Full Length Research Paper

Logistic support available for timely collection of data and its association with poor reporting of epidemics in two Southwestern states in Nigeria

M. D. Dairo, J. O. Bamidele and W. O. Adebimpe

Department of Epidemiology and Medical Statistics, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria.

Disease surveillance has been recognized as an effective strategy in the control and prevention of diseases most especially communicable diseases. An effective surveillance system allows early intervention for the prevention and reduction of the mortality and morbidity that may result from epidemics of communicable diseases. This study assesses the adequacy of training of disease surveillance and notification officers (DSN) officers and identifies the logistic factors that may hinder their effective functioning in the local government areas in the Ekiti and Osun States in Nigeria. A cross sectional descriptive study of the disease surveillance and notification officers in Osun and Ekiti states of Nigeria was carried out. Total sampling was done. Questionnaires sought information on demographic data, regularity of reporting and the availability of logistic facilities in the respective local government areas (LGAs). Out of 42 DSN officers surveyed, 38 (90.5%) were medical records officers. 32 (76.2%) had appropriate training in disease surveillance and notification. Most had received training from the WHO. Over 90% knew the process of reporting. 45.8% reported that there were penalties for defaulting officers. Logistic support was inadequate in more than half of the local governments surveyed. Inadequate funds and lack of surveillance forms were significantly associated with reporting of outbreaks by the officers. Only 13 of the officers had ever recorded episodes of epidemics in their LGAs. Majority of DSN officers had appropriate training on disease surveillance, reporting and notification. However, logistics for effective functioning was poor. Local and state governments need to put more effort into provision of logistic support for their DSN Officers to sustain the apparent improvement in surveillance activities.

Key words: Surveillance, logistic support, training, epidemics.

INTRODUCTION

Disease surveillance, notification and reporting have been defined as the continuous scrutiny of the occurrence of diseases and health related events to enable intervention for the control of diseases (CDC, 2009). Levels of surveillance can be individual, local, national and international. Most surveillance systems depend on the information on the occurrence of diseases obtained from health care providers, hospitals, clinics diagnostic laboratories and research laboratories. National surveillance systems often depend on a district level surveillance department for the collection of data

(CDC, 2009). Effective national and international surveillance for diseases therefore requires efficient and effective local or district surveillance department.

In Nigeria, surveillance and notification involves immediate notification of eleven diseases and routine notification of 22 diseases (FMOH, 2007). A surveillance officer in the health department is responsible for the collection of the data and reporting same to the state ministry of health. The state then forwards the report to the federal ministry of health. At each level analysis of the data collected is done to enable intervention such as instituting control and preventive measures for disease outbreaks and epidemics. A functional surveillance department requires trained staff, adequate transport and other logistics for efficiency and effectiveness. Despite the established system, surveillance of diseases breaks

*Corresponding author. E-mail: drdairo@yahoo.com. Tel: 08035664708.

Table 1. Distribution, qualification and training of disease surveillance officers.

State	No (%)
Osun	26 (61.9)
Ekiti	16 (38.1)
Qualification	
Community health extension workers/Community health officers	4 (9.5)
Medical records officers	38 (90.5)
Training	
Appropriate	32 (76.2)
Nil or Inappropriate	10 (23.8)

Table 2. Logistics support for surveillance activities.

Logistics	Adequate	Inadequate	Not available	Total
Office	18 (42.9)	10 (23.8)	14 (33.3)	42 (100)
Transport	10 (23.8)	14 (33.3)	18 (42.9)	42 (100)
Stationeries	14 (33.3)	7 (16.7)	21 (50)	42 (100)
Surveillance forms	20 (47.6)	13 (31)	9 (21.4)	42 (100)
Funding	8 (19.1)	25 (59.5)	9 (21.4)	42 (100)

down in Nigeria leading to avoidable morbidity and mortality. While various reasons factors are thought responsible, studies have not yet documented the extant reasons that may be responsible for the breakdown in surveillance activities. This study attempts to assess the adequacy of the logistic support available for timely collection of data and its association with poor reporting of epidemics in the respective states of the federation.

METHODS

A cross sectional descriptive study of the surveillance officers in two randomly chosen states of the southwestern region of Nigeria was conducted. The study was conducted in the month of June 2006. It is understood that there has not been a reshuffle among the surveillance officers in the recent past (one year). Total sampling of the 42 surveillance officers in the respective states was done. Information on primary qualification, further training since assuming the position of disease surveillance officer and surveillance practices was collected. Information about the logistic facilities available and perceived adequacy of funding was also obtained. Questions were asked about epidemics discovered and reported in the local government area since the officer assumed the position of DSN officer.

