International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

Knowledge and practice of Integrated Diseases Surveillance and Response among Primary Health Care Workers in Kano State, Nigeria

USMAN SUNUSI USMAN [1, 2, *], ALIYU MUHAMMAD MAIGORO [3], LAWAL MUHAMMAD GANA [1], AMINA JUMMAI SHEHU [4], ADO SHEHU [5] and JIBRIL ADAMU DAMAZAI [1]

[1] *Department of Community Medicine, Faculty of Clinical Sciences, Yobe State University, Damaturu, Nigeria.*
[2] *Department of Community Medicine, Faculty of Clinical Sciences, Federal University Dutse, Jigawa State, Nigeria.*
[3] *Federal University of Health Sciences Teaching Hospital Azare, Bauchi State, Nigeria.*
[4] *World Health Organization, Kano State, WHO Field Office, Amana-city Estate, Kano State, Nigeria.*
[5] *Department of Nursing Sciences, Faculty of Allied Health Sciences, Abubakar Tafawa Balewa University Bauchi, Nigeria.*

International Journal of Science and Research Archive, 2024, 13(02), 3149-3160

Publication history: Received on 10 November 2024; revised on 18 December 2024; accepted on 20 December 2024

Article DOI: https://doi.org/10.30574/ijsra.2024.13.2.2531

Abstract

Background: Communicable diseases are among the leading causes of morbidity and mortality in developing countries; these diseases can easily be detected, prevented and controlled through the application of Integrated Diseases Surveillance and Response (IDSR). Yet, its (IDSR) uses remain sub-optimal in many developing countries.

Objective: this study aims to assess the knowledge and practice of IDSR among Primary Health Care (PHC) workers in Kano State, Nigeria.

Method: Facility-based cross-sectional descriptive study was used with the aid of participants administered questionnaire. A total of one hundred and seventy-seven participants were selected through multi-stage sampling technique; with a response rate of 92%. P-value of $\leq$ 5% was considered statistically significant.

Results: the mean and standard deviation of the age of study participants were 38.4± 7.9 years. The aggregate good knowledge score was 38% and on bivariate analysis, age, professional category and gender were significantly associated with good knowledge score ($p<0.05$). On adjusting for confounding effect, only professional category of CHEW (aOR=1.23, 95%CI=1.11 – 4.46) and CHO (aOR=3.81, 95%CI=1.51 – 7.40) remained predictors of knowledge of IDSR. While, the aggregate practice score of IDSR was 25.8% and on bivariate analysis age, professional category and gender were significantly associated with practice of IDSR. On adjusting for confounding effect, age of 50-59 years (aOR=2.89, 95%CI=1.25-6.71) and professional category of CHEW (aOR=1.27, 95%CI=1.12 – 3.57) and CHO (aOR=10.34, 95%CI=3.37 – 22.78) remained predictors of practice of IDSR

Conclusion: PHC workers should be trained and re-trained on different component of IDSR. IDSR should also be included in the curriculum of health care workers at all level in Nigeria.

Keywords: Knowledge; Practices; IDSR; PHC workers

1. Introduction

Disease surveillance has been recognized as an effective strategy in the control and prevention of diseases: more especially communicable diseases [1]. An effective surveillance system allows early detection for the prevention and

* Corresponding author: USMAN SUNUSI USMAN

reduction of the mortality and morbidity that may result from epidemics of communicable diseases [1,2]. In most developing countries, communicable diseases are the most common causes of death, illness and disability. These diseases include Malaria, Measles, Cerebrospinal Meningitis, Cholera, Yellow fever; Lassa fever, Tuberculosis, HIV/AIDS, Diarrhoea and Pneumonia [3]. Diseases like Tuberculosis, HIV/AIDs and Malaria are among the communicable diseases targeted by Millennium Development Goals. It is only through surveillance that the successes of their eradication, control and elimination can be achieved [4]. But, the former surveillance system (Disease Surveillance and Notification) was not very sensitive as it was incapable of detecting early warning signs of outbreaks [3]. The resultant effect of the poor surveillance system is high mortality, morbidity and disability, with attendant suffering of people [3]. Therefore, a more comprehensive and holistic approach, an integrated approach, is needed.

