Original Article

The Role of Enabling and Motivating Factors in the Sustenance of Good Performance in Acute Flaccid Paralysis Surveillance in Kebbi State, Nigeria

Semeeh Akinwale Omoleke[1]*, Menberu Getachew Tadesse[1], Mukhtar Toyosi Raji[1], Mohammed Atiku Kende[2], Mala Abdallah Baba-Gana[1] and Braka Fiona[1]

[1]Immunization, Vaccines and Emergencies Unit, World Health Organization, Country Representative Office, Abuja, Nigeria; [2]Office of the Permanent Secretary, Ministry of Health, Kebbi State, Nigeria

Corresponding author:
Semeeh Akinwale Omoleke, Immunization, Vaccines and Emergencies Unit, World Health Organization, Country Representative Office, Abuja, Nigeria,
Tel: +234-816-759-7029;
E-mail: talk2semeeh@yahoo.co.uk

Abstract

Introduction: Nigeria was edging closer towards polio-free certification status until recently when the country experienced outbreaks of Wild Polio Virus type 1 in an insurgent-ravaged North eastern State of Borno. Despite this setback, all the States in the country must ensure that high surveillance sensitivity is achieved in an effort to achieve certification. In the light of this, we examined the role of motivating factors that could explain good acute flaccid paralysis surveillance performance in Kebbi State, Nigeria. **Methods:** The study is an observational descriptive study that made use of primary data sourced from the administration of questionnaires to 20 Disease Surveillance and Notification Officers (DSNOs) working in Kebbi State. We also retrospectively analysed secondary data to show the trend of performance of some key indicators from 2014 to 2016 in the State. **Results and Discussion**: Our study showed that certain factors such as the availability of decent amount of fund to support stool courier by DSNOs to reference virology laboratory; prompt payment of courier service allowance to DSNOs; high quality data analysis and feedback; availability of motorcycle to support surveillance activities and other logistics such as surveillance data tools; prompt payment of monthly salary by government; institutionalisation of reward system and effective periodic training supported by WHO could explain the good AFP surveillance performance in the State. **Conclusion:** Our study revealed that certain motivating factors and enabling environment are critical to achieving and sustaining good surveillance performance. These factors were present in Kebbi State and have contributed to the consistently impressive AFP surveillance performance recorded in the past 3 years. These factors should be replicated by relevant government ministries and supported by technical partner(s) in other States to improve performance indicators towards meeting polio-free certification standards or applied to other public health interventions towards achieving the much desired programmatic goals.

Keywords: AFP surveillance; Nigeria; Motivation; Performance Indicators; Polio certification; DSNOs

Introduction

Until July 4, 2016 when Wild Polio Virus type 1 (WPV1) was isolated in insurgent-ravaged North eastern state of Borno, Nigeria was edging closer (almost 2 years without any case of WPV) towards achieving Polio-free certification status. [1] Despite this setback, there is a need to ensure that surveillance for Acute Flaccid Paralysis (AFP) is of the highest possible quality. High surveillance sensitivity must be accompanied by high quality documentation of surveillance and immunization activities in order to meet Polio-free certification standards. [2,3]

AFP Surveillance is one of the key strategies of Global Polio Eradication Initiatives (GPEI) and it is the gold standard for the assessment of the eradication efforts. [2,4] Therefore, it is germane to monitor the performance of the surveillance system at all operational levels. There are indicators that are currently being used to monitor and measure AFP surveillance performance at Local Government Areas (LGAs), States and National level. There are 13 AFP surveillance performance indicators as per national guideline; however, two of these indicators are classified as "core", namely Annualised Non-Polio AFP Rate (ANPAFPR) and Stool Adequacy [2] Recently, the 30th Expert Review Committee (ERC) recommended that government and partners in Nigeria should closely monitor Non-Polio Entero-viruses (NPENT) isolation rate [5] The NPENT isolation has immense implication on the quality of reverse cold chain and serves as a proxy to assessing the capacity of the laboratory to isolate NPENT.[2]

Based on the National AFP Surveillance Guideline, the target

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for the NPAFP rate for a state/country is 2/100,000 under-15 populations and the benchmark for stool adequacy is 80% while the NPENT isolation rate has a target of at least 10% [5]

Kebbi State was one of the high risk states for Polio, given its previous history of WPV isolation (last case was dated July 25, 2011), relatively weak immunization status [6] borders high risk States of Sokoto and Zamfara, has nomadic population and hard-to-reach areas. It also has two international borders (Niger and Benin Republics). The State has, however, been showing consistently impressive performance in the past 3 years, though the performance has been outstanding in the last 2 years. The State made giant leap in the last two years as measured by the key AFP Surveillance performance indicators: ANPAFP rate, Stool Adequacy and NPENT rate. For instance, the State has the highest ANPAFP rate in the country in 2014 and 2015 with all the 21 Local Government Areas (LGAs) in the State meeting the two core performance indicators [7] which was not the case in some of the States in the country [8]

