

Original Research Article

ASSESSMENT OF TRAINING ON ACUTE FLACCID PARALYSIS SURVEILLANCE AMONG SURVEILLANCE OFFICERS IN ONDO STATE

ABSTRACT

Aim: We assessed the immediate impact of Acute Flaccid Paralysis (AFP) surveillance training on the knowledge of AFP surveillance among AFP surveillance personnel, and identify factors associated with changes in knowledge following the training.

Study design: A descriptive cross-sectional study design was conducted.

Place and Duration of Study: A quasi-experimental, before-and-after study was conducted at Akure, Ondo State in April, 2016.

Methodology: The training was conducted among 54 surveillance personnel which included the Disease Surveillance and Notification Officers (DSNOs) and assistants as well as the state surveillance officers. Agenda and training materials were supplied by the WHO country office (WCO), and adapted and modified in line with the present AFP surveillance challenges of the state. Data were obtained on the socio-demographic characteristics and knowledge of AFP surveillance; and analyzed using McNemar Chi-square and paired t-test with the alpha level of significance set at .05.

Results: Majority (70.4%) of the participants were males with mean age of 42.9 ± 9.2 years. Significantly, the mean score of post-test (40.0 ± 5.0) was higher than that of pre-test (31.2 ± 8.5), $P = .001$. The mean score of performance of the female participants was significantly higher at post-test (40.8 ± 4.3) compared to the males (37.4 ± 5.3) $P = .017$. Similarly, participants with more than 2 years' experience on AFP surveillance had higher mean score (40.9 ± 4.4) at post-test compared to those with less than 2 years' experience (32.3 ± 8.7) $P = .046$. Those that have received two or more trainings on AFP surveillance had higher mean score (40.9 ± 4.4) at post-test compared to those that have never or have received a training on AFP (37.4 ± 4.8) $P = .011$.

Conclusion: The training proved to be relevance at the time it was conducted as it impacted knowledge on the AFP surveillance personnel. However, there is need to assess the correlation between knowledge and practice in subsequent surveillance performance.

Key words: Acute Flaccid paralysis, Surveillance, Disease Surveillance and Notification Officers.

1.0 INTRODUCTION

Acute Flaccid Paralysis (AFP) surveillance system has become an established feature of public health system that is essential for monitoring progress towards global polio eradication [1]. It entails detecting and investigating (including stool sample collection) AFP cases in children under 15 years of age and all cases of paralytic illness in persons of any age in whom a clinician suspects poliomyelitis. The AFP surveillance is useful in identifying and documenting the presence or absence of wild poliovirus (WPV) or Circulating Vaccine

43 Derived Polio Virus in the country (cVDPV) in the country, and is the most reliable tool to
44 measure the quality and impact of immunization activities against polio. It is also crucial in
45 providing evidence for the certification committee to confirm the absence of WPV and to
46 certify the country as polio free [2].

47 In 1988, the World Health Assembly resolved to eradicate polio globally with the prevalence
48 of polio cases reduced by over 99% i.e. from an estimated 350 000 cases in more than 125
49 endemic countries then, to 37 reported cases in 2016 [3] As at early 2015, the countries
50 endemic for polio were Afghanistan, India, Nigeria and Pakistan. However, Nigeria was
51 removed formally from these countries on 26 October, 2015 following historic achievement
52 of the country in interrupting the transmission of wild poliovirus for a period of 15 months.
53 The country was later re-listed, after wild poliovirus (WPV) case was reported on August 10,
54 2016, in the north-eastern state of Borno, which has been severely affected by insurgency-
55 related insecurity [4].

56 The World Health Assembly were able to achieve tremendous progress in polio eradication
57 through the Global Polio Eradication Initiative (GPEI) which aim to interrupt transmission of
58 the wild poliovirus as soon as possible, achieve certification of global polio eradication, and
59 contribute to health system development and strengthening routine immunization and
60 surveillance for communicable diseases in systematic. Among the major strategies of the
61 GPEI, is the establishment of high quality AFP surveillance with timely investigation of
62 every case. A reliable AFP surveillance data will guide targeted immunization activities in
63 areas with continued poliovirus circulation. This is also important in measuring how effective
64 routine and supplementary OPV immunization has succeeded in decreasing poliovirus
65 transmission [5].

