

## Original Article

## Assessment of Knowledge And Practices Regarding Adverse Events Following Immunization (AEFI) Among Community Health Nurses In Alipurduar District, West Bengal

Bina Saha<sup>1</sup>✉, Smritikana Mani<sup>2</sup>

### ABSTRACT

**BACKGROUND:** Adverse events do occur following immunization; majority of which are minor and self limiting. However fear of Adverse Events Following Immunization (AEFI) adversely affects vaccine uptake in a community. Hence a correlational survey was undertaken to assess knowledge and practices regarding AEFI among community health nurses in Alipurduar District, West Bengal.

**METHODS:** A non-experimental survey approach and correlation survey research design was adopted. Purposive sampling of 148 community health nurses from 92 sub-centers was done. Predesigned and validated tools were used i.e. semi structured questionnaire for demographic variables and for assessment of AEFI training status, structured knowledge questionnaire for assessment of knowledge, structured interview schedule for assessment of stated practice and an observation checklist to observe few subjects practices.

**RESULTS:** Majority (53.38%) of the respondents had good knowledge and few also had (6.76%) excellent knowledge. Stated and observed practice in approximately 40% of respondents was good with another 8% showing excellent practices. Remaining respondents' practices were suboptimal. There were certain gaps in stated and observed practice. Significant association was found between knowledge and demographic variables and also found between practices and some demographic variables. Positive relationship was found between knowledge and practices [ $r(147)=0.86^*$ ].

**CONCLUSION:** Poor knowledge and practices still persist among health care workers. Therefore, periodic training and in-service education to ensure quality of immunization in this setting is recommendation.

**Keywords:** Community Health Nurse, AEFI, Knowledge, Practice.

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1. Alipurduar Nursing Training School, Alipurduar, West Bengal
  2. College of Nursing, Medical College & Hospital, Kolkata, West Bengal
- ✉ email: binasaha25@gmail.com

## Introduction:

Immunization is the process whereby a person is made immune or resistant by the administration of a vaccine against an infectious disease. This protects individual and the public from vaccine preventable diseases (VPDs). India is the largest developing country manufacturer of vaccines and vaccines manufactured in India are used in all continents. Vaccines used in the country are safe and effective if used correctly.<sup>1</sup> Although it is assumed modern vaccines are safe, but not free from risk; and sometimes adverse reactions occur following immunization. Adverse events following immunization should be promptly notified. AEFI occurs throughout the globe e.g. in USA for every 10,000 cases of vaccinations, 1.14 cases of AEFIs were reported with 1.4% deaths,<sup>2</sup> 14.1 cases of AEFIs were reported per 100,000 doses in Australia<sup>3</sup> and 129.5 per 100,000 vaccine doses in Sri Lanka.<sup>4</sup>

A very recent Adverse Events Following Immunization (AEFI) case occurred at Barasat District, WB with a child after administration of polio vaccine. A nurse identified the condition and took immediate action by administering injection adrenaline in intramuscular route, and the baby was saved. Therefore, health-care providers should be aware of the various aspects of AEFI, and also they should be prepared to respond to public concerns. Timely response about the safety of vaccine as well as prompt action can safeguard the trust of the immunization program. In preventive healthcare immunization of infants and young children is the most successful and cost-effective interventions.<sup>5</sup>

The community health nurses knowledge regarding AEFI becomes more important as they are immediately come in contact with the parents and evidence-based information on the benefits and risks of vaccines demonstrate to have competence and identify properly adverse events

following immunization. So the community health nurses are directly involved in AEFI case detection, investigation, reporting and case management. Therefore this study focused on assessing the knowledge and current practices of the community health nurses regarding AEFI with following objectives -

1. To assess knowledge regarding adverse events following immunization (AEFI) of community health nurses.
2. To assess practices regarding management/prevention of adverse events following immunization (AEFI) of community health nurses.
3. To find out the relationship between knowledge and practices of community health nurses.
4. To determine the association between selected demographic variables and the knowledge of community health nurses.
5. To determine the association between selected demographic variables and the practices of community health nurses.

