



Knowledge and Practice of Disease Surveillance and Notification among Resident Doctors in a Tertiary Health Institution in Benin City: Implications for Health Systems Strengthening

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KEYWORDS

Disease surveillance,
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ABSTRACT

Introduction

A nation's disease control effort is often as good as the surveillance and notification system put in place, which would help to generate the much needed data required for planning, monitoring and evaluation. This study assessed the knowledge and practice of disease surveillance and notification (DSN) among resident doctors in a tertiary health institution in Benin City, Edo state.

Method

A cross sectional descriptive study was conducted among all resident doctors in UBTH. Data was collected through the use of a structured, self administered questionnaire analysis was by computer.

Results

Two hundred and twenty four respondents (224) participated in the study. The mean age of respondents was 31.1 ± 4.6 years, while the mean years of practice was 4.5 ± 3.9 years. Barely above half of the respondents (51.8%) had good knowledge of disease notification. A high proportion (82.0%) of the senior registrars had good knowledge when compared with the other cadre of resident doctors. Knowledge of DSN was significantly associated with years of practice ($p < 0.001$), designation ($p < 0.001$) and department ($p = 0.009$) of respondents. Majority of respondents (89.7%) had a poor practice of DSN.

Conclusion

The study has established that there is a gap between the knowledge and practice of disease notification, and this will impact negatively on health system strengthening. Integrated Disease Surveillance and Response (IDSR) should be included in the orientation programme for doctors coming into the residency programme, as they are usually the first contact with the patients.

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INTRODUCTION

Disease surveillance is the entirety of the processes to detect, evaluate and report on the occurrence of disease within a defined population group or geographic area.¹ The Integrated Disease

Surveillance and Response (IDSR) strategy initiated by the WHO provide a basis for the rational use of resources for disease control and prevention.² Passive surveillance requires routine collection of information on notifiable diseases, the surveillance

system, however, should show a dynamic adaptability for active surveillance especially if an outbreak occurs.³

The communicable disease burden in developing countries has remained high due to such reasons as poor implementation of primary healthcare strategies, poor environmental health efforts, ignorance of a large proportion of the populace on health matters and poor national health information systems integration.³ In Nigeria, the 2009 revision of the IDSR lists forty (40) notifiable or priority diseases in three distinct categories namely: thirteen (13) epidemic prone diseases, five (5) diseases targeted for elimination and eradication, and twenty two (22) diseases of public health importance.⁴

In a cross sectional study done in Benin City, Edo State involving 134 doctors from a tertiary and a secondary health facility it was observed that 11.9% of doctors had a good knowledge of disease notification.⁵ A study in Durban, South Africa found that overall, the knowledge of doctors with regards to notifiable disease conditions was poor.⁶

Adefuye et al carried out a cross sectional study among 153 doctors to determine how much physicians knew about the reporting process, range of reportable diseases and factors that influence compliance to reporting or otherwise in a tertiary health institution in Sagamu, South west of Nigeria, a doctor ever seeing a notification form and being a consultant significantly predicted ever reporting an Infectious disease.⁷ In Yobe state, North Eastern Nigeria, Bawa et al carried out a cross sectional study reported in 2003 on the knowledge, attitude and practices of the reporting of notifiable diseases among 144 health workers drawn from the health facilities in the Local government. Only 38.2% of the respondents were aware of a national disease surveillance and notification system, 70.9% had ever reported while 21.8% of the respondents had ever received feedback on the reports they forwarded to

higher authorities.⁸

Health workers play a key role in Disease Surveillance and Notification (DSN); a study of this nature is thus relevant among doctors working in a tertiary health facility to determine their current level of knowledge and practice. The objective of the study was to determine the level of knowledge and practice of resident doctors in the University of Benin Teaching Hospital (UBTH) on disease surveillance and their notification.

MATERIALS AND METHODS

This study was carried out in the University of Benin Teaching Hospital, Edo state, South South geo – political zone of Nigeria which was established in 1973. It was a cross-sectional descriptive study conducted between July and September 2010.

The study population comprised all doctors below the rank of consultant (resident doctors, medical officers and house officers) employed by UBTH. The calculated minimum sample size was 161 using the Cochran formula⁹ with the proportion with good knowledge as 11.9% from the study by Ofili et al. A total population survey, involving all 430 resident doctors in UBTH was done, however only 224 participated in the study giving a response rate of 52.1%. Data was collected using a self administered structured questionnaire which was pre-tested among resident doctors in Irrua Specialist Teaching Hospital Irrua, Edo State.

