International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Original Article

A Cross-Sectional Study of Knowledge, Attitude, and Practice on Adverse Event Following Immunization Among Interns at A Tertiary Care Institute

Dr Arunprasath P[1], Dr Senthil G[2], Dr Vijayalakshmi S[2], Dr Raja T.A.R[2], Dr Razia A.R[3] Dr Renugadevi P[3]

[1] Postgraduate, Department of pharmacology, MAPIMS, Tamil Nadu, India
[2] Professor, Department of pharmacology, MAPIMS, Tamil Nadu, India
[3] Assistant professor, Department of pharmacology, MAPIMS Tamil Nadu, India

OPEN ACCESS

Corresponding Author:

Dr Arunprasath P

Postgraduate, Department of pharmacology, MAPIMS, Tamil Nadu, India.

Received: 02-09-2025
Accepted: 13-10-2025
Available online: 08-11-2025

ABSTRACT

Background: Immunization is a highly successful and cost-effective public health intervention, but adverse events following immunization (AEFI), ranging from minor to rare serious reactions, may influence vaccine acceptance and confidence. Effective AEFI surveillance requires timely recognition, reporting, and management. Medical interns are crucial to the management of AEFI and vaccination services. This study aimed to assess knowledge, attitude, and practice (KAP) regarding AEFI among medical interns at a tertiary care institute.
Methods: A cross-sectional, questionnaire-based study was conducted in the Department of Pharmacology, MAPIMS, Tamil Nadu, over three months. A total of 110 medical interns were included. Data were collected using a pretested, structured questionnaire with 30 items across knowledge, attitude, and practice. Descriptive statistics such as frequencies and percentages were used.
Results: Most participants demonstrated satisfactory knowledge of AEFI occurrence and reporting mechanisms. All agreed that AEFI reporting is mandatory. While 94% recognized confidentiality in reporting, 79% incorrectly believed AEFI occurs only immediately after vaccination. Documentation of vaccine batch numbers was done by 83.6%, and 95.4% monitored patients' post-vaccination.
Conclusion: Interns showed good overall KAP on AEFI, though misconceptions remained. Continuous education and structured training modules are needed to strengthen vaccine safety surveillance.

Keywords: *Adverse events following immunization, interns, knowledge, attitude, practice, vaccine safety.*

INTRODUCTION

Immunization is one of the most effective public health interventions for protecting the individual and the public from vaccine-preventable diseases (VPDs). Immunization has saved millions of lives. Modern vaccines are safe and effective. However, like other medicinal products, vaccines are not free from adverse reactions. Vaccines rarely cause serious adverse reactions, and common reactions are minor and self-limited. We monitor the safety of vaccines by looking for adverse events following immunizations (AEFI). An AEFI may be caused by a vaccine reaction but often, particularly if the event is serious, the event is coincidental to vaccination. Other events may be caused by an error in administration or handling of the vaccine. Irrespective of the specific cause, an AEFI may lead to public suspicions of vaccines and parents may refuse further immunization for their children, making them susceptible to VPDs which are disabling and life-threatening[1]. The success of immunization programs depends on Health care providers, who serve as important stakeholders in health care facilities where they work and the communities in which they serve[2]. Good knowledge of vaccines and their associated adverse events could promote vaccination coverage, as HCPs will educate the knowledge they have acquired to patients in their health facilities and people in the community, thereby improving vaccine safety and public trust in immunizations[3]. Poor knowledge and perceptions of HCPs about storage and administration of vaccines, as well as the AEFIs possible with vaccine products, have been found to be associated with failures of several immunization programs.[4-5] Among them, medical interns represent a crucial group, often participate directly in immunization clinics, paediatric wards, and outreach

services where vaccines are administered. Vaccine pharmacovigilance, which includes the surveillance of AEFI (i.e. systematic collection of data on medically important events following immunization, which provides information on investigation leading to necessary follow-up action), should be part of all immunization programmes as this helps sustain public confidence in the programme.[1]

Around 27 million newborns and about 30 million pregnant women each year are targeted by Universal Immunization Programme (UIP). The goal of immunization is to protect the individuals from vaccine preventable diseases.[5] The National AEFI guidelines provide information to health care providers and programme managers at various health care levels for establishing a sensitive AEFI surveillance system. It provides complete guidance and other details for reporting, investigating and conducting the causality assessment of cases reported as AEFIs.[6] Here Interns are eventually working in tertiary care hospital setting, they have significant responsibility to assess and report AEFI,[7] hence this study was done to assess the knowledge, attitude, and practicing behaviour regarding vaccine vigilance among the Interns at a tertiary care institute.