## Need of the study:

For maintaining vaccine safety surveillance of adverse events following immunization is an important process. Efforts should be made to enhance understanding by health care provider regarding vaccine safety issues. In this context following questions were considered:

- a) Was the strict aseptic technique maintained during vaccination?
- b) Was the vaccine administered to the child by appropriate technique?
- c) Was the vaccine administered to the child in correct route?
- d) Was the health care provider notified the adverse reaction in time?
- e) Did the health care provider observe the

child for 30 minutes after vaccination?

- f) Did the health care provider give appropriate information to the care giver for identification of any adverse reaction?

## Materials & methods:

The study was based on Non-experimental Survey approach and Correlation Survey Design. It was undertaken in Falakata and Kalchini Block Primary Health Centers under Alipurduar District, West Bengal. Out of total 184 community health nurses posted in two blocks, the participants were selected by Non-probability purposive sampling technique. Community health nurses who were working within Maternal and Child Health Clinic and administer vaccine, willing to participate, available during the study period and can understand and speak Bengali and English are included and nurses who were busy in other works (recordings) were excluded from the study. From Falakata BPHC out of 96 nurses 71 and from Kalchini BPHC out of 88 nurses 77 community health nurses were selected as sample. So, total participants were 148. Prior to data collection formal administrative permission was taken from the concerned authorities. Data were collected from the 15<sup>th</sup> October, 2018 to 24<sup>th</sup> November, 2018. Several tools were used to collect information i.e. semi structured questionnaire for demographic variables and for assessment of AEFI training status, structured knowledge questionnaire for assessment of knowledge regarding AEFI, structured interview schedule for assessment of stated practice regarding AEFI and an observation checklist to observe few subjects practices. The reliability of the semi structured questionnaire, structured knowledge questionnaire, structured interview schedule and observation checklist were established by using inter-rater method ( $r=1$ ), split half method ( $r=0.94$ ), split half method ( $r=0.88$ ),

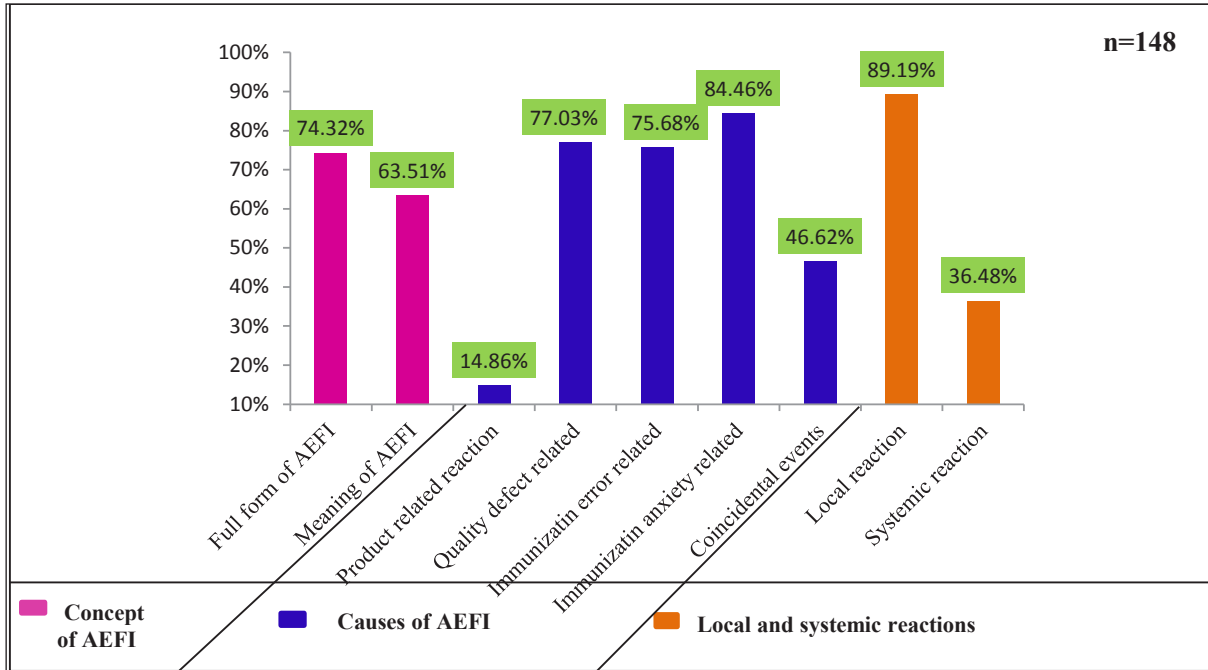
inter-rater method ( $r=1$ ) respectively. So the tools were considered reliable. The tools were validated by experts. Demographic tool contained 4 items and the CVI was 0.88, structured knowledge questionnaire contained 30 items and the CVI was 0.86, structured interview schedule contained 16 items and the CVI was 0.82 and observation checklist contained 16 items and CVI was 0.86. Institutional Ethics Committee approved the study and informed consent was obtained from every participant prior to interview and observation.

