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HEALTHCARE WORKERS' COMPETENCE IN INTEGRATED DISEASE SURVEILLANCE AND RESPONSE: A CROSS-SECTIONAL STUDY IN SOUTHWEST NIGERIA

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Keywords

Epidemics,
Healthcare workers,
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Integrated Disease
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Abstract

Background: Integrated Disease Surveillance and Response (IDSR) is a strategic approach to addressing the rising burden of diseases and public health threats. With the increasing frequency of disease outbreaks globally, early detection and timely response have become essential. This study assessed healthcare workers' knowledge, attitudes, and practices regarding IDSR in a health facility in Ogun, Nigeria.

Method: A health facility-based, cross-sectional study, involving 332 healthcare workers (HCWs) selected through a simple random sampling method from January to March 2025. Data were collected using a quantitative method and analysed using IBM SPSS version 27. Logistic regression was performed with a statistical significance level of $p < 0.05$. Ethical approval was obtained from Babcock University Health Research and Ethics Committee.

Result: Mean age of participants was 34.5 ± 11.1 years, and 189 (56.9%) were male. Regarding IDSR, 65.7% had good knowledge, 56% had a good attitude, and 41% had good practices. Factors associated with knowledge include educational qualification (AOR: 0.613, CI 0.444-0.846, $p=0.003$), years of experience (AOR: 0.568, CI 0.442-0.778, $p=0.0001$), IDSR forms availability (AOR: 0.443, CI 0.257-0.764, $p=0.003$), and occupation (AOR: 0.602, CI 0.438-0.828, $p=0.002$). Years of experience (AOR: 0.722, CI 0.537-0.971, $p=0.031$) was associated with attitude. Factors associated with practice include educational qualification (AOR: 1.494, CI 1.034-2.073, $p=0.032$), previous IDSR training (AOR: 10.016, CI 5.070-23.076, $p=0.0001$), and IDSR forms availability (AOR: 11.729, CI 6.002-22.922, $p=0.0001$).

Conclusion: To enhance IDSR implementation, HCWs' capacity should be strengthened through targeted training and improved availability of IDSR tools to support early detection and response to disease outbreaks.

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INTRODUCTION

Integrated Disease Surveillance and Response (IDSR) is a World Health Organization (WHO) strategy designed to strengthen public health systems. Its goal is the early detection, confirmation, and response to health threats.^{1,2} An effective IDSR system monitors priority diseases and generates timely information for public health action.³ Since its introduction, IDSR has remained an essential strategy for strengthening and building robust surveillance and response systems in most LMICs.⁴ Effective disease surveillance and response system is essential for the detection of disease outbreaks early enough before they spread and result in high morbidities and mortalities.^{5,6} Despite global and national efforts to institutionalize IDSR, challenges persist, particularly in ensuring that HCWs possess the requisite knowledge, maintain positive attitudes, and consistently apply best practices in disease surveillance.⁷ Gaps in these areas can result in delayed detection of outbreaks, poor data quality, and suboptimal responses to emerging health threats.

Studies done in Nigeria and some LMICs revealed gaps in the knowledge, attitude and practice of healthcare workers (HCWs) on IDSR.⁸⁻¹⁰ A study in Zambia showed that some HCWs lacked knowledge on the meaning and importance of IDSR. In addition, about 27% of HCWs either infrequently or never reported a disease requiring mandatory notification within 12 months prior to the study.¹¹ Other challenges associated with IDSR include data accuracy, zero reporting, delay in reporting, lack of resources for IDSR, and lack of knowledge on disease case definitions.² Furthermore, major IDSR implementation barriers identified in another study include high reporting burden, unstable electronic data transfers, inadequate training and supervision, parallel and uncoordinated surveillance systems, and lack of feedback to reporting healthcare workers. Other barriers reported in the study include priority conditions that cannot be diagnosed at the point of