METHODOLOGY

Study design and setting

This was a cross-sectional questionnaire-based study conducted in the Department of Pharmacology, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research (MAPIMS), Tamil Nadu. The study was carried out over a period of three months after obtaining approval from the Institutional Ethics Committee. The study population included medical interns undergoing compulsory rotatory residential internship at the institute. All interns posted at MAPIMS during the study period were eligible to participate. Those who gave informed consent were included, while interns unwilling to participate were excluded. The sample size of 110 was calculated based on a previous study conducted in Telangana on vaccine vigilance among postgraduates[8], which reported a prevalence of 63.3%. A total of 110 interns either gender were included in the study.

Data collection method: Data were collected using a pretested and structured questionnaire adapted from previous studies. The questionnaire consisted of 30 items, divided into three domains: Knowledge (10 multiple-choice questions) Attitude (10 agree/disagree questions) Practice (10 yes/no questions) Each participant was given detailed instructions before filling out the questionnaire. On average, it took 30–40 minutes to complete.

Data collection procedure: The objectives and importance of the study were explained to the interns before administering the questionnaire. Written informed consent was obtained, and confidentiality of responses was assured. Questionnaires were self-administered and collected immediately after completion to ensure maximum response rate.

Statistical analysis: The data were entered into Microsoft Excel and analyzed using SPSS version 22. Descriptive statistics such as frequencies, percentages, mean, and standard deviation were used to summarize the findings. The Chi-square test was applied to assess associations between categorical variables. A p-value of less than 0.05 was considered statistically significant.

Ethical considerations: Ethical approval was obtained from the Institutional Ethics Committee of (MAPIMS/IEC/52/2025). Participation in the study was voluntary. Informed consent was obtained from all participants. Confidentiality was maintained by anonymizing responses, and participants were free to withdraw at any stage without any consequences**.**

RESULTS

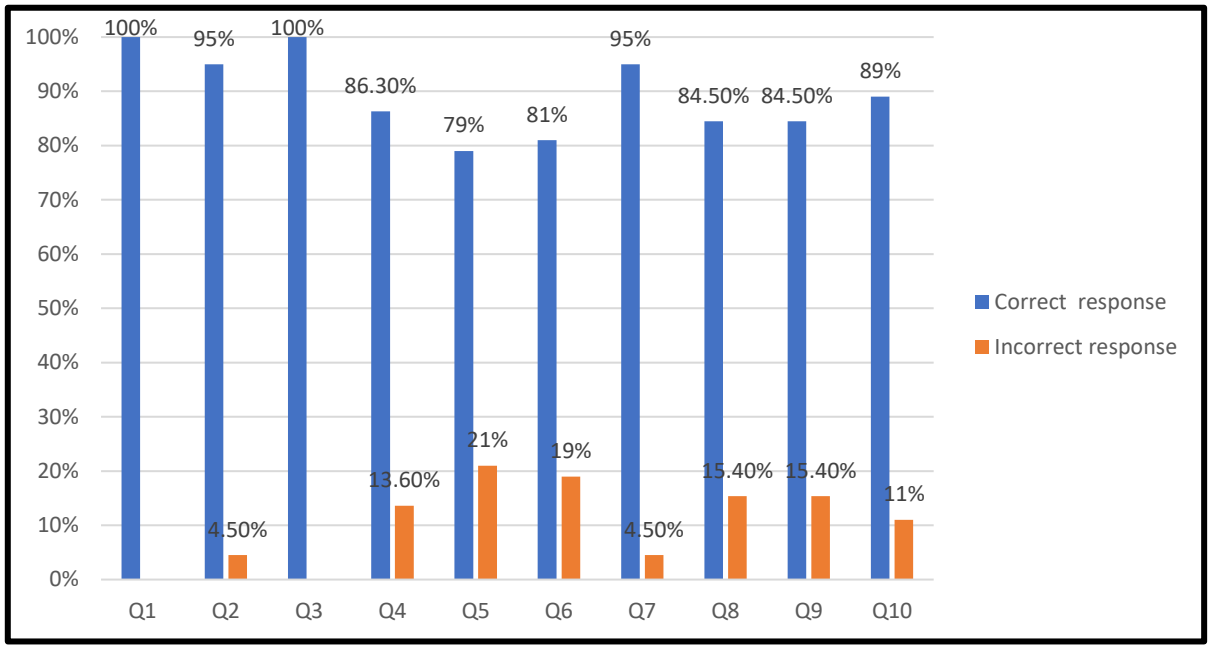

Figure 1: Knowledge towards AEFI among the study participants (N=110)