## Result:

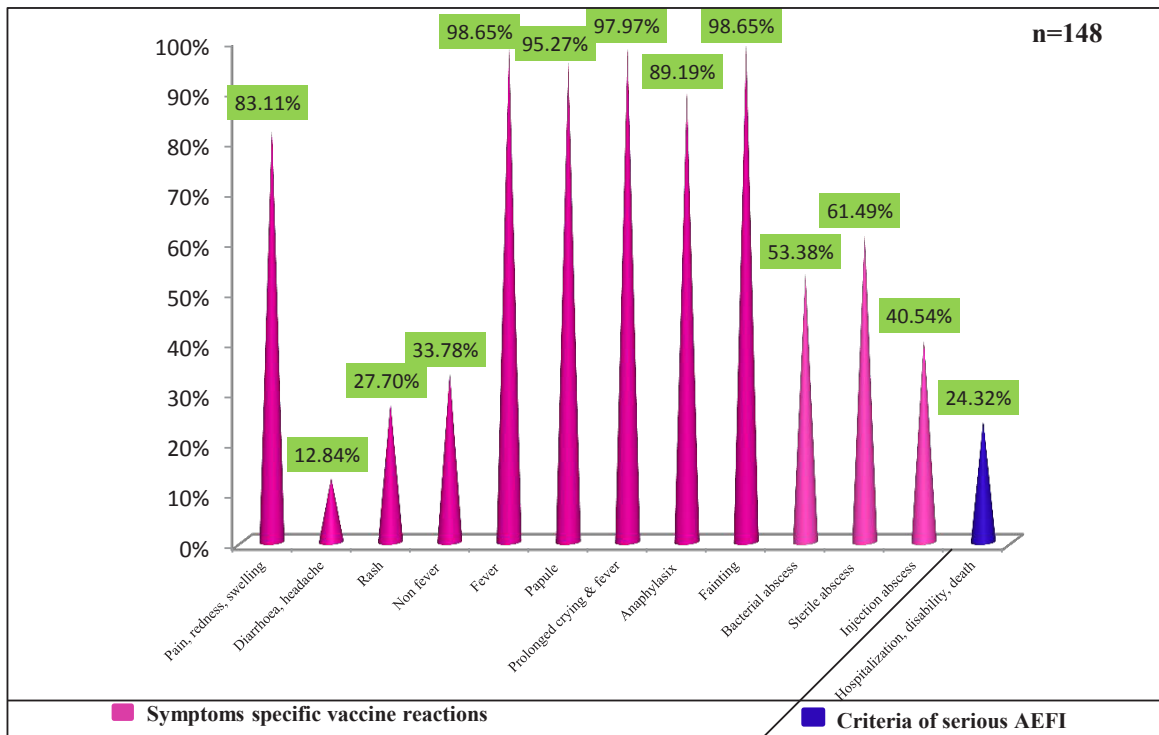
Out of total 148 respondents, majority belonged to more than 30 years of age group. Seventy four subjects (50%) were completed graduation and 56% had experience of more than 10 years in this field. Ninety percent were trained on AEFI with 15 persons yet to receive the training. Knowledge was assessed in several domains, namely the concept of AEFI, causes, local/systemic involvement, symptoms specific vaccine reactions, criteria for serious AEFI, preventive measures, management and reporting (Fig 1-3).

Respondents were mostly aware on local reaction (89%), some causes of AEFI like anxiety (84%) or quality defect (77%) or error related AEFI (76%) and full form of AEFI (74%). However not all were aware of actual meaning of AEFI (36%). Gap in knowledge was also there for systemic AEFI (64%). Knowledge about immediately reportable serious AEFI was limited to 24% respondents.

