

Original Article

Knowledge of Adverse Events Following Immunization and Awareness of its Reporting System among Primary Healthcare Workers in Jigawa State

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Abstract

Background: Healthcare workers (HCWs) have an essential and pivotal role to play in gaining and maintaining public confidence in the safety of vaccines through operational Adverse Events Following Immunization (AEFI) surveillance. For primary healthcare workers to be able to do this work effectively they should have the knowledge to detect an AEFI and at the same time be conversant with the reporting system. **Objective:** This study determined the knowledge of Adverse Events Following Immunization and the awareness of its reporting system among HCWs in primary health care centers of Jigawa State. **Methodology:** A cross-sectional study was conducted among 290 HCWs working in immunization units, selected through a multistage sampling technique. Data were collected using a pre-tested self-administered structured questionnaire. The data collected was sorted, checked for completeness, and entered into computer analysis software (IBM SPSS version 20) for analysis. The results obtained were presented in tables and charts. All statistical tests were two-tailed with a p-value of < 0.05 used as the statistical significance level. **Results:** About 167 (57.6%) of the respondents were aged between 21-30 years with a mean age of 31.3±7.4 years. The majority 278 (95.9%) of the primary HCWs were aware of AEFI, and seminars/workshops or training were the common sources of information on AEFI (216 (77.7%). Of the 278 primary HCWs that are aware of AEFI, only 120 (43.2%) could define AEFI correctly, and 142 (51.1%) and 87 (31.3%) could identify serious AEFI and non-serious (minor) as a type of AEFI respectively. Up to 213 (76.6%) of healthcare workers know the correct AEFI reporting flow, and only 44 (15.8%) know that only serious AEFI are reported. **Conclusion:** The majority of the primary healthcare workers were aware of AEFI and how to report it, but few had good knowledge of reporting it. The Jigawa State Primary Healthcare Development Agency in collaboration with Local government authorities should provide on-the-job training on AEFI surveillance for the primary healthcare workers especially those that provide immunization services.

Keywords: Awareness, AEFI, Knowledge, Primary healthcare workers, Reporting system

Introduction

An adverse event following immunization is any untoward medical occurrence that follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, an abnormal laboratory finding, a symptom, or a disease.¹ If not rapidly and effectively dealt with, can undermine confidence in a vaccine

and ultimately have dramatic consequences for immunization coverage and disease incidence. Vaccine-associated adverse events may affect healthy individuals and should be promptly identified to allow additional research and appropriate action to take place. As vaccine-preventable infectious diseases continue to decline, people have become increasingly concerned about

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Introduction

An adverse event following immunization is any untoward medical occurrence that follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, an abnormal laboratory finding, a symptom, or a disease.¹ If not rapidly and effectively dealt with, can undermine confidence in a vaccine and ultimately have dramatic consequences for immunization coverage and disease incidence. Vaccine-associated adverse events may affect healthy individuals and should be promptly identified to allow additional research and appropriate action to take place. As vaccine-preventable infectious diseases continue to decline, people have become increasingly concerned about the risks associated with vaccines.¹ Furthermore, technological advances and continuously increased knowledge about vaccines have led to investigations focused on the safety of existing vaccines which have sometimes created a climate of concern. Severe reactions following immunization are often rare but detecting, reporting, and monitoring adverse events following immunization (AEFI) are critical to managing vaccine reactions.²

Health workers have an essential and pivotal role to play in gaining and maintaining public confidence in the safety of vaccines through operational AEFI surveillance. These roles include providing evidence-based information on the benefits and risks of vaccines: identifying and reporting adverse events following immunization.³ Any AEFI report should be managed properly to reduce dropout and to maintain immunization coverage as the risks of natural infection are much greater than the risks of vaccination. Fear of vaccine reactions, real or perceived, deters many people from undergoing vaccination.⁴

For the primary healthcare workers to be able to do this work effectively they should have the knowledge to detect an AEFI and at the same time be conversant with the reporting system. Hence, the need for healthcare workers in our primary care facilities to have adequate knowledge, and requisite skills in detecting and reporting AEFIs. This study determined the knowledge of adverse events following immunization and the awareness of its reporting system among HCWs in primary health

care centers of Jigawa State. The findings of the study will add to the body of knowledge on immunization activities in the State and beyond, as there were very few researches carried out on AEFI. It will also help relevant stakeholders in deciding on the course of championing immunization activities in the State.

