
Audu Musa a,⇑, Bashir Abba a, Adamu M.I. Ningi a, Emanuel Gali a, Samuel Bawa a, Fadniding Manneh a, Pascal Mkanda b, Richard Banda a, Yared G. Yehulashe t a, Sisay G. Tegegne a, Gregory Umeh a, Peter Nsubuga c, Andrew Etsano d, Faisal Shuaib d, Ado Mohammed d, Rui G. Vaz a

Article Info

Article history:
Available online 27 June 2016

Keywords:
Transit vaccination
Polio supplemental immunization activities
Kaduna state

Abstract

Introduction: In Kaduna State of Nigeria, the high influx of people from neighboring states with eligible children for polio vaccination represents a significant proportion of the target population. Many of these children are often missed by the vaccination team. The purpose of the study was to determine the contribution of targeted stakeholders in transit polio vaccination.

Methods: We used the trends of vaccinated children at transit points, motor parks and markets, as well as total children vaccinated by transit teams in Chikun, Igabi and Sabon Gari Local Government Areas (LGAs) of Kaduna State, Nigeria, four rounds before and after the introduction of transit polio vaccination with targeted stakeholders.

Results: A total of 87,502 under-5 children were vaccinated by the various transit teams in the three LGAs, which accounted for 3.2% of the total 2,781,162 children vaccinated by the three LGAs. For transit point vaccination, the number of vaccinated children increased from 1026 to 19,289 (302%), while motor park vaccination increased from 1289 to 4106 (318%) and market vaccination increased from 10,488 to 14,511 (138%), four rounds after the introduction of transit polio vaccination with targeted stakeholders.

Conclusion: Engagement of targeted stakeholders significantly enhanced transit polio vaccination in Kaduna State, Nigeria.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Global polio eradication has received tremendous boost with only Nigeria, Pakistan, and Afghanistan remaining endemic for polioviruses in 2015 [1,2]. The success is largely due to increasing immunity from improved polio vaccine coverage over the years [2]. Worldwide, children who are traveling during mass immunization campaigns for polio represent a substantial component of the total target population [4,5]. These children are not easily accessible to health workers and may thus not receive vaccine [6]. The war against the poliovirus in Nigeria has recorded remarkable progress from 2012 to 2015 with continuous improvement in quality of Supplemental Immunization Activities (SIAs), reduction in unimmunized children and decrease in number of confirmed wild polioviruses (WPVs) [7,8]. However, there are still significant numbers of missed children that possess threat to interruption of poliovirus transmission [6]. The 28th Expert Review Committee (ERC) in Nigeria in September 2014 recommended that states should increase efforts to reach all children by reviewing high impact interventions that will capture children on transit for scaling up [9].

Kaduna State is one of the very high-risk states in northern Nigeria, and this region accounts for >95% of confirmed WPVs in Nigeria [10,11]. Despite high vaccine coverage over several rounds in the state, one case of WPV1 and 12 cases of circulating vaccine derived poliovirus (cVDPV) were isolated from environmental surveillance (ES) between April 2014 and June 2015 [12]. Kaduna, a cosmopolitan state in term of its strategic position in commerce, political, social and ethnic ties with other parts of the country, experiences influx of people from neighboring states on daily basis especially mothers and caregivers with eligible children for polio vaccination. Vaccination activities at mass transit sites (such as major intersections, bus depots and train stations), can increase
the proportion of children vaccinated but the effectiveness of these activities, and factors associated with their success, have not been rigorously evaluated [5]. Market, transit point, and motor park vaccinations are special interventions that have received accolade nationally and internationally [5]. In line with the 28th ERC recommendation and the country’s polio Emergency Plan [13], World Health Organization (WHO) office, Kaduna State in collaboration with the state Emergency Operations Centre (sEOC) identified transit polio vaccination as potential for reaching chronically missed children during SIAs. The state decided to collaborate with targeted stakeholders to enhance transit polio vaccination [14]. The stakeholders included the Federal Road Safety Corps (FRSC), (which is the Agency with the national mandate to enforce traffic rules and regulations in Nigeria), the National Union of Road Transport Workers (NURTW), (which is an umbrella union in-charge of motor parks and protection of transport workers’ interests in Nigeria) and with the leaders of various market organizations.

Transit polio vaccination has the advantage of ensuring directly observed vaccination as every child vaccinated is validated. Engagement of relevant stakeholders can bring better success during transit polio vaccination campaign [15].

The research focused on the role and relevance of targeted stakeholders in transit polio vaccination in Kaduna State, Nigeria. The purpose of the research was to determine the contribution of targeted stakeholders in transit polio vaccination in Kaduna State, Nigeria. It evaluated the impact of targeted stakeholders in enhancing transit polio vaccination in Kaduna State, Nigeria, on the basis of data generated four rounds before and after its introduction.