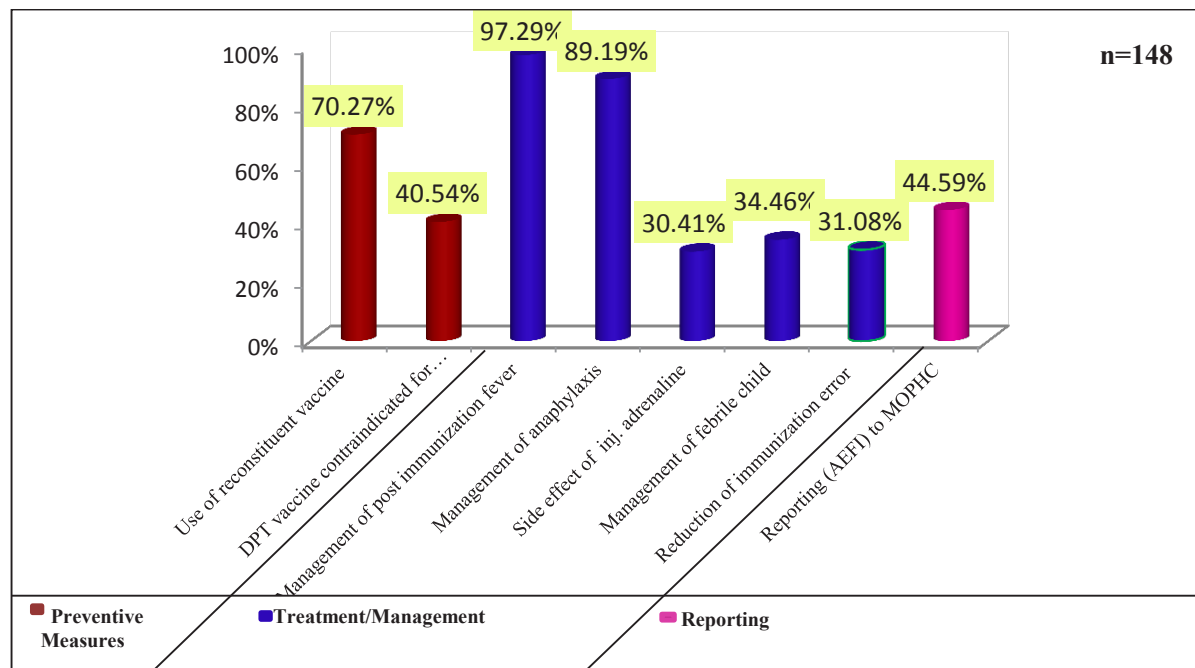
Presentation like pain, redness, swelling, fever, papule reactions, fainting, persistent cry or anaphylaxis was known to more than 80% of respondents. Lesser number of respondents could recall about different types of abscess which can occur as AEFI like sterile (61%), bacterial (53%) etc. Only 28% told that rash may occur



**Fig. 1:** Distribution of subjects according to knowledge of AEFI on domains like concept, causes and local or systemic reactions.



**Fig. 2:** Distribution of subjects according to knowledge of AEFI on domains like symptoms specific vaccine reaction and criteria for serious AEFI.



**Fig. 3:** Distribution of subjects according to knowledge of AEFI on domains like preventive measures, management and documentation of AEFI.

**Table 1:** Frequency and percentage of respondents in terms of their age(in years), educational status, years of experience and AEFI training status(n=148)

Demographic Variables	Frequency	Percentage(%)
<b>Age</b>		
< 25 years	33	22
25-30 years	44	30
>30 years	71	48
<b>Educational Status</b>		
Madhyamik	30	20
HS	35	24
Graduate	74	50
Postgraduate	9	6
<b>Years of Experience</b>		
< 5years	25	17
5-10 years	40	27
>10years	83	56
<b>AEFI Training Status</b>		
Yes, Trained to AEFI	133	90
No	15	10

following vaccination. Management of fever or anaphylaxis was known to majority (97% and 89%) of respondents; however knowledge about preventive aspects was less.

