

Awareness and reporting of notifiable diseases among private laboratory scientists in Lagos, Southwest Nigeria

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Abstract

The availability of accurate, up-to-date, reliable and relevant health information on disease notification by medical laboratory practitioners is essential to detecting and responding to epidemic outbreaks. However, information on notification practices of private laboratory scientists are not well documented. This study was conducted to assess the level of awareness and knowledge of Integrated Diseases Surveillance and Response (IDSR), as well as its practice by private laboratory scientists in Lagos State, Nigeria. In a cross-sectional study, 190 respondents from 14 chapters of the Association of Medical Laboratory Scientists in Lagos state were interviewed using a pretested self-administered semi-structured questionnaire to collect information on socio-demographic characteristics, awareness of IDSR and its policy, knowledge of notifiable diseases, practice of IDSR and constraints to reporting notifiable diseases. Data was analyzed using descriptive statistics, Chi-square test and logistic regression at $P = 0.05$.

The mean age of the respondents was 34.0 years with a standard deviation (sd) of ± 8.5 years and 65.3% were males. Half (50.0%) of them have ≤ 5 years of working experience with a mean of 7.5 ± 5.8 years. About 8.9% had ever heard of IDSR. About 9.5% had ever seen a disease notification form and 51.1% had good knowledge of IDSR guidelines for the country. Most (86.3%) had never reported a notifiable disease. Lack of knowledge on how to report (56.8%) and inefficiency of the health department (44.7%) were the major reasons given for not reporting. A significant predictor of disease notification was awareness of IDSR (OR = 5.7, CI = 1.9-16.7). Private medical laboratory practitioner's awareness and practice of disease notification is poor. A

range of interventions including awareness campaign, IDSR training, feedback and logistic support for reporting is recommended to improve reporting practices by private medical laboratory scientists.

Introduction

Disease surveillance, notification and reporting have been defined as effective strategies in the scrutiny of the occurrence of diseases and health related events to enable intervention for the prevention and control of diseases.¹ Effective communicable disease control relies on effective response systems, which in turn depend on effective disease surveillance.² In developing countries, notifiable diseases surveillance systems rely on mandatory reporting of cases by physicians and laboratories. In sub-Saharan Africa, infectious diseases remain the most common cause of morbidity, hence, the need for surveillance and control.³

In Nigeria, all 36 states in the federation, including the Federal Capital Territory are currently implementing IDSR.⁴ This system seeks to ensure that effective and functional systems are available at each level of the health system, from health facilities to Local Government Areas (LGAs), states and on to the national level. IDSR focuses on the LGA level where information is generated to other levels.⁵

In Nigeria, the current status of disease surveillance system is deplorable, characterized by a lack of intra and inter-sectorial collaboration. This leads to verticalization of programs and multiplicity of disease reporting formats and as a result compromises efficiency and quality of data.⁶ Integrated Disease Surveillance and Response (IDSR) is part of National Health Management Information System (HMIS) in Nigeria and was adopted to tackle the problem of multiplicity and duplicity of reporting formats in the country. However, one of the challenges encountered in the implementation of the IDSR programme is the issue of reporting which is often incomplete and untimely, a problem traceable to the level of awareness, knowledge and practice of personnel towards the programme.⁶

A laboratory network is an important component of a disease surveillance system; it serves as collection points from which samples are transported to regional or national reference laboratories for isolation and identification of pathogens. Trained laboratory workers in well-equipped primary level laboratories can carry out simple diagnostic test for many suspected disease conditions and should be

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required to notify the Medical Officer of Health (MOH) of any notifiable disease he/she identifies. Private medical laboratory scientists are becoming more important in the delivery of health care in Nigeria consequent to the infrastructural challenges occasioned by the downturn in the economy which had led to reduced public sector spending on upgrading laboratory services. The private medical laboratory services provide diagnostic support to both the public sector hospitals and private sector hospitals in Nigeria. These laboratory scientists can become an important link in the reporting of diseases and are therefore a key stakeholder in surveillance of diseases in Nigeria. Engagement of these personnel in reporting and surveillance activities will strengthen the disease control activities in the nation. This study therefore aims to determine the level of awareness of and compliance with IDSR policies, and identify barriers against reporting of notifiable diseases among private laboratory scientists in Lagos, an urban Metropolis South West, Nigeria.