The World Health Organisation provides immense support to AFP Surveillance in Nigeria in terms of technical and logistics support as well as capacity building, through its personnel who work closely with Disease Surveillance and Notification Officers (DSNOs) [3] The DSNOs are domiciled in the Local Government Areas across the States. They are usually health workers who were trained by WHO to conduct active case search and investigate cases of "true" Acute Flaccid Paralysis. As frontline health workers in the implementation of AFP Surveillance at the LGA level, the DSNOs play a vital role in the achievement and sustenance of stellar performance recorded in Kebbi State in the past three years. Therefore, it is important to understand the bases of this stellar performance by investigating the underlying motivating factors that could explain the consistently impressive performance in the State. Consequently, the findings of this study could have programmatic implications as the identified enabling and motivating factors could be replicated in other States in Nigeria, with the hope of achieving improvement in their surveillance performance indicators, and ultimately putting the entire country in a good stead for Polio-free certification status. The findings could also have relevance in health workforce management and could be applicable to other public health programmes. It should be noted no previous study has been done to specifically examine motivating factors/enabling environment for optimal surveillance performance in this part of the world. Nigeria is one of the three remaining polio-endemic countries yet to be certified polio-free, therefore, it is imperative to heighten surveillance sensitivity, and then explore ways to achieving this, by drawing from best practices in good performing States. These aforementioned further buttressed the relevance of this study.

Methodology

This is an observational descriptive study that made use of primary data sourced from the administration of questionnaires to Disease Surveillance and Notification Officers working in Kebbi State. The primary data for the study was collected in September 2016. We also retrospectively analysed secondary data (ANPAFP rates, Stool Adequacy and NPENT rates) to show the trend of performance of these key indicators from 2014 to 2016 in the State. The primary data were data collected directly by the investigators or researchers through the administration of questionnaires or interviews while the secondary data are existing data retrieved from the disease surveillance and epidemiology unit of the State Ministry of Health.

Study Area

Kebbi State is a northwestern State of Nigeria with both local and international borders. Locally, it borders with Zamfara, Sokoto and Niger States while it has international borders with Niger and Benin Republics. There are 21 LGAs in the State with 225 political wards and four traditional Emirates. It had a projected population of 4,394,887 (for 2016) based on 2006 census population. The Under-1 and Under-15 population figures were 175,795 and 2,091,966 respectively [9]. There were 124 Surveillance Focal Persons (SFPs) across the 21 LGAs in the State. These focal persons supported the LGA DSNOs through case detection and reporting as well as surveillance documentation at the health facility level. Each LGA in the State has one DSNO.

Data

We extracted data on Annualised Non-Polio AFP rates (NPAFPR), Stool Adequacy and Non-Polio Enterovirus (NPENT) rates from surveillance data reporting templates for a period of three years, 2014-2016, for each LGA and the State as a whole. These three variables are very important performance indicators for assessing AFP surveillance system performance [2,5]. The nationally acceptable target for ANPAFPR is 2/100,000 under-15 populations; Stool Adequacy of 80% and NPENT rate of $\geq$ 10% were used [2]. These indicators and their targets were the same at all administrative levels- LGA, State and National. Three years' surveillance data were used to show the trend and performance of LGAs and the State using the key surveillance indicators. We used comparative timeframe of June every year as end points.

In order to have a better understanding of the possible motivational and enabling factors for the high and sustained surveillance performance, self-administered questionnaires were provided to the DSNOs at the LGA level. Kebbi State has 21 Local Government Areas (LGAs). Hence, the study participants were the 21 LGA DSNOs who were the technical officers responsible for surveillance activities at the operational level (LGA). They were involved in active case search for AFP, passive surveillance, AFP case investigation and documentation of all surveillance activities at the LGAs. We obtained information on possible enabling and motivating factors in the course of discharging their functions as surveillance officers, like the monthly logistics support; prompt timing of payments; decent transportation allowance; regular data analysis, monitoring and feedback; performance-based rewarding system and periodic capacity building/training. These factors were rated by the DSNOs on a Likert scale from 1 to 5. The scale was interpreted as thus: 1- not important; 2-somewhat important; 3-important; 4- very important and 5- extremely important.

