

Impact of Educational Interventions on Materiovigilance Awareness among Pharmacy Students: A Cross-Sectional Study

Akshata Gore, Arfa Anwar Sayed, Shamita Shyam Sail, Ramish Khan, Agadi Hiremath Viswanatha Swamy, Sanatkumar Bharmu Nyamagoud*

Department of Pharmacy Practice, KLE College of Pharmacy (A Constituent unit of KLE Academy of Higher Education and Research, Belagavi), Vidyanagar, Hubballi, Karnataka, INDIA.

ABSTRACT

Background: Medical devices are used vitally in the healthcare system. Since India is a developing country, it didn't have a valid outline to screen and notice the adverse events occurred using medical devices. Hence, materiovigilance supports the administrative experts in decision-making, for example, working with the public as well as globally on MDAEs (Medical device adverse events) reporting and their examinations to prevent any up-coming adverse events related to medical device utilization in the future. As it helps healthcare professionals to analyse and manage sickness or injuries. **Materials and Methods:** This was a cross-sectional, self-designed questionnaire-based study conducted over a duration of six months, with participants involved undergraduates ($n=410$) and postgraduates ($n=135$). 15-item questionnaire assessed KAP, that administered with an educational intervention. Data was analysed using IBM SPSS 27.0, and internal consistency was verified with Cronbach's alpha. **Results:** Total of 545 participants responded, where intervention was highly effective in knowledge (97.01%) and perception (79.10%) among postgraduate, similar scores observed in attitude of UG (74.57%) and PG (72.38%). **Conclusion:** This study highlights notable improvements in Knowledge, Attitude, and Perception (KAP) related to materiovigilance among pharmacy students in KAP domains, where statistical analysis confirmed with postgraduates generally achieving higher post-test scores, whereas undergraduates indicated higher interventions as well. Postgraduates displayed more progress particularly in Good Knowledge that rose from 32.8% to 97.01%. These results emphasized the value of educational interventions in raising materiovigilance awareness for incorporating such programs into pharmacy curricula to encourage the reporting of MDAEs.

Keywords: Interventions, Materiovigilance, Participants, Postgraduates, Undergraduates.

Correspondence:

Dr. Sanatkumar Bharmu Nyamagoud

Assistant Professor and Head,
Department of Pharmacy Practice, KLE
College of Pharmacy (A Constituent unit
of KLE Academy of Higher Education and
Research, Belagavi), Vidyanagar, Hubballi,
Karnataka, INDIA.

Email: dr.sanathnyamagoud@gmail.com

Received: 27-02-2025;

Revised: 18-04-2025;

Accepted: 02-07-2025.

INTRODUCTION

In recent years, there has been a significant increase in incidents related to medical devices and their daily use. Previously, there was no system for reporting Medical Device Adverse Events (MDAEs). To address this, the Ministry of Health and Family Welfare established the Materiovigilance Programme of India (MvPI) in July 2015. Materiovigilance is defined as a coordinated system for identifying, collecting, reporting, and analyzing any adverse events associated with medical devices. It plays a vital role in safeguarding patients' health and reducing the likelihood of these incidents recurring (Bhandari, A *et al.*, 2024).

The rapid growth in the use of medical devices in recent years has led to a surge in their application. Currently, there are approximately 7,000 generic device groups and an estimated 2 million distinct types of medical devices worldwide. In response to the significant increase in both the variety and quantity of medical devices, the WHO has recommended the introduction of "An Essential Diagnostic List" to highlight their critical functions and purposes (Bhavsar *et al.*, 2024). This underscores the need to raise awareness about Materiovigilance among healthcare professionals. Similarly, the Central Drugs Standard Control Organisation (CDSCO) has played a crucial role in developing guidelines and regulations for medical devices, with the aim of protecting patients from potential adverse events (Sojitra *et al.*, 2024) Numerous cases have been reported in the past where device use led to patient morbidity and mortality, prompting the recall of devices such as breast implants, pacemakers, and hip prostheses due to malfunctions. This highlights the urgent need for a robust reporting mechanism and an effective,



DOI: 10.5530/ijpi.20250325

Copyright Information :

Copyright Author (s) 2025 Distributed under
Creative Commons CC-BY 4.0

Publishing Partner : Manuscript Technomedia. [www.mstechnomedia.com]

well-coordinated post-marketing surveillance system in the healthcare sector (Meher *et al.*, 2024).