reporting, lack of case definitions and diagnostic codes for priority conditions, reporting forms with unexplained acronyms, illegible data sources, and poor enforcement of reporting from private health facilities.¹² In addition, another study, lack of recommended IDSR forms was reported in 46.1% of the health facilities and delayed submission of urgent notification for more than 24 hours was reported in 46.8% of health facilities. None of the health facilities had the capacity to transport samples to reference laboratories for confirmation of cases. Also, there is complete deficiency of emergency stocks of drugs and supplies, lack of budget line for epidemic response, and absence of community public health measures. It was also found that follow-up of specimen results, keeping of specimen results reports, and completion of specimen results reports were poor.¹³ There is a need to evaluate public health surveillance and response systems to ensure they continue to fulfil the goals and objectives for which they were established, as surveillance gaps continue to expose the world to hazards and epidemics. Effective implementation of IDSR depends largely on HCWs' knowledge, attitudes, and practices, who serve as the first point of contact for disease surveillance and outbreak management.¹⁴ Hence, this study aimed to assess the knowledge, attitude, and practice of IDSR among HCWs with the objective of identifying existing strengths and gaps, thereby providing evidence to support the strengthening and improved implementation of the IDSR strategy.

METHODS

Study Area

The study was conducted at Babcock University Teaching Hospital (BUTH), located in Ilishan-Remo, Ikenne Local Government Area, Southwestern Nigeria. The hospital has all the major departments, which include Community medicine, Chemical pathology, Family medicine, Haematology, Histopathology, Medical microbiology, Internal medicine, Obstetrics and Gynaecology, Ophthalmology, Paediatrics,

Table 1: Sociodemographic Characteristics

Variables	Frequency	Percentage
Age group (years)		
≤32	171	51.5
> 32	161	48.5
Mean age = 34.5 ± 11.1		
Gender		
Male	189	56.9
Female	143	43.1
Occupation		
Nursing	68	20.5
Laboratory	60	18.1
Doctors	204	61.4
Qualification (Degree)		
Bachelor	215	64.8
Masters	47	14.1
Consultants/PhD	70	21.1
Years of working experience		
< 1	67	20.2
2-10	163	49.1
11-20	64	19.3
21-30	25	7.5
> 30	13	3.9
Ever had training on IDSR		
Yes	70	21.1
No	262	78.9

Study Design and Study Population

This study was a cross-sectional study among 446 HCWs (doctors, nurses and laboratory personnel) in BUTH.

Eligibility Criteria

Healthcare workers who were not involved in direct patient care and or were unavailable at the time of data collection were excluded from this study.

Sample Size Determination and Sampling Method

Sample size was determined using Cochran's formula ¹⁵

$$n = \frac{Z\alpha^2 \times pq}{d^2}$$

Where n is the minimum sample size, $Z\alpha^2$ is stated at 1.96, p is the Proportion (71.0%) of HCWs who had good knowledge of IDSR in a previous study ¹⁶, $q=1-p$, and d is the desired precision, which was set at 0.05. Substituting these values into the formula yielded a sample size of 316. However, to

account for non-response and incomplete information a 10% non-response rate was considered, making a minimum sample size of 351 HCWs. The HCWs were stratified by occupation (doctors, nurses and laboratory personnel) and a systematic sampling method was used to select the study participants.

Data Collection

Data was collected using a self-administered questionnaire which had sections on sociodemographic characteristics, knowledge, attitude and practice on IDSR. Two trained research assistants collected the data.

Data Processing and Analysis

The data was analysed using IBM SPSS version 27. Quantitative variables such as age, knowledge, attitude and practice scores were summarized using mean and standard deviation. Other variables were presented in tables as percentages and frequencies.

