Original Article :

Knowledge and Practice of Adverse Drugs Reaction Reporting Among Health Care Practitioners in Primary Health Care Centers in Kano Metropolis

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Abstract

Background and Aims:
Adverse Drug Reactions are one of the factors that contribute to hospitalization and death and can be duly prevented and reduced through spontaneous reporting. The study aimed at assessing the Knowledge and Practice of Adverse Drug Reaction Reporting among Health Care Practitioners in Primary Health Care Centers in Kano Metropolis.

Methods:
The cross-sectional study used a modified questionnaire that was adapted from similar previous studies with two sections. The total knowledge and practice scores were categorized as good for scores 80% and above, moderate for scores between 60-79% and poor for scores less than 60% using Bloom's cut-off point. Pearson Chi-square and Fischer-Freeman-Halton Exact Tests, where necessary, were used to test the hypotheses with $p < 0.05$ set as the level of statistical significance.

Results:
The outcome of the study revealed that though the respondents were aware of pharmacovigilance, only a few (13; 4.4%) understood what pharmacovigilance comprehensively entails. 213(71.7%) have inadequate knowledge and 161(71.7%) showed adequate practice of Adverse Drug Reaction reporting. Also, the participants' cadre significantly influences their knowledge (P-value= 0.026<0.05) and the knowledge of Adverse Drug Reaction significantly influences their practice of Adverse Drug Reaction reporting (P-value=0.031< 0.05).

Conclusion:
Healthcare practitioners are aware of pharmacovigilance but show inadequate knowledge of pharmacovigilance and Adverse Drug Reactions. However, there is an adequate Adverse Drug Reaction reporting practice among the healthcare practitioners. There is a need for continuous mandatory training on Adverse Drug Reactions and reporting, irrespective of the cadre or years of work experience of the health workers.

Keywords:
Knowledge, Practice, Adverse Drugs Reaction, Healthcare Workers, Nigeria

Introduction:

To underscore the importance of medication in healthcare intervention, the World Health Organization (WHO) set the theme of year 2022 World Patient Safety Day as "Medication Safety" to emphasize that medications are the largest used intervention in healthcare, hence they should be administered with no harm to the patients.[1] Spontaneous Adverse Drug Reaction (ADR) reporting can be seen as a method of detecting novel and infrequent Adverse Drug Reaction (ADR) occurrences.[2] As a result, healthcare professionals in any position play an important role in the pharmacovigilance system, and as such, they require extensive knowledge and competence in the field of the safety of medications, particularly for the early identification, treatment, and reporting of Adverse Drug Reaction (ADR).[3]

The teratogenicity of thalidomide during the sixties causing birth defects illumined the significance of independent monitoring of medication after it has been approved for distribution into the market. It brought a turn-around in the pharmacovigilance system, and spontaneous reporting of Adverse Drug Reaction (ADR) became systematized and controlled.[4] Countries that lack pharmacovigilance systems are defective in protecting their population from the lethal effects of medicines, therefore, it is imperative to have a system of Adverse Drug Reaction (ADR) reporting that is very effective in improving the care and safety of the patients and thus the overall health of the population.[5]

In 2004, National Agency for Food Drug Administration and Control (NAFDAC) launched pharmacovigilance to ensure drug safety and better treatment outcomes among patients at all levels of health care.[6] One of the components of Primary Health Care declared at Alma Ata in 1978 is the provision of essential drugs to manage common ailments in the community and thus a responsibility of healthcare workers at PHC facilities. It is required that these cadres of healthcare professionals have adequate knowledge and practice of Adverse Drug Reactions (ADR) as role players in ensuring safety of people at the community level. Therefore, a professional duty of healthcare practitioners is to report ADRs in order to improve the care and safety of the patients.[7]