2. Methods

2.1. Target population

We targeted caregivers with eligible children on transit (at transit points, markets, and motor parks) for transit polio vaccination. Each transit polio vaccination site was selected based on an analysis of the following factors: LGAs at high-risk of noncompliance, sites which were borded by states considered to be very high risk for poliovirus transmission, and presence of major markets and motor parks accessible to large number of people including those from polio high risk states.

3. Implementation

The strategy was implemented in stages from pre-implementation, implementation, and post-implementation.

4. Pre-campaign

At the initial stage major transit points, busy markets, motor parks and other important sites within the state were identified and listed. After listing, protocols on how to implement the strategy were developed with the contribution of all stakeholders. Adequate copies of polio education materials in the form of banners, stickers, and pamphlets were designed with simple information on the importance of immunizations and disease surveillance as a mobilization tool for the strategy. In addition, adequate quantities of transit team data tools were produced. This was followed by the identification and sensitization of all the major stakeholders that we partnered with which include National Union of Road Transport Workers (NURTW) State officials, Federal Road Safety Commission (FRSC) Kaduna Command, markets union officers and the concerned Local Government Area (LGA) teams. After identification an official letter was written to their authorities to request for their engagement. For the FRSC, official approval was obtained from their federal headquarters in Abuja.

A 1-day training with the identified stakeholders on their specific roles before, during, and after implementation of the strategy was conducted. Together with the sensitized stakeholders, an operational schedule for the implementation of the strategy was developed. At the end the required number of the sensitized stakeholders were engaged and assigned to their area of assignment.

5. Intra-campaign

All the relevant immunization materials were provided to the selected teams together with adequate community information materials and data collection tools. For transit point immunizations, a team of FRSC and the vaccination teams stayed together strategically at the transit points vaccinating eligible children for a period of 6–7 days, the entire period of polio SIA vaccination. On averages four FRSC officials were deployed per transit point. The first officer stopped vehicles, the second directed the vehicles to the vaccination team, the third supported the team to enforce vaccination of all eligible children (0–59 months) in the vehicle, and the fourth stayed to stop any vehicles that wanted to default. While for motor park vaccination representatives of NURTW and two vaccination teams worked together at the motor park’s entrance and within the park vaccinating eligible children for a period of 6–7 days. In the case of market immunizations, representatives of the market union leaders and the vaccination team vaccinated at all market entrances and gates and inside the markets, on average three teams per market, the total number of teams depended on the size of the market. The market teams operated morning and afternoon shifts vaccinating all eligible children on market day that fell within the period of Supplemental Immunization Activities (SIAs).

In all the various transit polio vaccinations, at the end of each day exercise, WHO LGA facilitators reviewed all reported issues at the ward level review meeting and then submitted their reports to WHO cluster coordinators at the daily LGA level review meetings. Additional senior supervisors and Management Support Team (MST) members were assigned to monitor and evaluate team performance in the field.

6. Post-campaign

At the end of each round of vaccination, the sEOC organized a 1-day feedback session with the various stakeholders facilitated by the WHO cluster coordinator. The meetings discussed issues and challenges during the vaccination rounds and best way of handling pending issues. Data from all the transit points were collated and analyzed, and written feedback given to all the stakeholders.

7. Monitoring of activities

For accountability, the transit polio vaccination were monitored and supervised by the WHO cluster coordinator who was the focal point for transit polio vaccination. The main process indicators used to measure performance were the daily number of children vaccinated per team using transit team tally sheet. The transit polio vaccination strategy was piloted in transit points, and motor parks in December 2014 in three LGAs of Kaduna State (i.e., Chikun, Igbai and Kaduna North) and the lessons learned were used to improve planning, preparation, and execution of the strategy which was later expanded to include markets and scaled up to three additional LGAs (i.e., Kaduna South, Sabon Gari, and Makarfi).
8. Evaluation

To evaluate this intervention three of the six LGAs (i.e., Chikun, Igabi and Sabon Gari) were selected. We evaluated the impact of transit polio vaccination using descriptive and analytic approaches. Quantitative and qualitative data for the evaluation were obtained from monitoring (i.e., End process, Enhanced Independent Monitoring) and tally sheet data, four rounds before and after the introduction of transit polio vaccination (December-2014, April-2015).

9. Results

A total of 87,502 under-5 children were vaccinated by the various transit teams, which accounted for 3.2% of the total 2,781,162 children vaccinated within the intervention period in the three LGAs (Fig. 1). The number of children vaccinated at transit points increased from 1026 in January 2015 to 19,289 in April 2015 which was a 302% increase. Likewise, Motor park vaccination increased from 1289 to 4106 (318% increase) and market vaccination increased from 10,488 to 14,511 (138% increase). Transit points and markets had the most number of children vaccinated. A total of 556 zero dose children (i.e., children who had never received polio vaccination) were vaccinated by the various transit teams which accounted for 5.3% of the total 10,344 zero dose of the three LGAs.