Materials and Method

Study Area

Jigawa State is one of the 36 States of Nigeria, created out of Kano State on August 27, 1991. It is situated in the north-western part of the country between latitudes 11.00^oN to 13.00^oN and longitudes 8.00^o E to 10.15^oE. It consists of 27 Local Government Areas and 288 political wards in a land area of 23,154 km square. Kano and Katsina States border Jigawa to the west, Bauchi State to the east and Yobe State to the northeast. To the north, Jigawa shares an international border with the Republic of Niger. The projected (2006 census) total population of the State is 5,739,027 while the projected population of under-five and women of childbearing age are 1,147,805 and 1,262,586 respectively. The main occupation of the people is farming, petty trading, and animal rearing. The State is dominated by Hausa, Fulani with Kanuri & Bade in the northeast senatorial district. There are other settled tribes both from within and outside Nigeria inhabiting almost all the local Government areas of the State with the highest concentration in the State capital.⁵

Jigawa has the following healthcare facilities distributed all over the State; Hospitals (tertiary, general & comprehensive) 12, PHC Centers 381, Health Posts 267, Private Health Facilities 15, and Mission Hospitals 3. All the tertiary, general, comprehensive hospitals and primary healthcare centers provide routine immunization services for clients in the State. Adverse events following immunization surveillance are carried out regularly during both routine immunization services provision and supplemental immunization activities in the State. A report from National Primary Healthcare Development Agency (NPHCDA) shows the following AEFIs cases were line listed in Jigawa State; 19 cases in 2011, 41 cases in 2015, and 39 cases in 2017. However, there were no cases of death due to AEFI during the period.⁶

Study Design and Study Population

A descriptive cross-sectional design was used to study healthcare workers providing services in immunization units for at least 6 months in public primary healthcare centers of Jigawa State.

Sample Size and Sampling Technique

The sample size was determined using the following formula;⁷

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

Where;

n = minimum sample size

z = standard normal deviate which corresponds to a 95% confidence interval level

p = proportion of the target population estimated to have good knowledge of AEFI reporting = 24.3% = 0.243⁸

q = 1 – 0.243 = 0.757

d = degree of precision = 5% = 0.05

The minimum sample size was 290.

All 290 respondents were selected through a multistage sampling technique;

Stage one: selection of LGAs

One LGA was selected using simple random sampling (SRS) by balloting from each of the three senatorial zones of the State. This made a total of three LGAs for the study.

Stage two: selection of wards

All the wards in the three selected LGAs were involved in the study

Stage three: selection of primary healthcare facilities

From all the selected wards of each selected LGA, twenty primary healthcare centers (PHCs) that offer immunization services were selected using SRS by balloting, and this made a total of sixty PHCs.

Stage four: selection of respondents

Two hundred and ninety primary HCWs were selected through proportionate allocation and using SRS by balloting from the four hundred and eighteen HCWs manning the sixty PHCs selected from the three LGAs selected from the three senatorial zones in the State.

Study Instrument and Data Collection Methods

Data was collected using a self-administered structured questionnaire with open and closed-ended questions. The questionnaire was pretested

among HCWs working in immunization units of primary healthcare centers in the neighboring LGAs that were not participating in the study and were about 50km away before it was finalized. Six research assistants trained and supervised by the researcher collected the data over two weeks.

Statistical Analyses

The data collected was sorted, checked for completeness, and entered into computer analysis software, IBM SPSS version 20 for analysis (IBM SPSS, 2011).⁹ Univariate analysis was done to calculate frequencies and proportions of socio-demographic data, knowledge of AEFI, and its reporting. The results obtained were presented using tables and charts. The mean age of respondents mean duration in service, and their standard deviations were also calculated. Bivariate analysis using the chi-square test was used to examine the associations between socio-demographic characteristics, knowledge, and reporting AEFI among HCWs as well as identify the significant variables which were interpreted as statistically significant at p - values of < 0.05.