Integrated disease surveillance is the merging of resources and services at various levels and between sectors to improve health outcome [1,5,6]. The integrated approach is applicable even if the diseases are dissimilar, as it combines the common or cross-cutting aspects of disease control, such as surveillance; training; infection control and antimicrobial resistance containment; operational research; and advocacy. It promotes a more equitable distribution and optimal use of health resources and contributes to building the health system on the basis of primary health care [4,5,6].

A single functional disease surveillance system integrated into each level and intervention program of the health care system is essential for identifying problems and acting to resolve them [4]. Incorporating epidemiological methods into the surveillance system enables health personnel to make evidence-based decisions for public health actions [4,5]. Specific surveillance objectives guide policymakers towards selecting data that are most useful to collect and use to set priorities, plan interventions, mobilize and allocate resources and predict or provide early detection of outbreaks –these are useful strategies for disease control and prevention [4,5,7,8].

In 1998, Nigeria along with other member nations at the regional committee meeting in Harare, endorsed the Integrated Disease Surveillance and Response (IDSR) strategy as a means of strengthening communicable disease surveillance and response with a view to making it more sensitive at all levels [3]. The IDSR implementation process in Nigeria started in June 2000, with an orientation workshop held to sensitize national program managers of vertical programs and partners on IDSR. In January 2001, a steering committee on IDSR was inaugurated to steer the implementation process [3]. In June 2001 the steering Committee carried out an assessment of the surveillance system with a view to obtaining baseline information on the existing disease surveillance system in the country and securing consensus on a list of priority diseases [3,5]. Based on these findings, it was recommended that: the National standard case definitions and management protocols for priority diseases, relevant trainings for IDSR and provision of budget line for IDSR should be established [3,5].

The generation of data through IDSR system is critical to appropriate planning and implementation of disease control programmes, outbreak investigation, emergency preparedness and response: as communicable diseases are among the leading causes of morbidity and mortality in developing countries [8,9,10]. In order to be successful, application of the integrated approach in communicable diseases control will have to address several major challenges. These include gaining essential support, identifying problems and developing solutions, setting priorities and making sure that the integration process will not lead to delays in achieving the targets of specific disease control [3,4,5,6]. It is an approach that will lead to better use of resources, wider coverage of intervention strategies and avoidance of duplication in efforts. Practical steps for implementing this approach have also been developed; i.e. developing an essential package of services and the necessary human and financial resources [4].

In Nigeria research was conducted by Bawa et al in order to assess knowledge, attitude and practices of reporting of notifiable diseases among health workers in Yobe State, north-eastern part of Nigeria, where a cross-sectional study was conducted in six randomly selected local government areas: It was found that only fifty-five (38.2%) of the respondents were aware of the national diseases surveillance system [11]. Most of the respondents (87.5%) that were aware of the reporting requirements listed lack of training on disease surveillance as one of the factors affecting disease reporting [11,12,13]. This showed that lack of knowledge of reporting requirements was identified as a major factor affecting disease surveillance among the respondents, the training and retraining of health workers responsible for data generation, collection and forwarding in health facilities on disease notification, regular feedback on diseases reporting and provision of forms were recommended [11].

Bawa et al also conducted research on the functional status of disease surveillance and notification system at the local government level in Yobe State, Nigeria [13]. The results of their studies showed that only fifty-eight (65.9%) and 7 (8.0%) of the facilities had up-to-date registers and DSN forms respectively [13]. Diagnostic services were lacking in most health facilities and logistics for supervising diseases surveillance activities were inadequate [13]. In similar

research conducted by Dairo. et al in two southwestern states in Nigeria, it was found that logistic support was inadequate in more than half of the local governments surveyed [14]. They went further to attribute their findings to inadequate funding [14]. Another research was conducted by Ofili et.al in order to assess knowledge of disease notification among doctors in government hospitals in Benin City, Edo state, south – Nigeria [15]. The result showed that knowledge of disease notification among doctors in government hospitals in Benin was poor. Only 11.9% of doctors had a good knowledge of disease notification, thirty -one (23.1%) doctors knew where to obtain notification forms, and 32(23.9%) knew how to complete these forms [15]. This showed that knowledge of disease notifications among doctors in these major institutions was poor. It was therefore recommended that seminars should be conducted to update doctors' knowledge and serve as reminders about disease notifications [15,16]. Also, a report of institutional based policy and practices on malaria conducted by Lagos State Ministry of Health found that, there were low awareness of Integrated Disease surveillance and Response system for reporting among health workers and recommended the strengthening of the IDSR system of reporting (training, tools) [17].