Raising awareness of Materiovigilance and providing educational interventions is essential for all healthcare workers. Materiovigilance encourages a proactive approach to risk management and helps enhance healthcare services (Selvam *et al.*, 2024). Therefore, by implementing proper educational interventions, workshops, continuing medical education, and hosting various conferences, awareness of Materiovigilance and the reporting of adverse events among healthcare workers would significantly improve. To further enhance learning, Materiovigilance should also be included in student curricula (K. *et al.*, 2024).

Pharmacy students play a crucial role in the healthcare sector, yet awareness of Materiovigilance, particularly regarding their Knowledge, Attitude, and Perception (KAP) related to Materiovigilance and the spontaneous reporting of Medical Device Adverse Events (MDAEs), has been found lacking among both undergraduate and postgraduate students. To address this, a cross-sectional questionnaire-based study was conducted among these students to assess their KAP regarding Materiovigilance. The study included both a pre-test and a post-test, administered before and after an educational intervention, respectively.

MATERIALS AND METHODS

Study site

The study was conducted at KLE College of Pharmacy, Vidyanagar, Hubballi.

Study design

It was a cross-sectional, self-designed questionnaire-based study designed to evaluate the Knowledge, Attitude, and Perception of Materiovigilance among Under-Graduate and Post- Graduate students studying in KLE College of Pharmacy, Vidyanagar, Hubballi.

Ethical Approval

Ethical clearance was obtained from the institutional ethical committee, KLE College of Pharmacy, Hubballi. IEC No. KLECOPH/IEC/2023-24/01.

Study period

The learning was carried out for a period of 6 months in KLE College of Pharmacy, Vidyanagar, Hubballi, Karnataka.

Study criteria

Inclusion criteria: Students enrolled in Undergraduate and Postgraduate stream in KLE College of Pharmacy, Hubballi.

Exclusion criteria: Pilot study participants were excluded from the study and students who are not willing to contribute to the learning.

Study Procedure

The faculty of the Department of Pharmacy Practice developed 15 MvPI questionnaires as mentioned in Table 2, to assess three domains: Knowledge, Attitude, and Perception. The questionnaires were divided into five questions each for the respective domain. The Knowledge domain was dichotomous (coded as 'Yes' as 1 and 'No' as 0). While the Attitude and Perception domains were coded using a 5.0-point Likert scale. The internal consistency of the questionnaires was evaluated using IBM SPSS 27.0 and Cronbach's alpha (α), with an α of 0.827, indicating good internal consistency. A pre-test was conducted, followed by a brief educational session on the topic, including insightful information on definitions, aim, regulatory body, history, reporting, and types of medical devices. The same set of 15 questions each with 3 domains was re-distributed to participants through Google forms, and responses were recorded in the post-test.

Statistical Analysis

The obtained data was entered into a Microsoft Excel spreadsheet. Continuous data were presented as mean \pm standard deviation. The differences between the UG and PG pharmacy students were evaluated using t-test respectively. Suitable descriptive and inferential statistical analyses were conducted using Excel and SPSS version 27.

Sample size

Sample size is calculated using the formula;

$$n = \frac{[Z_{1-\alpha/2}]^2 p (1 - p)}{d^2}$$

Where, Z is critical value.

d is allowable error.

p is sample proportion.

α is level of significance.

