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Review Article

Fully Immunised for age Project (FIFAP): Challenges Affecting a Hospital Based Intervention for Missed Opportunities for Vaccination in a low-Resource Setting

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Abstract

Background:
Missed opportunity for vaccination (MOV) refers to any contact with health services by an individual who is eligible for vaccination and free from contraindications to vaccination, which does not result in the person receiving one or more of the vaccine doses for which he or she is eligible. Eliminating MOV may be difficult to achieve in low-resource settings due to obvious paucity of resources. Hence there is need for identification and follow-up of missed opportunity for vaccination (MOV) cases that visit health facilities and analyze the challenges faced during such interventions in order to effectively improve on immunization coverage.
Methods:
Exit interviews were conducted for mother/child pairs of under-five children consecutively as they visited the preventive and the curative sections of Federal Medical Centre, Umuahia Nigeria from January 2019 to December 2020. The MOV cases identified in this process were followed up on phone till they were fully immunized for age according to the National Program on Immunization (NPI) schedule.
Results:
One thousand and eight MOV cases were identified and followed up over the period. Five hundred and forty-five were males while 463 were females, with a M:F ratio of 1.2:1. Nine hundred and thirty-two (92.5%) completed their NPI scheduled vaccines. The first 200 (20%) to complete their vaccinations according to the NPI schedule were rewarded with N500 (1$) recharge card or its monetary equivalent. Seventy-six (7.5%) could not be accessed on phone.
The barriers that affected this intervention include: No available phone contacts in 29 (2.9%), inaccessible phone numbers 37(3.7%), and ten mortalities (0.9%) as at the time of this report. The other social barriers that affected access to vaccination as at when due were; the globalcovid19 lockdown and the frequent compulsory sit-at home demonstrations in southeastern Nigeria.
Conclusion:
Barriers exist that hinder the follow-up of MOV cases. Hence, all the vaccines should be made available every day to every eligible child that visits health facilities to effectively eliminate MOV.

Keywords: Project; Challenges; Intervention; low-resource; Umuahia

Introduction:

Missed opportunity for vaccination (MOV) refers to any contact with health services by an individual who is eligible for vaccination and free from contraindications to vaccination, which does not result in the person receiving one or more of the vaccine doses for which he or she is eligible.[1] It is a significant cause of poor immunization coverage and resurgence of vaccine preventable diseases.[2] Immunization is one of the most successful and cost-effective interventions for reducing childhood illnesses and mortality and currently prevents 4-5 million deaths every year.[3] It prevents deaths in all age groups from diseases like diphtheria, tetanus, pertussis (whooping cough), influenza and measles.[3]

As a way of combating poor immunization coverage, the Expanded Program on Immunization Global Advisory Group (GAG) recommended that immunization be provided to all eligible persons at every contact with a health facility.[4] It was also recommended that missed opportunity surveys be used to routinely monitor immunization programs in all regions.[2] Surveys on MOV could be community-based or health facility-based. However, studies done in health facilities make it possible to more accurately assess why a child who goes to a health facility with a parent/guardian is not given the necessary vaccines despite having no contraindications for vaccination.[5]

A review of 45 studies on MOV done in middle-and low-income countries by Sridhar et al [6] showed a significant pooled MOV prevalence estimate of 32.2%.[6] Hence, there is need for intervention programs and follow-up of MOV cases especially in low resource settings in order to improve their immunization coverage rates.

Despite all the noted benefits of immunization, vaccines may not be readily available especially for unscheduled visits in low resource settings, in order to avoid wastage. [7] Healthcare in low resource settings is plagued by financial pressure, suboptimal healthcare service, underdeveloped infrastructure, paucity of knowledge, research challenges and considerations, geographical and environmental factors, human resource limitations and the influence of beliefs and practices. [8] It was observed that the major cause of MOV in low resource settings is the existence of non-immunization days (in order to avoid wastage of vaccines) in Nigeria, Chad and Malawi.[7][9][11][12] On such non-immunization days, eligible children who are partially vaccinated or unvaccinated visit the health facilities and go home without receiving the needed vaccines.

Studies have shown that simple, low-cost, pragmatic and community-driven interventions may reduce MOVs and improve vaccine coverage.[13] However, the follow-up of MOV cases are not without challenges. Analyzing these challenges will help proffer better ways to effectively salvage and eliminate MOVs in health facilities in low-resource areas. An intervention project called Fully Immunized for Age Project (FIFAP) was carried out at the Federal Medical Centre Umuahia, Abia State, South-eastern Nigeria from January 2019 to December 2021. The project identified MOV cases over the period and followed them up via phone-calls till they were fully immunized for age. This study aims to describe the challenges faced during the follow-up of the MOV cases among the under-fives at the Federal Medical Centre Umuahia, Nigeria.

Materials and methods

Two research assistants were trained to conduct exit interviews for caregiver/child pairs of under-five children consecutively, as they exited the preventive (immunization clinic) and curative sections (children out-patient clinic [CHOP], children emergency ward [CHEW] and the maternity ward) of the hospital from January 2019 to December 2020. The partially or unimmunized cases were identified by checking their National Program on Immunization (NPI) routine immunization cards or by recall for those whose NPI cards were not available. Ethical clearance was gotten from the Hospital Research and Ethics Committee before the commencement of the project. The identified partially immunized/ unimmunized children were sent to the immunization clinic to receive the available needed vaccines while those whose needed vaccines were not available were followed up on phone at least twice till they were fully immunized for age.

