

KNOWLEDGE AND PRACTICE OF DISEASE SURVEILLANCE AND NOTIFICATION AMONG DOCTORS IN TARABA STATE, NORTH-EAST NIGERIA

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ABSTRACT

Recognition and reporting of diseases, most especially communicable diseases, is an important step in the control and prevention of disease spread among individuals, communities and countries. By virtue of their training and leadership position in the healthcare system, doctors are relied upon for driving an effective surveillance and notification system. The study assessed the level of knowledge and practice of disease surveillance and notification among doctors in Taraba State, Northeast Nigeria. It was descriptive cross-sectional in design. Data collection was done using a pre-tested, self-administered questionnaire. Data obtained was analyzed using Microsoft excel and Epi Info version 7.2.1.0. A p-value of ≤ 0.05 was considered statistically significant. Ninety respondents participated in the study. Their mean age was 41.6 ± 9.25 years while the mean years of practice was 12.4 ± 9.51 years. Majority of the respondents (67.8%) had never attended any training on disease surveillance and notification (DSN). Only 41.1% had good knowledge of DSN. Sixty per cent (60.0%) of respondents admitted ever reporting a notifiable disease. Lack of training was identified as the commonest reason (67.5%) for non/poor reporting. Regular training and re-training of doctors was recommended to improve their knowledge and practice of DSN.

Key Words: disease surveillance, notification, doctors, Taraba

INTRODUCTION

The need for prevention of disease spread among individuals, communities and countries necessitated the birth of the Disease Surveillance and Notification System.¹ This was aimed at reporting disease conditions that need prompt and preventive intervention.² Recognition and reporting of communicable diseases is an important step in protection of the public from consequences of such conditions.³ A notifiable disease is one in which regular, frequent and timely information regarding individual cases is considered necessary for the prevention and control of the disease.⁴ These diseases are deemed of sufficient importance to public health to require that their occurrence must be reported. Hence, they could also be referred to as reportable diseases.⁵ Their notification

provides the starting point for investigations into the failure of preventive measures such as immunization, tracing sources of infection, finding common vehicles of infection, describing the geographic clustering of infection, and various other purposes, depending on the particular disease.⁶ Notifiable diseases are major causes of huge disease and economic burden to countries. They significantly contribute to global deaths annually.⁷ Acute respiratory infections, HIV/AIDS, diarrhea, malaria and tuberculosis are the biggest infectious killers in the world and particularly in Africa. These diseases cause about 13 million deaths per year. But besides the high mortality, they also engender a high burden in terms of disability and morbidity, affecting individuals, families and entire societies.⁸ While outbreaks of infectious diseases have long presented a

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public health challenge especially in developing countries like Nigeria, the frequency of such outbreaks has risen tremendously in recent years. As a region, Africa is characterized by the greatest infectious disease burden and, overall, the weakest public health infrastructure among all regions in the world.⁷

Disease Surveillance and Notification (DSN) was introduced in Nigeria in 1988 following epidemic outbreaks of yellow fever and cerebro-spinal meningitis in 1986-1987 which revealed that the disease notification system was poor and undermined the national capacity to detect and control epidemics.⁹ The Federal Ministry of Health (FMOH) in Nigeria adopted the Integrated Disease Surveillance and Response (IDSR) strategy which was put forward by the WHO Regional Office for Africa as a valid means of implementing WHO International Health Regulations (IHR) in 2005.¹⁰ In Nigeria, the IDSR strategy requires routine reporting of 41 priority diseases and conditions into the IDSR system.¹⁰ These diseases have been grouped into 3 categories.^{11,12} (1) Epidemic prone diseases such as Anthrax, Cholera, Dengue Fever, Diarrhoea with blood (*Shigella*), Human influenza caused by a new subtype, Measles, Meningococcal Meningitis, Severe Acute Respiratory Illness (SARI), Severe Acute Respiratory Syndrome (SARS), Small Pox, Viral haemorrhagic fevers (Lassa, Ebola Virus Disease), Yellow Fever. (2) Diseases targeted for eradication and elimination: Acute Flaccid Paralysis (AFP)/Poliomyelitis, Buruli ulcer, Dracunculiasis, Leprosy, Lymphatic filariasis, Neonatal tetanus, Noma, Onchocerciasis, Tuberculosis. (3) Other diseases of public health importance, for example Adverse Effects following Immunization (AEFI), Asthma, Diabetes mellitus, Diarrhoea in children under 5 years of age, Epilepsy, Hepatitis B, Human Immunodeficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS) (new cases), Human rabies, Hypertension, Malaria, Malnutrition in children under 5 years of age, Maternal deaths, Pertusis, Plague, Severe Pneumonia in children less than 5 years of age, Schistosomiasis, Sexually