According to reports from research done in four South African hospitals, Adverse Drug Reactions (ADRs) accounted for 8.4% of admissions.[8] Findings from studies in Nigeria revealed that 1.2% and 10.7% of adult and pediatric inpatients respectively developed adverse drug reaction on admission.[9,10] Previous study revealed inadequacy in the knowledge and unsatis-

factory practice of Adverse Drug Reactions (ADRs) reporting, the major determinant being training of how to report ADR. It was further revealed that only one-third of the respondents have ever had Adverse Drug Reactions (ADRs) reporting training which may be a significant factor that contributes to the poor knowledge and practice. Also, Pharmacovigilance (PV) is not part of the curricula of a lot of health training institutions in developing countries and healthcare workers only become cognizant of it when they start practicing. Besides, the larger percentage of the respondents work in primary healthcare facilities where acquaintance with information on Adverse Drug Reactions (ADRs) reporting are deficient.[11] Outcome of a study in South-western part of Nigeria showed that only 12(15.0%) exhibited good knowledge of Adverse Drug Reactions (ADRs) which indicated a low level of knowledge of Adverse Drug Reactions (ADRs) and pharmacovigilance among the respondents.[12]

Primary Healthcare facilities are healthcare facilities under the auspices of Local Government Area in Nigeria that provides promotive, preventive, curative and some components of rehabilitative healthcare to people in the community irrespective of where they live or work. This tier of health system serves as the first contact of people to Nigeria Health System and consists of various cadres of healthcare professionals. Primary Health Care Workers are the closest to the people in the community and serves as an entry into the Nigerian Health System. Primary Health Care workers provide basic health care needs to the members of the community including provision of essential drugs. This study is therefore interested in assessing the level of Knowledge and Practice of Adverse Drug Reaction (ADR) Reporting among Healthcare Practitioners in Selected PHCs in Kano State.

Methods:

Design and Study Population:

A cross-sectional design was used to assess the knowledge and practice of Adverse Drug Reaction (ADR) Reporting among Primary Health Care (PHC) Workers in Kano Metropolis. Kano Metropolis is located in the state capital of Kano State; Kano city and consists of eight Local Governments; Kano Municipal, Dala, Nassarawa, Fagge, Tarauni, Gwale, Ungogo, and Kumbotso Local Government with a total number of one-hundred and eighty-six health facilities distributed across the eight local government in the metropolis. The population for this study consisted of PHC workers (Nurses/Midwifes, Community Health Officers, Community Health Extension Worker, Junior Community Health Extension Workers and

Pharmacy Technicians) in the eight local governments of Kano metropolis.

Sample size and sampling technique:

The sample size for the study was determined from Krejcie and Morgan table.[13] The total number of health workers across the health facilities in the eight local governments are 1546 according to Kano State Primary Health Care Management Board (2022). From the sample size determination table, the sample size for a population of 1546 is three hundred and six. Therefore, 306 respondents participated in the study. Multistage sampling technique was employed for this study. At the first stage, four Local Governments: Kumbotso, Kano Municipal, Nassarawa and Tarauni were randomly selected from the eight local governments in Kano Metropolis. At the second stage, four health facilities were selected from Kano Municipal, six from Kumbotso, six from Nassarawa and four from Tarauni Local Government using a systematic random sampling technique. At the selected health facilities, a simple random sampling was done based on the population of the health workers in the facilities to meet up with the sample size.

Study Instrument:

The study questionnaire was adapted from previous relevant studies[11,12] investigating knowledge, practice and factors affecting Adverse Drug Reaction (ADR) reporting. The questionnaire consisted of two sections; A and B. Section A elicited the demographic characteristics of the respondents, which have 5 items, while section B consists of the main variables which consisted of 3 parts on knowledge, practice and factors affecting practice with a total of 40 items. The instrument was validated by three professionals in the field of pharmacy and nursing science in order to ensure comprehensiveness of items in the instrument, coverage of study objectives and to ensure that there are no obtuse statement/ items. Minor modifications were made to the questionnaire based on feedbacks from the validators. A pilot study was carried out in three PHC facilities from two of the excluded Local Governments among 30 PHC workers who possess similar characteristics with the population of the study. Cronbach Alpha was used to determine the reliability of the instrument. This was after the instrument was validated and a pilot study was carried out. The instrument produced a coefficient value of .681 which is regarded as acceptable and reliable.

Data Collection:

The researcher with the aid of three research assistants visited the selected PHCs, the number of questionnaires required for each selected health facility based on the sample size was handed over to the in-

charge of the PHC facility and retrieved after a period of one week.