Materials and Methods

Study setting and study population

The study site was Lagos state, Nigeria. The state is divided into administrative divisions called LGAs. One LGA is an equivalent of a county. The 2006 National Population Census of Nigeria credited the metropolitan area with a population of 9, 019, 534. With a population projection at growth rate 3.2%, the population now approaches 17 million inhabitants, which is almost one tenth of the population of Nigeria.⁷ Study population comprised medical laboratory scientists working in private medical facilities in the state. There are 22 chapters of the Association of Medical Laboratory Scientists (AMLSN) in the state, of which 14 are chapters of medical laboratory scientists working within private health facilities at the LGA level.

Study design

The study was a descriptive cross sectional study. The sample size of 190 was obtained using the formula for the estimation of single proportion ($N = \frac{Z^2 pq}{d^2}$) in which p is the proportion of health workers reporting notifiable diseases in Benin City, Edo State, Nigeria.⁸ The percentage point of the normal distribution Z is a constant set at a value 1.96 for 95% confidence interval, while q is $(1-p)$ and d , the precision estimate is set at a value of 0.05. The sample size calculated was adjusted for 10% non-response rate. A systematic sampling technique was used to select 190 respondents out of the total 710 laboratory scientists in all the chapters, using a sampling interval of 4, derived by dividing the total population of the laboratory scientists by the calculated sample size ($N_r/N_s = 710/190$).

Ethical approval to conduct the study was obtained from University of Ibadan/University College Hospital ethical review committee (IMRAT) and AMLSN Lagos State before the commencement of the study. The data collection instrument was survey questionnaire, developed from review of the technical guidelines for IDSR in the African region and literature on previous surveys on awareness and knowledge of notifiable diseases and its challenges of disease notification.⁹⁻¹² The questionnaire contains information such as socio-demographic characteristics; awareness of IDSR and its policy; knowledge of notifiable diseases, practices of IDSR and challenges of diseases notifications. The semi structured questionnaire consists of both open- and closed-ended questions and was pretested among private laboratory scientist in Ibadan, Oyo State. The self-administered questionnaire was distributed by the princi-

pal investigator with the help of two research assistants. The two research assistants were trained on the process of creating rapport with potential respondent and obtaining consent for the study from each participant. The questionnaires were coded for confidentiality and respondents were not required to give their names. In the field, research assistants were required to give a brief introduction of themselves and the survey request respondents to give a written consent assuring them that the survey will in no way be harmful to them. Respondents were also informed that ethical approval has been obtained from University of Ibadan/IMRAT and AMLSN Lagos State. The interview was conducted in an enclosed space for privacy. The interviewers review each questionnaire for missing/incomplete data since they were self-administered by respondents. At the end of each day questionnaires were checked for completed data, feedback on the data collection process was obtained and problems faced were resolved.

The knowledge of notifiable diseases was scored based on respondents' understanding of 61 IDSR guidelines on notification of notifiable diseases as done in previous studies.^{8,12} These includes knowledge of reportable diseases and where to report them, priority diseases for IDSR and time frame for reporting diseases. This was adopted from the technical guidelines for

IDSR in the African region.⁹ Each correct response was awarded one mark. Respondents with score >30 were regarded as those with good knowledge of IDSR guidelines.

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 20. Descriptive Statistics such as frequencies, percentages, chi-square and logistic regression were used. The level of statistical significance in tests of hypothesis was set at a P-value below 0.05.

Results

A total of one hundred and ninety private laboratory scientists were interviewed. About a third [124, 65.3%) were males. The majority [140, 73.7%] were Christians and 136, 71.6% were of the Yoruba ethnic group. Half [95, 50.0%] of them had ≤ 5 years of working experience (Table 1).