The level of knowledge of DSN by respondents was scored by allocating a score of one (1) for a correct response and zero (0) for an incorrect response. Ten of the questions asked required respondents to tick the appropriate category for the 10 listed diseases using the 2009 IDSR technical guideline which were categorized as epidemic prone diseases, diseases targeted for elimination and eradication; and diseases of public health importance. Respondents were then required to state two other diseases in the above

Table I: Socio-demographic characteristics of respondents (N=224)

| Variable | Frequency | Percent |
|--------------------------|------------------|----------------|
| Age (Years) | | |
| 20-29 | 110 | 49.1 |
| 30-39 | 103 | 46.0 |
| 40-49 | 11 | 4.7 |
| Sex | | |
| Male | 163 | 72.8 |
| Female | 61 | 27.2 |
| Ethnic group | | |
| Benin | 60 | 26.8 |
| Esan | 48 | 21.4 |
| Igbo | 42 | 18.8 |
| Yoruba | 19 | 8.5 |
| Urhobo | 18 | 8.0 |
| Others | 34 | 15.1 |
| Marital status | | |
| Single | 116 | 51.7 |
| Married | 107 | 47.8 |
| Separated | 1 | 0.4 |
| Department | | |
| Community Health | 11 | 4.9 |
| Dentistry | 28 | 12.5 |
| Family Medicine | 14 | 6.2 |
| Medicine | 37 | 16.5 |
| Obs. & Gynea. | 33 | 14.7 |
| Paediatrics | 33 | 14.7 |
| Pathology | 8 | 2.6 |
| Psychiatry | 3 | 1.3 |
| Surgery | 57 | 25.1 |
| Designation | | |
| House officer | 95 | 42.4 |
| Medical officer | 28 | 12.5 |
| Registrar | 62 | 27.7 |
| Senior registrar | 39 | 17.4 |
| Years of practice | | |
| 0-4 | 124 | 55.4 |
| 5-9 | 77 | 34.4 |
| 10-14 | 16 | 7.1 |
| 15-19 | 7 | 3.1 |

Table II: Sociodemographic Characteristics and Knowledge of Disease Surveillance and notification (DSN) by respondents

| Characteristic | Knowledge of DSN | | Total Freq. (%) | Test statistic and p-value |
|--------------------------|-------------------|-------------------|--------------------|---|
| | Poor Freq. (%) | Good Freq. (%) | | |
| Age (Years) | | | | |
| 20-29 | 64 (58.2) | 46 (41.8) | 110 (100) | $\chi^2 = 9.343$ df= 2 p = 0.009* |
| 30-39 | 41 (39.8) | 62 (60.2) | 103 (100) | |
| 40-49 | 3 (27.3) | 8 (72.7) | 11 (100) | |
| Sex | | | | |
| Male | 76 (46.6) | 87 (53.4) | 163 (100) | $\chi^2 = 0.605$ df = 1 p= 0.437 |
| Female | 32 (52.5) | 29 (47.5) | 61 (100) | |
| Designation | | | | |
| House officer | 61 (64.2) | 34 (35.8) | 95 (100.0) | $\chi^2 = 27.357$ df= 5 p < 0.001** |
| Medical officer | 16 (57.1) | 12 (42.9) | 28 (100.0) | |
| Registrar | 24 (38.7) | 38 (61.3) | 62 (100.0) | |
| Senior registrar | 7 (17.9) | 32 (82.1) | 39 (100.0) | |
| Years of practice | | | | |
| 0-4 | 77 (62.1) | 47 (37.9) | 124(100.0) | $\chi^2 = 24.87$ df=3 p < 0.001** |
| 5-9 | 27 (35.1) | 50 (64.9) | 77(100.0) | |
| 10-14 | 4 (25.0) | 12 (75.0) | 16(100.0) | |
| >15 | 0 (0.0) | 7 (100.0) | 7(100.0) | |

*Significant at p<0.05, **Significant at p<0.001

categories not captured in the questionnaire list that they had ticked. Four other questions were asked on relevant aspects of disease surveillance and notification. A total of 20 items were scored for knowledge in the questionnaire. The minimum obtainable score was 0, the maximum obtainable score was 20. A score of 9 or less was categorized as poor knowledge while a score of 10 and above was categorized as good knowledge.

The practice of respondents was determined by 5 questions. A positive response was given a score of 1 while a negative response was given a score of 0. Good practice was determined by a score of 3-5 while poor practice was determined by a score of 2 or less for each respondent.

Data was analysed using the Statistical Package for Scientific Solutions (SPSS) version 16.0 software. Individual informed consent was obtained from participants, permission was obtained from the UBTH management for the study to be carried out, ethical clearance was obtained from the ethics and research committee, University of Benin Teaching Hospital.