Data Analysis:

Data obtained was sorted and analyzed using IBM-SPSS version 28. Descriptive statistics of frequency count and percentage were used to summarize the data. 10 items were selected to assess the knowledge of the respondents and 5 items were selected to assess the practice of the respondents, each correct response was scored '1' and each incorrect response was scored '0'. The total knowledge and practice score for each respondent was calculated, converted into percentage score and further categorized as good for scores 80% and above, moderate for scores between (60-79%) and poor for scores less than 60%) using Bloom's cut-off point. Fischer-Freeman-Halton Exact Test and Pearson Chi-square as appropriate was used to determine the influence of years of experience and professional cadre on knowledge of the respondents and the influence of years of experience, professional cadre and knowledge on practice with the level of statistical significance set at $p < 0.05$.

Ethical consideration:

An introduction letter was obtained from National Open University of Nigeria, Kano Study Centre (NOUN/KN-SC/032/I). The Health Research Ethics Committee, Kano State Ministry of Health, provided ethical permission to conduct the study (NHREC/17/03/2018, SHREC20223503). A verbal consent was obtained from the participants as their willingness to participate in the study.

Results:

Demographic Characteristics of the Participants

Out of a total of three hundred and six (306) questionnaires distributed to the participants, two hundred and ninety-seven copies (297; 97.1%) were adequately filled and used for the result analysis. 164 (55%) were female and the remaining (133; 45%) were males. 155 (45%) were Community Health Extension Workers (CHEW), 70 (24%) were Juniour Community Health Extension Workers (JCHEW), 37 (13%) were Pharmacy Technicians, 36 (12%) were Nurses/Midwifes and few (19;6%) were Community Health Officers (CHO). Majority (123; 41.4%) have worked for less than 5 years while 15(5.1%) have been on the job for 15 – 19 years.

Knowledge of Adverse Drug Reaction (ADR) and reporting among health care practitioners in PHCs.

Majority (261; 87.9%) of the participants claimed to have been previously trained on Adverse Drug Reaction (ADR) reporting and mostly from seminar/workshop (130; 34.7%), followed by school (118; 31.5%), part of routine immuniza-

tion training (75; 20%), national malaria control program (32; 8.5%) and few during NYSC (20, 5.3%), however, only 13(4.4%) understood the comprehensive meaning of pharmacovigilance. 15 (5.1%) of the participants knew that an Adverse Drug Reaction (ADR) is NOT a side effect that patients frequently experience while taking a drug. 124 (41.8%) knew that adverse reaction can be experienced by a patient patient taking concoction/herbs, one hundred and fifty-seven (52.9%) of the participants are of the opinion that only effects of medication that are unbearable should be reported, although, 265(89.2%) understood that it is fundamental to report and record Adverse Drug Reaction (ADR). Majority (213; 71.7%) have a total knowledge score below 60% indicating inadequate knowledge. Findings further revealed that cadre of the participants significantly influence the knowledge of Adverse Drug Reaction (ADR) see Table 1.

Table 1: Association between variables and knowledge and practice of ADR reporting:

Variables	Level of Knowledge			Level of Practice		
	Poor	Moderate	Good	Poor	Moderate	Good
			Cadre			
Nurse/Midwife	(7.7%)23	(4.0%)12	(0.3%)1	(3.7%)11	(3.0%)9	(5.4%)16
[a]CHO	(6.4%)19	(0%)0	(0%)0	(0.3%)1	(2.0%)6	(4.0%)12
[b]CHEW	(30.6%)91	(14.5%)43	(0.3%)1	(8.1%)24	(10.4%)31	(26.9%)80
[c]JCHEW	(18.2%)54	(5.1%)15	(0.3%)1	(7.1%)21	(5.1%)15	(11.4%)34
[d]Pharm Tech	(8.8%)26	(3.7%)11	(0%)0	(2.4%)7	(3.7%)11	(6.4%)19
[e]FET = 15.817; p = .026*				[f]X^2 = 10.248; p = .248		
			Years of Experience			
years 5 >	(32.0%)95	(8.8%)26	(0.7%)2	(11.4%)34	(10.1%)30	(19.9%)59
years 9 – 5	(24.9%)74	(13.1%)39	(0.3%)1	(7.1%)21	(9.1%)27	(22.2%)66
years 14 – 10	(5.7%)17	(2.7%)8	(0%)0	(1.3%)4	(1.0%)3	(6.1%)18
years 19 – 15	(3.4%)10	(1.7%)5	(0%)0	(0.7%)2	(1.7%)5	(2.7%)8
years and above 20	(5.7%)17	(1.0%)3	(0%)0	(1.0%)3	(2.4%)7	(3.4%)10
[e]FET = 8.621; p = .333				[e]FET = 9.057; p = .329		

[a]Community Health Officer, [b]Community Health Extension Worker, [c]Junior Community Health Extension Worker, [d]Pharmacy Technician, [e]Fischer-Freeman-Halton Exact Test, [f]Pearson Chi-square.