66 As Nigeria approach polio certification, there is need to maintain a sensitive AFP surveillance
67 that will detect all cases of AFP through all reporting channel (clinician, focal and non-focal
68 reporting sites and community informants) in the AFP surveillance network. For this to be
69 achieved, clinicians and other AFP field surveillance personnel must be knowledgeable about
70 the standard AFP case definition, the differential diagnosis, when and how to report AFP
71 cases and to whom AFP cases should be reported to when detected. Previous rapid
72 assessment of surveillance in other high-risk states consistently found knowledge gaps among
73 surveillance personnel, especially those at the LGA and health facility levels, to be one of the
74 key challenges to quality surveillance [6,7].

75 In order to enhance the capacity of the surveillance personnel to perform their roles in AFP
76 surveillance, cascade training on AFP surveillance sub-systems of the IDSR was conducted
77 from the state to the Local Government Area (LGA) level between 6th to 7th April, 2016 in
78 Ondo State. This necessitated the need to conduct formal training for the new surveillance
79 officers and an opportunity to retrain the previous officers. The training aimed to; improve
80 the knowledge of the surveillance personnel on the standard case definition and differential
81 diagnosis of AFP and other IDSR diseases, discuss the conduct of quality active surveillance,
82 improve Disease Surveillance and Notification Officers (DSNOs) and assistants skills on
83 AFP stool collection process, and emphasize the need for proper documentation of all AFP

surveillance activities. The training was assessed to document its immediate impact on the knowledge of AFP surveillance among the participants, and to identify factors associated with changes in knowledge following the training.

2. MATERIALS AND METHODS

2.1 Study area

Ondo State, one of the 36 states in Nigeria, was created on 3 February 1976 from the former Western States with its headquarter in Akure, the state capital. The State covers an area of approximately 788.723 square Kilometres (Km²) and is bounded in the North by Ekiti and Kogi States, in the East by Edo State, in the west by Osun and Ogun States and in the south by the Atlantic Ocean [8]. The major occupations of the inhabitants include farming, fishing and trading. The people of the State are predominantly Yorubas who speak various dialects of the Yoruba language such as the Akoko, Akure, Apoi, Idanre, Ikale, Ilaje, Ondo and the Owo and a minority speaking the Ijaw Language. The State has a population of 3,441,024 according to the 2006 census and accounts for 2.5 percent of Nigeria's population [9].

Ondo State has 18 LGAs and is located in the South western zone of Nigeria. For administrative convenience, it is divided into three political zones: Ondo north, south and central. The administration is organized at state and local levels of government. The LGA PHC Department is directly responsible for diseases surveillance activities at the LGAs and coordinated by the State Surveillance Officers.

2.2 Study population

Participants were DSNOs and their respective assistants from the 18 LGAs in Ondo state and state AFP surveillance officers.

2.3 Study design

A quasi-experimental, before-and-after study was conducted. The training took place in Akure, Ondo State in April, 2016. Agenda and training materials were supplied by the WHO country office (WCO), and adapted and modified in line with the present AFP surveillance challenges of the state. Training materials were made available to participants. Lectures were essentially participatory and opportunity was provided for sharing experience among participants. Also, a field trip session was made to two health facilities (General Hospital, Idanre and comprehensive health centre) for practical demonstration of the conduct of quality active surveillance and documentation of AFP surveillance activities by participants.

2.4 Data collection, management, and analysis

The data were entered into the Microsoft excel spreadsheet and analyzed using Statistical Package for Social Science (SPSS) version 20. Aggregate scores were calculated giving a maximum score of 50. These were then categorized as fail (<35) and pass (≥35) respectively. Descriptive analysis using the mean and proportion were computed. The proportion of participants with fail and pass were calculated for both pre- and post-tests. The McNemar

Chi-square test for paired data was used to test the null hypothesis that there were no differences between the proportion of participants who passed the pre- and post-tests. Also, the paired t-test was used to test for significant differences between the mean scores at the pre- and post-tests. The associations between selected socio-demographic variables and knowledge score at pre-and post-test were also determined. The level of significance for the statistical test was set at an alpha level of $P < 0.05$.