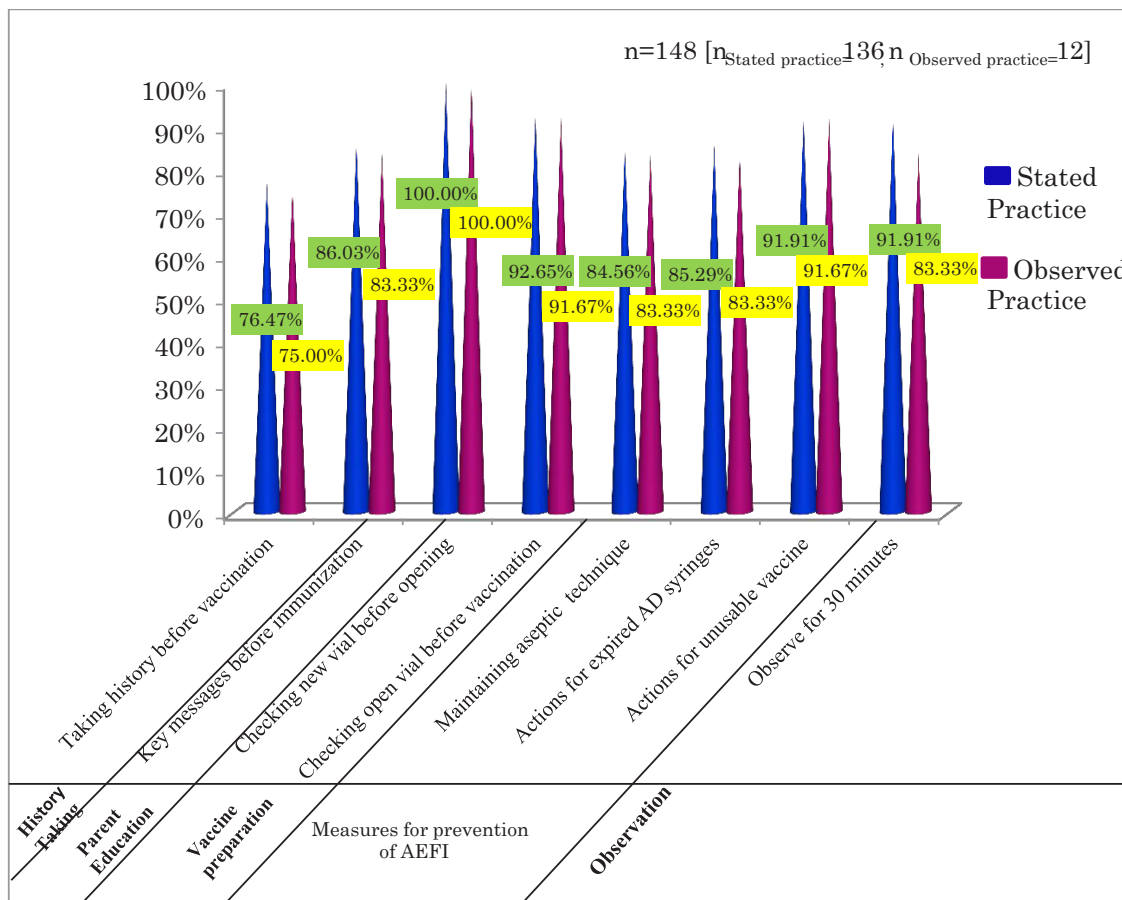
Seventy percent respondents could tell how long reconstitute vaccines used while 41% could recall contraindication for DPT containing vaccines. Only 45% were aware about process of AEFI reporting and 30% could recall the side effect of Inj. adrenaline, 34% could recall the management of febrile child and 31% could recall the steps to reduce immunization errors.

Knowledge response scoring revealed that out of all the respondents 10 were in

excellent category, 79 were in good, 28 were in fair and rest 31 were in poor category (Table 2).