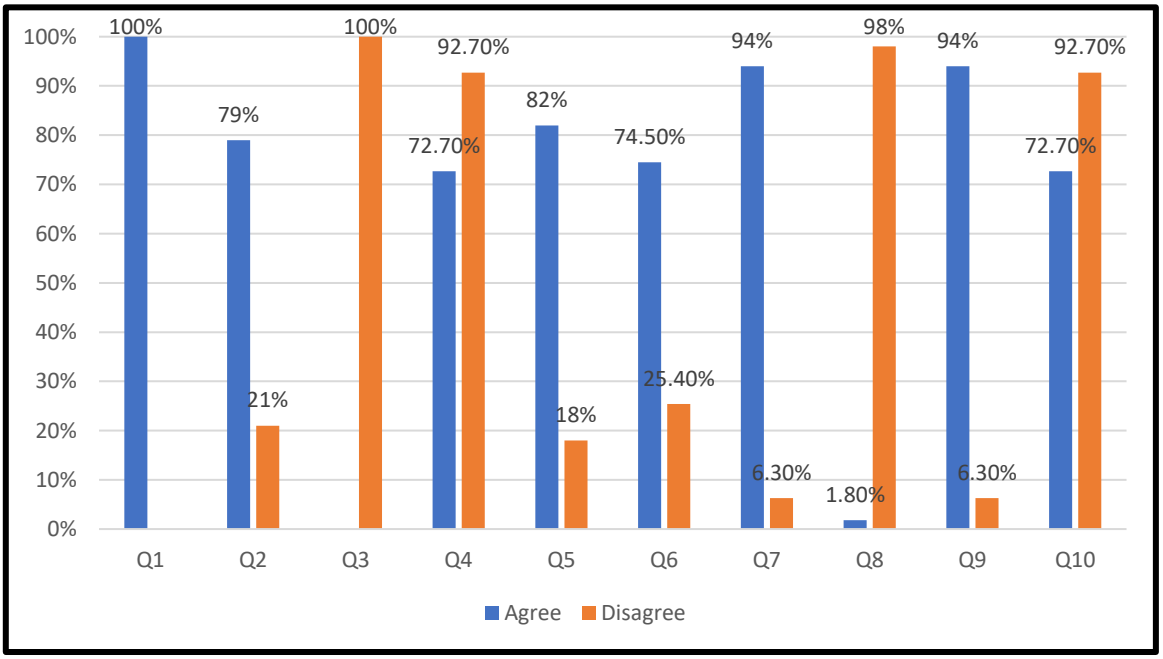

Figure 2: Attitude towards AEFI among the study participants N=110

Table 1: Practice towards AEFI among the study participants N=110

S.no	Questions	Yes n%	No n%
1.	Have you ever encountered a suspected AEFI?	7(6.3)	103(93.6)
2.	Do you check vaccine expiration dates before administration?	110(100)	-
3.	Do you document every vaccine administration, including batch number?	92(83.6)	18(16.3)
4.	Hand hygiene & proper aseptic technique followed during vaccine administration?	104(94.5)	6(5.4)
5.	Are you reporting AEFI at your workplace?	110(100)	-
6.	Have you ever missed reporting an AEFI?	6(5.4)	104(94.5)
7.	Do you monitor patients for AEFI after vaccination?	105(95.4)	5(4.5)
8.	Do you participate in AEFI training and education programs?	98(89)	12(11)
9.	Do you encourage patients to report any unusual symptoms after vaccination?	110(100)	-
10.	Do you understand the importance of reporting AEFI?	110(100)	-

