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Assessing Community Members' Knowledge about AEFI, Awareness about AEFI Reporting and Their Vaccine Safety Perception in Oyo State Nigeria

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Abstract

Immunization as a cost-efficient has proven to be a successful public health initiatives, as it prevents more than 2.5 million child fatalities yearly. Worry about the possibility of adverse events after vaccination (AEFI) may lead to low vaccination rates, a reduction in vaccine confidence, or return of vaccine preventable diseases. This study aim to understand the community level knowledge about AEFI, their awareness about AEFI reporting and perception about vaccine safety. This study is a descriptive cross-sectional study that was carried out among 422 vaccine recipients in Oyo State that have at least received a dose of vaccine in the last 10 years. Semi- structured questionnare was used for data collection. The data was analyzed using SPSS24 and the descriptive statistical tools used are frequency, mean and standard deviation. The mean knowledge score out of 10 was 6.61± 2.34 and more than half (56.2%) of the respondents have good knowledge about the concept of AEFI. The mean awareness scores out of 10 was 4.75±1.48 and only few (3.3%) of respondents have good awareness about AEFI reporting. The majority (95.7%) of study respondents perceived vaccines as safe and effective against vaccine preventable diseases, however more than half (52.9%) of the respondents perceived that many HWs administer vaccines in a harmful manner. This study demonstrated community members' suboptimal awareness about reporting system for AEFI, as well as having perception that vaccines though safe and effective, their administration were in a harmful manner.

Keywords: *AEFI, AEFI Reporting, Perception, Vaccine Safety.*

Introduction

Immunization prevents more than 2.5 million child fatalities each year and is considered one of the most cost-efficient and successful public health initiatives [1] (World Health Organization, 2022). It has significantly reduced the morbidity and mortality from diseases that can be prevented by vaccination. [2-5] A robust and effective health service infrastructure that can deliver and scale-up the vaccination service is essential to the success of any immunization program. However, because of immunization's accomplishments, the prevalence of vaccine-preventable diseases (VPDs) has fallen considerably, and the public's focus switches from VPDs to vaccine safety and unfavorable vaccine side effects.[6, 7] People are becoming more worried about the hazards connected with vaccines as the number of cases of infectious diseases preventable by vaccination continues to drop. Following any vaccine introduction, continued post-licensure safety monitoring and evaluation of vaccine-associated events (adverse events following immunizations, AEFI) is necessary to provide a more complete benefit-risk profile.[8, 9] In addition, research on the safety of current

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vaccines has expanded due to technological developments and the ongoing expansion in knowledge about vaccines has occasionally sparked further curiosity and some alarm.[2, 10] According to WHO, widespread worry about the possibility of adverse events after vaccination (AEFI) may result in poor vaccination, a downward trend in vaccine confidence, or even a 'comeback' of vaccine preventable diseases.[11] A typical example was seen in 2003 in Northern Nigeria OPV boycott.[12] Akwataghibe et al in their study also identified AEFI as main 'demotivating factor'[13]. At such, it is important to ensure a strenghthened pharmacovigilance on vaccine safety to confidently understand potential vaccine safety issues and unabigously provide vote of confidence in vaccines with evidence through scientific expert perspective.

People's knowledge about AEFI, information available to them about reporting channels as well as their perception about vaccine safety may impact the reporting rate of AEFI from the community to the health system structure where the information are expected to be aggregated. Having a previous medical experience, whether as a patient, caregiver or even acquaintance provides basis for improved knowledge about such medical condition and availability/ accessibility to care. The same is applicable to experience with AEFI. However, incident(s) that follows or experience surrounding the occurrence of the adverse event may positively or negatively affect subsequent reporting of AEFI in future.

Currently, there is no record that provide the social data about what the community members in Oyo State knows about AEFI, AEFI reporting or understanding of their perception about vaccine safety perception.

It is important to understand the current community level knowledge about AEFI, their awareness about AEFI reporting and perception about vaccine safety to understand the impact these may have on the current AEFI reporting rate to the health system and provide a great sense of direction for technical experts in information provision to the communities about AEFI, reporting and vaccine safety. Therefore, results from this study may provide a clear sense of guidance in the development of community targetted communication materials that may be used in enhancing AEFI reporting.

Accordingly, in addition to enhancing AEFI reporting, having a high level of knowledge about AEFI, greater awereness about reporting of AEFI and a favorable perception about vaccination and AEFIs may help to reduce immunization neglect and the related medical liabilities [14].