In Africa similar research was conducted to assess practice of disease notification among health workers by Uganda Ministry of Health in 2000. The result showed poor practice among health workers, where out of 152 health facilities only five (3.3%) of the health facilities analyzed data for trends, and 14 (9.2 %) had thresholds for action in response to surveillance data for epidemic prone diseases [18]. Community wide prevention and control measures had been conducted at 26(17.1 %) of health facilities 'during 12 months before assessment and reports of this intervention were available in eight (5.3%) [18].

The timeliness and completeness of reporting surveillance data improved in all six selected countries in Africa following implementation of IDSR [19,20,21]. In Uganda, the completeness of reporting improved from 2% in 1998 to 65% in 2002. Reports of suspected cases of yellow fever in Ghana increased by eightfold in the second half of 2002, following IDSR sensitization of clinician [22]. Meanwhile, laboratories were becoming increasingly involved in outbreak investigations, resulting in early detection and response to outbreaks [22]. In Uganda, 80% of outbreaks in 2001 and 2002 were laboratory confirmed. In the Upper West region of Ghana, the timeliness of specimen collection for acute flaccid paralysis (AFP) surveillance improved from 68% in 2000 to 100% [23].

In a retrospective study conducted by Jagrati et al whereby data were collected from the routine surveillance system in order to test whether the provinces registered an outbreak; the distribution of measles cases was compared to endemic level established based on cases reported in previous years [24]. It was found that, there was a significant under-notification of measles cases from the health facilities to the province and national level [24]. They concluded that, the Mozambican surveillance system was based on poor quality records, received the notification of only a fraction of the total no of measles cases in the country and may result in failure to detect epidemic [24].

2. Material and methods

2.1. Study setting

The study was carried out in selected health facilities of Gwale Local Government Area (LGA) of Kano State, Nigeria. Gwale covers a land of 18 kilometers square. It forms the western enclave of Kano city and has a population of 362, 059 based on 2006 census. There was no tertiary health facility or specialist hospital in the LGA; however, there were about 18 Primar Health Care (PHC) centers and several private clinics and chemists. The PHC Departmental staff strength was about 638. Majority of the inhabitants were Hausas by tribe. Other tribes include Yoruba, Igbo and Fulani [25].

2.2. Study design

A cross-sectional descriptive study design was used to assess the knowledge and practice of Integrated Diseases Surveillance and Response among PHC workers in Kano State, Nigeria.

2.3. Study population

The study population included selected health care workers at the point of service delivery in the health facilities using inclusion and exclusion criteria as stated below.

2.3.1. Inclusion Criteria

- Health workers that were in service for more than one year in the selected health facility.
- They must be working with general outpatient/inpatient unit, medical record unit and/or laboratory unit.
- They must sign consent and were willing to participate in the study

2.3.2. Exclusion Criteria

- Health workers who were retiring from active service before the completion of the study
- Health workers who were just transferred i.e within three month into the study LGA.

2.4. Sampling method and sample size determination

The minimum sample size for the study was estimated using an appropriate formula for calculating sample size for cross-sectional studies [16] i.e

$$n = Z^2 pq / d^2$$

where;
n = minimum sample size required
Z_α = Reliability coefficient at 95% confidence level i.e the standard normal deviate corresponding to 5% level of significance =1.96;
$p_{1=}$ 11.9% or 0.119 proportion of those health workers with good knowledge from previous studies; [15]
$q_{1=}$ the complementary probability to p_1 i.e 1-0.119 = 0.881;
d^2=precision or margin of error, that is assumed to be 5%=0.05

By substituting the values obtained into the formula,

$$n = 1.96^2 \times 0.119 \times 0.881/0.05^2$$

$$n=161.0998$$

n=161.0998 + 10% of 161.0998 (to cover for non-response)

$$n = 177.20978$$

$$n=177.0$$

The total sample size used was approximately one hundred and seventy-seven

Multi-stage sampling technique was used to select participants for the study.