The first 200 MOV cases to complete their NPI routine vaccinations (2nd dose of measles

at 15 months of age) were rewarded with N500 ($1) worth of GSM recharge card or its monetary equivalent on showing their immunization card/certificate (hard copies or soft copies were accepted).

Results:

One thousand and eight MOV cases were identified from January 2019 to December 2020. Five hundred and forty-five (54%) were males while 463 (46%) were females with a M:F ratio of 1.2:1.

Two hundred and ten (21%) MOV cases were from the curative sections (CHOP and CHEW), 208 (20.6%) were from the maternity ward while 590 (58.5%) were from the immunization clinic.

Nine hundred and thirty-two (92.5%) of the MOV cases identified completed their NPI scheduled vaccines. The first 200 (20%) to show their completed NPI cards / certificate were rewarded with N500 ($1 USD) worth of recharge/call card or its monetary equivalent. Seventy-six (7.5%) could not be accessed via GSM.

Physical barriers: Seventy-six (7.5%) were not effectively followed up due to; twenty-nine (2.9%) had no phone contacts, thirty-seven phone numbers were not accessible (3.7%) while ten of the children died before completing their vaccines (0.9%).

Timing/System barrier: The unvaccinated newborns delivered and discharged home over the weekends and late in the evenings were neither captured in this study nor vaccinated before they were discharged home.

The social barriers that affected timeliness to access to vaccination as at when due were the global covid19 lockdown in April/May 2020 and the frequent compulsory sit-at-home separatists' demonstrations in southeastern Nigeria from August 2021till date.

Discussion:

The follow-up of MOV cases is very needful in resource poor settings in order not to lose them to follow-up. The Federal Government of Nigeria has strived over the last ten years (2012-2022) to introduce more vaccines into the NPI schedule and increased the rate of vaccination of some vaccines like the pentavalent, oral polio and hepatitis vaccines to more than once a week. However, in Federal Medical Centre Umuahia and most public health facilities in Nigeria, some vaccines like the Bacille Calmette Guerrin (BCG) vaccine for protection against Tuberculosis and the yellow fever vaccines are still being given once a week. More so, a vial is not opened (to avoid wastages) when there are not ten babies to exhaust the ten doses in a vial of

BCG for instance. Hence, caregivers are sent home if the available number of babies cannot use a full vial. In addition to that, unscheduled partially vaccinated or unvaccinated children who visit the hospital for other purposes on non- immunization days of a particular vaccine, go home as missed opportunity for vaccination cases and may be lost to follow-up. MOV is a major contributor to low immunization coverage and the main cause of MOV in low-resource health facilities as noted in Umuahia, Nnewi, Benin, Chad and Malawi is the existence of non-immunization days in public hospitals.[7][9][10][11] Most MOV cases identified on the non-immunization days go home without getting the needed vaccines and may end up being lost to follow-up.

A systematic review of strategies for reducing MOV noted that patient education, patient tracking and provider prompts reduce MOV though rigorous studies are required to confirm these findings and increase the certainty of the current evidence base.[13] In the index intervention study, the method used to salvage the MOV cases was to follow them up on phone to ensure they either came back to our health facility to complete their needed vaccines or they go to any health facility near them. This method of intervention was effective in mopping up the MOV cases identified except those who could not be reached on phone and the mothers who lost their babies before being fully immunized according to the NPI schedule. This method of intervention was not captured in the new WHO guide-book for reducing MOV.[1] This could be as a result of the fact that the focus was actually on preventing MOV but did not focus on following up the identified MOV cases. However, the use of social media to send text messages and phone-calls were one of the caregiver level work plans for addressing MOV in Malawi and Jordan. [12][14]. The American Academy of Family Physicians National Research Network used the multicomponent intervention which included provider reminders, quarterly provider-level performance reports, provider education, patient visual aid materials, and standing orders on adult pneumococcal, influenza, and zoster immunizations. Individual and comparative provider-level vaccination rates and missed opportunities detailing concordance with targets established by Healthy People 2020 for pneumococcal, influenza, and zoster immunizations were assessed with significant increase in vaccination rates over 12 months. [15] It was noted that provider reminders remain the most effective strategy when delivered either as a component of these interventions or alone. This can be true in a high-resource settings like America where all vaccines are readily available every day unlike in their low-resource counterparts.

In Cambodia [16], a WHO supported MOV-lite implementation for MOH staff and Immunization partners at national level was done which involved a workshop to identify causes and brainstorming about activities to reduce MOV. However, the impact of the program is yet to be evaluated.