Materials and Methods

This study is a descriptive cross-sectional study carried out among vaccine recipients in Oyo State who received at least a dose of vaccine in the last 10 years or the caregivers of the vaccine recipient. A sample size of 422, drawn using Cochran's infinite population technique was adopted for the study. Where Z is the standard normal deviate set at 1.96 (corresponding to 95% CI), p is the estimated proportion of an attribute that is present in the population (0.5 or 50% used as prevalence in the study population was unavailable), q is the complementary probability (1-p), and dis the margin of error set at 5% (0.05).

The respondents were selected by using multistage (3 stages) sampling procedure.

The first stage: Random selection of 3 LGAs, one per senatorial district in Oyo State.

Second stage: PPS sampling methodology was used in selecting the settlements.

Based on the master list of settlement showing Ibadan Northwest, Iseyin and Ogo Oluwa has 384, 439 and 204 communities/ settlements respectively, 16, 18 and 8 settlements were selected in the LGAs accordingly.

The third stage: random selection of 10 persons in the selected settlements to make

422 eligibles. One eligible was then selected per household.

A semi- structured questionnaire on ODK was used for the data collection to get information about socio -demographic characteristics, knowledge about AEFI, vaccine safety perception and awareness of AEFI Reporting among respondents. Validity and reliability of the tool was ensured through extensive literature search of relevant previous papers in development of the tool, pretesting of the tool in similar adjoining LGAs to study lcations (10% of sample size), incorporation of preliminary pretested outputs for apprpriate instrument modification and deployment of Cronbach's Alpha technique for reliability test ensuring coefficient reliability value of 0.8. In addition, content and construct validity were reviewed during the training of research assistants to ensure uniform understanding and interpretation by all research assistants that supported data collection.

The data was analyzed using IBM/ Statistic Package for Social Science (SPSS) (Version 24) statistical package. The descriptive statistical tools used are frequency, mean and standard deviation.

Respondents' knowledge was computed using scale of 1 to 10, score of =>7 was termed good knowledge, 5-6 average knowledge while <5 termed poor knowledge. The same scoring was applied to respondents' awareness about AEFI reporting. The frequency of responses for each of the enquiries to determine perception about vaccine safety was presented seperately to depict respondents' opinion about vaccine safety.

Prior to the commencement of the study, ethical approval was obtained from the Oyo State Ministry of Health Ethics Review Committee. Verbal informed consent was obtained from all participants and confidentiality, privacy and anonymity of information maintained by ensuring no identifier placed on each respondents questionnaire, only autocodes generated on ODK, each respondents were interviewed in a private space and all collected data were downloaded, kept confidentially by the investigator with no unauthorized access and utilized strictly for research purpose only.

Results

A total of 422 respondents with 320 (75.8%) identified as females, 80 (19%) as males and 22 (5.2%) people who did not want to disclose their gender were interviewed. Respondents aged 36-50 years represented close to half (46.4%) of those interviewed, while respondents aged 21-35 years represented 39.3%. Only 10.5 % and 3.8% of the total interviewed were aged above 50 years and below or equal to 20 years. The mean age of respondents is 37.2+ 10.3. Majority (70.4%) of the respondents were of the Islamic faith, while 28.4% were Christians and only 1.2% practice the traditional religion. More than half (58.2%) of the respondents have at least secondary level education, while 23.9% and 17.5% of respondents had primary and tertiary level as their highest level of education at the time of interview. Close to half (48.1%) of respondents lived within 1-to-2-kilometer distance to the closest health facility, while 25.4% lived within 2–5-kilometer distance to closest health facility. only 7.8% of respondents lived within 1km of the closest health facility, but 18.7% lived a distance greater than 5km away from the closest health facility. People who have had 3 to 4 children represents 43.8% of the respondents, while slightly above one-third (34.6) of respondents have had 1-2 children. People who had no child were 12.1 of respondents and the remaining 9.5% were people with 5 or more children. Table1 provides the sociodemograhic information.

Table 1. Sociodemographic Distribution of Respondents (N=422)

Variables	**Value (n)**	**Frequency**
Gender		
Female	320	75.8
Male	80	19.0
Prefer not to answer	22	5.2
Age of Respondents (years)		
<20	16	3.8
21-35	166	39.3
36-50	196	46.4
51-65	44	10.5
	Mean Age (SD)	37.2 (+10.32)
Religion		
Christianity	120	28.4
Islam	297	70.4
Traditional	5	1.2
Highest level of education		
primary	101	23.9
secondary	247	58.5
tertiary	74	17.5
Distance to closest HF		
<1km	33	7.8
2km	203	48.1
5km	107	25.4
>5km	79	18.7
Ethnicity		
hausa	3	7
igbo	11	2.6
yoruba	403	95.5
others	5	1.2
No of children		
0	51	12.1
1-2	146	34.6
3-4	185	43.8
>=5	40	9.5

Based on the computed score for knowledge shown in table2, more than half (56.2%) of the respondents have good knowledge about the concept of AEFI, while 24.9% and 19% have average knowledge and poor knowledge respectively about AEFI. The mean Knowledge score out of 10 was 6.61+ 2.34.