Level of awareness and knowledge of IDSR polices among respondents

Less than one-tenth [17, 8.9%] had ever heard of IDSR and 24 (12.6%) are aware of the IDSR policies in the country. Only 9.5% had ever seen a disease notification form (Table 2). About half [97, 51.1%] had good knowledge of IDSR guidelines in the country while almost half [93, 48.9%] had poor

Table 1. Socio-demographic characteristics and years of experience of respondents in Lagos.

Variables	Frequency n=190	Percentage (%)
Age (years)		
20-24	19	10.0
25-29	49	25.8
30-34	41	21.6
35-39	29	15.3
40-44	33	17.4
≥ 45	19	10.0
Gender		
Male	124	65.3
Female	66	34.7
Religion		
Christian	140	73.7
Islam	50	26.3
Tribe		
Yoruba	136	71.6
Igbo	42	22.1
Hausa	2	1.1
Others	10	5.3
Years of experience since graduation		
<5	95	50.0
5-9	34	17.9
10-14	30	15.8
15-19	23	12.1
≥ 20	8	4.2

knowledge (Table 2). A low proportion 6 (3.2%) of them knew that the form 003 is used for monthly reporting of diseases while 8 (4.2%) knew that the IDSR form 001 is used for immediate reportable diseases and the 8 (4.2%) knew the IDSR 002 is used for weekly reportable diseases.

Prevalence of ever reported notifiable diseases among private laboratory scientists

About 13.7% of the respondents have ever reported a notifiable disease while 86.3% never reported a notifiable disease. About one third [31.1%] report to the local government health office, which is the ideal section to report cases (Table 3). About three quarters of out of the 13.7% have ever reported a disease using only forms. About One third of the 13.7% reported the diseases to the local government health office, which is the ideal place while almost half [46.2%] reported diseases to the epidemiological unit of the state ministry of health directly (Table 3).

In the bivariate analysis, majority of those that have never heard of IDSR have never reported a diseases compared to those that have heard of it [89% versus 58.8%, $p=0.001$]. Also more of those that are not aware of IDSR policy in the country have never reported a disease compared to those aware [88.6% versus 70.8%, $p=0.018$]. More of those that have not seen the disease notification form before have never reported a disease compared to those that have seen it before [93.0% versus 22.0%, $p<0.001$] (Table 4).

Logistic regression associations between ever report a notification disease and awareness of IDSR

The significant predictors of reporting a notifiable disease among the respondents were awareness of IDSR and its policy, and seeing the notification forms. Those that have heard of IDSR were almost 6 times more likely to report a notifiable disease compared to those that have not ever heard (OR= 5.7, 95% CI= 1.9-16.7). Those that were not aware of IDSR policy were about 3 times more likely not to report a notifiable disease compared to those that were aware (OR= 3.2, 95% CI= 1.2 -8.7). Those that have not seen a notification form before were more likely not to report a disease compared to those that have seen it before (OR= 46.7, 95% CI= 13.3 – 164.0) (Table 5).

Reasons for not reporting diseases among respondents in Lagos

Reasons the respondents gave for not reporting the notifiable diseases include: not knowing how to report a disease

[56.8%], inefficiency of the local government area health department [44.7%], lack of feedback *i.e.* reporting may not make a difference [30%] (Figure 1).

Discussion

Less than one-tenth of the respondents in this study have ever seen diseases notification forms and significant proportion of them that had never sighted these forms were more likely not to have reported a notifiable disease compared to those that have sighted them. The low level of awareness in this study is comparable to the report by Oyegbile in Southwest Nigeria¹³. It differs from the findings of a study in northern Nigeria, which revealed that a higher proportion (38.2%) of health-care personnel studied were aware of the disease surveillance and notification system in Nigeria (DSN) system and that in the eastern Nigeria in which most (89.8%) of the

respondents were aware of the existence of the DSN system.^{11,12}

The findings of this study conform to those of other studies, which showed persisting poor awareness of health-care personnel on the system of reporting of infectious diseases and notifiable conditions.^{8,11,12} In this study, although the awareness of the DSN policies was generally low, knowledge of the DSN system was significantly high among those who were aware of the IDSR policies. About half of the respondents were knowledgeable about the DSN system in the country. However detailed knowledge about the reporting forms was poor. For instance, on the knowledge of the respondents about the respective forms; only 4.2% each knew the form 001 and 002 are used for immediate and weekly reporting of diseases while 3.2% of them knew form 003 used for monthly reporting. In a different report in Anambra state, more than a quarter of health-care personnel in the state were aware of the IDSR form 001, 002

Table 2. Respondent's awareness of IDSR, notification forms and where to report notifiable diseases in the country.