3.0 RESULTS

3.1 Socio-demographic characteristics of respondents

A total of 54 surveillance officers, including (18; 33.0% each) DSNOs, assistant DSNOs and state surveillance officers participated in the training. The mean age of the participants was 42.9 (± 9.2) and 70.4% were female. More than two-third (75.9%) of the respondents were married; 47 (87.0%) had completed tertiary level of education and 33 (61.1%) had been working as a surveillance officer for more than 24 months (Table 1). More than one-quarter (37.0%) of the participants were trained twice on AFP surveillance and 89.8% had been trained in 2015.

Table 1: Socio-demographic characteristics of respondents

	Frequency (n=54)	Percentage (%)
Age		
25-34	11	20.4
35-44	16	29.6
≥ 45	27	50.0
Mean (SD)	42.9 (± 9.2)	
Gender		
Male	16	29.6
Female	38	70.4
Marital status		
Single	13	24.1
Married	41	75.9
Highest level of education		
Secondary	1	1.9

Tertiary	47	87.0
Postgraduate	6	11.1
Professional qualification		
Medical officers	9	16.7
Nurse	9	16.7
CHW	30	55.6
MRO	6	11.0
Designation		
Assistant DSNO	18	33.3
DSNO	18	33.3
State surveillance officer	18	33.3
Experience at work (in month)		
<15	11	20.4
15-24	10	18.5
≥25	33	61.1
Number of training on AFP surveillance		
None	5	9.3
1	12	22.2
2	20	37.0
3	7	13.0
≥4	10	18.5
Year last trained on AFP surveillance n=49		
2014	1	2.0
2015	44	89.8
2016	4	8.2

3.2 Impact of training on respondents' knowledge of AFP surveillance

As shown in table 2, 20 (37%) of the participants passed the pre-test compared to 47 (87%) that passed the post-test ($P = .001$). The median score of post-test was 7.5 points higher than that of pre-test, and a significant mean paired improvement score of 8.8 was observed between the pre- (31.2) and post-tests (40) (paired t -test=8.239, $P = .001$).

Table 2: Impact of training on respondents' knowledge of AFP surveillance

Respondents' performance	Pre-test	Post-test	Test Statistics & p-value
Pass	20 (37.0)	47 (87.0)	McNemar $\chi^2=23.310$
Fail	34 (63.0)	7 (13.0)	$P = .001$
Mean (SD)	31.2 (8.5)	40.0 (5.0)	Paired t -test= 8.239
Median	32.5	40.0	$P = .001$

Significantly, female participants performed better than the male during the pre- and post-tests, with mean scores of 40.8 ± 4.3 vs 37.4 ± 5.3 , and 31.7 ± 8.9 vs 29.8 ± 7.8 respectively; however, these differences were only statistically significant in post-test (pre-test $p=0.470$; post-test $p=0.017$) (Table 3). Also, the number of period for which participants had worked as a surveillance officer and the number of relevant trainings on AFP surveillance ever attended were significantly associated with their performances in pre and post-tests.

Table 3: Factors associated with knowledge of AFP surveillance at pre- and post-tests

Respondents Characteristics	Pre-test Mean Score (SD)	Post-test Mean Score (SD)
Age		
<45	28.9 (± 9.7)	38.8 (± 4.9)