Other methods of intervention noted in the new WHO guidebook were: increasing number of days of vaccination to daily, making a vaccination defaulters list, use of coupons on MOV folders, electronic reminders for health workers and training of health workers on false contraindications.[1]

Though majority of the MOV cases in the index intervention study were followed up till they

completed their NPI scheduled vaccinations, some challenges were encountered during this MOV salvaging project:

Unavailability of mobile phones, which was obviously common among the low socio-economic class was a major barrier to the following up some of the identified MOV cases. Home visits would have been the next option to ensure the identified cases were followed up till completion of their needed vaccines but for its extra cost and time which was not budgeted for in the project. A study in rural communities in Delta and Bayelsa states of Nigeria revealed that the frequent recharging of mobile phones leads to indebtedness. Other factors identified that affect the use of mobile phones in the rural areas include network failure, non-availability of recharge cards, unreliable or complete absence of power supply to charge batteries, high charges by network service providers, stealing of mobile phones, and unskilled persons repairing phones in rural areas.[17] These can explain the unavailability of phones among some identified MOV cases in a low-resource setting.

However, a study by Wood *et al* [18] noted that phone calls and preventive home visits of African American newborns in South Central Los Angeles, California (a focus of the 1989 to 1990 measles outbreak) had minimal effect on MOV. This could probably be due to vaccine refusal. The phone calls in this setting were to 'prevent' MOV while the phone calls in the index project were 'curative', to salvage the MOV case already identified. The cases of vaccine refusal were not encountered in this intervention project, probably because the research assistants were trained on the need and how to counsel the caregivers who may not be willing to administer or complete their children's vaccinations before the intervention began.

Secondly, another challenge encountered during the follow up of the identified MOV cases was the loss of access to some phone contacts as the phone numbers were permanently switched off. More so, some network providers sometimes switch the phone numbers of old users to different new users after some period of inactivity by the original owner. This led to loss of access to the original owners of the phone contacts submitted. In addition to other challenges afore mentioned especially among the low socio-economic class, [17] such caregivers were lost to follow-up even when their phone contacts were available. However, a systematic review on the acceptability of mobile phone reminders for routine childhood immunization appointments in Nigeria was rated high. [19]

It was also that some babies delivered and discharged home during the weekends and late in the evenings were MOV cases which could not be captured in this project because the research assistants did not work during those periods and the immunization clinics were not open during these periods too. This was a major limitation which should be put into consideration when considering a health facility-based intervention for immunization in the future. Another major challenge encountered during the follow up of the MOV cases was the sad news of the death of some of the children from their caregivers when they were reached on phone. Death halted the mop-up exercise of such MOV cases. This is a major reason why it is better to have the vaccines available at every point in time than having some MOV cases die not being fully vaccinated.

The social challenges encountered by the MOV cases that affected the timeliness for completion of their vaccination during the period of the intervention were the global lockdown during the covid19 pandemic in the year 2020, the frequent compulsory separatists sit-at-home demonstrations in south-eastern Nigeria where the health facility is located and the frequent health workers' industrial action. During the covid19 global lockdown, there was tight restriction of

movement in Umuahia and the nation at large. This interfered with immunization as both the healthcare providers and the caregivers could not access the health facilities because of the restrictions on both interstate and intrastate movement. A systematic review on the impact of the covid-19 pandemic on immunization campaigns and programs noted that the factors contributing to low vaccine coverage included fear of being exposed to the virus at health care facilities, restriction on city-wide movements, shortage of workers, and diversion of resources from child health to address the pandemic.[20] Disruptions to service delivery due to lockdowns and challenges in vaccination programs, were also noted as the covid19 impact on disparity in childhood immunization in low- and middle -income countries.[21][22]

As noted by Ezemenaka [23], Nigeria a a heterogeneous nation faces challenges within the balance of economic development along ethnic divisions in society. The current problems facing the Nigeria government and the Biafra separatist agitators originate in the causes and the effects of the Nigerian Civil war (06 July 1967 - 15 January 1970). Biafrans who are geographically in the South and South-East of Nigeria feel and believe that their economic and developmental prowess are not well represented in the Nigerian state, and this lack of representation leads to marginalization.[23] This agitation led to the compulsory sit-at-home demonstration which was commenced after the Nigerian Army had a face-off with the agitators during a peaceful demonstration. The agitators thereafter chose a compulsory in-house demonstration for everyone in south eastern Nigeria every Monday as a way of expressing their various grievances. This has gone a long way to affect schools, markets, businesses and health institutions as they are shut down every Monday till date.

These interruptions made the follow-up exercise more rigorous and affected the patients' timely access to healthcare/vaccination. Such uncertainties should be put into considerations when planning for timely health related services in the future to avoid interruption of such programs and for possible adoption of a 'plan B' ahead of time.

Conclusion/Recommendations:

Caregiver-level follow-up of MOV cases is an effective way of salvaging MOV cases in low-resource settings and could be captured in the new WHO guidebook for reducing MOV.

However, there are physical and social barriers that pose as challenges that hinder the caregiver-level follow-up and timely salvage of MOV cases that visit health facilities.

Home visits though more expensive should be imbibed as a follow-up method for MOV cases since access to mobile phones may likely not be feasible for all the clients in a low-resource setting.

Ultimately, all the vaccines should be made available every day to every eligible child that visits health facilities in order to effectively eliminate MOV.

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