Training of the disease surveillance officer was categorized as appropriate if it was on disease surveillance. All other forms of training were classified as inappropriate. The office was regarded as adequate if there is a designated space and desk for the officer to perform his duties. Funding was regarded as adequate if it covers the cost of visiting all the health facilities situated within the surveillance officer's jurisdiction weekly and returning the disease surveillance forms to the state ministries of health weekly. Data was analyzed using SPSS (11.0) version. Data was shown in Tables of frequencies and percentages. Chi square test and Fishers exact probability was used to test association between categorical variables. Level of significance was set at 0.05.

RESULTS

Majority of the surveillance officers were medical records officers 38 (90.5%). Thirty two (76%) had received further training from WHO. Others 10 (24%) had training in computer management but not in integrated disease surveillance (Table 1). Table 2 shows the disease surveillance officers assessment of the logistic support available for their activities. Only 18 (42.9%) had offices while others did not have designated offices. Transport was available for only a quarter of the surveillance officers while stationery supplies were available for less than one third of them. Specifically, standardized and designated surveillance forms were available and adequate in only 20 (47.8%) of the local government area surveillance units. Funding for surveillance activities was adequate in 8 (19.1%) of the local government areas while 9 (21.4%) provided no funding at all. Table 3 shows the knowledge of information flow by the surveillance officers. Majority (97.6%) can correctly describe the pathway of information for surveillance from the peripheral health facility to the state ministry of health. For 36 (86%) of the officers reporting to the state is regular while visits to the peripheral facilities to receive reports are done weekly and regularly by 37 (88%) of the 42 disease surveillance officers.

Table 3. Knowledge of information pathway and its flow by the surveillance officers.

Practice	No (%)
Knowledge of pathway of report from peripheral facility	
Correct	41(97.6)
Incorrect	1(2.4)
Knowledge of pathway of report to state	
Correct	40(95.2)
Incorrect	2(4.8)
Regularity of report to state	
Regular (weekly)	36(85.8)
Irregular (not specified)	6(14.2)
Regularity of visits to health facility	
Regular (weekly)	37(88.1)
Irregular (not specified)	5(11.9)
Health facilities visited	
All facilities	41(97.6)
Government facilities only	1(2.4)
Penalties for defaulting officers	
Query	7(16.7)
Salary withholding	6(14.3)
Others	2(4.8)
Combination	4(9.5)
Nil	23(54.8)

Table 4. Reported outbreaks of epidemic prone diseases in the local government areas.

Outbreaks	No (%)
Cholera	7(16.6)
Gastroenteritis	2(4.8)
Measles	2(4.8)
Schistosomiasis	1(2.4)
Typhoid	1(2.4)
Nil	29(69.0)
Total	42(100)

In 23 (54.8%) of the local government areas, no penalty was given to those designated officers that fail to perform their surveillance duties. However, various mechanisms to ensure timeliness of reporting were in operation in the other local government areas and these are shown in the Table 4. The commonest penalty for defaulting officers was query as reported by 7 (16.7%) of the officers. This was followed by withholding the salary and other benefits of the officer (14.3%). Combination of the penalties were practiced in 4 (9.5%) of the local government areas.

Outbreaks of epidemic prone diseases were reported in 13 of the local government areas. The commonest epidemic was cholera, reported in 7 (16.6%) of the local government areas. Other epidemics reported were that of gastroenteritis and measles [2 (4.8%)] each, *Schistosomiasis* and typhoid fever [1 (2.4%)] each (Table 4). In a bivariate analysis, inadequate funding (p = 0.046) and lack of adequate surveillance forms (p = 0.007) were statistically significant factors associated with the reporting of outbreaks in the local government areas (Table 5).

DISCUSSION

Rapid notification of infectious diseases is essential for prompt public health action and for monitoring of disease trends at the local, state and national levels. Despite its importance, notification suffers from some setbacks, as shown by several studies (WHO, 1998; Tan et al., 2007). The challenges of the surveillance system in developing countries like Nigeria include lack of awareness, lack of feedback, ignorance of current regulations and the list of notifiable diseases by the health personnel (Bawa et al., 2003, Ofili et al., 2003). This study has tried to assess the logistic challenges of the surveillance system from the

Table 5. Logistic factors and its association with the reporting of outbreaks of epidemic prone diseases in the local government areas.

Factors	Reporting of epidemics [No (%)]			P value
	Total N= 42 (100%)	Yes N = 13 (31%)	No N = 29 (69%)	
Relevance of training				
Relevant	32 (76.2)	11 (26.2)	21 (50)	NS
Irrelevant	10 (23.8)	2 (4.8)	8 (19)	
Availability of reporting forms				
Available	20 (47.6)	8 (19)	12 (28.6)	
Not Available	22 (52.4)	5 (11.9)	17 (40.5)	0.007
Staff primary qualification				
Medical records	32 (76.2)	12 (28.6)	20 (47.6)	NS
Other qualification	10 (23.8)	1 (2.4)	9 (21.4)	
Adequacy of transport				
Adequate	10 (23.8)	2 (4.8)	8 (19)	
Inadequate	32 (76.2)	11 (26.2)	21 (50)	NS
Adequacy of fund				
Adequate	8 (19.0)	5 (11.9)	3 (7.1)	
Inadequate	34 (81)	8 (19)	26 (62)	0.046
Penalty				
Present	19 (45.2)	6 (14.2)	13 (31.0)	NS
Absent	23 (54.8)	10 (23.8)	13 (31.0)	

NS= not statistically significant.

designated DSN officers' perspective as a measure of active surveillance activities.