≥45	33.3 (±6.8)	40.9 (±4.5)
Test Statistics; p-value	*t-test= -0.9; p=0.059	t-test= -1.6; p=0.113
Gender		
Male	29.8 (±7.8)	37.4 (±5.3)
Female	31.7 (±8.9)	40.8 (±4.3)
	t-test= -0.7; p=0.470	t-test = -2.5; p=0.017
Marital status		
Single	30.2 (±9.4)	41.5 (±5.6)
Married	31.4 (±8.4)	39.3 (±4.5)
	*t-test= -0.5; p=0.643	t-test= 1.5; p= 0.139
Highest level of education		
Tertiary and lower	30.7 (±8.9)	39.5 (±4.7)
Post graduate	34.3 (±4.8)	42.0 (±5.8)
	*t-test= -0.9; p=0.338	t-test= -1.2; p= 0.241
Professional qualification		
Nurse/MO/MRO	29.8 (±9.6)	40.8 (±4.2)
CHW	32.2 (±7.7)	39.0 (±5.1)
	*t-test= -1.0; p=0.311	t-test=1.4; p=0.165
Designation		
Assistant DSNO	34.0 (±7.7)	39.9 (±4.4)
DSNO and State surveillance officer	29.7 (±8.7)	39.8 (±5.1)
	*t-test= -1.8; p-value=0.083	t-test =0.2; p=0.890
Experience at work (in month)		
<25	27.5 (±7.8)	38.2 (±4.8)
≥25	33.4 (±8.4)	40.8 (±4.6)

t-test= -2.6; p=0.012

t-test= -2.0; p=0.046*

Number of training on AFP surveillance

None and 1	28.6 (±8.0)	37.4 (±4.8)
≥2	32.3 (±8.7)	40.9 (±4.4)
	t= -1.5; p= .142	t= -2.6; p= .011

* paired t-test

Figure 1 showed the overall ratings of the training by participants. More than 60% of the participants rated the training as excellent with respect to venue/training material, schedule, participation, facilitation, training content and meal.

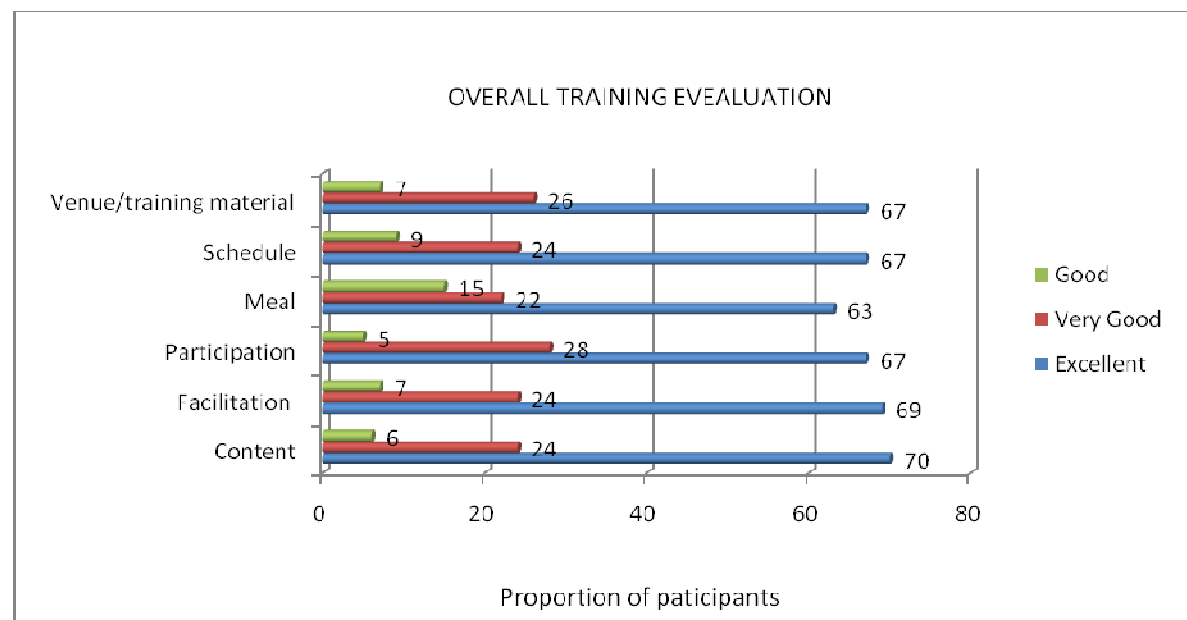


Figure 1: Overall evaluation of AFP training by participants

4. DISCUSSION

The need to conduct assessment of training and re-training of surveillance officers should form one of the foundational methods of improving the quality of any national or state