RESULTS

As Shown in Table 1, study included 545 participants, of which 55.41% were female ($n=302$) and 44.58% were male ($n=243$). Most participants were aged between 18 and 21 years, with 20.91% being 21 years old, followed by 17.61% at 19 years old. Most participants were undergraduates, comprising 75.22% ($n=410$) of the sample, while postgraduates made up 24.77% ($n=135$). A significant proportion of participants came from non-medical backgrounds (86.78%, $n=473$), and in terms of socioeconomic status, 29.54% ($n=161$) were from the lower class, followed by 27.33% ($n=149$) from the upper middle class. Additionally, the majority of participants resided in urban areas, accounting for

Table 1: Demographics details of UG and PG students.

Demographics	Characteristics	n=545 (%)
Gender	Female	302 (55.41)
	Male	243 (44.58)
Age in years	18	74 (13.57)
	19	96 (17.61)
	20	85 (15.59)
	21	114 (20.91)
	22	80 (14.67)
	23	58 (10.64)
	24	26 (4.77)
Study group	Undergraduates	410 (75.22)
	Postgraduates	135 (24.77)
Parents profession	Non-medical background	473 (86.78)
	Medical background	72 (13.21)
Socioeconomic status	Lower class (< 1 lakh Rupees per year)	161 (29.54)
	Lower middle class (2 to 5 lakh Rupees per year)	134 (24.58)
	Upper class (> 10 lakh Rupees per year)	36 (6.60)
	Upper lower class (1 to 2 lakh Rupees per year)	65 (11.92)
	Upper middle (5 to 15 lakh Rupees per year)	149 (27.33)
Residence	Rural	192 (35.22)
	Urban	353 (64.77)

64.77% (n=353) of the sample, compared to 35.22% (n=192) from rural areas.

The above Table 2 contains a questionnaire to assess participants' knowledge, attitude, and perception related to materiovigilance and the reporting of adverse events caused by medical devices. The knowledge-based questions focused on participants' awareness of the ongoing Materiovigilance Programme of India, the classification of medical devices into four categories, the procedures and authorities for reporting adverse events, and their experience with reporting forms and alerts or recalls related to

Table 2: Questionnaire used in the study.

Sl. No.	KAP Questionnaire	Domain
Knowledge based questions		
1.	Are you aware of the ongoing Materiovigilance Programme of India?	Yes and No
2.	Are you aware that medical devices are classified into 4 categories (Category A, Category B, Category C and Category D)?	
3.	Are you aware of how and whom to report the adverse events caused by the medical devices?	
4.	Have you come across any means/forms of reporting adverse events related to medical devices?	
5.	Have you come across any alerts or recall about medical devices?	
Attitude based questions		
1.	Do you agree that medical devices can cause adverse events?	Strongly Agree (SA), Agree (A), Not sure (N), Disagree (D) and Strongly Disagree (SD)
2.	Do you agree that it is important to report the adverse events caused by medical devices?	
3.	Do you agree that training on Materiovigilance to the pharmacy students is essential?	
4.	Do you agree that reporting of adverse event will enhance patient safety?	
5.	Do you agree that if you come across any adverse event related to medical devices, would you report it?	
Perception based questions		
1.	Do you believe that India's Materiovigilance Programme can generate evidence-based data on medical device safety?	Strongly Agree (SA), Agree (A), Not sure (N), Disagree (D) and Strongly Disagree (SD)
2.	Do you think that one report on adverse event related to medical device will make any difference in health care system?	
3.	Are you aware of the potential consequences of not reporting adverse events related to medical devices?	
4.	Do you perceive Materiovigilance reporting as a potential area for your growth and development in the field of pharmacy?	
5.	Do you perceive a need for greater awareness and understanding of Materiovigilance among pharmacy students?	

Table 3: t-Test Analysis of Knowledge scores in undergraduates and postgraduates regarding MvPI.

KAP Domain Mean±Sd. Dev		Undergraduates	Postgraduates	p-value
		Mean±Sd. Dev		
Knowledge	Pre-test	1.25±1.721	2.56±1.782	0.258
	Post-test	3.86±1.792	4.51±.976	<0.001
Attitude	Pre-test	18.27±4.196	18.27±5.619	<0.001
	Post-test	19.32±4.536	19.24±6.390	<0.001
Perception	Pre-test	17.18±3.421	18.17±4.927	<0.001
	Post-test	18.97±3.979	19.73±5.518	0.002

*Significantly significant $p < 0.05$.