In addition, open- ended questions were used to further explore their views and observations on motivating factors in order to have more robust responses. The questionnaires were developed by WHO personnel and pre-tested. It was administered in English Language since the DSNOs are all literates with tertiary-level education.

Ethical considerations

We obtained consent from all the DSNOs who participated in the study, after explaining the purpose of the study to them. We also got ethical clearance from the Research and Ethical Committee of the Kebbi State Ministry of Health.

Analysis

Secondary data on AFP surveillance for the State and LGAs were cleaned, summarized and presented using summary tables and graphs to show the trend of key indicators over time and compared performance among different LGAs.

We analysed the primary data to calculate the proportion (in percentages) of responses from the DSNOs in respect of motivation and enabling factors that could explain the stellar performance of AFP surveillance system in Kebbi State. We augmented the structured questionnaires with open-ended questions in order to fully explore participants' perspectives and to ensure consistency. The DSNOs' responses were coded thematically and summarised manually. Finally, the findings from the analyses were presented in narrations and tables.

Results

Secondary data analysis

From the secondary data source, summaries of AFP surveillance performance based on the key indicators were analysed for three consecutive years and presented as follows:

Almost all the LGAs (95%) had higher NPAFP rate in 2016 when compared with same time in 2014. The highest NPAFP rate of 127.0 was achieved in the State by Aliero and Ngaski LGAs while the lowest was 35.0 [Figure 1]. The State as a whole had higher NPAFP rate compared to previous years, rising from 49.4 in 2014 to 68.2 in 2016. All LGAs except two LGAs (Augie and Fakai) had an increasing trend in NPAFP rates for the last three years [Figure 1].

Likewise, a steady increase in percentage stool adequacy was observed in virtually all the LGAs. Marginal reduction between 2015 and 2016 were observed in two LGAs namely, Birnin Kebbi and Wasagu/Danko. The State achieved a steady increase over three years- from 97.6% (2014) to 99.1% (2015) and 99.6% in 2016 [Figure 2].

Generally, higher rates of NPENT isolation were recorded by the LGAs; 90% of the LGAs performed better in 2016 when compared with the previous years (2014 and 2015). NPENT isolation for the State was 14.8 in 2015, compared with 7% and 6% in 2014 and 2015 respectively. At the LGA level, the highest recorded NPENT rate was 40.6% from Augie LGA followed by Wasagu/Danko LGA, recording 37.5% in 2016 [Figure 3].

Primary data analysis and result

A total of 20 DSNOs (out of 21) completed self-administered questionnaire, giving a response rate of 95%. The educational backgrounds of respondents were as follow: 5 Senior Community Health Extension Workers; 5 Community Health Extension Workers, 6 Environmental Health Technicians; 2 Diploma and Certificate in Health Management Information System and 2 Community Health Officer. Their years of experience ranged from 1 to 11 years [Table 1-4].

According to the data from self-administered questionnaire,

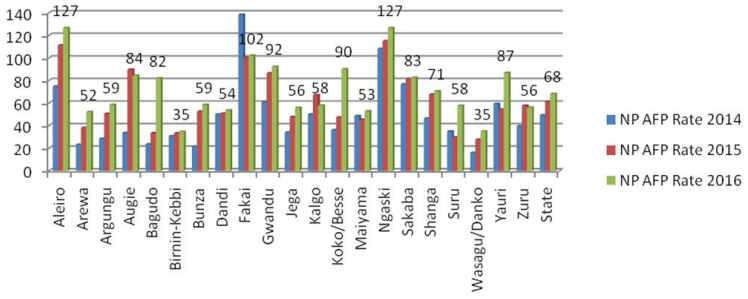

Figure 1: Trend of NPAFP Rate in Kebbi State (as at June 2014 - June 2016).

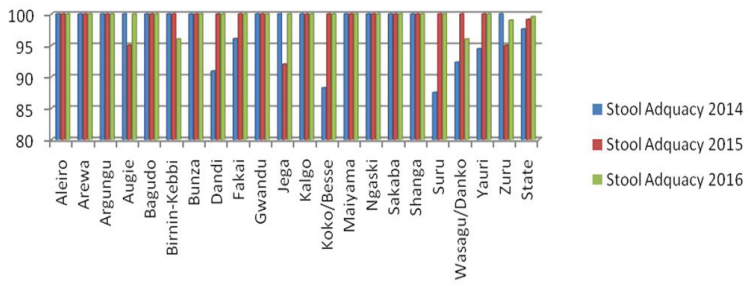

Figure 2: Trend of Stool adequacy in Kebbi State (June 2014 – June 2016).