Table 2. Computed Score of Respondents' Knowledge About AEFI (N=422)

Variables	Value (n)	Frequency
Knowledge Score		
good	237	56.2
Average	105	24.9
poor	80	19.0
	Mean (SD)	6.61 (+2.34)

As illustrates in table3, very few (3.3%) of respondents have good awareness about AEFI reporting. However, greater than half (58.3%) of the respondents have average awareness about reporting of AEFI while 38.4% are poorly aware about reporting AEFI. The mean awareness scores out of a total of 10, for the 422 respondents was 4.75+1.48.

Table 3. Respondents' Awareness About AEFI Reporting (N=422)

Variables	Value (n)	Frequency
Awareness score grading about AEFI reporting		
good	14	3.3
Average	246	58.3
poor	162	38.4
	Mean (SD)	4.75 (+1.48)

Table4 shows the perception of respondents about vaccine safety. The majority (95.7%) of respondents agreed that vaccines are safe and effective against vaccine preventable diseases while 2.4% responded not know and 1.9% disagreed. More than half (52.9%) of the respondents believed that many HWs administer vaccines in a harmful manner. Almost the same proportion of respondents (45.5% and 43.4%) agreed and disagreed respectively that vaccine is not necessary unless a person is sick, while 11.1% of respondents said they did not know. About two-third (67.7%) of the respondents believed that AEFI are commonly developed.

More than half (62.8%) of respondents got worried about developing AEFI when they/ ward/ family member was to go for vaccination.

Greater than two- third of respondents (8.5% strongly agree, 62.6% agree) disclosed to believing that pre-counselling about AEFI is usually conducted by HWs before vaccinating.

Similarly, two- third of respondents (6.9% strongly agreed, 59.5% agreed) disclosed to believing that follow-up counselling about AEFI is usually conducted by HWs after vaccinating. Close to three- quarter of respondents (7.6% strongly agreed, 65.4% agreed) also said HWs usually provide counselling about AEFI management. Higher proportion of participants (7.3% strongly agreed, 62.8% agreed) were satisfied with AEFI counselling provided by HWs.

Many (62.3% agreed, 7.6% strongly agreed) of the respondents believed that AEFI safety precaution are observed at the immunization posts.

Some of the respondents perceived that vaccines do more harm than good, with 20.1% of respondents agreeing and 7.3% strongly agreeing. However, majority of the respondents perceived otherwise (57.1% disagreed, 5.0% strongly disagreed). The remaining 10.4% of respondents responded that they did not know.

Table 4. Vaccine Safety Perception Among Respondents (N=422)

Variables	Value (n)	Frequency
Vaccines safe &effective		
Strongly agree	146	34.6
Agree	258	61.1
Don't Know	10	2.4
Disagree	6	1.4
Strongly disagree	2	0.5
Many HWs administer vaccines in harmful manner		
Strongly agree	21	5.0
Agree	202	47.9
Don't Know	63	14.9
Disagree	130	30.8
Strongly disagree	6	1.4
Vaccines not necessary unless sick		
Strongly agree	25	5.9
Agree	167	39.6
Don't Know	47	11.1
Disagree	168	39.8
Strongly disagree	15	3.6
AEFI commonly developed		
Strongly agree	47	11.1
Agree	239	56.6
Don't Know	62	14.7
Disagree	70	16.6
Strongly disagree	4	0.9
I get worried about vaccine safety when my family/ I am to receive vaccine		
Strongly agree	40	9.5
Agree	225	53.3
Don't Know	29	6.9
Disagree	126	29.9
Strongly disagree	2	0.5
Pre-counselling about AEFI done by HWs before vaccination		
Strongly agree	36	8.5
Agree	264	62.6
Don't Know	58	13.7
Disagree	63	14.9
Strongly disagree	1	0.2
Follow-up counselling about AEFI done by HWs after vaccination		
Strongly agree	29	6.9
Agree	251	59.5
Don't Know	59	14.0
Disagree	78	18.5
Strongly disagree	5	1.2

HWs provide counselling about AEFI management		
Strongly agree	32	7.6
Agree	276	65.4
Don't Know	51	12.1
Disagree	61	14.5
Strongly disagree	2	0.5
Satisfy with AEFI counselling HWs provide		
Strongly agree	31	7.3
Agree	265	62.8
Don't Know	50	11.8
Disagree	72	17.1
Strongly disagree	4	0.9
Safety precaution on AEFI observed at immunization posts		
Strongly agree	32	7.6
Agree	263	62.3
Don't Know	85	20.1
Disagree	42	10.0
Strongly disagree	0	0.0
Vaccines do more harm than good		
Strongly agree	31	7.3
Agree	85	20.1
Don't Know	44	10.4
Disagree	241	57.1
Strongly disagree	21	5.0