2.5. Method of data collection

A semi-structured interviewer administered questionnaire was used for data collection in the study. Section A of the questionnaire sought information on respondents' bio-data, and Section B sought information on knowledge of IDSR among PHC workers and Section C was used to collect information on practices of IDSR.

2.6. Data analysis

Data was summarized and presented using tables and summary indices. The relationships between sociodemographic characteristics and knowledge/practice of IDSR among PHC workers were evaluated using bivariate and multivariate analyses. A p-value of <0.05 was considered as significant. A logistic regression analysis was performed to determine predictors of knowledge and practice among study participants.

2.7. Ethical issues

Ethical approval was obtained from Kano State Ministry of Health. Also, Informed consent was obtained from all individual participants included in the study

3. Results

The mean and standard deviation of age of respondents were 38.4± 7.9 years. PHC workers in the age group 30-39 years had the largest representation (37.4%) of the total workers in the department. Majority of the workers (38.7%) were Community Health Extension Workers (CHEWs): others included Community Health Officers (CHO), Medical Laboratory Technologist/Scientist, Medical Record Officers as well as Nurses/ Midwives. About two-thirds (62%) were married, and majority were males with sex ratio of about 2:1 as shown in table 1 below.

Majority of the respondents 129(79.1%) of the study participants had attended seminar in the past with 91(55.8%) attending more than one seminar. About one third of the study participants worked for less than a decade while about a quarter worked for two to three decades (Table 1).

Table 1 Socio-demographic characteristics of the study participants

Variable	Frequency	Percentage (%)
Age group		
20- 29	33	20.2
30- 39	61	37.4
40- 49	50	30.7
50- 59	19	11.7
Mean age ± SD	38.4± 7.9	
Gender		
Males	104	63.8
Females	59	36.2
Marital status		
Married	101	62.0
Others	62	38.0
Professional category		
CHEW	63	38.7
CHO	11	6.7
Nurse/Midwives	26	16.0
Medical Record Officers	19	11.7
Laboratory Scientist	17	10.4
Others	27	16.5
Previous seminar on Disease Surveillance		
Yes	129	79.1
No	34	20.9
Number of times seminar was attended		
0	34	20.9
1 – 5	91	55.8
>5	38	23.3
Duration at present work		
1 – 10	61	37.4
11 – 20	65	39.9
21 – 30	37	22.7

The general knowledge on different component of IDSR ranges from slightly more than one quarter in completeness of forms (26.4%) to above half in awareness of IDSR (57.7%) (Table 2). While, only slightly more than one third (38.0%) had good aggregate knowledge score on IDSR (Table 3). At the bivariate level, age was significantly associated with knowledge of IDSR (P<0.05). PHC workers of the age of 40 - 49 years had better aggregate score of knowledge of IDSR

(40.3%) compared with other age groups. A significantly higher proportion of CHEW (33.9%) had good aggregate scores knowledge of IDSR compared to other professional category ($P<0.05$). A higher proportion of male participants (74.2%) had good knowledge of IDSR compared to females (25.8%). These differences were statistically significant ($p<0.05$) (Table 4). On adjusting for the confounding effects of each variable using logistic regression analysis that was significant at bivariate level, only professional category (CHEW and CHO) remained significant predictors of knowledge of IDSR. PHC workers with CHO certificate were nearly 4 times more likely to have good knowledge of IDSR compared with those holding other qualifications except CHEW. CHEWs had 23% more likelihood of having good knowledge of IDSR compared to others except CHO (Table 5).

Table 2 General knowledge of IDSR among the study participants

Knowledge of IDSR	Frequency	Percentage (%)
Awareness of IDSR	94	57.7
Knows selected notifiable diseases	92	56.4
Knows type of forms used in IDSR	88	54.0
Knows alert threshold	54	33.1
Knows action threshold	56	34.4
Knows methods for immediate notification	92	56.4
Knows line listing	95	58.3
Knows the importance of two ways reporting in IDSR	82	50.3
Knows completeness of forms	43	26.4
Knows timeliness of diseases reporting	46	28.2
Knows the role of community members in diseases surveillance	67	41.1
Knows the reasons for integrating laboratories in surveillance	44	27.0
Knows the reasons for basic analysis of surveillance data at health facility	56	34.6

Table 3 Aggregate knowledge scores of IDSR among the study participants

Aggregate knowledge scores	Frequency (n)	Percentage (%)
Good	62	38.0
Poor	101	62.0
Total	163	100.0