The present study assessed the knowledge, attitude, and practice of healthcare professionals regarding adverse events following immunization (AEFI) among 110 participants. Knowledge regarding AEFI was found to be high among the participants, with all (100%) correctly identifying its cause and definition. Most participants also demonstrated good awareness about its importance, reporting procedures, and preventive measures. However, relatively lower knowledge was observed in areas related to causality assessment categories (79%) and its purpose (81%). Attitude assessment (figure 2) revealed largely positive perceptions towards AEFI surveillance. All participants (100%) agreed that AEFI reporting is mandatory for healthcare professionals, and none believed that vaccines are completely safe without any adverse effects. However, certain misconceptions persisted: nearly four-fifths (79%) perceived that AEFI can occur only immediately after vaccination, and 7.3% believed that reporting is necessary only for serious adverse events. A substantial proportion (82%) stated that vaccine manufacturers are responsible for monitoring and reporting AEFI, while 74.5% recognized contamination as a possible cause. The majority (94%) were aware that reporting is confidential and patient identities are protected, and a similar proportion (94%) emphasized the importance of informing patients about potential side effects. Nearly all participants (98%) disagreed that AEFI is solely the responsibility of healthcare providers, suggesting awareness of the broader shared responsibility. Moreover, the majority of participants (92.7%) did not agree with the statement that vaccines provide complete protection against infectious diseases. In terms of practice (Table 1), adherence to safe and responsible immunization practices was evident. All respondents reported checking vaccine expiration dates before administration, reporting AEFI at their workplace, encouraging patients to report unusual symptoms, and understanding the importance of AEFI reporting. Documentation of vaccine details, including batch number, was performed by 83.6% of participants, while 16.3% reported not doing so. Good compliance with aseptic techniques (94.5%) and post-vaccination monitoring (95.4%) was observed. Only 6.3% of participants had personally encountered a suspected AEFI, and 5.4% admitted to having missed reporting an event. A large proportion (89%) had attended training or education programs related to AEFI, indicating ongoing efforts to strengthen knowledge and skills in this area.

DISCUSSION

Medical interns, as future healthcare providers, require adequate knowledge, attitude, and practice (KAP) regarding AEFI reporting to build public trust and ensure optimal vaccine uptake. Several studies have explored KAP of AEFI reporting among healthcare professionals, yet limited evidence exists regarding interns who are at the threshold of independent clinical practice. This cross-sectional study was therefore undertaken to assess the knowledge, attitude, and practice of AEFI reporting among medical interns in a tertiary care institute. In the present study our findings are consistent with the study by **Sani et al**[9] in Nigeria, where 63.6% of respondents had good knowledge and 86.8% demonstrated appropriate reporting practices about AEFI. In our study, knowledge levels were even higher, which may be due to greater exposure to training and awareness activities. Similar to their findings, however, we also observed that some participants had misconceptions about who holds responsibility for AEFI monitoring and the timing of events. A study by **Yamoah et al**[10] reported that only a small proportion of healthcare professionals had high knowledge, while a large number showed low knowledge. Negative perceptions, such as lack of interest in learning more about AEFI reporting and management, were barriers in their setting. In contrast, most participants in our study had positive attitudes, as all agreed that reporting is mandatory and most recognized that vaccines are not entirely risk-free. Still, misconceptions such as believing that AEFI occurs only immediately after vaccination or that manufacturers alone are responsible for monitoring were also noted in our study.

Barriers to reporting have been highlighted in other studies. **Parrella et al**[11] described confusion about what constitutes a reportable event, differences between provider groups, and time pressures. Similarly, **Thomas et al**[12] in Kerala found that difficulties in reporting, fear of creating public concern, and lack of visible action from health authorities were major reasons for underreporting. In our study, although nearly all participants reported following proper practices, a small proportion admitted missing an event, which may suggest similar challenges. Comparisons with studies from other regions also show variation. **Masika et al**[13] found that less than one-third of respondents had good knowledge and practices. In contrast, our participants demonstrated much higher levels in all three domains, possibly reflecting stronger institutional support and training. **Lv et al**[14] reported good knowledge among most vaccination workers but lower levels of positive perceptions and practices compared to our study. **Upadhaya et al**[15] who reported that postgraduate residents had only 34.8% correct knowledge about adverse drug reactions and pharmacovigilance, while nearly two-thirds (64.1%) had incorrect knowledge. Despite limited knowledge, most residents (90.8%) recognized the importance of reporting for patient safety, but only 7.9% had actually reported an adverse event. Our study demonstrated much better knowledge levels and higher adherence to reporting**.** Similarly, **Gupta et al**[16] found that only 33% of multipurpose health workers (MPHWs) knew how to fill an AEFI reporting form. Although 83.5% of them had encountered an AEFI, less than half (46.6%) reported the event within 24 hours, and knowledge was observed to decline with increasing age. However, a small proportion (5.4%) admitted missing an event, echoing the underreporting was observed. In contrast, participants in our study reported stronger knowledge and safer practices, with all checking vaccine expiry dates and most documenting vaccine details and reporting AEFIs at their workplace.