Discussion

Knowledge about AEFI among Community Members

This study shows that majority of the respondents have average to good knowledge about AEFI with mean knowledge score of 6.61+2.34. Participants exhibited understanding of the basic meaning of AEFI, the reactions that can be termed as AEFI, who can suffer an AEFI, when AEFI can occur and the need for AEFI surveillance. This aligns with results of the study by Afolaranmi et al conducted in Jos, Nigeria [15] where over two-third of respondents exhibited good knowledge about AEFI. This implies that many community members understands that AEFI can occur and AEFI surveillance can complement other efforts targeted at vaccine safety.

Level of Awareness of AEFI Reporting among Community Members

Very few respondents in this study exhibited good awareness about reporting of AEFI. This compares with findings from Omoleke et al [16] conducted in Kebbi State, Nigeria but in contrast with the findings from a study by Afolaranmi et al in Jos Nigeria [15] and another study in Ondo State Nigeria by Olaoye et al.[17] This result from the later study may however not be surprising as the finding was among health workers who are usually expected to have regular training and sensitization about AEFI.

Vaccine Safety Perception among Community Members

People are often driven to act based on their perception of the circumstance in relation to the constructs.[18] Majority of respondents in this study have the perception that vaccines are

safe and effective, and this finding aligns with findings from Lee & Sibley.[19] It is noteworthy that about 4% disagreed with this affirmation or stated not to know. These set of people and their likes should be targeted and carefully guided to prevent them from confusing some of those who already are convinced that vaccines are safe and effective.

In terms of community members perception about the health workers, more than half of the respondents in this study were convinced that many HWs administer vaccine in a harmful manner. This proportion is huge for a sensitive matter that hover around system trust and may be a strong reason for not showing up for vaccinations when due or as well be responsible for not reporting AEFI as there are no trust in the health workers. This results however contrast results from a Northern Nigeria study [20] that suggests that community members had complete trust in the health workers and satisfy with AEFI information provided.

In their perception, majority of respondents feels AEFI is commonly developed. In assessing respondents' perception about safety precaution being observed at the immunization posts, slightly above two- third perceived that vaccine safety precautions are usually being observed at the immunization posts, leaving a whooping one- third who perceived otherwise. Even the two- third with the positive impression contrasts the results seen for perception about health workers administering vaccines in a harmful manner in this same study, which indicates that many perceives harmful manners of administering vaccines by the health workers. The contrast is a confirmation that perception is often not from an informed judgement or actual occurrence/ situation.

The study further tries to understand the perception of respondents about whether vaccines do more harm than good, and the findings showed that 27% perceived that vaccines do more harm than good, but 62% perceived otherwise, while about 10% were undecided. This huge gap indicates a cry for help to intensified efforts to improve the public perception about the advantages vaccines has to offer through regular awareness creation, print media, TVs and radio broadcast and jingles, social media platforms.

Conclusion

The research study has shown that many people have good knowledge about AEFI but in addition demonstrates limited awareness about the AEFI reporting system among community member which could have a huge impact on AEFI surveillance and subsequently on immunization coverage. The results from the perception about vaccine safety indicates that most community members believe in the safety and effectiveness of vaccines, however, there are still a handfull with disbelieve that requires being targeted for proper orientation. Furthermore, results from the vaccinne safety perception aspect of this study also suggest that majority of the community members do not trust the health system in providing the available safe and effective vaccine in an unharmful manner. Though, perception may not be from an informed judgement or actual occurrence/ situation, it often shape the cue to action. Therefore, this sensitive finding requires further guidance to healthworkers to be more sensitive in vaccine mangement and administration to leave a better impression on clients and vaccinnee and caregivers.

These findings are indication of a need for professionally crafted mass awareness messages about vaccine safety and AEFI reporting system targeted at improving community members' perception about vaccine safety and AEFI pharmacovigilance and in turn immunization coverage and VPD reduction.

Conflict of Interest

Authors declare no conflict of interest.

Ethical Approval

Ethical approval was obtained from the Oyo State Ministry of Health Ethics Review Committee, Ibadan, Nigeria prior to the commencement of the study.

Data Availability

All collected data are securely saved and available for research purpose only in line with ethical consideration.

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Authors' Contribution

Conceptualization, literature review, methodology, data analysis, Writing – original draft, Writing – review & editing: **Olayiwola, Olanike**.

Supervision, Writing – review & editing: **AbdulRaheem, Ibraheem.**

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