disease surveillance system. It is important to conduct immediate assessment of AFP training as done in other diseases eradication program [3], in order to identify gaps that may limit the impact of the training among personnel. This assessment focused on the impact of AFP surveillance training on the knowledge of standard case definition, differential diagnosis of AFP and other IDSR diseases; the conduct of quality active surveillance, AFP stool collection process; and the need for proper documentation of all AFP surveillance activities among AFP surveillance officers in Ondo State. Factors associated with changes in knowledge following the training were also identified.

In this study, we observed that high proportion of the participants were in the older age group of more than 44 years with the females highly represented. This finding is consistent with that reported among DSNOs in Osun State, Nigeria [10] and among private medical doctors in Ondo State, Nigeria [11]. Interestingly, high proportion of the participants had tertiary level of education with more than two years' experience in AFP surveillance activities. These are strengths to implementation of AFP surveillance activities in the state. Similar report was also made in other related studies [10, 11]. However, the study conducted in Osun State reported higher working experience of more than 10 years among the surveillance personnel compared to this study (2 years) [10].

The mean score of the participants was high at pre-test, indicating that participants were conversant with AFP surveillance requirements. This report contradicts a related study finding conducted in a south western state of Nigeria, where very low pre-test mean knowledge score was reported [12]. The difference in outcome of this study compared to that conducted by Fatiregun et al. (2010) may be attributed to the type of training conducted. Our study assessed AFP surveillance training, while Fatiregun et al. (2010) study focused on the assessment of training on yellow fever surveillance which the surveillance personnel might not be conversant with. Also, an increase in mean score was observed in the post-test compared to the pre-test, which suggests that trainings focused on AFP will be needed to keep the surveillance personnel abreast of knowledge of the disease surveillance in the state.

The sex, number of years as AFP surveillance personnel and number of trainings on AFP ever attended significantly influenced the results of the participants. The findings of this study corroborates previous study that found the females' participants to perform better than the males [12]. However, previous report among the same group did not show any significant difference in post test score [10]. In most part of the country, surveillance activities have been equally well performed by DSNOs of either sex. However, in certain part of the country, females are usually recommended as either immunization officers or vaccinators due to socio cultural consideration [13].

Participants with more than two years' experience as AFP surveillance personnel got high scores in both pre- and post-tests compared to those with lower numbers of years. Previous study among surveillance personnel in Osun State also made similar observation [12]. This suggest that surveillance personnel should be retain more in their activities as surveillance officer in order for them to acquire more years of experience, and caution should be exercise in changing this category of officers as it may affect the surveillance activities in the LGA negatively.

Furthermore, this study found that participants that had received more than one training on AFP surveillance significantly performed better in post-test only. This finding is not consistent with that of previous studies in Osun State that assessed the effect of training of DSNOs on AFP surveillance [10], and determined the immediate impact of yellow fever

training on the knowledge of surveillance officers [12]. This finding suggest a need for periodic training of the surveillance officers to keep them abreast of knowledge of disease surveillance. Equally important is the measure of surveillance performance indicators and sensitivity to detect transmission or the absence of transmission of the condition.

CONCLUSION

In overall, the participants rating of the training was excellence based on the areas evaluated. The tool used for the evaluation may however be improved in order to capture other areas such as the relevance of topic and depth of discussion. The main strengths in this training included the availability of; enough time to plan, training materials and agenda, resourceful persons that have themselves undergone training previously. The training was successful and proved to be relevance at the time it was conducted as it impacted knowledge on participants who are State and LGA surveillance officers. However, there is need to assess the correlation between knowledge and practice in subsequent surveillance performance. Also, regular training are recommended for the officers particularly those with few years of experience in AFP surveillance.

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