Practice of Adverse Drug Reaction (ADR) reporting among health care practitioners in selected PHCs in Kano.

286(96.3%) of the participants have encountered Adverse Drug Reaction (ADR) out of which 209 (73.1%) claimed to have reported it, only 55 (19.2%) encountered a patient with Adverse Drug Reaction (ADR) in the last one month. Most common Adverse Drug Reaction (ADR) encountered were rashes (156; 23.7%) and itching (102; 15.5%) while the least common were ringing in the ear (12; 1.8%) and difficulty in breathing (28; 4.2%). Referring a patient with Adverse Drug Reaction (ADR) to the next level of healthcare was listed as one of the actions performed by individuals who came across Adverse Drug Reaction (ADR) (181;39.9%),along with treating symptoms with a different medication (152; 33. 5%). Most (203; 68.4%) of the participants have come across Adverse Drug Reaction (ADR) form and 213 (71.7%) stated that they have it in their health facility. Majority (161; 54.2%) have a total score of 80% and above indicating a good practice of Adverse Drug Reaction (ADR) reporting. 80 out of a total of 135 CHEWs have a good practice of Adverse Drug Reaction (ADR) reporting. Health workers with good practice are those that have <5 years and 5-9 years working experience (see Table 1). Forty-one (13.8%) of those who have poor level of knowledge also have poor practice. There is significant influence of knowledge on the practice of an Adverse Drug Reaction Reporting see Table 2.

Table 2: Influence of level of knowledge on the level of practice of ADR among healthcare practitioners in PHCs:

Level of Knowledge	Level of Practice			FET Value	P-Value
	Poor	Moderate	Good		
Poor	(13.8%)41	(15.8%)47	(42.1%)125	9.211	031.
Moderate	(7.4%)22	(7.7%)23	(12.1%)36		
Good	(0.3%)1	(0.7%)2	(0%)0		

Factors affecting the practice of Adverse Drug Reaction (ADR) reporting among health care practitioners .

Majority (155; 52.2%) claimed that reporting Adverse Drug Reaction (ADR) is difficult, more than half (150; 50.5%) of the participants stated inadequate knowledge of Adverse Drug Reaction (ADR) as a barrier to the practice. Majority (163; 54.9%) did not see fear of being blamed

as a challenge, 105 (35.4%) cited time as a challenge to Adverse Drug Reaction (ADR) reporting. 146 (49.2%) of the participants claimed that Adverse Drug Reactions (ADR) they have seen are not severe, unavailability of adverse drug reporting form was stated by 136 (45.8%) of the participants as factors affecting their practice. 131 (44.1%) of the participants do not have experience in filling the forms, 115 (38.7%) claimed to have too many patients to attend to and less than half (140; 47.1) of the participants believed that Adverse Drug Reaction (ADR) reporting is not important in their work place.

Discussion:

Findings from the study revealed that the knowledge of Adverse Drug Reaction (ADR) among the participants is inadequate as two hundred and thirteen (71.7%) and three (1.0%) have poor and good knowledge respectively. Also, only thirteen (4.4%) have understood the comprehensive meaning of pharmacovigilance. This finding agrees with the report of previous studies.[12,14-17] The low level of knowledge of the participants may probably be because some of the regulating bodies responsible for training most professional cadres in PHC facilities do not extensively capture pharmacovigilance in the training curriculum. There is an adequate practice of Adverse Drug Reaction (ADR) reporting among the participants; two-hundred and six (96.3%) of the participant have encountered adverse drug reaction out of which two-hundred and nine (73.1%). claimed to have reported it. This finding is in line with outcome of previous studies that reported an adequate practice among the respondents.[17,18]

Major actions taken by the participants when Adverse Drug Reactions (ADR) were encountered include referral to secondary health facility and treating systems with another drugs. Health workers at PHC facilities are major in treating minor ailments and referral of complicated cases outside their limit to the next level of health care for proper management thus this could be regarded as an excellent practice. Although management of Adverse Drug Reaction (ADR) with another drug should be discouraged because the health worker may be unable to establish the initial cause of the reaction and the action can lead to further complications.