Practice was assessed in several domains like history taking, key messages, vaccine preparation, preventive measures, case management, disposal measures, and notification, reporting and recording. (Fig. 4-5)

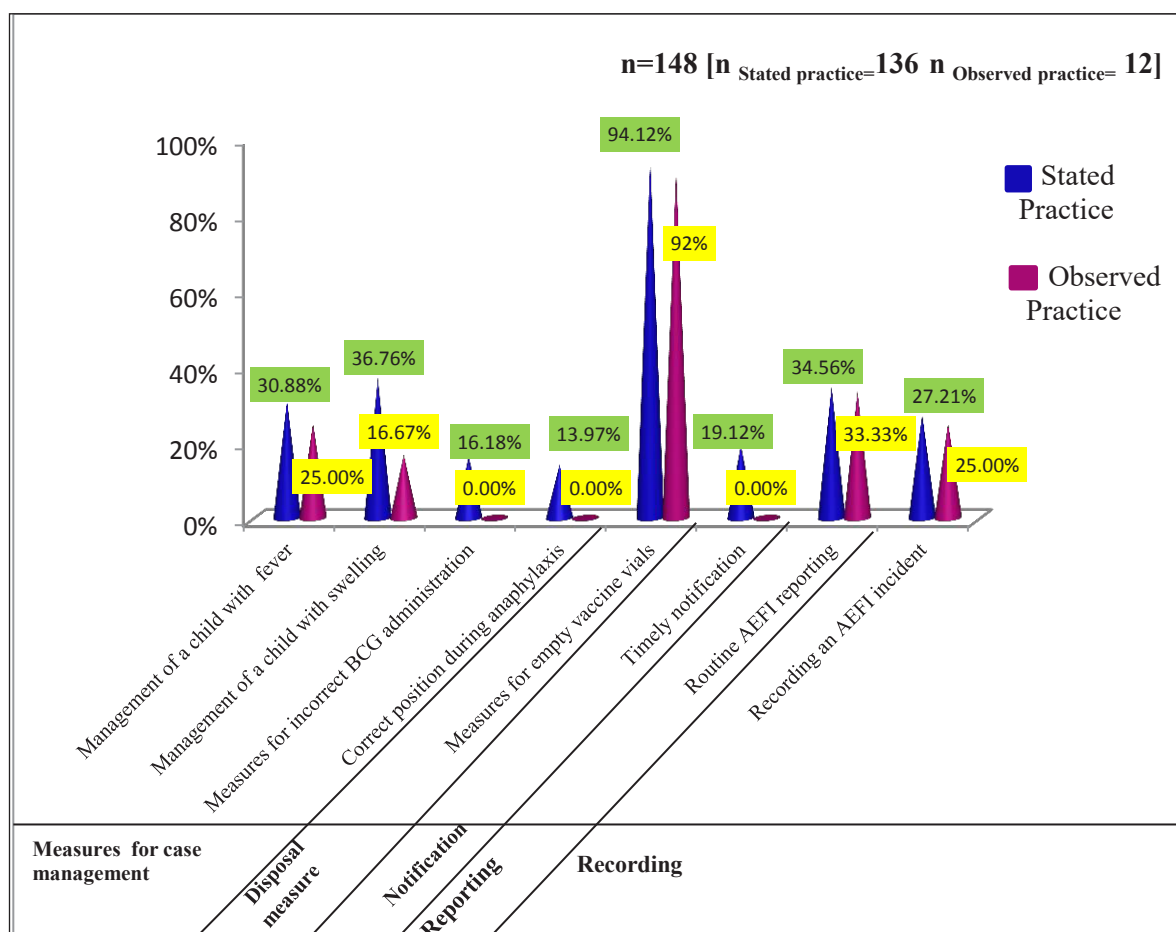
136 responses were available on AEFI management practice and same was observed for 12 respondents. For more than 75% of respondents, stated and observed practice on issues like history taking, checking vaccine vials before opening or vaccination, maintaining asepsis, actions for expired



**Fig. 4:** Distribution of subjects according to practices regarding AEFI on domains like history taking, key messages, vaccine preparation, preventive measures etc.

**Table 2:** Distribution of respondents according to scores in knowledge and practice

Score groups	Knowledge (n=148)		Stated practice (n <sub>1</sub> =136)		Observed practice (n <sub>2</sub> =12)	
	Frequ-ency	Percentage (%)	Frequ-ency	Percentage (%)	Frequ-ency	Percentage (%)
Excellent (80% & above)	10	6.76	20	14.71	1	8.33
Good (60-79%)	79	53.38	60	44.12	5	41.67
Fair (50-59%)	28	18.92	27	19.85	3	25
Poor (Below 50%)	31	20.94	29	21.32	3	25



**Fig 5:** Distribution of subjects according to practices regarding AEFI on domains like measures for case management, disposal measures, notification, reporting and recording of AEFI

AD syringes, actions for unusable vaccine, disposal of empty vaccine vials, four key messages, observation for 30 minutes after vaccination were good; however about 1/3 or lesser number of respondents were sure about properly managing cases of AEFI, notification, reporting and recording of AEFI.