RESULTS

Two hundred and twenty four respondents participated in this study. The mean age of respondents was 31.1 ± 4.6 years (male = 31.7 ± 4.7 , female = 29.4 ± 4.1) (Table I). Majority of the respondents 163 (72.8%) were males. One hundred and sixteen (51.7%) of the respondents were single, 47.8% of respondents were married. The highest proportion of respondents 57 (25.1%) were from the department of surgery and House officers comprised the largest cadre of respondents 95 (42.4%) in the survey followed by the registrars 62 (27.7%). The mean years of practice of respondents was 4.51 ± 3.9 years (male = 4.6 ± 3.8 , female = 4.2 ± 4.0) with a range of 1-18 years.

The senior registrar cadre had highest proportion of respondents with good knowledge of DSN compared with the other cadres. There was a statistically significant association between the designation (job status) of respondents and knowledge of DSN ($\chi^2 = 27.357$, $df = 5$, $p < 0.001$). There was no statistically significant association between the sex of respondents and their knowledge of DSN ($\chi^2 = 0.605$, $df = 1$, $p = 0.437$). (Table II).

Good knowledge of DSN was higher among resident doctors of the age group 40-49 years (72.7%) compared with other age groups. There was a statistically significant association between the age group of respondents and their knowledge of DSN ($\chi^2 = 9.343$, $df = 2$, $p = 0.009$). All respondents (n=7, 100%) who had practiced for 15 years and above had a good knowledge of DSN. There was a statistically significant association between the years of practice of respondents and knowledge of DSN ($\chi^2 = 24.87$, $df = 3$, $p < 0.001$).

Eighty one percent of respondents in Department of Community Health had a good knowledge followed by residents in Family Medicine (71.4%). There was a statistically significant association between the department of respondents and their knowledge of DSN ($\chi^2 = 20.308$, $df = 8$, $p = 0.009$). (Table III).

Majority of the respondents 201 (89.7%) had a poor practice of DSN (Table IV). There was no statistically significant association between the age group of respondents and their practice of DSN ($\chi^2 = 4.043$, $df = 2$, $p = 0.132$); the sex of respondents and their practice of DSN ($\chi^2 = 1.180$, $df = 1$, $p = 0.331$).

The senior registrars seemed to have more respondents with a good practice 9 (23.7%) and there was a statistically significant association between the designation of respondents ($p = 0.044$), years of practice of respondents ($p < 0.001$) (Table IV), Department of respondents ($p < 0.001$) (Table V) and their practice of DSN.

Table III: Department of respondents and knowledge of DSN

| Department | Knowledge of DSN | | Total |
|-------------------|-------------------|-------------------|--------------------|
| | Poor Freq. (%) | Good Freq. (%) | |
| Community health | 2 (18.2) | 9 (81.8) | 11 (100.0) |
| Dentistry | 23 (82.1) | 5 (17.9) | 28 (100.0) |
| Family medicine | 4 (28.6) | 10 (71.4) | 14 (100.0) |
| Medicine | 16 (43.2) | 21 (56.8) | 37 (100.0) |
| Obs & Gynaecology | 17 (51.5) | 16 (48.5) | 33 (100.0) |
| Paediatrics | 15 (45.5) | 18 (54.5) | 33 (100.0) |
| Pathology | 3 (37.5) | 5 (62.5) | 8 (100.0) |
| Psychiatry | 1 (33.3) | 2 (66.7) | 3 (100.0) |
| Surgery | 27(47.4) | 30 (52.6) | 57 (100.0) |
| Total | 108 (48.2) | 116(51.8) | 224 (100.0) |

² = 20.308, df= 8, p=0.009

DISCUSSION

Majority of the respondents in this study were male which was similar to the findings of a survey among resident doctors in Sagamu,⁷ Ogun state and reflects the sex distribution in most residency training institutions in Nigeria.

The highest proportion of respondents in this study came from the department of Surgery. This was similar to the findings⁵ in an earlier study among doctors in Edo state. A reason for this could be the number of sub specialties under surgery such as Orthopaedics and trauma, Ophthalmology, Otorhinolaryngology, Urology, General surgery and Neurosurgery who were eligible as respondents and the fact that they represent the largest department in the hospital.

This study revealed that barely above half of the respondents had a good knowledge of Disease Surveillance and Notification. This was an improvement over an earlier study in Benin City⁶

carried out in 1999 where 11.9% had a good knowledge of DSN; a reason for the increase could be the increased awareness on the IDSR and the activities of the DSN unit in the hospital. The scoring of occupational notifiable diseases included in the earlier study and excluded in this present study could also have affected the scores for knowledge by respondents as occupational notifiable diseases are not included in the IDSR strategy.