Table 4: Scoring and categorization of KAP domains.

Domain	Question format	Scoring	Poor category	Moderate category	Good category
Knowledge	Yes/No (2 options)	Yes=1, No=0	0-2 points	3 points	4-5 points
Attitude	SA, A, N, D, SD (5 options)	5,4,3,2,1	0-16 points	17-18 points	19-25 points
Perception	SA, A, N, D, SD (5 options)	5,4,3,2,1	0-16 points	17-18 points	19-25 points

Table 5: Comparison of KAP factors between undergraduates and postgraduates.

Study Group	Domain	Good (%)		Moderate (%)		Poor (%)	
		Pre	Post	Pre	Post	Pre	Post
Undergraduates	K	15.89	72.86	6.84	6.84	77.50	20.29
	A	59.16	74.57	14.91	7.33	25.91	18.09
	P	38.63	68.21	26.89	11.49	34.47	20.29
Postgraduates	K	32.8	97.01	17.91	10.44	50.74	2.98
	A	70.14	72.38	5.22	6.71	24.62	20.89
	P	62.68	79.10	14.17	5.97	23.88	15.67

medical devices. Attitude-based questions explored participants' agreement on the potential for medical devices to cause adverse events, the importance of reporting these events, the necessity of materiovigilance training for pharmacy students, the role of reporting in enhancing patient safety, and their willingness to report adverse events if encountered. Finally, perception-based questions assessed participants' beliefs in the effectiveness of India's Materiovigilance Programme in generating evidence-based data on device safety, the impact of reporting even a single adverse event on the healthcare system, awareness of the consequences of not reporting, and the perceived value of materiovigilance

reporting as a growth area in pharmacy, as well as the need for greater awareness and understanding of Materiovigilance among pharmacy students.

The study evaluated the Knowledge, Attitude, and Perception (KAP) domains in Table 3 of undergraduates and postgraduates before and after an intervention. In the Knowledge domain, undergraduates had a pre-test mean score and Sd. Dev of 1.25±1.721, while postgraduates scored 2.56±1.782, with no statistically significant difference between the groups ($p=0.258$). However, after the intervention, both groups showed significant improvement, with postgraduates achieving a higher post-test

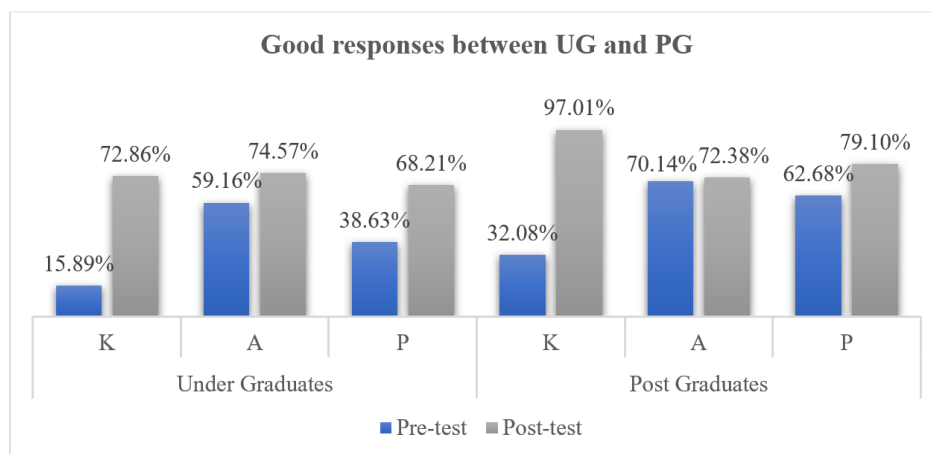


Figure 1: Good responses between UG and PG.

mean score and Sd. Dev of 4.51 ± 0.976 compared to 3.86 ± 1.792 for undergraduates ($p < 0.001$), indicating a notable enhancement in knowledge, particularly among postgraduates.