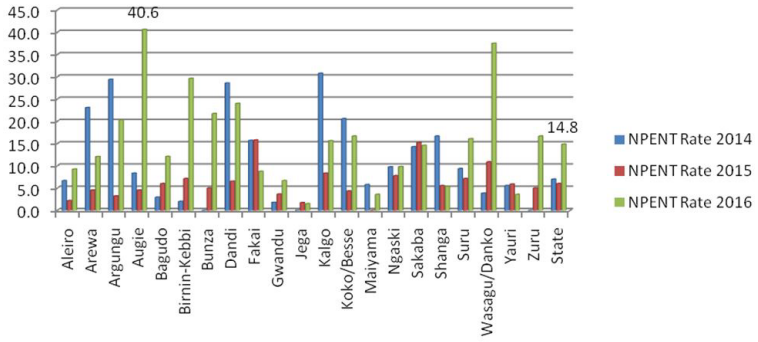

Figure 3: Trend of NPENT isolation in Kebbi State (June 2014 - June 2016).

Table 1: Years of experience of DSNOs in Kebbi State as at 2016.

Years of experience as a DSNO	Number of DSNOs who responded
<2 years	4
2-5 years	6
5-7 years	6
> 7 years	4

frequent data analysis, interpretation and feedback (through monthly review meeting) was reported as extremely important motivating factor by majority of the respondents (75%). Likewise, better understanding of surveillance through quality training was also rated by the majority as a key motivator. This finding is also supported by the finding from open-ended questionnaire as succinctly captured by the respondents: "improving the capacity of DSNOs, Surveillance Focal Persons and Informants by way of refresher training and close supervision from partners is a key motivating factor".

Prompt payment of salary by government, timely payment of travel allowances and decent amount of money provided for travel to Polio Laboratory by WHO were rated as extremely important by 75%, 60% and 50% of the respondents respectively.

Availability of motorcycles to support active case search and other logistics were reported as extremely important and very important by 45% and 50% of the DSNOs respectively. Institutionalisation of rewards system for good performance was also rated as extremely important by 70% of the DSNOs. No factor was rated as not important and /or somewhat important by the respondents.

From the open-ended questionnaire on the possible contributing factors for better surveillance performance in their respective LGAs, the DSNOs documented that "increase (amount) in the monthly allowance to DSNOs, Assistant DSNOs, Surveillance Focal Persons (SFPs) and Community Informants" was among the top motivating factors recommended by them followed by "transport support" (provision of new motor cycles/maintenance) for surveillance activities, such as active case search. Office refurbishment and provision of adequate specimen containers were also mentioned as important supporting factors for better performance and motivation. As part of polio end game strategy and ensuring sustainability, the need for local governments to own service delivery and the inclusion of Integrated Disease Surveillance and Response (IDSR) in the District Health Information System, DHIS/Health Management Information System, HMIS was recommended by few DSNOs.

Reward system to informants notifying AFP cases was also mentioned as a motivating factor for the current gains of high detection rate. In addition, improving the capacity of DSNOs, SFPs and Community Informants by way of refresher training and close supervision from partners is a key motivating factor.

Discussion

As Nigeria moves closer to the goal of achieving polio-free certification status, there is constant need to maintain a high quality acute flaccid paralysis (AFP) surveillance system that will promptly detect and report the presence of any wild polio virus in the country. [2,3] In view of this, Kebbi State has made remarkable achievements in the last couple of years. According to the routine surveillance data (2014-2016), the State achieved the highest NPAFP rate in Nigeria, with steadily increasing trend in the last three years. [7] By disaggregating the data, these feats were also observed at the LGA level, as all the LGAs have consistently surpassed the national targets. In 2016, one of the LGAs recorded a NPAFP rate as high as 127 per 100,000 under-15 populations which exceeded by far the set target of 2/100,000 as per national guideline.

The high NPAFP rates have been accompanied by extra-ordinary achievements of the other key surveillance indicators; stool adequacy and NPENT rate (99.6% and 15%) respectively for the State as at June 2016. In particular, the NPENT rate, which is a direct reflection of the reverse cold chain system, has been very impressive. It is often a source of concern and challenge to some of the States in the country.[8] This has led to phasic introduction in 2016 (starting with few States) of stool temperature tracking system aimed at improving the NPENT isolation and the laboratory capacity to isolate NPENT has also been improved. However, in Kebbi State, more than 90% of the LGAs met the NPENT target as at the time of writing this report and the State achieved one of the highest NPENT rate in 2016 [7,8]

Our field and programme management experience have shown that the LGA DSNOs (frontline surveillance officers) play a critical role in the achievement of these performance indicators as they are responsible for virtually all the stages; from sample collection to stool courier to the Polio reference laboratory,

hence their views and opinions are extremely important for any programmatic or policy changes towards establishing and sustaining a strong surveillance system that is sensitive and could meet the Polio certification standards.