Transmitted Infections (STIs), Sickle Cell Disease, Trachoma, Trypanosomiasis, Tuberculosis, Typhoid Fever.

At the root of recognition of reportable conditions are the health personnel with requisite knowledge of disease or suspicious occurrences.¹ Doctors in particular are relied upon for reporting such conditions as they constitute the frontline stakeholders in the health sector.¹³ However, some doctors do not always report notifiable diseases.³ Many reasons for not reporting may include poor knowledge of the reportable disease and reporting requirements, not knowing how or whom to report to, being too busy, cumbersome nature of reporting tools, communication gap and lack of infrastructure or reporting tools.¹³⁻¹⁸

Several studies done to assess the knowledge and practice of disease notification among stakeholders show a disparity between knowledge and practice.¹⁹⁻²¹ The common problems of incomplete data and untimely reporting are all traceable to the level of knowledge and practice of personnel towards disease surveillance.¹⁰ However, there has not been any study on the way doctors report notifiable diseases in Taraba State to the best of our knowledge. This study aims therefore to assess the level of knowledge of disease surveillance and notification among medical doctors in Taraba State and to identify reasons for non-compliance with reporting system in this part of the country.

METHODOLOGY

Study Area, population and study design

The study area was Taraba State, located in the North-Eastern geopolitical zone of Nigeria. Taraba State was created on August 27th, 1991 out of the defunct Gongola State, with Jalingo as the State capital.²²⁻²⁴ It is divided into 16 Local Government Areas and 2 Special Development Areas.²² The State is bordered on the West by Nassarawa and Plateau States, to the North by Bauchi and Gombe States, by Adamawa State to the North-East, and by Benue State to the South-West. It shares an international boundary with the Republic of Cameroun to the South and South-East.²²⁻²⁴ Taraba State covers a land area of 59,400

square kilometres.²² According to the 2006 census figures by the National Population Commission, Taraba State had a population figure of 2,300,736 people, with 1,199,849 males, 1,100,887 females.^{22,23} There are over 80 ethnic groups found in Taraba State, each with its distinct historical and cultural heritage.^{22,23} As a result of its agrarian nature, the predominant population of the State (75%) engage in farming as an occupation. The State also has a growing number of those who engage in white collar jobs owing to the assumption of a cosmopolitan character by the State capital.²² Jalingo, the State capital and most developed town is home to the only 2 tertiary healthcare institutions in the State- the Federal Medical Centre and a State owned Specialist Hospital. The State Government also has 6 General Hospitals, 3 First Referral Hospitals and 4 Cottage Hospitals, one in each LGA. Besides, they are several missionary and private clinics dotted across the State, some manned by medical doctors who are mostly working with the government hospitals. Majority of the private clinics are concentrated in the State capital. Primary Health Centres also exist in various Local Governments but are under the control of the LGAs and do not employ doctors.

This was a descriptive cross-sectional study to assess the knowledge and practice of Disease Surveillance and Notification (DSN) among medical doctors in Taraba State. Study was conducted from December 2018 to June 2019. The study population was medical doctors who are practicing in both public and private health facilities across Taraba State.

Sample Size Determination

The sample frame for the study was 171. This was the total number of medical doctors practicing in Taraba State as of September 2018 according to the records of the Nigeria Medical Association Taraba State. All licensed doctors are by default members of this association and have their records with the NMA. No sampling technique was used. All doctors who attended the biannual CME/NMA general meetings within the data collection period and consented to participate were recruited.

Data Collection Tool

Data was collected using a self-administered, structured questionnaire. The questionnaire was adopted from previous literature.²⁵ The questionnaire was used to obtain data on the following:

Section A: Socio-demographic characteristics. This section consisted of 4 items namely age, sex, years of medical practice and type of health facility.