Resident doctors in the Department of Community Health were found to have a good knowledge of DSN, followed by residents in Family Medicine when compared with respondents from other departments. This could be due to the fact that the resident doctors in community health go through a formal training and a posting in the Infection control unit in which they are involved in relevant activities that include Disease Surveillance and Notification, while resident doctors in family medicine have to do a rotation in community health as part of their post graduate training. It could also be due to inclusion of

Table IV: Socio-demographic characteristics and practice of DSN by respondents

| Characteristic | Practice of DSN | | Total Freq. (%) | Test statistic and p-value |
|--------------------------|-------------------|-------------------|--------------------|-------------------------------|
| | Poor Freq. (%) | Good Freq. (%) | | |
| Age | | | | |
| 20-29 | 103 (93.6) | 7 (6.4) | 110 (100.0) | Fisher's exact = 0.128 |
| 30-39 | 87 (84.5) | 15 (15.5) | 102 (100.0) | |
| 40-49 | 11 (91.6) | 1 (8.4) | 12 (100.0) | |
| Sex | | | | |
| Male | 144 (88.5) | 19 (11.7) | 163 (100.0) | Fisher's exact = 0.329 |
| Female | 57 (93.4) | 4 (6.6) | 61 (100.0) | |
| Designation | | | | |
| House officer | 89 (93.7) | 6 (6.3) | 95 (100.0) | Fisher's exact = 0.044* |
| Medical officer | 25 (89.2) | 3(10.7) | 28 (100.0) | |
| Registrar | 57 (91.9) | 5 (8.1) | 62 (100.0) | |
| Senior registrar | 30 (76.9) | 9 (23.1) | 39 (100.0) | |
| Years of practice | | | | |
| 0-4 | 118 (95.2) | 6 (4.8) | 124 (100.0) | Fisher's exact <0.001** |
| 5-9 | 68 (88.3) | 9 (11.7) | 77 (100.0) | |
| 10-14 | 10 (62.5) | 6 (37.5) | 16 (100.0) | |
| >15 | 5 (71.4) | 2 (28.6) | 7 (100.0) | |

*Significant at $p < 0.05$, **Significant at $p < 0.001$

DSN in the postgraduate training curriculum in these two Faculties. The resident doctors in the Departments in Dentistry had the least level of knowledge of DSN, a reason could be a possible

non inclusion of DSN in their undergraduate and postgraduate training curriculum.

This study revealed that the knowledge of Disease Surveillance and Notification increased with the

number of years of practice. There was a significant association between number of years of practice and the knowledge of DSN by respondents and it was observed that all the respondents with years of practice > 15 years had a good knowledge of DSN. A reason could be that the curriculum of junior residency training included some information on disease notification. Respondents with greater than 10 years in practice and presently in residency training may have worked in other sectors that might have increased their exposure to disease notification such as the local government or the state ministry of health. Residency training in Nigeria is usually completed within six years in most specialties except in some sub specialties in surgery.

This study found that the practice of DSN among resident doctors in UBTH was poor, the failure to notify by respondents could be due to their being unaware of the diseases listed in the IDSR (2009) and their standard case definitions. It could also be as a result of not being trained to know how and to whom to notify. This study observed that a majority of the respondents had no previous training in disease surveillance and

notification. The study by Bawa et al⁸ showed that most of the respondents that were aware of the reporting requirements listed lack of training on disease surveillance as one of the factors affecting disease surveillance and notification among them, this was similar to findings from this study. The IDSR strategy seeks to train a critical mass of at least 60% of health workers at all levels for the implementation of the IDSR¹⁰ this has not been achieved in the study population as just 39 (17.4%) of respondents reported a previous training in DSN. Resident doctors as part of the human resources for health can play a critical role in promoting and implementing the IDSR strategy in health facilities.

This study concluded that the level of knowledge of disease surveillance and notification among resident doctors in UBTH was poor in close to half of the

respondents and consequently there was a poor level of practice of disease notification by majority of respondents.

It was recommended that DSN training using the IDSR strategy should be included in the orientation programme of newly employed house officers and resident doctors into the hospital by the management through the department of community health. Regular seminars should be organised to educate resident doctors on disease surveillance and notification. Electronic versions of the IDSR (pdf) should be disseminated via email where available to the resident doctors to increase awareness and knowledge of DSN. The current notifiable disease list with copies of IDSR forms should be conspicuously displayed in the outpatient consulting rooms and emergency units by the hospital management. The notifiable disease list of 40 diseases should be reduced to a more manageable number (i.e 22) to aid user recall and compliance; and thus aid notification¹¹ Further research could test the effectiveness of the above measures in strengthening the health system.¹²

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