Ethical Considerations

Ethical clearance for the conduct of the research was obtained from Jigawa State Health & Ethics Committee, and written informed consent was obtained from every participant before data collection was carried out. Permission was also obtained from the in-charges of the health facilities involved in the research.

Results

About 167 (57.6%) of the respondents were aged between 21-30 years with a mean age of 31.3±7.4 years. The majority, 168 (57.9%) of the respondents are males and 236 (81.4%) possesses diploma certificate. Majority, 179 (61.7%) of the respondents are community health extension workers followed by environmental health officers 57 (19.7%). Up to 126 (43.5%) of the respondents had spent 1-3 years and up to 50 (17.2%) had spent more than 10 years working in immunization units. The mean duration of work experience is 5.4±4.3 years. (Table 1)

Table 1: Socio-demographic characteristics of Primary healthcare workers in Jigawa State, May 2019. (n=290)

Variable	Frequency	Percent
Age group (years)		
≤ 20	9	3.1
21-30	167	57.6
31-40	71	24.5
41-50	42	14.5
51-60	1	0.3
Mean age = 31.3±7.4		
Sex		
Male	168	57.9
Female	122	42.1
Highest Educational Qualification		
SSCE/GCE	13	4.5
OND	19	6.6
Diploma	236	81.4
HND	9	3.1
1st Degree	1	0.3
Others	12	4.1
Cadre		
CHO	2	0.7
CHEW	179	61.7
Nurse	11	3.8
Midwife	4	1.4
Pharmacy technician	12	4.1
Health Assistant	22	7.6
Auxiliary nurse	3	1.0
Others (Environmental health officers)	57	19.7
Work experience (years)		
1-3	126	43.5
4-6	88	30.3
7-9	26	9.0
≥10	50	17.2
Mean = 5.4±4.3		

The majority 278 (95.9%) of the primary HCWs were aware of AEFI, and seminars/workshops or training were the common sources of information on AEFI, 216 (77.7%). (Table 2)

Table 2: Awareness and sources of information on AEFI among primary healthcare workers, Jigawa State May 2019.

Variable	Frequency	Percent
Aware of AEFI		
Yes	278	95.9
No	12	4.1
Primary source of information on AEFI (n= 278)		
Classroom lectures	26	9.4
Seminar/workshop/training	216	77.7
Colleagues	32	11.5
Media	4	1.4

Table 3: Primary healthcare workers' knowledge of definition and types of AEFI, Jigawa State May 2019.

Variable	Frequency	Percent
Definition of AEFI		
Correct	120	43.2
Incorrect	158	56.8
Types of AEFI*		
Non-serious AEFI	87	31.3
Serious AEFI	142	51.1
Mild AEFI	229	82.4
Moderate AEFI	146	52.5
Severe AEFI	197	70.9

*Multiple responses

Of the 278 primary HCWs that are aware of AEFI, only 120 (43.2%) could define AEFI correctly, and 142 (51.1%) and 87 (31.3%) could identify serious AEFI and non-serious (minor) as a type of AEFIs respectively. (Table 3) About 60 (21.6%) of the respondents had good knowledge of AEFI reporting, whereas 97 (34.9%) had poor knowledge of AEFI reporting. (Table 4)

Table 4: Knowledge grade on AEFI among primary healthcare workers in Jigawa State, May 2019. (n=278)

Knowledge	Frequency	Percent
Poor	97	4.9
Fair	121	43.5
Good	60	21.6
Total	278	100.0

The majority, 268 (96.4%) of the primary HCWs were aware of how to report AEFI whenever it occurs. Up to 213 (76.6%) of healthcare workers that are aware of AEFI know the correct reporting flow, and only 44 (15.8%) know that only serious AEFI are reported. About 219 (78.8%) and 54 (19.4%) primary HCWs mentioned telephone and filling forms as some of the appropriate methods of AEFI notification respectively. Up to 148 (53.2%), 72 (25.9%), and 54 (19.4%) of the HCWs said AEFI detected in the health facility should be reported to the In-charge of health facility (HF), Ward focal person and disease surveillance and notification officer (DSNO) respectively. (Table 5).