It was made known some of the factors affecting the practice of Adverse Drug Reaction (ADR) reporting which include difficulty in reporting Adverse Drug Reaction (ADR) (155; 52.2%) inadequate knowledge of Adverse Drug Reactions (ADR) (150; 50.5%) fear of being held responsible (134; 45.1%), lack of time (105; 35.4%), non-severity of cases seen(146;

49.2) unavailability of adverse drug reporting form (36; 45.8%) no experience filling the form (131; 44.1%), work overload (115; 38.7%) importance not attached to Adverse Drug Reaction (ADR) reporting (140; 47.1).This finding is consistent with previous studies which highlighted similar challenges among the participants. [12,19-21]

Outcome of the study revealed that professional cadre of the respondents significantly influence the knowledge of Adverse Drug Reaction (ADR). Cadres that have good knowledge are Nurse, CHEW and JCHEW each with 0.3% respectively with only 1 participant each from the three cadres. This is in contrast with the findings from a study among PHC workers in South West, Nigeria, who reported that of all the cadres who took part in the study, in comparison to other professional cadres, nurses possess considerably adequate basic understanding of Adverse Drug Reactions.[12] Majority of participants with good practice are from the Community Health Extension Workers and the least are from the Community Health Officers. This may be due to the fact that the Community Health Extension Workers constitute a larger percentage of healthcare practitioners in PHCs.

Years of working experience of the participants does not have significant influence on the level of knowledge of the participants. Majorly participants who have less than 5 years working experience has good knowledge while participants with more than 20 years working experience portrayed inadequate knowledge of Adverse Drug Reaction (ADR). This is also in contrast with a previous report that 78.2% of participants with inadequate knowledge have working experience of less than five years.[12] Although, the majority who had poor knowledge are from the participants who had less than five years working experience. Findings from the study indicated that the cadre of the participants does not have significant influence on their level of practice. Findings from the study further revealed that years of working experience of the participants does not have significant influence on the level of practice. Majority of the participants who have good level of practice of ADR reporting have been on the job for 5 – 9 years.

Conclusion:

Healthcare practitioners in selected PHCs in Kano Metropolis are aware of pharmacovigilance but have inadequate knowledge of Adverse Drug Reaction (ADR) and the concept of pharmacovigilance, however, the practice of Adverse Drug Reaction (ADR) reporting is adequate. Factors affecting practice of Adverse Drug Reactions (ADRs) mostly cited by healthcare practitioners in PHCs, Kano

Metropolis are difficulty in reporting Adverse Drug Reaction (ADR), inadequate knowledge of Adverse Drug Reaction (ADR), fear of being held responsible and no experience filling out the Adverse Drug Reaction (ADR) reporting form. The procedure for Adverse Drug Reaction (ADR) reporting should be simplified and made known to health care practitioners at the PHCs. There should be proper training on how to fill out the Adverse Drug Reaction (ADR) reporting form and also made known to the healthcare practitioners that there will be no legal responsibility for Adverse Drug Reaction (ADR) reported in as much as treatment was within their limitations. There is need for continuous mandatory training/seminars on Adverse Drug Reaction (ADR) and reporting irrespective of the cadre or years of experience of healthcare practitioners in PHCs.

Key Points:

- Primary Health Care workers provide basic health care needs to the members of the community including provision of essential drugs
- There is an inadequate knowledge but adequate practice of Adverse Drug Reaction (ADR) reporting among healthcare practitioners in PHCs, Kano Metropolis
- Difficulty in reporting Adverse Drug Reaction (ADR), inadequate knowledge of Adverse Drug Reaction (ADR) and fear of being held responsible are some of the factors affecting the Adverse Drug Reaction (ADR) reporting.

Conflict of interest:

All authors in this article declared no conflict of interest

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