Table 4 Socio-demographic factors associated with participants' knowledge of IDSR in the study group

Variable	Good (%)	Poor (%)	χ^2	p-value
Age group (years)				
20- 29	8(12.9)	25(24.8)	16.75	0.0008*
30- 39	16(25.8)	45(44.6)		
40- 49	25(40.3)	25(24.8)		
50- 59	13(21.0)	6(5.9)		
Gender				

Males	46(74.2)	58(57.4)	3.98	0.046*
Females	16(25.8)	43(42.3)		
Marital status				
Married	40(64.5)	79(78.2)	27.98	<0.0001*
Others	22(35.5)	22(21.7)		
Professional category				
CHEW	21(33.9)	42(41.6)	11.07	0.050*
CHO	8(12.9)	3(3.0)		
Nurse/Midwives	11(17.7)	15(14.9)		
Medical Records	7(11.3)	12(11.9)		
Lab Scientist	6(9.7)	11(10.9)		
Others	9(14.5)	18(17.8)		

*Statistically significant difference

Table 5 Multivariate (Logistic Regression Analysis) of predictors of participants' knowledge of IDSR among the study group

Predictor(s)	**Crude OR (95% CI)**	**Adjusted OR (95% CI)**	**p-value**
Age group (years)			
20- 29	Referent		
30- 39	0.46(0.28 – 0.92)	0.40 (0.09 – 2.13)	0.12
40- 49	0.89(0.08 – 0.66)	1.25 (0.37 – 3.13)	0.33
50- 59	1.24(1.12 – 6.87)	2.11 (0.87 – 9.96)	0.55
Professional category			
CHEW	1.48 (1.12 – 3.56)	1.23 (1.11 – 4.46)	0.03*
CHO	2.37 (1.26 – 4.47)	3.81(1.51 – 7.4)	0.01*
Nurses/Midwives	0.73(0.36 – 1.48)	0.95(0.78 – 2.27)	0.11
Others	Referent		
Gender			
Males	0.88(0.46 – 1.58)	0.64(0.24 – 1.71)	0.18
Females	Referent		
Marital status			
Married	2.24 (0.18 – 8.99)	0.86 (0.47 – 5.58)	0.29
Others	Referent		

*Statistically significant difference

The practice of IDSR among the study participants was generally poor, ranging from only 6.1%, who attended seminar to 28.2% who reported priority diseases from the facility (Table 6). Nearly about one quarter (25.8%) of the study participants had good aggregate practice on IDSR (Table 7). At the bivariate level, age was significantly associated with practice of IDSR (P<0.05). PHC workers over the age of 40 - 49 years had better aggregate score of practice on IDSR (35.7%) compared with other age groups. A significantly higher proportion of CHEW (28.6%) had good aggregate score

of practice on IDSR compared with other professional category (P<0.05). Among those with aggregate scores of good practices, males' participants (73.8%) were significantly different from female participants (P<0.05). Also, married participants (76.2%) were more likely to have good scores of practices on IDSR then their other counterpart (Table 8). On adjusting for the confounding effects of each variable that was significant at bivariate level using logistic regression analysis, only age group (50 – 59 years), professional category (CHEW and CHO), no of previous seminars attended on disease surveillance and duration at present work (working experience) remained significant predictors of practices on IDSR. PHC workers with CHO certificate were nearly ten times more likely to have good practice on IDSR compared with others holding other qualifications except CHEW.

Table 6 Practices of IDSR among the study participants

IDSR practices	Frequency	Percentage (%)
Reporting IDSR priority diseases from health facility	46 (28.2)	28.2
Completeness of reports for IDSR diseases	43 (26.4)	26.4
Reporting for zero case of epidemic prone diseases	46 (28.2)	28.2
Timeliness of reporting	38(23.3)	23.3
Reporting for diseases that exceed action threshold	33(20.2)	20.2
Use of appropriate forms in reporting	26(16.0)	16.0
Conduct laboratory investigation	44(27.0)	27.0
Sending routine IDSR report	39(23.9)	23.9
Basic analysis and interpretation of IDSR data	23(14.1)	14.1
Sending feedback to catchment population on generated IDSR data	20(12.3)	12.3
Workshop/seminar for community members	10(6.1)	6.1