Variables	Frequency n=190	Percentage (%)
Ever heard of IDRS before		
Yes	17	8.9
No	173	91.1
Awareness of IDSR policy in the country		
Yes	24	12.6
No	166	87.4
Ever seen a diseases notification forms before		
Yes	18	9.5
No	172	90.5
Where to report diseases		
LG Health Office is an ideal section to report diseases	59	31.1
State Ministry of Health (Epidemiological unit)	64	33.7
Federal Ministry of Health (Epidemiological unit)	61	32.1
Don't know	6	3.2
Respondents category of IDSR Knowledge		
Good	93	48.9
Poor	97	51.1

Table 3. Practice of reporting diseases according to the IDSR among respondents in Lagos.

Variables	Frequency n=190	Percentage (%)
Ever reported a notifiable disease		
Yes	26	13.7
No	164	86.3
How do you report the diseases (n=26)		
Phone only	3	11.5
Forms only	20	76.9
Phone, forms and electronically	3	11.5
Where do you report to (n=26)		
Local government health office	9	34.6
State ministry of health (epidemiological unit)	12	46.2
Federal ministry of health (epidemiological unit)	5	19.2

and 003 for immediate/case-based reporting, weekly notification of epidemic-prone diseases and monthly notification of diseases of public health-care importance.¹¹ This underscores the need of intervention to improve awareness and knowledge among the health personnel.

The major reasons given by the respondents for not reporting notifiable diseases are lack of knowledge of how to report, inefficiency of the health department and for those who had reported before, lack of feedback on diseases they have reported. Similar to this study, previous authors have reported lack of knowledge of how or to whom to report and inadequate feedback as common reasons for not reporting notifiable disease.¹²⁻¹⁴ Feedback had been reported as a major component of a surveillance system.¹⁵ Studies showed that 33% and 40% of health-care workers at primary health care in Nigeria and Germany respectively received feedback on their surveillance data.^{11,16} In our study these observations reflect a lack of emphasis by public health departments and health authorities on surveillance support activities. This lack of