CONCLUSION

This study showed that healthcare professionals had good knowledge, positive attitudes, and safe practices regarding adverse events following immunization. While overall awareness and reporting practices were satisfactory, some misconceptions persisted, particularly in relation to causality assessment and responsibility for monitoring. Addressing these gaps through regular training, simplified reporting procedures, and supportive supervision will further strengthen AEFI surveillance. Improved knowledge and reporting will not only enhance vaccine safety monitoring but also help in maintaining public trust and confidence in immunization programs.

Declaration:

Conflicts of interests: The authors declare no conflicts of interest.

Author contribution: All authors have contributed in the manuscript.

Author funding: Nill

REFERENCES

1. World Health Organization. Global manual on surveillance of adverse events following immunization (AEFI*)*. Geneva: WHO; 2014. Available from: https://fctc.who.int/publications/i/item/global-manual-on-surveillance-of-adverse-events-following-immunization
2. Institute of Medicine (US) Committee on Review of Priorities in the National Vaccine Plan. Appendix D, Initial Guidance for an Update of the National Vaccine Plan: A Letter Report to the National Vaccine Program Office. In Priorities for the National Vaccine Plan; National Academies Press (US): Washington, DC, USA, 2010.https://www.ncbi.nlm.nih.gov/books/NBK220064/
3. Masika, C.W.; Atieli, H.; Were, T. Knowledge, perceptions, and practice of nurses on surveillance of adverse events following childhood immunization in Nairobi, Kenya. BioMed Res. Int. 2016, 2016.
4. Netterlid, E.; Månsson, M.E.; Håkansson, A. Surveillance of vaccine safety: Comparison of parental reports with routine surveillance and a clinical trial. Vaccine 2009, 27, 2042–2047.
5. Gahunia, J.; Bigham, M.; Konrad, S.; Snow, M.E. Adverse events following immunization: Evaluating an enhanced nursing role for PHNs. Can. Nurse 2013, 109.
6. Government of India, Adverse Events Following Immunization: Surveillance and Response Operational Guidelines. New Delhi: Ministry of Health and Family Welfare, Government of India; 2010.
7. AEFI-Surveillance and Response Operational Guidelines. Ministry of Health and Family Welfare, 2012.
8. Karunasree N, Kumari PP, Patil TS, Gayathridevi A, Fatima A, Siddiqua SA. Knowledge, attitude, and practice of vaccine vigilance among the post-graduates in tertiary care hospital, Telangana. Natl J Physiol Pharm Pharmacol 2024
9. U. M. Sani, M. O. Oche, M. O. Raji, U. M. Ango, and N. M. Jiya. 2020. "Knowledge, Attitude and Reporting Practices on Adverse Events Following Immunization Among Routine Immunization Service Providers in Health Facilities of Sokoto State, Nigeria". International Journal of TROPICAL DISEASE & Health 40 (2):1–14.
10. Yamoah P, Bangalee V, Oosthuizen F. Knowledge and Perceptions of Adverse Events Following Immunization among Healthcare Professionals in Africa: A Case Study from Ghana. Vaccines (Basel). 2019 Mar 8;7(1):28
11. Parrella, A., Braunack-Mayer, A., Gold, M. et al. Healthcare providers' knowledge, experience and challenges of reporting adverse events following immunisation: a qualitative study. BMC Health Serv Res 13, 313 (2013)
12. Thomas RA, Rajan Joseph M, Castilloux AM, Moride Y. Understanding reporting practices and perceptions of barriers in adverse events following immunisation surveillance: A cross-sectional survey of paediatricians in Kerala, India. Vaccine. 2021 Jul 30;39(33):4678-4684
13. Masika, C., Atieli, H., & Were, T. (2016). Knowledge, Perceptions, and Practice of Nurses on Surveillance of Adverse Events following Childhood Immunization in Nairobi, Kenya. BioMed Research International, 2016.
14. Lv, Huakun; Pan, Xuejiao; Wang, Ying; Liang, Hui; Yu, Hu. Knowledge, perceptions, and practice towards adverse events following immunization surveillance among vaccination workers in Zhejiang province, China. Asian Pacific Journal of Tropical Medicine 16(3):p 102-109, March 2023.
15. Upadhyaya HB, Vora MB, Nagar JG, Patel PB. Knowledge, attitude and practices toward pharmacovigilance and adverse drug reactions in postgraduate students of Tertiary Care Hospital in Gujarat. J Adv Pharm Technol Res. 2015 Jan-Mar;6(1):29-34
16. GuptaNC, Rathod KKG, GargLR. Assessment of knowledge of multipurpose health workers regarding adverse events following immunization (AEFI) in a rural block of Haryana, India. Int J Contemp Pediatr 2020;7:127-31.