In a previous study in Northern Nigeria, only fifty-five (38.2%) of the respondents were aware of the national disease surveillance system (Bawa et al., 2003). In another study of knowledge of disease notification among doctors in government hospitals in Benin City Nigeria only 11.9% of surveyed doctors had a good knowledge of disease notification, 23.1% knew where to obtain notification forms and 23.9% knew how to complete forms (Ofili et al., 2003). Training has been documented to positively impact the disease notification habits of health personnel as reported in an interventional study conducted in Northern Nigeria in which percentage completeness of reporting of notifiable diseases increased from 2.3 - 52.0% and percentage of timely reports increased from 0.0 - 42.9% post training (Bawa and Olumide, 2005). As shown in this study, 76.2% of DSN officers had relevant training in disease surveillance and notification in contrast to the study in Northern Nigeria by Bawa and Olumide (2005) in which only a small percentage were found to have received training. However, this report was from a different part of the country. The World Health Organization had been

providing technical assistance to the Nation most especially in capacity building of surveillance officers at the district (local government) and state level. Therefore, this finding is not unexpected when viewed in relation to the spatial difference in time and place. In this study 38 (90.5%) of the disease surveillance officers were medical records officers. This shows that medical records officers were the cadre of choice in the recruitment of the disease surveillance officers at the local government area level. This choice may appear appropriate as this category of officers are most likely to have obtained skills in data management as a part of their primary training as medical records officers. However, the assessment of their performance in relation to counterparts who are not medical records officers is outside the scope of this study.

The knowledge of the pathway of disease notification directs the DSN officer and indirectly predicts his level of awareness of his duty. In this study, majority 41 (97.6%) of respondents have a correct knowledge of the pathway and this may be explained by their previous training. They also appeared to be active in their surveillance duties as shown, 36 (85.8%) reported that they sent timely reports to the state level, 37 (88.1%) conducted regular weekly visits to peripheral health centre and 41 (97.6%) reported

visiting all health facilities, (government and private) in their weekly visits. This supports the findings from the previous study in Nigeria on effect of training on disease notification (Bawa et al., 2003).

A major challenge which had hitherto remained unexplored in previous studies in this country is that of inadequate logistic support. As demonstrated in this study, majority of the surveillance units lack offices (57.1%), only 10(23.8%) had adequate transport and 8(19%) had adequate finance for their daily activities. Despite this *scenario*, only inadequacy of finance (funding) is significantly associated with poor performance of surveillance activities in this study (p > 0.05). However, the inadequacy of reporting forms and stationeries as reported by 52.4% of the respondents was significantly associated with non-reporting of outbreaks (p = 0.007). This has also been reported in previous studies which reported lack of reporting forms as a reason for not reporting notifiable diseases (Bawa et al., 2003; CDC, 2009). The effect of this poor logistic support is demonstrable in the proportion of the surveillance units who were able to promptly report outbreaks of epidemic prone diseases in their local government areas. The relationship between the availability of this logistic support and reporting of epidemics is, however not clear. It cannot be clearly concluded whether outbreaks occurred and were not reported due to late detection emanating from logistic hindrances to surveillance or whether the officers lack the requisite knowledge to detect outbreaks. There is a need for further studies on the impact of logistic support in disease surveillance activities and the findings need to be interpreted with extreme caution.

This study revealed that penalties had been instituted in some local governments as reported by (45.2%) of respondents as a punitive measure to defaulting officers.

This however was shown not to have significantly affected their reporting of outbreaks in the affected local government areas. There has been no similar study in this regard. Despite the lack of clarity of relationship between availability of logistics and reporting of epidemics, it can still be concluded that the surveillance officers' report of the adequacy of logistic facilities is not complimentary and may affect their motivation and effectiveness. Therefore, to ensure efficient and functional surveillance units, training of the surveillance officers must be complemented with adequate logistic support, particularly funding of the surveillance officers activities. Monitoring and evaluation of the activities of DSN officers will further ensure effectiveness and efficiency of the surveillance system with resultant increase in the prevention and control of disease.

Conclusion

The necessary logistic support to enable the surveillance officers carry out their duties is still grossly lacking. It is imperative for the Local and State Governments to ensure adequate provision of the necessary resources and facilities to resuscitate the prostrate disease surveillance system and to enhance the effectiveness of the officers.

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