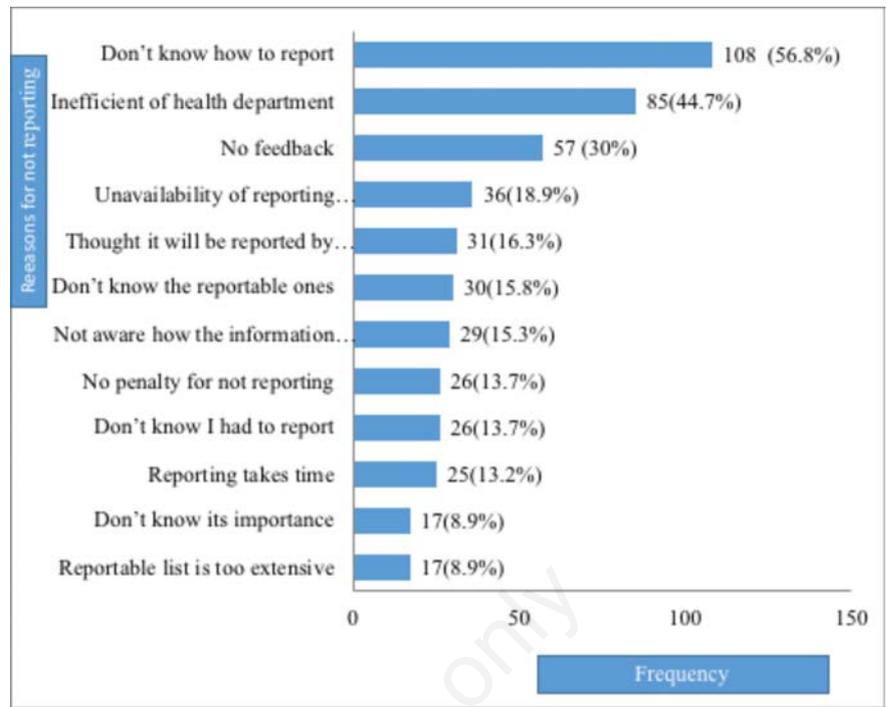


Figure 1. Reasons for not reporting a disease among the respondents in Lagos.

Table 4. Associations between awareness, knowledge of IDSR and ever reported a diseases.

Variables	Ever reported a disease (n%)		Total	Chi-square	P-Value
	Yes	No			
Ever heard of IDSR					
Yes	7 (41.2)	10 (58.8)	17	12.0	0.001
No	19 (11.0)	154 (89.0)	173		
Aware of IDSR policy					
Yes	7 (29.2)	17 (70.8)	24	5.6	0.018
No	19 (11.4)	147 (88.6)	166		
Ever seen the diseases notification form					
Yes	14 (77.8)	4 (22.2)	18	69.2	<0.001
No	12 (7.0)	160 (93.0)	172		
Knowledge of IDSR					
Good	14 (14.4)	83 (85.6)	97	0.1	0.760
Poor	12 (12.9)	81 (87.1)	93		
Where did you report to					
LG health office	9 (100.0)	0 (0.0)	9	4.3	0.113
SMH epidemiological unit	12 (100.0)	0 (0.0)	12		
FMOH epidemiological unit	4 (80.0)	1 (20.0)	5		

Table 5. Logistic regression relationship between ever report a notifiable disease and awareness of IDSR.

Variables	Odd ratio	95% Confidence interval		P-value
		Lower	Upper	
Ever heard of IDSR				
No	5.7	1.9	16.7	0.002
*Yes				
Aware of IDSR policy				
No	3.2	1.2	8.7	0.023
*Yes				
Ever seen a notification form before				
No	46.7	13.3	164.0	<0.001
*Yes				

*Reference group; variables significant at P<0.2 on the bivariate analysis was included in the model.

emphasis might arise from a mistaken perception that such activities are not vital for a successful surveillance programme, or from a lack of adequate resources, human and otherwise, at the central level.

Conclusions

The level of knowledge of the IDSR was average and the prevalence of those that had ever reported a notifiable disease was low which might have resulted to low rate of reporting for some of the notifiable diseases encountered by the respondents. Ignorance of reporting requirements and absence of feedback are identified as factors militating against efficient reporting among private medical laboratory service providers.

Recommendation

Regular information, education and communication programs concerning the IDSR programme and its importance to the public, is recommended for health-care facility workers generally but particularly for the laboratory scientists. For data collection to be effective, the forms for reporting of disease should be readily available. Furthermore, there should be regular provision of copies of the standard case definitions guides, transportation, as well as other necessary logistics to the health care facility by the local and state governments. Laboratory staff particularly those in gateway cities needs to be conscious of the surveillance guidelines and comply with its provisions to prevent importation of exotic diseases. Thus regular training of laboratory staff on IDSR is necessary and beneficial to public health service in the state. However, beyond awareness of surveillance guidelines, strengthening laboratory capacity to provide services for identification and confirmation of microbial agents has become imperative. Laboratories are required to aid diagnosis, differentiate between similar syndromes and illnesses and therefore ensure the accuracy of diagnosis. Early diagnosis of the infectious agent respon-

ble for an outbreak could aid speedy intervention in epidemic conditions. Public health laboratory capacity thus needs to be strengthened to respond to outbreak of diseases and provide strong support to its control throughout the federation. While reference laboratories are often established to provide confirmatory services for cases of diseases from different parts of the nation strong peripheral laboratories will ensure that common microbial agents often implicated in outbreaks are rapidly isolated and thus preventive services commenced to mitigate the impact of an outbreak.

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