Table 2- Knowledge of Respondents on IDSR

Statements	Yes	No
	Frequency (%)	Frequency (%)
IDSR is a thorough public health monitoring and response systems for priority illnesses and health-related events	326 (98.2)	6 (1.8)
IDSR is a systemic approach to disease surveillance	313 (94.3)	19 (5.7)
IDSR is a one-time comprehensive approach to gathering, analysing, and interpreting health information.	134 (40.4)	198 (59.6)
Case-based reporting of any ailment that needs to be reported, utilize the IDSR 001A form.	260 (78.3)	72 (21.7)
Weekly reporting of epidemic-prone diseases is via IDSR 001A.	206 (62.0)	126 (38.0)
Laboratory request form for notifiable diseases IDSR 001B.	267 (80.4)	65 (19.6)
IDSR 001C form, provides overview of all suspected cases	248 (74.7)	84 (25.3)
Monthly reporting is done using the IDSR 002 form	206 (62.0)	126 (38.0)
Weekly reporting of public health events of global relevance is via IDSR 002 form	241 (72.6)	91 (27.4)
Measles is a notifiable disease	266 (80.1)	66 (19.9)
Polio is a notifiable disease	315 (94.90)	17 (5.1)
Cholera is a notifiable disease	326 (98.2)	6 (1.8)
Monkey pox is a notifiable disease	324 (97.6)	8 (2.4)
Level of Knowledge on IDSR		
Good knowledge	218	65.7
Poor knowledge	114	34.3

Knowledge was categorized as good and poor and was assessed using 12 questions. Each correct answer was scored 1, and each wrong answer was scored 0. Giving a total maximum attainable score of 12 and a minimum attainable score of 0. The mean knowledge score was calculated, and any respondent with a score greater than the mean was considered to have good knowledge, while any score equal to or below the mean was considered to have poor knowledge. Attitude was assessed using 9 questions on a Likert scale from strongly disagree, disagree, neutral, agree and strongly agree. For positive questions, strongly agree had 5 points, agree had 4 points, neutral had 3, disagree had 2 points and strongly disagree had 1 point. For negative questions, strongly disagree had 5 points, disagree had 4 points, neutral had 3 points, agree had 2 points and strongly agree had 1 point. Giving a total maximum attainable score of 45 and a minimum attainable score of 9. The mean attitude score was calculated, and respondents with a score above the mean were considered to have a positive attitude, while those with a score at or below the

mean were considered to have a negative attitude. Practice was categorized as good and poor and was assessed using 9 questions. Each correct answer was scored 1 and each wrong answer was scored 0. Giving a total maximum attainable score of 9 and a minimum attainable score of 0. The mean practice score was calculated, and any respondent with a score greater than the mean was considered good practice, while any score equal to or below the mean was considered poor practice. Sociodemographic characteristics were the independent variable while knowledge, attitude and practice were the dependent variables. A chi-square test was done to determine the relationship between the independent and dependent variables. All variables found to be statistically significant at 10% level and other variables from a previous study¹⁷ found to be associated with the outcome variables were built into a logistic regression model to determine the predictors of knowledge, attitude and practices, using odds ratios and 95% confidence intervals. A p-value < 0.05 was considered to be statistically significant.

Table 3- Attitude Toward IDSR

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Statements	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
IDSR is a simple process	12 (3.6)	108 (32.5)	135 (40.7)	68 (20.5)	9 (2.7)
IDSR is not an essential part of your work	6 (1.8)	33 (9.9)	16 (4.8)	190 (57.2)	87 (26.2)
IDSR is not important for health system strengthen	13 (3.9)	15 (4.5)	31 (9.3)	122 (36.7)	151 (45.5)
Routine data reporting systems should be supported and promoted.	187 (56.3)	117 (35.2)	11 (3.3)	10 (3.0)	7 (2.1)
Routine data reporting does not have to be complete and timely	7 (2.1)	8 (2.4)	41 (12.3)	166 (50.0)	110 (33.1)
Knowledge of routine data reporting is not necessary for HCWs	5 (1.5)	16 (4.8)	21 (6.3)	145(43.7)	145 (43.7)
It is essential for HCW to be knowledgeable about routine data reporting	196 (59.00)	99 (29.8)	21 (6.3)	10 (3.0)	6 (1.8)
The current data being reported is adequate for planning and decision making	45 (13.6)	77 (23.2)	105 (31.6)	86 (25.9)	19 (5.7)
Data sources need to be of high quality	156 (47.0)	110 (33.1)	25 (7.5)	19 (5.7)	22 (6.6)
Level of attitude	Frequency		Percentage		
Positive	186		56.0		
Negative	146		44.0		