Section B: Training. This section sought to know if the respondent had ever attended any training on disease surveillance and notification system and if so, how many times and when last s/he did.

Section C: Knowledge of disease surveillance and notification. This section consisted of 38 questions that aimed to assess participant's knowledge of the major functions of the disease surveillance and notification system, notifiable diseases and methods of notification. The participant's knowledge of common epidemic prone diseases and diseases targeted for eradication and elimination was also assessed.

Section D: Practice of disease surveillance and notification system. Five questions were asked to determine the number of respondents that had ever notified the occurrence of any of the priority diseases, the number of times they had done so, the authority they usually reported to, and whether they had ever received feedbacks after notifying any disease.

Section E: Reasons for non-compliance with reporting requirements. The reason for this section was to identify why diseases were not reported as often as they should.

Pre-test

The validity of the questionnaire was pre-tested among 20 medical doctors in Adamawa State, another State in North-east Nigeria.

Data Analysis

Data was entered and analyzed using Microsoft excel and Epi Info statistical software version 7.2.1.0 (CDC Atlanta Georgia). The results were presented in form of frequency tables and percentages. Categorical variables were compared using

the chi-squared test. A p-value of less than 0.05 was considered significant. In knowledge section, one score was awarded to every correct answer and zero score to wrong answers, scores $\geq 60\%$ were graded as good, $< 60\%$ were graded as poor.

Ethical Approval

Ethical approval to carry out the study was obtained from the HREC of Faculty of Health Sciences, Taraba State University Jalingo. Participation in the study was voluntary. Written informed consent was obtained from all the participants. The nature of the study, its relevance and intended purpose was explained to them. Information provided was treated confidentially. No risk was involved to the subjects.

RESULTS

Ninety questionnaires out of 91 administered were properly filled and returned giving a response rate of 98.9%. Majority of the doctors (65.6%) were less than 45 years of age with mean age of 41.6 ± 9.25 . Only 6% of the respondents were female while the males were 94%. Most of the doctors (56.7%) were young in practice (1-10 years). The mean length of service was 12.4 years. Above one half of the respondents (51%) worked with the Federal Medical Centre. Every seven (7) out of 10 doctors had never attended any training on IDSR (Table 1)

Nine out of every 10 respondents did not know the number of notifiable diseases in Nigeria. Over 90% had good knowledge of epidemic prone diseases while less than one-fifth (15.6%) had good knowledge of notifiable diseases and how they are reported. Over all, less than half of respondents (41.1%) had good knowledge of disease surveillance and notification (Table 2)

Three-fifth (60%) of the respondents had ever reported occurrence of diseases while two-fifth (40%) had not. Among those who reported, 39% did to the facility focal person while the rest reported to other authorities. Only 46% received feedback following reporting (Table 3)

The study showed that the practice of disease notification decreases with both chronological age and age of medical practice. Younger doctors, in age and service years, notified diseases more often than the older ones. This was however not statistically significant (Fisher's $p = 0.803$, $\chi^2 = 2.42$, $p = 0.299$) both for age and years of practice respectively) There was also no statistically significant association between training and practice of disease notification ($\chi^2 = 0.78$, $p = 0.395$). Two-third of those who had good knowledge of DSN (67.6%) had been involved in disease notification while a little above half of those with poor knowledge (54.7) had also notified diseases in the past. No association was found between knowledge of DSN and practice ($\chi^2 = 0.22$, $p = 0.116$) (Table 4)

Lack of training, motivation and feedback was the commonest reason for poor reporting practice (68%), followed by non-availability of reporting materials (62%) (Table 5)

Table 1: Socio-demographic Characteristics of Respondents.

| Background Characteris | Frequency=(90) | Percentage(%) |
|--------------------------------|------------------|---------------|
| Age Group (year) | | |
| 25-34 | 27 | 30.0 |
| 35-44 | 32 | 35.6 |
| 45-54 | 21 | 23.3 |
| 55 and above | 10 | 11.1 |
| Mean \pm SD | 41.6 \pm 9.251 | |
| Gender | | |
| Male | 85 | 94.4 |
| Female | 5 | 5.6 |
| Years of Practice | | |
| 1-10 | 51 | 56.7 |
| 11-20 | 20 | 22.2 |
| 21 and above | 19 | 21.1 |
| Mean \pm SD | 12.4 \pm 9.516 | |
| Health Facility Type | | |
| Federal | 46 | 51.1 |
| State | 37 | 41.1 |
| Private | 7 | 7.8 |
| Attended training on DS | | |
| Yes | 29 | 32.2 |
| No | 61 | 67.8 |

