vaccine @ 10 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	85	62.96	No	0	82	60.74
Yes	1	50	37.04	Yes	1	53	39.26
Total		135	100.0	Total		135	100.0

Before intervention, 37.04% of school children took rotavirus Vaccine @ 10 weeks and after intervention 39.26% took rotavirus Vaccine @ 10 weeks.

Table 44. Rotavirus Vaccine @ 14 Weeks Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	133	98.52	No	0	130	96.30
Yes	1	2	1.48	Yes	1	5	3.70
Total		135	100.0	Total		135	100.0

Before intervention, 1.48% of school children took rotavirus Vaccine @ 14 weeks and after intervention 3.70% took rotavirus Vaccine @ 14 weeks. This third dose of rotavirus vaccine was introduced August 2022 and implementation in Lagos government health facilities started in December 2022.

Table 45. TdaPIPV Booster @ 5 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	133	98.52	No	0	133	98.52
Yes	1	2	1.48	Yes	1	2	1.48
Total		135	100.0	Total		135	100.0

Before intervention, 1.48% of school children took TdaPIPV Booster @ 5 years and after intervention. This is because at 5 years TdaPIPV Booster is not given to children free in government health facilities and can only be found at private hospital at a very high cost.

Table 46. Vitamin A @ 18 Months Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	38	28.15	No	0	32	23.70
Yes	1	97	71.85	Yes	1	103	76.30
Total		135	100.0	Total		135	100.0

Before intervention, 71.85% of school children took vitamin A @ 18 months and after intervention 76.30% took the vitamin A @ 18 months with the help of follow-up calls and referral to a health facility.

Table 47. Vitamin A @ 2 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	57	42.22	No	0	50	37.04
Yes	1	78	57.78	Yes	1	85	62.96
Total		135	100.0	Total		135	100.0

Before intervention, 57.78% of school children took vitamin A @ 2 years and after intervention 62.96% took the vitamin A @ 2 years with the help of follow-up calls and referral to a health facility.

Table 48. Vitamin A @ 2.5 Years Before Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	74	54.81	No	0	63	46.67
Yes	1	61	45.19	Yes	1	72	53.33
Total		135	100.0	Total		135	100.0

Before intervention, 45.19% of school children took vitamin A @ 2.5 years and after intervention 53.33% took the vitamin A @ 2.5 years with the help of follow-up calls and referral to a health facility.

Table 49. Vitamin A @ 3 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	81	60.00	No	0	69	51.11
Yes	1	54	40.00	Yes	1	66	48.89
Total		135	100.0	Total		135	100.0

Before intervention, 40% of school children took vitamin A @ 3 years and after intervention 49.89% took the vitamin A @ 3 years with the help of follow-up calls and referral to a health facility.

Table 50. Vitamin A @ 3.5 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	92	68.15	No	0	83	61.48
Yes	1	43	31.85	Yes	1	52	38.52
Total		135	100.0	Total		135	100.0

Before intervention, 31.85% of school children took vitamin A @ 3.5 years and after intervention 38.52% took the vitamin A @ 3.5 years with the help of follow-up calls and referral to a health facility.

Table 51. Vitamin A @ 4 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	97	71.85	No	0	91	67.41
Yes	1	38	28.15	Yes	1	44	32.59
Total		135	100.0	Total		135	100.0

Before intervention, 28.15% of school children took vitamin A @ 4 years and after intervention 32.59% took the vitamin A @ 4 years with the help of follow-up calls and referral to a health facility.

Table 52. Vitamin A @ 4.5 Years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	102	75.56	No	0	96	71.11
Yes	1	33	24.44	Yes	1	39	28.89
Total		135	100.0	Total		135	100.0

Before intervention, 24.4% of school children took vitamin A @ 4.5 years and after intervention 28.89% took the vitamin A @ 4.5 years with the help of follow-up calls and referral to a health facility.

Table 53. Vitamin A @ 5 years Before and After Intervention

Before intervention				After intervention			
Value Label	**Value**	**Frequency**	**Percent**	**Value Label**	**Value**	**Frequency**	**Percent**
No	0	112	82.96	No	0	101	74.81
Yes	1	23	17.04	Yes	1	34	25.19
Total		135	100.0	Total		135	100.0

Before intervention, 17.04% of school children took vitamin A @ 5 years and after intervention 25.19% took the vitamin A @ 5 years with the help of follow-up calls and referral to a health facility.

Discussion

We used various school's WhatsApp group to communicate with parents and distributed paper respondent informed consent form to over 2,000 parents [11], the principal researcher used her LinkedIn, Facebook, Instagram, webinars, and WhatsApp to increase awareness on routine immunization [12-15]. We talked to 100 parents at PTA Janet and John school Soluyi on 15th October 2022, 36 parents at Pelade school Gbagada on 25th October 2022 and 70 parents at Pelade school Oworoshoki on 21st October 2022, 50 parents at Twinkle star school Gbagada PTA meeting and 40 parents on November 11th, 2022, at Bethany Hall school Ogudu PTA meeting on November 12th, 2022, about childhood immunization. We also went to a church NGO (Joy foundation Ifako Gbagada) on December 17th, 2022, to talked to 100 parents about childhood immunization and increase their knowledge about childhood vaccination. On December 18th, 2022, we talked to about 55 mothers at November meeting for Catholic Women Organization St. Gerald Catholic Church Soluyi Gbagada about immunization for children and increase their knowledge about vaccination. Parents asked a lot of questions

regarding childhood immunization, and we answered all of them.

