

ASSESSMENT OF TRAINING ON MEASLES CASE-BASED SURVEILLANCE FOR DISEASE SURVEILLANCE AND NOTIFICATION OFFICERS (DSNOs) IN OSUN STATE

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ABSTRACT

Background: Poor knowledge among Disease Surveillance and Notification Officers (DSNOs) as a result of high staff turnover has been identified as a major reason for sub-optimal surveillance performance in Osun State. Training aimed at strengthening the measles surveillance sub-system of the Integrated Disease Surveillance and Response (IDSR) was thus conducted for DSNOs in the state in May, 2006.

Objectives: The immediate impact of the training on participants' knowledge and their role in the measles surveillance process was assessed as well as demographic factors associated with participants' knowledge.

Methods: Participants were DSNOs from the 30 Local Government Areas of the State and the Ife East Area office. Training materials were received from the WHO country office and adapted for use. Assessment of training was conducted by statistical evaluation of the pre- and post-tests results.

Results: Thirty-one DSNOs with a mean age of 36.2 ($\pm$ 3.5) years participated. There were 14 (45.2%) males and 17 (54.8%) females and they had been employed for an average of 13.7 ($\pm$ 2.2) years. Mean pre- and post-test scores were 31 and 61, respectively, and showed a significant statistical difference (paired t-test = 12.665, $p=0.000$).

Conclusion: Training achieved its short-term objective. However, a correlation between knowledge and practice will be based on the subsequent surveillance performance.

Keywords: Assessment of training, measles case-based surveillance, disease surveillance and notification officers, Nigeria

INTRODUCTION

Disease surveillance is an approach to information gathering about the occurrence and spread of diseases that serves to improve or maintain the health of the population¹. The information obtained is used to set priorities, plan, implement, and monitor interventions. It is also useful in mobilizing and allocating resources, as well as predicting or providing early detection and response to outbreaks. Attributes of an effective surveillance system include acceptability of the process, reliability of data, timeliness, and completeness of reporting². In September 1998, the 48th World Health Organization regional committee for Africa met in Harare, Zimbabwe and the members adopted the Integrated Disease Surveillance and Response (IDSR) as a regional strategy to strengthen weak national surveillance systems and ensure an efficient response to

priority communicable diseases for the Africa region³. Implementation of the IDSR commenced in Nigeria in the year 2000 and replaced the former Disease Surveillance and Notification System (DSN), which had been in operation in the country since 1990. Information about the 22 communicable diseases selected for reporting in the IDSR strategy are collected from health facilities and forwarded to the Local Government Areas (LGA). At the LGA, the completed forms from the health facilities are collated periodically as applicable and sent to the state level. The LGA are also expected to initiate investigation and response of suspected outbreaks and rumors, provide support for specimen transfer for laboratory confirmation, and monitor and supervise the health facilities. The Disease Surveillance and Notification Officers (DSNOs)

under supervision of the Local Government Medical Officers of Health (MOH) perform this duty. Unfortunately, because of lack of territorial epidemiologists at the local government level, the DSNOs are mostly medical record officers with little or no training in disease surveillance and response. The Local Government Civil Service Commission is responsible for selection and appointment of health record officers as DSNOs.

The measles mortality reduction programme was adopted in Nigeria in 2005. The recommended strategies for achieving this goal include achieving routine immunization coverage of at least 90% in each LGA, ensuring that all children have a second opportunity for measles vaccination through supplemental immunization activities, and establishing case-based surveillance and improving management of measles cases, including the administration of supplemental vitamin A and adequate treatment of complications⁴. Measles case-based surveillance is an important strategy to detect cases and outbreaks of measles. It is also useful in monitoring the performance of the programme⁵. The DSNOs, under the supervision of the MOH, have an important role to play to ensure the success of the programme. These roles include sensitizing clinicians and health facility staff on the measles surveillance activities in the LGA, actively searching for measles cases, ensuring that samples are promptly collected from suspected measles cases, and transportation and delivery of the specimen at the zonal measles laboratory; monitoring surveillance indicators in the LGA, providing feedback to reporting facilities, focal persons, and communities, and also keeping them informed of likely outbreaks⁴. An Accelerated Measles Catch-up campaign was conducted in the northern part of the country in December 2005 and in the southern part of the country in 2006.