Chikun LGA had the largest number of children vaccinated by the various transit teams among the three LGAs with the largest number vaccinated at motor parks and markets (Fig. 2).

A comparison of missed children from outside household, end-process monitoring data four rounds before and after introduction of transit point vaccinations (August-14, September-14, October-14, November-14 and December-14, January-14, March-14, April-14 respectively) showed decrease in the percentage missed children but statistical analysis using $T$-test showed no significant difference in mean percentage (standard deviation): 11.1% (9.8%) before intervention compared with 9.1% (5.9%) after, $p = 0.23$ as shown in Table 1.

<table>
<thead>
<tr>
<th>Date</th>
<th>Check point</th>
<th>Motor park</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-14</td>
<td>1026</td>
<td>1289</td>
<td>0</td>
</tr>
<tr>
<td>Jan-15</td>
<td>1539</td>
<td>2304</td>
<td>10,488</td>
</tr>
<tr>
<td>Feb-15</td>
<td>17987</td>
<td>3395</td>
<td>11,568</td>
</tr>
<tr>
<td>Mar-15</td>
<td>19,289</td>
<td>4106</td>
<td>14,511</td>
</tr>
<tr>
<td>Apr-15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1. Children vaccinated by 3 LGAs at transit points in Kaduna State – December 2014–April 2015. Source: Kaduna SPHCA IPDs data, 2014–2015.

<table>
<thead>
<tr>
<th></th>
<th>Chikun</th>
<th>Igabi</th>
<th>Sabon Gari</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check points</td>
<td>15049</td>
<td>19117</td>
<td>4649</td>
</tr>
<tr>
<td>Motor parks</td>
<td>7236</td>
<td>1283</td>
<td>2575</td>
</tr>
<tr>
<td>Markets</td>
<td>21130</td>
<td>10893</td>
<td>5570</td>
</tr>
</tbody>
</table>

Fig. 2. Children immunized by 3 LGAs at transit point vaccinations Kaduna – December-2014 to April-15. Source: Immunization Plus Days (IPDs) tally sheet data Kaduna EOC December-14–April-15.
and markets respectively. The FRSC has assisted vaccination teams across the three Very High Risk (VHR) Local Government Areas (LGAs) to safely vaccinate children at transit points: stopping motorists; introducing vaccination teams to drivers and passengers; facilitating safe disembarking of mothers and their babies, and making it possible for the vaccination teams to reach unvaccinated children. The collaboration with NURTW made motor park vaccination effective and safe. The teams are no longer intimidated, harassed and abused by touts (some providing services at the motor park but not formally engaged) and miscreants that prowl the motor parks. The collaboration with market leaders facilitated smooth vaccination in major markets in these three VHR LGAs. Vaccination teams worked very closely with the focal person nominated by the market leader, who assisted the teams from planning to implementation.

Planning for transit polio vaccinations starts during the pre-campaign phase: developing and updating of microplan, meeting with partners and other stakeholders as well as sensitization, logistics and budgeting. Transit polio vaccination is a very useful strategy that has worked in other countries, like India who has successful interrupted poliomyelitis transmission and remained poliomyelitis free for over 3 years [17].

Many children were immunized by the teams, who may have been missed without transit polio vaccinations and this intervention has significantly assisted in Kaduna State efforts to reach chronically missed children in very high-risk communities. Transit polio vaccinations can be implemented successfully in very high-risk communities with proper planning, motivated teams and workable collaborations with important partners. It is a useful and workable innovation, essential in sustaining efforts to interrupt poliomyelitis transmission in Kaduna State.

The primary limitation to the research was that information obtained from house-to-house vaccination cannot be generated from these transit polio vaccinations, thereby limiting further analysis. Furthermore, the intervention was implemented in a small number of LGAs due to limited resources, but we believe that the results obtained in these few LGAs may be useful in scaling up the intervention in other high risk LGAs and states in Nigeria, with major transitory points.

We conclude that transit polio vaccinations has shown significant impact in addressing chronically missed children in very high-risk communities in Kaduna State, through strong collaboration with key stakeholders. The strategy ensured that children absent from their homes during SIAs had the opportunity to be vaccinated by teams working at transit point, Motor Park or market. It is an effective innovation that should be sustained over time, and subsequent operational review guided by documented best practices.

Financial support

This work was support by financial grant from WHO country office, Nigeria.

Conflict of interest

The authors declare there is no conflict of interest.

Acknowledgements

We are grateful to Drs. Terna Nomhwange and Loveday Nkwogu, and the entire WHO team in Kaduna for their support and efforts in preparing this manuscript. We are also grateful to WHO staff at the country office, whose support and encouragement made this manuscript possible.
References