Table 4 Practices of IDSR

	Yes	No
Responses	Frequency (%)	Frequency (%)
I have ever reported a disease using an IDSR form	59 (17.8)	273 (82.2)
There sufficient supply of IDSR forms at your facility	82 (24.7)	250 (75.3)
I attend to at least 10 patients a day	186 (56.0)	146 (44.0)
I have ever reported immediate case notifiable disease on IDSR 002	50 (15.1)	282 (84.9)
I have ever used IDSR 001B as laboratory request form for notifiable diseases	31 (9.3)	301 (90.7)
I have attended IDSR training in recent years	71 (21.4)	261 (76.6)
I have attended IDSR training in my current employment	70 (21.1)	262 (78.9)
I base my decisions on previously reported incidents	203 (61.1)	129 (38.9)
I report on real time data	111 (33.4)	221 (66.6)
Level of Practice		
Good	136	41.0
Poor	196	59.0

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Babcock University Health Research and Ethics Committee (BUHREC 664/24). Written informed consent was obtained from the study participants. The study was carried out in accordance with the regulations of the approving body. The respondents were reassured of their confidentiality as no identifiers were required on the questionnaire and were informed of their right to exit the study at any point.

RESULTS

A total of 351 participants were recruited for this study; however, only 332 completed questionnaires and were included in the analysis. The mean age of the study participants was 34.5 ± 11.1 years, with 189 (56.9%) being males. Most respondents (204, 61.4%) were doctors, and 216 (64.8%) held a bachelor's degree. Furthermore, 163 (49.1%) of the study participants have been working for 2-10 years, and 70 (21.1%) had ever been trained on IDSR. (Table 1). Most respondents (98.2%) knew that IDSR involves public health monitoring and response systems for priority illnesses, conditions, and occurrences at all levels of the health system. Additionally, 94.3% knew that IDSR is a systematic approach to the ongoing gathering, evaluation, and interpretation of health data. Regarding the use of IDSR forms, 206 (62.0%) reported using Form 002 for weekly care reporting, while another 206 (62.0%) reported using Form 002 for monthly reporting of priority diseases. In both instances, most of the respondents did not answer correctly. The majority of respondents also correctly identified the diseases requiring notification. Overall, 218 respondents (65.7%) had good knowledge of IDSR. (Table 2). A total of 20.5% strongly agreed that IDSR is a simple process. Regarding monitoring, IDSR is an essential part of their work; 26.2% strongly disagreed. Similarly, 45.5% strongly disagreed that IDSR is unimportant for strengthening the system. Conversely, 33.1% strongly disagreed that routine data reporting need not be complete and timely.

Likewise, 43.7% strongly disagreed that health workers do not need to be knowledgeable about routine data reporting. Regarding the adequacy of current data for planning and decision-making, only 13.6% strongly agreed. Lastly, 47.0% strongly agreed that data sources need to be of high quality to ensure complete and timely reports. Overall, slightly more than half of the respondents (196, 56.0%) had a good attitude towards IDSR. Furthermore, educational qualification (AOR:1.494, 95% CI 1.034-2.073, $p = 0.032$), ever been trained on IDSR (AOR:10.016, 95% CI 5.070 – 23.076, $p = 0.0001$) and availability of IDSR forms (AOR:11.729, 95% CI 6.002- 22.922, $p = 0.0001$) had a statistically significant relationship with practice.