Table 7 Aggregate practice scores of IDSR among the study participants

Aggregate knowledge scores	Frequency (n)	Percentage (%)
Good	42	25.8
Poor	121	74.2
Total	163	100.0

Table 8 Socio-demographic factors associated with participants' practices on IDSR

Variable	Good	Poor	χ^2	p-value
Age group (years)				
20- 29	6(14.3)	27(22.3)	10.54	0.0015*
30- 39	11(26.2)	50(41.3)		
40- 49	15(35.7)	35(28.9)		
50- 59	10(23.8)	9(7.4)		
Professional category				
CHEW	12(28.6)	51(42.1)	14.87	0.011*
CHO	8(19.0)	3(2.5)		

Nurse/Midwives	5(11.9)	21(17.4)		
Medical Records	5(11.9)	14(11.6)		
Lab Scientist	5(11.9)	12(9.9)		
Others	7(16.7)	20(16.5)		
Gender				
Males	31(73.8)	73(60.3)	3.98	0.046*
Females	11(26.2)	48(39.7)		
Marital status				
Married	32(76.2)	89(73.6)	0.02	0.89
Others	10(23.8)	32(26.4)		

Table 9 Multivariate (Logistic Regression Analysis) of predictors on participants practices of IDSR in the study group

Predictors	**Crude OR (95% CI)**	**Adjusted OR (95% CI)**	**p-value**
Age group (years)			
20- 29	Referent		
30- 39	0.99 (0.29 – 3.42)	1.12 (0.40 – 2.44)	0.79
40- 49	1.93 (0.59 – 6.48)	1.65 (0.71 – 3.82)	0.34
50- 59	5.00 (1.21 – 21.76)	2.89 (1.25 – 6.71)	0.02*
Occupation			
CHEW	0.64 (0.25 – 1.59)	1.27 (1.12 – 3.57)	0.03*
CHO	7.22 (1.48 39.54)	10.34 (3.37 – 22.78)	0.005*
Nurses/Midwives	0.64 (0.18 – 2.21)	0.89 (0.57 – 3.37)	0.19
Others	Referent		
Gender			
Males	1.85 (0.80 – 4.35)	0.73 (0.50 – 3.37)	0.17
Females	Referent		

*Statistically significant difference

4. Discussions

Knowledge of IDSR among the study participants was found to be 38.0%; this was similar to findings by Bawa et al who reported 38.2% of the health workers having good knowledge of DSN [11]. This contrasted the findings by Ofilli et al, who reported that only 11.9% of doctors studied had good knowledge of DSN [15]. This could be due to difference in the two study populations, as the former comprised of all professional category of health workers, while the later comprised of only doctors. This showed that lack of knowledge of reporting requirements seems to be a major factor affecting IDSR [11,13,14]. This resultant negative effect was that the health-care workers may be unable to detect and notify the occurrence of diseases that have high case fatality rates and are of public health-care importance [26]. Also, this finding is lower than the findings by Nnabue et al who reported that 89.8% of the health workers were aware of DSN. This difference could be attributed to geographical location within the country and the composition of study participants, as Nnabue et al used study participants from primary, secondary and tertiary health centers [26]. In this study, despite the fact that the awareness of IDSR was found to be high, 57.7%, the depth of knowledge was poor because only 38.0% had good aggregate knowledge score.

On the knowledge of the forms used in IDSR, 54% were aware on the uses of forms. However, this was higher than the finding by Nnebue et al in which they reported that only about 33% were aware of the uses of IDSR forms [26]. About 56.4 % among the study participants knew methods for immediate notification of diseases. This was slightly less than half of what was reported in Ibadan study, whereby about 97.6% were aware of correct pathway for reporting of notifiable diseases from periphery to district/LGA [14]. This difference in knowledge can be due to the fact that, over 90% of the study populations were medical record officers/DSNO [14]. Knowledge of the completeness of diseases reporting was particularly poor among the study participants (26.4%). Other components of knowledge parameters like alert threshold, action threshold, and importance of two ways reporting in IDSR, role of community members in diseases surveillance, reasons for integrating laboratories in surveillance, and reasons for basic analysis and interpretation of IDSR data were not previously studied. Knowledge on alert threshold was found to be (33%), action threshold (34%), importance of two ways reporting (50%), reasons for integrating laboratories (27%), reasons for basic analysis and interpretation of IDSR data (35%) among the study participants