For the Attitude domain, both groups had identical pre-test mean scores of 18.27, though the standard deviation was slightly higher for postgraduates (5.619) compared to undergraduates (4.196). Despite the identical means, the difference was statistically significant ($p < 0.001$). Following the intervention, both groups showed slight improvements, with undergraduates scoring 19.32 ± 4.536 and postgraduates scoring 19.24 ± 6.390 . The p-value remained significant ($p < 0.001$), suggesting that the intervention had a positive effect on attitudes in both groups, though the differences between the groups were minimal.

In the Perception domain, postgraduates initially had a higher pre-test mean score and Sd. Dev of 18.17 ± 4.927 compared to 17.18 ± 3.421 for undergraduates, and this difference was statistically significant ($p < 0.001$). Post-test scores also improved for both groups, with postgraduates scoring 19.73 ± 5.518 and undergraduates scoring 18.97 ± 3.979 , with a significant p-value ($p = 0.002$). This indicates that the intervention effectively enhanced perceptions in both groups, with postgraduates consistently scoring higher.

Overall, the study demonstrates that the intervention led to significant improvements in Knowledge, Attitude, and Perception across both undergraduates and postgraduates, with postgraduates generally showing greater gains, particularly in the Knowledge and Perception domains.

In Table 4, the scoring system evaluates three domains: Knowledge, Attitude, and Perception. For the Knowledge domain, participants answer Yes/No questions, where “Yes” scores 1 point and “No” scores 0 points. Scores are categorized as Poor (0-2 points), Moderate (3 points), or Good (4-5 points). The Attitude and Perception domains use a 5-point Likert scale (SA, A, N, D, SD) with corresponding scores of 5 to 1 point. These scores are categorized as Poor (0-16 points), Moderate (17-18 points), or

Good (19-25 points). This system helps to clearly differentiate participant responses across the three domains.

The study results in Table 5 indicate a significant improvement across the Knowledge, Attitude, and Perception domains for both Undergraduate (UG) and Postgraduate (PG) groups following in the Figure 1 indicates the percentage of intervention in the graphical. For the UG group, the percentage of participants in the “Good” category for Knowledge surged from 15.89% to 72.86%, while the “Poor” category dropped from 77.50% to 20.29%. In the Attitude domain, those in the “Good” category increased from 59.16% to 74.57%, with decreases in the “Moderate” and “Poor” categories. Similarly, Perception scores improved, with the “Good” category rising from 38.63% to 68.21% and the “Poor” category falling from 34.47% to 20.29%. The PG group showed even more dramatic gains, particularly in Knowledge, where the “Good” category jumped from 32.8% to 97.01%, and the “Poor” category fell from 50.74% to 2.98%. Improvements were also seen in Attitude domain with the “Good” category from 70.14% to 72.38% and a minor decrease in the “Poor” category from 24.62% to 20.89% was noticed. Lastly, in Perception, with the “Good” category increasing from 62.68% to 79.10%. Overall, the intervention was highly effective in enhancing participants’ knowledge, attitude, and perception, with the most significant improvements observed in the Knowledge domain among postgraduate students.

DISCUSSION

After an educational intervention, Postgraduates (PGs) significantly increased their scores in the “Good” category (from 32.8% to 97.01%) and consistently beat Undergraduates (UGs) in Knowledge, Attitude, and Perception. UG medical students experienced more accidents (23.8%) than nursing students (3.4%), according to the Oliveira and Gonçalves study, which concentrated on safety standards among health science students (Oliveira *et al.*, 2024). Our study highlights the long-term benefits of tailored treatments, especially for PGs who demonstrated improved knowledge retention and application, indicating the

need for more sophisticated educational tactics in the health sciences.