DISCUSSION

This study assessed knowledge, attitude, and practice of IDSR among HCWs in a private tertiary health institution in southwest Nigeria. The study found good knowledge in 65.7%, positive attitude in 56.0% and good practice in 41.0% regarding IDSR. Factors associated with knowledge were educational qualification and years of working experience; for attitude, it was years of working experience; and for practice, educational qualification and having ever received training were factors. Good knowledge was found among 218 (65.7%) of the respondents and this was slightly lower than the findings of 71.0% in Enugu, Nigeria,¹⁶ but higher than 52.6% found in Eastern Ethiopia.¹⁷ Both studies at Enugu and Ethiopia were aimed at determining the knowledge, attitude, and practices of IDSR among HCWs. Most respondents in our study were able to identify notifiable diseases, a finding consistent with other studies in Nigeria, which found that 57.5% and 70.0% respondents knew the notifiable diseases.^{8,18} However, significant knowledge gaps persisted among some HCWs, particularly regarding the correct use of reporting forms and case definitions, potentially hindering disease reporting. In addition, Table 5 also shows logistic regression analysis of

Table 5a: Bivariate and Logistic Regression Analysis for Factors Associated with Knowledge, Attitude and Practice of IDSR

Variables	BIVARIATE ANALYSIS FOR FACTORS ASSOCIATED WITH KNOWLEDGE, ATTITUDE AND PRACTICE OF IDSR								
	Knowledge			Attitude			Practice		
	Good	Bad	X ² (P-value)	Good	Poor	X ² (p-value)	Good	Poor	X ² (p-value)
Age (years)									
≤ 32	111 (64.9)	60 (35.1)	0.0005(0.945)	106 (62)	65 (38)	1.271(0.260)	54(31.6)	117 68.4)	12.84(0.0001)
> 32	107 (66.5)	54 (33.5)		90 (60)	71 (40)		82 (50.9)	79 (49.1)	
Gender									
Male	126 (66.7)	63 (33.3)	0.196(0.658)	103 (54.5)	86 (45.5)	3.738(0.053)	83 (43.9)	106 (56.1)	1.581(0.209)
Female	92 (64.3)	51 (35.7)		93 (65)	50 (35)		53 (37.1)	90 (62.9)	
Occupation									
Nurse	49 (72.1)	19 (27.9)	12.282(0.002)	39 (57.4)	29 (42.6)	1.082(0.582)	20 (29.4)	48 (70.6)	9.92(0.007)
Laboratory	49 (81.7)	11 (18.3)		39 (65)	21 (35)		34 (56.7)	26 (43.3)	
Doctor	84 (41.2)	120 (58.8)		116 (57.8)	86 (42.2)		82 (40.2)	122 (59.2)	
Educational qualification									
BSc/MBBS	150 (69.8)	65 (30.2)	5.695(0.058)	127 (59.1)	88 (40.9)	1.087 (0.581)	61 (28.4)	154 (71.6)	45.07(0.0001)
MSc	30 (63.8)	17 (36.2)		25 (53.2)	22 (46.8)		36 (76.6)	11 (23.4)	
PhD/Medical	38 (54.3)	32 (45.7)		44 (62.9)	26 (37.1)		31 (44.3)	39 (55.7)	
Consultant									

factors associated with knowledge, attitude and practices of IDSR. Educational qualification (AOR: 0.613, 95% CI 0.444-0.846, $p = 0.003$), years of experience (AOR: 0.568, 95% CI 0.442-0.778 $p = 0.0001$, availability of IDSR forms (AOR: 0.443, 95% CI 0.257- 0.764, $p = 0.003$) and occupation (AOR: 0.602, 95% CI 0.438- 0.828, $p = 0.002$) had statistically significant association with knowledge. In addition, years of experience (AOR: 0.722, 95% CI 0.537-0.971, $p = 0.031$) was associated with attitude. Furthermore, some respondents viewed IDSR as a simple process, and this finding was consistent with that from Ibadan, where 69.7% of respondents had a similar view.¹⁸ Good IDSR practices were observed among 41.0% of respondents, a rate lower than the 50.2% reported in Eastern Ethiopia¹⁷ but higher than the 27.1% reported in Enugu, Nigeria.¹⁶ Only 17.1% respondents had ever used an IDSR form for reporting, a figure consistent with the 19.0% reported in Enugu.¹⁶ Use of IDSR forms for