In the light of the above, we found out that 75% of the DSNOs mentioned that frequent data analysis, interpretation and feedback (via monthly technical review meeting) was an extremely important motivating and enabling factor for the attainment and sustenance of good surveillance performance in Kebbi State. Likewise, better understanding of surveillance via quality periodic training was also rated by the majority as a key motivator. This finding was also supported by the results from open-ended questions as the DSNOs asserted that "improving the capacity of DSNOs, SFPs and CIs by way of refresher training and close supervision from partners is a key motivating factor".

The DSNOs also strongly reflected on the need to provide a reliable means of transportation (specifically, motorcycle) for close and regular support of the surveillance activities at health facilities and community level (through community informants). This was also considered as an extremely important contributing factor for the highly impressive achievements recorded in Kebbi State. This finding corroborated that the recommendations in the National Acute Flaccid Paralysis Surveillance Guideline [2] and the Expert Review Committee (ERC), which advocated the strengthening of community informant network as one of the strategies to enhance surveillance sensitivity.[3,10]

Ensuring government ownership to guarantee sustainability and using AFP surveillance resources for other program areas was highly recommended in the spirit of polio legacy planning. [11] This was also corroborated by the views of the DSNOs and succinctly captured as thus: "as part of polio end game strategy and towards ensure sustainability, the need for local governments to own the service delivery and inclusion of Integrated Disease Surveillance and Response (IDSR) in the District Health Information System(DHIS)/Health Management Information System(HMIS) becomes important, as this factor did not only contribute to the good performance, but will also ensure sustainability of the current gains, even in the absence of partners". Similarly, strengthening capacity through supervision at all levels of the surveillance system including close follow-up, enhancing the capacity of the LGAs to monitor performance with local personnel by training and providing computers and surveillance data tools were also stated as key action areas aimed at ensuring sustainability. Further, expanding surveillance network through motivation and supervision of community informants as well as rewarding system for community informants were found to be contributing factors, and were recommended to be sustained by the WHO.

One of the limitations of this study was the inability of the authors to specifically explore the role of WHO personnel, especially surge capacity personnel, such as Cluster Coordinators, Local Government Area Facilitators, Field Volunteers who have been supporting the DSNOs in case detection and reporting, especially at the community level. However, our analysis showed that the cases detected and notified by these personnel were less than 10% of total cases reported annually. Therefore, this would not have impacted negatively on the acceptability of the study findings. Another limitation was the use of administrative retrospective surveillance data which are prone to over-reporting by the LGA DSNOs, and might have accounted for the extremely high NPAFP rates. This underscores the need for a periodic peer-review or validation of the reported AFP cases. This study however was not set out to revalidate the reported AFP cases. There is a possibility of a few other factors that might have not been investigated or mentioned by the DSNOs because they might not have impacted directly on them but could be relevant to good performance.

Conclusion

Our study revealed that certain motivating factors and enabling environment were important to achieving good surveillance performance and sustained surveillance sensitivity. These factors have contributed to the consistently impressive AFP surveillance performance in Kebbi State. The factors were: availability of decent fund to support stool courier by DSNOs; prompt payment of courier service allowance to DSNOs; high quality data analysis and feedback; availability of motorcycle to support surveillance activities (movements) and other logistics, such as surveillance data tools; prompt payment of monthly salary by government; institutionalisation of reward system for good surveillance performance and effective periodic training and supportive supervision by WHO. The DSNOs also suggested that there should be improved ownership by government towards the sustenance of best practices and consolidation of gains made in the area of personnel capacity. In the light of our findings, if these enabling and motivating factors are adopted and carefully replicated in other States in Nigeria and, or in other public health intervention(s), the desired programmatic goal(s) can be achieved. The replication of these enabling and motivation factors should be implemented by government through relevant ministries and units, and supported by technical partners in global polio eradication initiatives, such as the World Health Organisation.

Authors' contributions

SAO conceived the idea, designed the study, took part in primary data collection, wrote parts of the manuscript and coordinated the entire manuscript writing; RMT was involved in secondary data management, TMG wrote part of the manuscript and contributed to primary data collection while SAO, BAM, BF, MAK critically revised the manuscript. All authors read and approved the final draft of the manuscript.

Acknowledgement

We appreciated the efforts of the hardworking LGA DSNOs who are committed to ensuring that Kebbi State sustains consistently impressive surveillance performance among the league of States in Nigeria.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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