Kumar *et al.*, found that, while postgraduates exhibited a better understanding on the importance of materiovigilance, undergraduates showed a more positive attitude towards reporting adverse events, suggesting a gap in practical application among the former group (Kumar *et al.*, 2024). Soni *et al.*, emphasized the need for structured training programs to bridge this knowledge gap, particularly for undergraduates who may not have been exposed to comprehensive materiovigilance education (Soni *et al.*, 2024) Whereas our study shows that although postgraduates had better knowledge, both groups improved significantly with targeted interventions, especially in undergraduates' attitudes, underscoring the need for specific educational approaches for each group. Research indicates that PG students generally exhibit a higher level of knowledge regarding materiovigilance principles and practices compared to their UG counterparts (Shetti *et al.*, 2021).

The attitudes regarding Medical Device-Associated Adverse Events (MDAEs) differ significantly between Undergraduate (UG) and Postgraduate (PG) students. Research by Bikash *et al.*, indicates that PG students generally exhibit a more critical and informed perspective towards MDAEs, likely due to their advanced training and clinical exposure. They tend to recognize the complexities involved in reporting and managing these events, emphasizing the importance of systematic approaches to patient safety and device evaluation (Bikash *et al.*, 2023). Whereas our study shows that although postgraduate students tend to have a more critical view of Medical Device-Associated Adverse Events (MDAEs), both undergraduates and postgraduates showed notable improvements in their understanding and attitudes following targeted training, highlighting the value of systematic education for all levels of experience.

The perception of materiovigilance among Undergraduate (UG) and Postgraduate (PG) students reveals notable differences in awareness and understanding. Whereas our study shows that despite the differences in awareness and understanding of materiovigilance between undergraduates and postgraduates, targeted interventions significantly enhanced perceptions for both groups, emphasizing the effectiveness of practical training in bridging these gaps. The PG programs' expanded curriculum and exposure to real-world applications, which stress the significance of monitoring medical equipment and guaranteeing patient safety, may be the cause of this difference (Bhandari *et al.*, 2024) (Shetti *et al.*, 2021).

CONCLUSION

This study illustrates the significant improvement in both the streams of Undergraduate and Postgraduate pharmacy students. The pre-test had shown profound improvements in both the streams and substantial gains in each domain Knowledge,

Attitude and Perception regarding the Materiovigilance. Later, the educational intervention resulted in a significant improvement in KAP among both undergraduate and postgraduate pharmacy students respectively. It was revealed from the study that Undergraduates showed substantial increase in responses in terms of Knowledge domain in which percentage of participants had showcased a dramatic rise in "GOOD" category. However, postgraduates exhibited even greater advancements, particularly in Knowledge, where the "Good" category surged from 32.8% to 97.01%. Similarly, the study had disclosed slightly higher Attitude in case of Undergrads with significant improvements as seen in both the streams. Lastly, in terms of Perception Postgraduates were found to have responded consistently higher as compared to Undergraduates. Hence, these findings ascertain the significance of educational intervention and to promote spontaneous reporting of MDAEs among the pharmacy students. Consequently, the study had resulted in an overall and more profound improvement as seen in Postgraduates. Therefore, this intervention also addresses us in enhancing the KAP of Materiovigilance among both the streams and its necessity in the curricula soon.

ACKNOWLEDGEMENT

The authors are thankful to the Vice-Chancellor, Registrar and Dean of Pharmacy, KLE Academy of Higher Education and Research, Belagavi.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

MDAEs: Medical Device Adverse Events; **MvPI:** Materiovigilance Programme of India; **KAP:** Knowledge, Attitude, and Perception; **UG:** Undergraduate; **PG:** Postgraduate; **CDSKO:** Central Drugs Standard Control Organisation; **WHO:** World Health Organization; **SA:** Strongly Agree; **A:** Agree; **N:** Not sure; **D:** Disagree; **SD:** Strongly Disagree; **Sd:** Standard Deviation; **IEC:** Institutional Ethical Committee; **IBM SPSS:** International Business Machines Statistical Package for the Social Sciences; **UG:** Undergraduate; **PG:** Postgraduate.