Table 2: Respondents' Knowledge of Notifiable Diseases.

| Variables | Frequency (n = 90) | Percentage (%) |
|---|--------------------|----------------|
| Number of Notifiable Diseases in Nigeria | | |
| Correct | 9 | 10.0 |
| Incorrect | 81 | 90.0 |
| Awareness of the Standardized Case Definitions for Notifiable Diseases | | |
| Yes | 48 | 53.3 |
| No | 42 | 46.7 |
| Knowledge of Basic Functions of Disease Surveillance system | | |
| Good | 82 | 91.1 |
| Poor | 8 | 8.9 |
| Knowledge of Diseases Notified and how they are Reported | | |
| Good | 14 | 15.6 |
| Poor | 76 | 84.4 |
| Knowledge of Epidemic Prone diseases | | |
| Good | 82 | 91.1 |
| Poor | 8 | 8.9 |
| Knowledge of Diseases Targeted for Eradication and Elimination | | |
| Good | 36 | 40.0 |
| Poor | 54 | 60.0 |
| Overall Knowledge of DSN | | |
| Good | 37 | 41.1 |
| Poor | 53 | 58.9 |

Table 3: Respondents' Practice of Disease Notification.

| Variables | Frequency | Percentage (%) |
|---|-----------------|----------------|
| Ever notified any disease | (n = 90) | |
| Yes | 54 | 60.0 |
| No | 36 | 40.0 |
| Number of times respondents have notified diseases | (n = 54) | |
| 1-2 | 16 | 29.6 |
| 3-4 | 13 | 24.1 |
| >4 | 25 | 46.3 |
| Authorities diseases were reported to | (n = 54) | |
| Facility focal person | 21 | 38.9 |
| DSNO at the LG | 15 | 27.8 |
| Hospital Management | 11 | 20.3 |
| Designated officer at SMOH | 7 | 13.0 |
| Ever received feedback following reporting | (n = 54) | |
| Yes | 25 | 46.3 |
| No | 29 | 53.7 |

Table 4: Relationship between some Socio-demographics, Knowledge,

| Variable | Yes Frequency (%) | No Frequency (%) | χ^2 (p-value) |
|----------------------------------|----------------------|---------------------|--------------------|
| Age Group | | | Fisher's p = 0.86 |
| 25-34 | 18 (66.7) | 9 (33.3) | |
| 35-44 | 19 (59.4) | 13 (40.6) | |
| 45-55 | 12 (57.1) | 9 (42.9) | |
| 55 and above | 5 (50.0) | 5 (50.0) | |
| Years of Practice | | | 2.42 (0.299) |
| 1-10 | 34 (66.7) | 17 (33.3) | |
| 11-20 | 11 (55.0) | 9 (45.0) | |
| 21 and above | 9 (47.4) | 10 (52.6) | |
| Facility Type | | | Fisher's p = 0.89 |
| Federal | 27 (58.7) | 19 (41.3) | |
| State | 22 (59.5) | 15 (40.5) | |
| Private | 5 (71.4) | 2 (28.6) | |
| Training | | | 0.78 (0.395) |
| Trained | 18 (62.1) | 11 (37.9) | |
| Untrained | 36 (59.0) | 24 (41.0) | |
| Overall Knowledge of IDSI | | | 0.22(0.116) |
| Good | 25 (67.6) | 12 (32.4) | |
| Poor | 29 (54.7) | 24 (45.3) | |

Table 5: Reasons for Non-Compliance with Reporting Requirements.

| Reasons | Frequency | Per cent (%) |
|--|-----------|--------------|
| No training, motivation, incentives, feedback | 54 | 67.5 |
| Unavailability of materials | 49 | 62.0 |
| Reporting procedure is cumbersome | 40 | 53.3 |
| Not sure if the diagnosed disease is notifiable | 36 | 46.8 |
| Not my duty (thought someone else would report) | 23 | 29.5 |
| Not aware of any disease notification system | 21 | 26.3 |
| Too busy to report | 21 | 27.3 |
| No need to report because patient has been treated | 11 | 14.1 |