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 [27,28]. Despite its importance, notification suffers from some setbacks, as shown by several studies [29,30]. On the practices of IDSR, 28% of the study participants had ever reported IDSR priority diseases from the health facilities. This finding was slightly higher than that of Bawa et al in which they found out that 27.1% had ever reported notifiable diseases [11]. But this finding was much lower than that in Taiwan whereby 83.5% of doctors had experience of reporting notifiable diseases [16]. This difference may be due to the fact that, there was difference in the composition of study participants. Some of the reasons for not completing the forms identified in the study include; lack of knowledge on diseases under surveillance, IDSR forms have many questions and lack of time to complete the forms. While previous studies have attributed poor reporting to lack of adequate forms and training on diseases surveillance and notification [11,26]. Timeliness and completeness of diseases reporting was similar to findings of Kaduna study[65] but much lower than the findings of Bawa et al in Yobe state [11]. This difference may be due to the fact that at the time of Yobe studies, IDSR was not fully operational in Nigeria [11,13].

Sending feedback information of data generated on IDSR to catchment population on generated IDSR data was found to be poor (12.3%) which is similar to finding in Yobe and Kaduna states respectively [10,11]. Inefficient feedback is shown to reduce the usefulness and sensitivity of the surveillance system [27,29]; on the other hand, regular feedback of information through the use of monthly bulletin contributed to the success of disease surveillance [30].

5. Conclusion

The aggregate knowledge and practice scores of IDSR were 38.0% and 25.8% respectively. Age and professional category were found to be significant predictor of knowledge while only professional category was found to be significant predictor of practice of IDSR among the study participants.

Recommendations

In view of the findings of this study, the following recommendations were made:

- There should be regular training and retraining of health workers responsible for data generation, collection and transmission in health facilities on IDSR by State Primary Health Care Management Board in collaboration with development partners
- There should be regular feedback on surveillance data from LGA to health facility and to the community.
- The LGA PHC department should appoint an IDSR focal person in each of the health facilities who can aid in the prompt dissemination of information with regards to IDSR priority diseases

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Author's contribution

- Prof. Usman Sunusi Usman- contributed in the design; analysis and interpretation of data as well as drafting the article for intellectual content

- Dr Ado Shehu-contributed in the analysis; discussion and interpretation of data. Also revises the article critically
- Mrs Amina Jummai Shehu- participated from conceptualization of the research ideas up to analysis and interpretation of research findings. Also participated in drafting the articles for intellectual content
- Dr Lawan Muhammad Gana- contributed in data collection; data analysis; discussion and interpretation of study findings.
- Dr Jibril Adamu Damazai- contributed in the analysis; discussion and interpretation of study findings.
- Dr Aliyu Muhammad Maigoro- contributed in data collection; data analysis; discussion and interpretation of study findings

References

[1] An integrated approach to communicable disease surveillance. PAHO Epidemiology Bulletin. 2000; 21(1):1–4.

[2] Assessment of the national communicable disease surveillance and response system, Ethiopia. Bull WHO, 2001; 76:9-16.

[3] Epidemiology Division. National Policy on Integrated Diseases Surveillance and Response. Federal Ministry of Health, Abuja; September 2005.

[4] Technical Guidelines for Integrated Disease Surveillance and Response in African Region October, African Regional Office of WHO; 2010.

[5] Epidemiology Division. National Technical Guidelines for Integrated Diseases Surveillance and Response. Volume I. Federal Ministry of Health, Abuja; June 2001.

[6] Franco LM, Setzer J, Banke K. Improving performance of IDSR at district and facility levels: experience in Tanzania and Ghana in making IDSR operational. Bethesda, MD: The Partners for Reform plus Project. Abt Associates; 2006

[7] Technical guidelines for integrated disease surveillance and response in the African region, African Regional Office of WHO; July 2001.

[8] Rowe AK, de Savigny D, Lanata CF, Victora CG. How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet 2005; 366: 1026-35.

[9] Helen NP, Sharon MM, Wondimagegnehu A et al. Planning an integrated disease surveillance and response system: a matrix of skills and activities. BMC Medicine, 2007; 5(27): 2-4.