REFERENCES

- Bhandari, A. (2024). Knowledge, attitude and practice of materiovigilance among medical postgraduate students. *International Journal of Current Pharmaceutical Research*, 16(3), 113–115. <https://doi.org/10.22159/ijcpr.2024v16i3.5007>
- Bhavsar, A. P., & Trivedi, H. R. (2024). A questionnaire-based study to assess the knowledge, attitude, and practice of Materiovigilance among health-care professionals of a tertiary care teaching hospital in Gujarat. *National Journal of Physiology, Pharmacy and Pharmacology*, 14(8), 1673–1677. <https://doi.org/10.5455/njppp.2024.14.01018202405032024>
- K., S., & P., U. K. (2024). A study assessing the knowledge, attitude, and practice of materiovigilance among medical professionals in the states of Tamil Nadu and Andhra Pradesh, India. *International Journal of Basic and Clinical Pharmacology, UK*, 13(3), 364–370. <https://doi.org/10.18203/2319-2003.ijbcp20240993>
- Kumar, A. P., S., & J. (2024). A V, K., & George, J. Study on the impact of sensitization on materiovigilance programme among pharmacy and dental postgraduate students. *Expert Review of Medical Devices*, 21(6), 543–552. <https://doi.org/10.1080/17434440.2024.2364821>

- Meher, B. R., & Dash, A. (2023). Reporting of adverse events related to medical devices: A single-center experience from a tertiary care institute of national importance in India. *Indian Journal of Pharmacology*, 55(2), 128–132. https://doi.org/10.4103/ijp.ijp_495_21
- Meher, B. R., Padhy, B. M., Srinivasan, A., & Mohanty, R. R. (2022). Awareness, attitude, and practice of materiovigilance among medical professionals at a tertiary care institute of national importance: A cross-sectional study. *Perspectives in Clinical Research*, 13(2), 94–98. https://doi.org/10.4103/picr.PICR_187_19
- Oliveira, A. C., & Gonçalves, J. de A. (2009). Incidência de acidentes com material perfurocortante entre alunos de graduação em ciências da saúde - DOI: 10.4025/ciencuidsaude.v8i3.9021. *Ciência, cuidado E Saúde*, 8(3), 385–392. <https://doi.org/10.4025/ciencuidsaude.v8i3.9021>
- Selvam, S., Prassath, R., Jothi Babu, I., Raja, S., & Rajarathinam, N. (2024). Knowledge attitude and practice of materiovigilance among healthcare professionals in tertiary care hospitals. *International Journal of Basic and Clinical Pharmacology*, 13(3), 358–363. <https://doi.org/10.18203/2319-2003.ijbcp20240992>
- Shetti, S. A., & Limaye, R. P. (2021). An evaluation of knowledge, attitude and perception about adverse drug reactions and pharmacovigilance among intern doctors in a medical college teaching hospital of Sangli. *International Journal of Basic and Clinical Pharmacology*, 10(6), 714–719. <https://doi.org/10.18203/2319-2003.ijbcp20212083>
- Sojitra, B., Patel, C., Pandya, S., Virani, P., Shah, P., Patel, J., & Shah, A. (2024). Knowledge, attitude, and practice of materiovigilance among healthcare professionals at a tertiary care teaching hospital. *Cureus*, 16(7), Article e64978. <https://doi.org/10.7759/cureus.64978>
- Soni, M., Nandave, M., & Kumar, A. (2024). Materiovigilance. In M. Nandave, A. Kumar (Eds.). *Pharmacovigilance Essentials* (pp. 269–287). Springer Nature Singapore. https://doi.org/10.1007/978-981-99-8949-2_13

Cite this article: Gore A, Sayed AA, Sail SS, Khan R, Swamy AHV, Nyamagoud SB. Impact of Educational Interventions on Materiovigilance Awareness among Pharmacy Students: A Cross-Sectional Study. *Int. J. Pharm. Investigation*. 2025;15(4):1281-7.