Like that of awareness, practice responses were also summarized and grouped using a scoring system. Observed and stated practices showed that majority (>40%) belonged to good category (Table 2).

Analysis showed that respondents aged <30years, educational qualification

graduate or above, more years of experience and AEFI training were factors significantly associated with better knowledge on AEFI. Stated and observed practice were associated significantly with age <30years, more years of experience and AEFI training (Table-3). Correlation between knowledge and practice was high and statistically significant with r value of 0.86 (Table- 4).

### Discussion:

Present study shows that 6.76% the community health nurses have excellent

**Table 3:** Comparison between demographic characteristics and knowledge and practices scores

Demographic Variables	Knowledge		$\chi^2$	Practice		$\chi^2$
	< Median	≥ Median		< Median	≥ Median	
Age						
< 30 years	33	45	3.90*	24	53	7.58*
≥ 30 years	41	29		38	33	
Educational Status						
< Graduate	39	26	4.67*	-	-	-
≥ Graduate	35	48				
Years of Experience						
<10 years	40	25	6.17*	36	29	8.67*
≥ 10years	34	49		26	57	
AEFI Training Status						
Yes,	60	73	14.54*	48	85	20.57*
No	14	1		14	1	

\* statistically significant with  $p < 0.05$  at  $df=1$

**Table 4:** Correlation coefficient “r” showing the relationship between the knowledge and practices of the community health nurses (n=148)

Variables	Mean score	“r: Value	Remarks
Knowledge	18.05		
Practice	9.5	0.86*	Significant



knowledge, 53.38% have good knowledge, 18.92% have fair knowledge and 20.94% have poor knowledge regarding AEFI. The study participants have poor knowledge regarding reporting of an AEFI incidents in respect of other areas of AEFI. This study is supported by other study conducted by Masika WC *et al*<sup>6</sup> on knowledge, perceptions and practice of nurses on surveillance of Adverse Events following immunization; they reported that 29.2% respondent had good knowledge on AEFI surveillance.

In the present study maximum number of the community health nurses were doing good practices as stated (44.12%) as well as observed (41.67%) whereas only few nurses were doing excellent practices ( $S_{14.17\%}, O_{8.33\%}$ ), nurses were doing fair practices ( $S_{19.85\%}, O_{25\%}$ ) and also doing poor practices ( $S_{21.32\%}, O_{25\%}$ ). Whereas in Masika W C *et al*, study shows that 32.1% respondent had good practice and 45.3% respondent had good perceptions on AEFI surveillance respectively.

Present study also supported by the another study conducted by Mohammed LA *et al*<sup>7</sup> on knowledge, perception and reporting attitude of adverse effects following immunization among primary healthcare workers, they reported that more than 50% of respondents had good knowledge on AEFI but only 17.8% had good reporting practices.

### Limitations:

The investigator used observation checklist to observe the practices only for 12 subjects due to non-availability of immunization clinic during data collection period. The study can be replicated on large sample. A study may be conducted to assess the perceptions, approaches and attitude regarding adverse events following immunization among the community health nurses. A study may be conducted to assess practices through direct observation.

### Conclusion:

Based on the study findings of the present study the researcher had come to the conclusion that majority of the Community health nurses had good knowledge regarding AEFI. The lowest knowledge levels were in identifying causes of AEFI and systemic reactions, some symptoms specific vaccine reactions, criteria of serious AEFI, how to prevent, how to investigate, how to manage febrile child, how to reduce immunization error related reactions and whom to report an AEFI.

Majority of the community health nurses were practicing good and lowest practice levels were in practicing history taking, management of a child with fever, management of a child with injection site swelling, measures for incorrect BCG administration, correct position during anaphylaxis, timely notification and AEFI reporting and recording. There was positive relation between knowledge and practices of community health nurses. Knowledge and practices regarding AEFI is positively influenced by their educational status, years of experience and having AEFI training.

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