In order to enhance the capacity of DSNOs to perform their roles in disease surveillance, cascaded training on measles and acute flaccid paralysis (AFP) surveillance sub-systems of the IDSR were conducted from the National level to the LGA level between June and August 2005. However, in January 2006 four DSNOs were redeployed and six new ones were appointed which resulted in suboptimal performance in AFP surveillance [6]. This necessitated the need to conduct formal training for the new surveillance officers and an opportunity to retrain the previous officers. The training which was aimed at strengthening AFP and measles surveillance in order to direct immunization activities was used to review the current epidemiology of polio and measles transmission, as well as the goals and current status of the global and national

initiatives. The training enabled participants to understand and appreciate the surveillance process, indicators, and data management issues, as well as the role of officials at various levels, particularly DSNOs in both the AFP and measles surveillance subsystem. The training was assessed to document its immediate impact on the knowledge of participants about their role in the surveillance process. The results of the effect of the training on measles surveillance are reported here. The association between some socio-demographic factors and the changes in knowledge following the training were also assessed.

Socio-demographic characteristics	
Age group (years)	N (%)
20 - 29	1 (3.2)
30 - 39	28 (90.3)
40 - 49	2 (6.5)
Mean age	36.2, S.D $\pm$ 3.5
Median age	36
Modal age	37
Gender	
Male	14 (45.2)
Female	17 (54.8)
Marital Status	
Single (never married)	1 (3.2)
Married	30 (96.8)
Highest level of education	
Secondary	2 (6.5)
Tertiary	29 (93.5)
Relevant work experience	
<i>Number of years in service</i>	
< 15 years	19 (61.3)
= 15 years	12 (38.7)
<i>Number of years as a DSN</i>	
< 10 years	14 (45.2)
= 10 years	17 (54.8)
<i>Number of relevant training workshops attended</i>	
0 - 2	7 (22.6)
= 3	24 (77.4)

Table 1: Socio-demographic characteristics of the participants

METHOD

Study area

Osun State, one of the 36 states in Nigeria, came into existence on 27 August, 1991. It was carved out of the old Oyo State and is made up of more than 200 towns, villages, and various settlements. The State covers an area of approximately 8,602 square kilometers and is bounded in the West by Oyo State, Ondo and Ekiti States in the East, Kwara State in the North, and Ogun in the South. The 1991 census estimated the population of the State at 2.2 million. The State runs

an agrarian economy with a vast majority of the populace involved in farming. For administrative convenience, Osun State is divided into the following six zones: Osogbo, Ede, Iwo, Ikirun, Ilesha and Ile-Ife. There are 30 LGAs and one Area office, the Ife East Area Office at Modakeke. The administration of Osun State is organised at state and local levels of government. The LGA PHC Department is directly responsible for disease surveillance activities at the LGAs⁷.

try office (WCO), were adapted for use. Resource persons included the State team members who had participated in the zonal cascaded training which took place during the previous year. The training which lasted two days, consisted of didactic lectures, role plays, and interactive sessions. Information on participants' socio-demographic characteristics and relevant job experience was obtained. Pre- and post-tests were

Respondents' performance	Pre-test	Post-test	Test Statistic & p-value
Pass (50% and above)	3 (9.7%)	31 (100%)	McNemar Chi ² = 24.038 p = 0.000
Fail (< 50%)	28 (90.3%)	0	
Mean (SD) scores (%)	30.9 (11.1)	60.5 (10.3)	Paired t-test = 12.665 p = 0.000
Median (%)	30.0	60.0	
Range (%)	15 - 60	50 - 95	

Table 2: Results of measles training

Study population

Participants were 32 DSNOs from each of the 30 LGA of the State and the Ife East Area office.

Study design

A quasi-experimental, before-and-after study was carried out. The training on measles surveillance took place in Osogbo, the Osun state capital at the conference centre of the Women Development Centre (Oke fia, Osogbo) in May 2006. Agenda and materials for the training, which were supplied from the WHO coun-

ducted using the questions supplied by the WHO country office (WCO). The training was also evaluated by the participants using the evaluation tool supplied.

Data collection, management, and analysis

The data were analysed using SPSS, version 11. Aggregate scores were calculated giving a maximum obtainable score of 100%. These were then categorized as fail (< 50%), pass (50 – 69%), and distinction/ excellent ($\geq 70\%$). Participants' scores at the pre- and post-tests, as well as mean, median, modal scores,

Respondent Characteristics	Pre-test Mean Score (SD)	Post-test Mean Score (SD)
Gender Male	32.7 (± 11.9)	60.7 (± 11.5)
Female	29.4 (± 10.4)	60.2 (± 9.4)
Test Statistic; p-value	t-test = 0.821; p = 0.418	t-test = 0.111; p = 0.912
Number of years < 10	28.2 (± 10.5)	57.9 (± 7.5)
as DSNO = 10	33.1 (± 11.4)	62.6 (± 11.9)
Test Statistic; p-value	t-test = 1.236; p = 0.226	t-test = 1.307; p = 0.202
Number of relevant trainings attended in the last 2 years		
0 - 2	32.1 (± 14.4)	56.4 (± 8.9)
= 3	30.5 (± 10.3)	61.7 (± 10.5)
Test Statistic; p-value	t-test = 0.331; p = 0.743	t-test = 1.195; p = 0.242

Table 3: Respondents' mean scores at pre- and post-tests

and the range were computed. The proportions of those with < 50% fail, 50% to 69% pass, and $\geq 70\%$ pass with distinction/excellent 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 and 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 scores at pre- and post-tests were also assessed. The level of significance for all statistical tests was set at an $\alpha = 0.05$.