reporting was very low among respondents, similar to the findings from a study in Ibadan, Nigeria, where about 10% reported using most of the forms.¹⁸ Low practices of IDSR were also observed in a systematic review of studies conducted among HCWs in Nigeria. This was attributed to a lack of awareness and inadequate knowledge of IDSR.⁷ This consistent level of poor practice in the present study and other studies is a significant challenge to the effective functioning of disease surveillance systems. Educational qualification, years of experience, availability of IDSR reporting forms and occupation were some factors found to be associated with knowledge of IDSR in this study. This implies that higher levels of formal education may contribute to a better understanding of surveillance concepts and procedures. This suggests that individuals with more advanced training are also more likely to understand IDSR guidelines. HCWs who have spent more time in the field may have been involved in surveillance

Table 5b: Bivariate and Logistic Regression Analysis for Factors Associated with Knowledge, Attitude and Practice of IDSR

BIVARIATE ANALYSIS FOR FACTORS ASSOCIATED WITH KNOWLEDGE, ATTITUDE AND PRACTICE OF IDSR									
Variables	Knowledge			Attitude			Practice		
	Good	Bad	X ² (P-value)	Good	Poor	X ² (p-value)	Good	Poor	X ² (p-value)
Years of experience									
≤ 1	62 (78.5)	17 (21.5)	7.916(0.095)	49 (73.1)	18 (26.9)	16.670(0.002)	19 (28.4)	48 (71.6)	14.63(0.006)
2=10	83 (69.2)	37 (30.8)		95 (58.3)	68 (41.7)		64 (39.3)	99 (60.7)	
11-20	56 (54.4)	47 (45.6)		27 (42.2)	37 (57.8)		28 (43.8)	36 (56.3)	
21-30	14 (51.9)	13 (48.1)		14 (56)	11 (44)		17 (68)	8 (32)	
> 30	3 (100.0)	0 (0.0)		11 (84.6)	2 (15.4)		8 (61.5)	5 (38.5)	
Ever trained on IDSR									
Yes	51 (72.9)	19 (27.1)	0.011(0.915)	50 (71.4)	20 (28.6)	0.705(0.401)	59 (83.1)	12 (16.9)	66.30(0.0001)
No	167 (63.7)	95 (36.3)		146 (55.7)	116 (44.3)		77 (29.5)	184(70.5)	
Availability of IDSR forms									
Yes	75 (30)	175 (70)	8.446(0.004)	105 (42)	145 (58)	0.449(0.503)	180 (72)	70 (28)	70.34(0.0001)
No	39 (47.6)	43 (52.4)		31 (37.8)	51 (62.2)		16 (19.5)	66 (80.5)	

activities more frequently, thereby developing a deeper familiarity with reporting processes and public health response strategies.¹⁸ Furthermore, the availability of IDSR reporting tools may increase familiarity of the HCW with the tools and improve their understanding of the IDSR strategy. The association with occupation suggests that specific job roles may offer greater opportunities or responsibilities in disease surveillance.¹⁶ In addition, the number of years of experience was found to be associated with the respondents' attitude towards IDSR, similar to findings in Zimbabwe.¹⁹ With increased experience, individuals are likely to have witnessed the importance of early disease detection and the impact of timely reporting on public health outcomes. This practical exposure can foster a sense of responsibility and appreciation for the role of IDSR in controlling disease outbreaks.