[10] Abubakar AA, Idris SH, Sabitu K, Shehu AU, and Sambo MN: Emergency preparedness and capability to identify outbreaks: A case of Sabon Gari Local Government Area, Kaduna State. Annals of Nigerian Medicine. 2010; 4(1): 21 – 27.

[11] Bawa SB, Olumide EA, Umar US. The knowledge, attitude and practices of the reporting of notifiable diseases among health workers in Yobe State, Nigeria. Afr. J. Med. Sci. 2003; 32 (1):49-53.

[12] Bawa SB, Olumide EA. The effect of training on the reporting of notifiable diseases among health workers in Yobe State, Nigeria. Niger. Postgrad. Med. J.2005; 12(1):1-5.

[13] Bawa SB, Umar US. The functional status of diseases surveillance and notification system at the local government level in Yobe state, Nigeria. Afr. J. Med. Sci, 2003; 32(1): 49-55.

[14] Dairo MD, Bamidele JO, Adebimpe, WO. Disease surveillance and reporting in two Southwestern states in Nigeria: Logistic challenges and prospects. Journal of Public Health and Epidemiology. 2010; 2(6):125-129.

[15] Ofili AN, Ugwu EN, Zirebe A, Richards R, Salami S. Knowledge of disease notification among doctors in government hospitals in Benin City, Edo State, Nigeria. Public Health, 2003; 117(3): 214-217.

[16] Hsiu-Fen et al. Private Doctors' practices, knowledge, and attitude to reporting of communicable diseases: a national survey in Taiwan. BMC Infectious Diseases. 2009; 9(11) 102 – 103.

[17] Report on Institutional Based Policy and practice on Malaria. Lagos state Ministry of Health, Nigeria; 2005.

[18] Rowe AK, de Savigny D, Lanata CF, Victora CG. How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet 2005; 366: 1026-35.

[19] Allen, CJ, Ferson MJ. Notifications of Infectious Diseases by General Practitioners. Australian Medical Journal. 2002; 172 (3): 325-8.

[20] Weiyi Xiong, Jun Lv, Liming Li.A Survey of Core and Support Activities of Communicable Disease Surveillance Systems at Operating-Level CDCs In China. BMC Public Health. 2010; 10 (3):704.

[21] Raika D, Ali OK: Completeness of hepatitis, brucellosis, syphilis, measles and HIV/ AIDS surveillance in Izmir, Turkey. BMC Public Health. 2010; 10 (2): 71

[22] Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. Morbidity & Mortality Weekly Report CDC Surveillance Summaries 2001; 50:1-51.

[23] Fatiregun AA, Sangowawa AO, Abubakar AA. Outcome of training on Yellow Fever surveillance in South-Western State, Nigeria: implications for improved field implementation. Nigerian Journal of Clinical Practice. 2010; 13(4): 449-552

[24] Jagrati VJ, Ilesh VJ, Carolina A, Sundeep S, Jorge B, Gunnar B. Assessment of routine surveillance data as a tool to investigate measles outbreaks in Mozambique. BMC Infectious Diseases. 2006; 6 (3):29.

[25] Kurawa IA. Brief History of Kano State: Year 999 to 2009. Available from http//: www.kanostate.net/profile

[26] Nnebue CC, Onwasigwe CN, Adogu POU Ugochukwu UO. Awareness and knowledge of disease surveillance and notification by health-care workers and availability of facility records in Anambra State, Nigeria. Niger J Clin Pract 2013; 16:471-477.

[27] Integrated Disease Surveillance and Response: A Regional Strategy for Communicable Diseases 1999 – 2003. World Health Organization, Regional Office for Africa; June 2003.

[28] Nsubuga P, Eseko N, Wuhib T, Ndayimirije N, Chungong S, McNabb SJN. Structure and performance of infectious disease surveillance and response. United Republic of Tanzania, 1998. Bulletin of the World Health Organization 2002; 80(3):196–203

[29] Tan HF, Chang CK, Tseng HF, Lin W (2007). Evaluation of the National Notifiable Disease Surveillance System in Taiwan: an example of Varicella reporting. Vaccine. 30; 25(14): 2630-2633.

[30] Global infections disease surveillance. WHO fact sheet; No 200 http://www.who.int/home/ Accessed June 12, 2024.