RESULTS

Socio-demographic characteristics

A total of 31 DSNOs participated, including 14 (45.2%) males and 17 (54.8%) females. The mean age of the participants was 36.2 (± 3.5) years; nearly all of the participants were married 30 (96.8%) and 29 participants (93.5%) had a tertiary education (Table 1). Twelve participants (38.7%) had been working for 15 or more years and 17 participants (54.8%) had been working as DSNOs for 10 years or more (Table 2).

Results of the measles case-based surveillance training

Twenty-eight (90.3%) of the participants failed the pre-test. The mean and median pre-test scores were 31% and 30%, respectively, with minimum and maximum scores of 15% and 60%, respectively (Table 2). All of the participants passed the post-test and 4 of the participants (12.9%) had distinction/excellent scores of 70% and above. The mean and median post-test scores were 61% and 60%, respectively, with a minimum of 50% and a maximum of 95%. There was a statistically significant difference between the proportion of

participants who passed the post-test (31 [100%]), but failed the pre-test (28 [90.3%]) and the proportion who passed the pre-test, but failed the post-test (0 [0%]; $p = 0.000$). The mean paired improvement score of 30% observed between the pre- (31%) and post-tests (61%) also had a statistically significant difference (paired t-test = 12.665, $p = 0.000$).

Males performed better than females during the pre- and post-tests, with mean scores of 33% vs. 29%, and 61% vs. 60%, respectively; however, these differences were not statistically significant ($p = 0.418$ and $p = 0.912$, respectively; Table 3). The number of years for which participants had worked as DSNOs and the number of relevant trainings ever attended were not significantly associated with performance on the pre- and post-tests.

Table 4 showed the ratings of the training by participants. More than 90% of participants rated the training as very good with respect to the relevance of topics, usefulness of role play, and reference materials. Overall organization was rated as very good by 84% of the participants, while 81% and another 87% rated the clarity of presentation and depth of discussion, respectively, as being very good.

DISCUSSION

The results showed that there was an impact on the score between the pre- and post-tests; however, the overall improvement in surveillance performance from the 2nd quarter of 2006 will confirm if there is a correlation between the knowledge and the practice of DSNOs in surveillance activities.

The number of years for which the respondents had worked as DSNOs and the number of relevant

Area of Evaluation	Poor n=31 (%)	Satisfactory n=31 (%)	Very Good n=31 (%)
Overall organization of sessions	0	5 (16)	26 (84)
Relevance of topics	0	2 (6.5)	29 (93.5)
Clarity of presentations	0	6 (19)	25 (81)
Usefulness of case studies	0	3 (9.7)	28 (90.3)
Usefulness of reference materials	0	3 (9.7)	28 (90.3)
Depth of discussion	0	4 (13)	27 (87)

Table 4: Evaluation of measles training by participants

trainings attended in the preceding 2 years had no significant effect on pre-test scores. This is similar to findings from the assessment of the effect of training of DSNOs on AFP surveillance in Osun State⁸. This suggests that periodic training is necessary to keep the DSNOs abreast of knowledge of disease surveillance. The participants' rating of the training was good, based on the areas evaluated. The tool used for evaluation, however, may need to be improved upon to capture other areas, such as conduciveness of the venue. This was not assessed, but there is anecdotal evidence to suggest that the venue may not be the best. A standard venue within the state, where most of the international agencies (UNICEF and UNFPA) usually use their programmes, is located outside the State capital and will require Daily Subsistence Allowance (DSA) for resource persons who were not part of the budget. This issue may need to be addressed in subsequent trainings in the state.

The main strengths in this training included the availability of training materials and agenda from WCO, the use of resource persons that have themselves undergone training previously, and also the fact that there was enough time to plan.

CONCLUSION

The training was relevant at the time it was conducted and the conduct was successful. Evidence from the pre- and post-test scores showed that it impacted knowledge on participants who are DSNOs from the LGAs in the State. However, the correlation between knowledge and practice will be assessed based on subsequent surveillance performance. Regular trainings are recommended and there is need to improve on the training venue in the State.

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