Experienced HCWs may also feel more confident and competent in carrying out surveillance tasks, which can contribute to a more favourable attitude.¹⁹ Furthermore, educational qualifications, having ever been trained in IDSR, and the availability of IDSR tools were statistically significantly associated with IDSR practice. The finding that educational qualifications significantly influence IDSR practice suggests that individuals with higher levels of education are more likely to apply surveillance procedures correctly. This may be due to a better understanding of health systems, data management, and the importance of disease monitoring, which typically accompanies advanced education. Such individuals may also be more adept at interpreting guidelines and fulfilling reporting responsibilities. Training on IDSR, which is significantly associated with practice, highlights the crucial role of capacity building in improving

Table 5c: Bivariate and Logistic Regression Analysis for Factors Associated with Knowledge, Attitude and Practice of IDSR

BIVARIATE ANALYSIS FOR FACTORS ASSOCIATED WITH KNOWLEDGE, ATTITUDE AND PRACTICE OF IDSR									
Variables	Knowledge			Attitude			Practice		
	Good	Bad	X ² (P-value)	Good	Poor	X ² (p-value)	Good	Poor	X ² (p-value)
LOGISTIC REGRESSION ANALYSIS OF FACTORS ASSOCIATED WITH KNOWLEDGE, ATTITUDE AND PRACTICE OF IDSR									
	Knowledge		p-value	Attitude		p-value	Practice		p-value
	AOR (95% CI)			AOR (95% CI)			AOR (95% CI)		
Educational Qualification	0.613 (0.444-0.846)		0.003				1.494 (1.034-2.073)		0.032
Years of experience	0.586 (0.442-0.778)		0.0001	0.722 (0.537-0.971)		0.031			
Ever been trained on IDSR							10.016 (5.070 – 23.076)		0.0001
Availability of IDSR forms	0.443 (0.257- 0.764)		0.003				11.729 (6.002- 22.922)		0.0001
Occupation	0.602 (0.438- 0.828)		0.002						

surveillance activities. Lack of training was also reported as a factor in Malawi.¹² Healthcare workers who have received IDSR training are more likely to understand what is required of them, how to complete reporting forms, and the importance of timely and accurate reporting. This underscores the effectiveness of targeted training programs in translating knowledge into action and reducing poor practices on IDSR due to a lack of training.²⁰ The availability of IDSR tools, including reporting forms, also plays a key role in facilitating proper practice, as was also reported in Enugu, Nigeria, and Ghana.^{8,21} Even when HCWs are knowledgeable and well-trained, the absence of essential tools can hinder their ability to report cases and follow surveillance procedures effectively.^{21,22} Another key finding from this study was that the majority (78.9%) of respondents had not been trained in IDSR, a pattern also observed in Zambia, Malawi and Uganda.^{3,11,12} This may be due to the high turnover rate of HCWs, including those who have previously been trained, due to various factors, including the economic situation of most LMICs.^{23,24} Insufficient training leaves healthcare workers without the skills to detect, report, and respond to priority diseases effectively. This deficiency increases the risk of delayed outbreak

recognition, fuelling uncontrolled transmission. Furthermore, it compromises data quality, impeding the monitoring of disease trends and evidence-based decision-making. Ultimately, these shortcomings undermine the entire surveillance system, diminishing the country's capacity to meet national and international public health preparedness standards.²

LIMITATIONS OF THE STUDY

This study was a cross-sectional study relying on self-reported data, which may be prone to recall bias. To mitigate this, logistic regression was used to exclude variables that could act as cofounders. Nevertheless, this limitation should be considered when interpreting and generalizing the results.

CONCLUSION

The study concludes that while healthcare workers had relatively good knowledge and attitudes towards IDSR, their practice levels were suboptimal. To enhance IDSR implementation, health workers' capacity should be strengthened through targeted training, improved availability of IDSR tools, and supportive supervision. Addressing these key factors can improve early detection and response to disease outbreaks, ultimately strengthening the health system's resilience and preventing epidemics.

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

AUTHORS' CONTRIBUTIONS

CA- Conception and study design, data analysis and interpretation, drafting of manuscript, revision and approval of final version of manuscript. **OI, KUO, OO, KHY, and GOO-** Data collection, data analysis and interpretation, drafting of manuscript, revision and approval of final version of manuscript.

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