DISCUSSION

The responsibility of reporting designated diseases to appropriate authorities for decision making in implementing public health interventions for the prevention and control of communicable diseases is that of all and sundry. However, clinicians, by virtue of their training and pivotal position as leaders of the healthcare delivery team are relied upon more in order to achieve this goal. The knowledge about the notification of disease, though not sufficient in itself, is very important for the reporting of notifiable diseases.²¹ This study found that the proportion of doctors who had good knowledge about DSN was less than half (41.1%). This is slightly lower than the result of a study conducted in Benin City in 2014 among resident doctors which revealed that 51.8 had good knowledge about DSN.²⁰ The difference is not surprising as the latter was done in a tertiary health institution where most of the respondents were in residency training whereas majority of the participants in this study were medical officers since there is no residency training institution in the State. In Osun State, Southwest Nigeria, a study among private medical practitioners reported 80% good knowledge of DSN.²⁶ Also in Taiwan, a study conducted in 2008 among doctors involved in private practice revealed that 87.4% knew about disease surveillance.³⁰

Across domains of knowledge, a vast majority (91.1%) had good knowledge of epidemic prone diseases. This corroborates the result of a study conducted in Oyo State in 2015 where 82.7% of the respondents which included other healthcare workers had good knowledge in this regard.²⁷ The good knowledge of epidemic prone diseases is not unexpected as they can easily be known even among other cadres of health care workers because they are often severe and also have potential to cause high morbidity and mortality.²⁷ Regarding diseases notified in Nigeria and how they are reported- either immediately or by filling forms- less than one-fifth (15.6%) of respondents had good knowledge. This poor knowledge can be attributed to probably lack of training about

IDSR in the study setting, a finding that is also apparent in the study. The study revealed that only about one-third (32.2%) of the respondents had been trained on DSN. This is low compared to a similar study carried out in Osun and Ekiti States Nigeria where 76.2% of the healthcare workers had been trained on DSN.²⁸ In agreement with this study however, several studies in different parts of Nigeria and Africa have also reported low rates of participation in training.^{6,13,14,16,18,29} Figures as low as 14% have even been documented.⁶

The study found that the practice of DSN among doctors in Taraba State was good despite low knowledge of DSN. Compared to doctors in a study in Benin City where 89.7% had poor practice of DSN,²⁰ 60% of the respondents in this study had good practice. As mentioned earlier, knowledge of DSN among participants in Benin City was however higher than that found in this study. This paradox of knowledge not always, necessarily translating to behaviour change (practice in this case) is a puzzle that social scientists have been trying to unravel. Higher level of practice of DSN of 70.9% has been reported among health care workers in Yobe State in 2003.¹⁴ A study in Lagos also found impressive practice of 75.7% and 65.4% among health care workers in public and private facilities respectively.²⁵

In consonance with studies in Anambra and Osun States,^{21,26} this study identified lack of training (67.5%) followed by unavailability of reporting materials (62.0%) as the commonest reasons for non/poor reporting of diseases as required. Local government DSNOs who occasionally receive training from WHO and other partners for capacity building are saddled with the responsibility to train and retrain healthcare workers at the facility level.²⁵ Hospital staff who have received such training are also expected to cascade same to other facility staff.

The study did not find statistically significant association between age of respondents, years of practice, facility type, training on DSN and practice of DSN.

CONCLUSION

The practice of disease surveillance and notification among doctors in Taraba State was generally good despite suboptimal knowledge of IDSR. Majority of the doctors had never attended any training on IDSR. Regular training and re-training especially in the areas of basic knowledge of notifiable diseases in Nigeria and how they are reported will greatly improve the practice of IDSR in the State.

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CONFLICT OF INTEREST

None

CONTRIBUTION OF AUTHORS

Atinge S conceived the idea, designed the study with Rimande J. Rimande J and Atinge S collected the data and analyzed it with Bulndi IG. Atinge S prepared the manuscript. Rimande J and Bulndi IG critically reviewed manuscript. All authors approved the manuscript.

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