Table 5: Primary healthcare workers' knowledge on reporting AEFI, Jigawa State, May 2019.

Variable	Frequency	Percent
Aware of how to report AEFI (n= 278)		
Yes	268	96.4
No	10	3.6
AEFI reporting flows		
Correct	213	76.6
Incorrect	75	23.4
AEFI to be reported		
Serious AEFI only	44	15.8
All AEFIs	234	84.2
The appropriate method of AEFI notification		
Telephone	219	78.8
Filing forms	54	19.4
Telling colleagues	5	1.8
Who to report AEFI detected in your HF to		
DSNO	54	19.4
ILO	2	0.7
In-charge of HF	148	53.2
Surveillance officer	2	0.7
Ward Focal Person	72	25.9

Discussion

A total of 290 healthcare workers working in the immunization unit or clinic of primary healthcare facilities participated in the study and most were aged between 21-30 years with a mean age of 31.3 ± 7.4 years. This shows that youth were more among the HCWs who are usually full of energy to carry out stressful activities. The mean age of the primary healthcare workers was lower than that of respondents in Lagos (39.5 years) and Kenya (41.4 years), but similar to the study done in Zimbabwe (33.0 years).^{8,10,11} This may be because the majority of the healthcare workers in the study area did only two years of post-secondary study program and later take up a job in the health sector, hence they were younger than those that did more than two years program post-secondary education which is commonly the situation in other areas. In this study, males were more among the HCWs this is in contrast to findings from similar studies carried out in Lagos (88.4%), Kenya (83.3%), and Albania (94.1%) where females were more among the HCWs.^{8,11,12} This has to do with the nature of tradition and religious beliefs of people in the study area, where women are not encouraged to take up white-collar jobs compared to their male counterparts. Professionally, the majority of the respondents were community health extension workers

followed by environmental health officers. This could be because the training of community health extension workers is centered on offering services in primary healthcare settings, where most routine immunization services are provided. Most of the respondents had spent 1-3 years and very few had spent more than 10 years providing immunization services. The mean of the work experience is 5.4 ± 4.3 years.

The majority of the primary HCWs were aware of AEFI, and seminars/workshops or training were the common sources of information on AEFI. Up to ninety-six percent of the primary HCWs were aware that some unwanted events, side effects, or symptoms may occur after a child is given a vaccination. This study shows that quite a great number of the primary HCWs were aware of AEFI and the commonest source of their information on AEFI was through seminars/workshops or training which is not surprising because of the frequent and regular training programs given to them by many different stakeholders. Less than half of the primary HCWs could define AEFI correctly, and about half and very few could identify serious AEFI and non-serious (minor) as a type of AEFIs respectively. Only a few of the respondents had good knowledge of AEFI reporting, whereas

(34.9%) had poor knowledge of AEFI reporting, this is higher than 20.2% reported by Ogunyemi et al in a study carried out in Lagos.⁸

Majority of the primary HCWs were aware of how to report AEFI whenever it occurs. Most healthcare workers know the correct AEFI reporting flow, however, very few know that only serious AEFI are reported. Most of the primary HCWs mentioned that telephone, but few mentioned filling forms as some of the appropriate methods of AEFI notification respectively. More than half of the HCWs said AEFI detected in the health facility should be reported to the In-charge of HF, but very few said it should be reported to Ward focal person.

Conclusions

The majority of the primary healthcare workers were aware of AEFI and how to report it, but few had good knowledge of reporting it. The Jigawa State Primary Healthcare Development Agency in collaboration with Local government authorities should provide on-the-job training on AEFI surveillance for the primary healthcare workers especially those that provide immunization services.

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Conflict of Interest

There is NO conflict of interest

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