From our observation the category of parents that ensure that their children get all necessary vaccines are those that waited for a year or more 10 or 15 years before conceiving or birthing. The ones that got theirs after 9 months of being married don't care or go extra mile or willing to make any sacrifice. The immunization cards we reviewed shows that information and education about vaccination is power. Some parents weren't willing to release photocopy of their children's vaccination card for us to review. Some think that government health facility gives their children all the necessary immunization which is not true. There were some parents who took prompt action to get their children fully immunized as a result of our intervention but didn't want to release their children's immunization cards. There also were some parents who were willing to participate in this research, but their children's immunization cards were missing.

The implementation research approach we designed and used can be found on Odis Adaora Isabella's LinkedIn [14]. Federal ministry of health disclosed in February 2023 that it has concluded plans to introduce malaria and Human Papilloma Virus (HPV) into the routine immunization programme in Nigeria to boost the health of the population. Minister of health. [16], this will help the uptake of HPV vaccine among girls ages 9 years and above. The main challenges in scaling up this implementation research were lack of meaningful involvement of policymakers in the whole process, grant was not released on time, hospital leadership and management as regards to proper communication and reporting of field work (intervention) resulting to not keeping up with intervention appointment in a school, and health systems capacity [17-18]. Intervention efficacy, in the health care sector, is the capacity of a given intervention under ideal or controlled conditions [19]. Intervention effectiveness is the ability of an intervention to have a meaningful effect on patients in normal clinical conditions [19]. Implementation Effectiveness is doing "the right" things, for example setting the right targets to achieve an overall goal (the effect) [19]. It is the extent to which planned outcomes, goals, or objectives are achieved as a result of an activity, intervention, or initiative intended to achieve the desired effect, under ordinary circumstances [19]. Out of 135 immunization cards reviewed, 90 children received some catch-up immunization for missed vaccines and 1 child with zero dose and 1 child with zero dose started taking immunization which will decrease the spread of diphtheria in Lagos (5, 1%) [20], measles, Cholera [6], mumps and chicken pox. We plan to continue with school and church vaccination demand pooling to increase demand for secondary vaccination such as Cholera, Chicken pox, MMR, Hepatitis A, Meningococcal conjugate vaccine, Typhoid and HPV. This will help reduce outbreak of Cholera and child mortality [6].

Recommendation

1. Working as a TEAM makes the work easier and faster, effective communication like report writing, feedbacks and follow ups are very important in implementing any research or intervention.
2. Leveraging our networks helped also to get the vaccine demand pooling discounts approved from R Jolad hospital Lagos and rolled out.
3. Lagos State government should monitor how their health workers treat parents that bring their children for immunization and install CCTV in various government health facilities.
4. This implementation research can fit into the existing monitoring and evaluation of Nigeria's immunization work plan, but it does require Lagos state to enforce this new practice or system of ensuring pupils vaccination are up to date using their immunization card as a checklist in nursery and primary schools.

5. Creating awareness and sensitization is very important in schools, especially using the power of storytelling for positive change in vaccination uptake. There are parents who can afford to pay for secondary vaccines but don't have the information and there are parents who have the information but can't afford to pay for secondary vaccines due to the present economic hardship in Nigeria. We recommend that vaccine demand pooling in schools is championed to enable parents to afford secondary vaccines for their children.
6. Parents are advised to keep their children's immunization cards properly because immunization is a life course, and the children may need their immunization cards when they want to travel abroad.

Conclusion

Timely vaccination is key to maintaining population immunity against vaccine-preventable diseases (VPDs), ensuring populations are fully protected against life-threatening illnesses as early as possible, and preventing large outbreaks of VPDs. However, scheduled vaccinations may be missed for a number of context-specific reasons (e.g., pandemic lockdown, lack of time by parents to take their children to a health facility for immunization, health system barriers like vaccine equity, attitude of health care workers, stock outs, cash crunch, Bank transfer failures, cost of secondary vaccine).

School-based catch-up immunization for children can increase vaccination demand and ensure that children with missed immunization are reached and fully immunized. We derive joy when a child is fully immunized so as to prevent a vaccine-preventable disease such as cholera, Measles, Mumps, Rubella, and chicken pox. We empowered women in terms of increasing their knowledge about childhood immunization. It's better hire a female parent from a school to work with them because they can serve as gatekeepers in a school-based implementation research or intervention. We also gave the mothers ₦1,000 for transportation for each child so that they can complete their immunization which was really appreciated by parents. Creating awareness and sensitization is very important in schools, especially using the power of storytelling for positive change in vaccination uptake. There are parents who can afford to pay for secondary vaccines but don't have the information and there are parents who have the information but can't afford to pay for secondary vaccines due to the present economic hardship in Nigeria. We recommend that vaccine demand pooling in schools is championed to enable parents to afford secondary vaccines for their children**.**

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Limitation

The study lacks a control group, which limits the ability to draw causal inferences from the findings.

Conflicts of Interest

The author declares no conflict of interest.

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