



Research Article

## Assessment of knowledge, attitude and practice of cosmetovigilance among undergraduate medical students in a tertiary care hospital – A questionnaire-based study

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### ABSTRACT

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**Background:** Cosmetovigilance involves the detection, assessment, and prevention of adverse effects associated with cosmetic products. Increasing cosmetic use has raised concerns regarding cosmetic safety and adverse reaction reporting. In this study the objective is to evaluate undergraduate medical students' knowledge of cosmetovigilance, their attitudes toward cosmetic safety monitoring, and their practices concerning the identification and reporting of cosmetic-related adverse reactions.

**Materials and Methods:** A questionnaire-based cross-sectional study was undertaken among second- and third-year medical undergraduate students at a medical college during the period from March to August 2024. A pre-validated, semi-structured questionnaire was distributed electronically via google forms after obtaining approval from the Institutional ethics committee and receipt of informed consent from all participant. Descriptive and inferential statistical tools were employed to analyse the study data. P value of less than 0.05 was considered statistically significant.

**Results:** The study population comprised 154 undergraduate medical students. The participants demonstrated mean knowledge, attitude, and practice scores of  $2.7 \pm 1.3$ ,  $16.0 \pm 2.0$ , and  $7.4 \pm 2.0$ , respectively. Most participants were aware of cosmetovigilance (61.0%) and cosmetic adverse reaction reporting (72.7%), but only 38.3% knew the reporting procedure. Positive attitudes towards cosmetic safety were observed among most participants. Good cosmetic safety practices were common, although sharing of cosmetics was frequently reported. Knowledge scores were significantly higher among second-year students ( $p = 0.003$ ). Weak positive correlation was observed between knowledge and attitude scores ( $\rho = 0.216$ ,  $p = 0.007$ ).

**Conclusion:** Undergraduate medical students exhibited a moderate level of knowledge, favourable attitudes, and satisfactory practices related to cosmetovigilance. However, inadequate awareness regarding adverse reaction reporting highlights the need for structured cosmetovigilance education in undergraduate medical training.

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**Keywords:** Cosmetovigilance, Cosmetic adverse reactions, Medical Students, Knowledge Attitude, Practice, Cosmetic safety.

### INTRODUCTION

Cosmetics are widely used products intended to improve appearance, maintain hygiene, and enhance personal care. The cosmetic industry has expanded rapidly worldwide in recent years, resulting in increased exposure to various chemical ingredients through skincare products, hair dyes, perfumes, and makeup products. Although cosmetics are generally considered safe, their use may sometimes result in adverse effects such as allergic reactions, erythema, dermal irritation,

pigmentation disorders, and photosensitivity. Increasing reports of cosmetics associated adverse reactions have highlighted the need for effective cosmetovigilance system [1,2]

Cosmetovigilance denotes the science and systematic activities concerned with the detection, assessment, understanding, and prevention of adverse effects related to cosmetic products. Similar to pharmacovigilance, cosmetovigilance plays an important role in ensuring consumer safety by promoting early identification, reporting, and monitoring of cosmetic-related adverse reactions. Effective cosmetovigilance systems help regulatory authorities identify harmful ingredients, evaluate product safety, and implement preventive measures to protect public health. [3,4]

The concept of cosmetovigilance was initially developed in response to increasing reports of cosmetic-associated adverse reactions worldwide. Earlier studies by Vigan and Castelain and Sautebin highlighted the need for structured surveillance systems for cosmetic products and emphasized the importance of consumer safety monitoring. [5,6] Over time, several countries have implemented cosmetovigilance programs to improve reporting practices and ensure cosmetic safety.

Despite increasing cosmetic use, awareness regarding cosmetovigilance and adverse event reporting remains inadequate among consumers as well as healthcare professionals. Underreporting of cosmetic adverse reactions is common because of limited knowledge regarding reporting systems, poor awareness of potential adverse effects, and lack of formal training. Recent studies conducted among medical students and cosmetic users in India have demonstrated moderate awareness but inadequate practical knowledge regarding cosmetovigilance and adverse event reporting. [7,8]

As future healthcare professionals medical students represent a key group in promoting patient education, counselling, and reporting of cosmetic-related adverse events. Adequate knowledge and positive attitudes regarding cosmetovigilance are therefore essential for strengthening cosmetic safety surveillance systems. Previous studies have suggested that educational exposure and structured training programs can improve awareness and reporting behaviour related to cosmetovigilance and pharmacovigilance practices. [8,9]

Despite increasing attention to cosmetic safety and cosmetovigilance, limited data are available on the knowledge, attitude, and practices (KAP) of undergraduate medical students, particularly those studying in tertiary care teaching institutions in India. To address this knowledge gap, this study was carried out to evaluate the knowledge, attitude, and practices concerning cosmetovigilance in undergraduate medical population in a tertiary care teaching hospital using a questionnaire-based approach.

The primary objective is to evaluate the knowledge, attitude, and practices related to cosmetovigilance within the undergraduate medical student population in a teaching hospital providing tertiary healthcare services. The secondary objectives are to evaluate awareness regarding cosmetic-related adverse effects and adverse event reporting systems among undergraduate medical students and to analyse the correlation between knowledge, attitude, and practice scores associated with cosmetovigilance.

## **MATERIALS AND METHODS**

### **1. Patient Population and Ethical Consideration**

The present study was designed as a cross-sectional, questionnaire-based survey and was conducted in the pharmacology department at a government medical college. Second and third year medical students of medical college constituted the study population. Data collection was performed over a period of six months from march 2024 to august 2024.

The study was performed after the approval from the Institutional ethics committee (1748/ME3/2024), and all participants provided written informed consent before participating in the study. Personal details were not procured from the participants and all data were kept confidential throughout the study period. The study used a convenience sampling technique and the participants were chosen according to their availability and willingness to provide informed consent.

### **2. Selection Criteria**

Medical students studying in second and third year, who were willing to participate and who provided informed consent were included in the study. Medical students absent during data collection and incomplete questionnaires were not enrolled in the study

### **3. Study Tool**

A structured and validated questionnaire was used for collecting the data. The questionnaire contained three sections. The first section assessed knowledge regarding cosmetovigilance, the second section assessed attitude towards cosmetovigilance, and the third section assessed practices related to cosmetovigilance.

### **4. Study Procedure**

Participants who met the eligibility criteria were recruited and were briefed regarding the purpose of the study. Link to a pre-validated semi-structured questionnaire created using google forms was distributed to second- and third-year MBBS

students at government medical college. They were requested to complete the study questionnaire and submit their responses. The questionnaire data were collected and analysed to evaluate the participants knowledge, attitude, and practices regarding cosmetovigilance.

## 5. Statistical Analysis

Data obtained from the study were entered into Microsoft Excel and analysed using SPSS software. Categorical variables were summarised as frequencies and percentage. Normally distributed continuous variables were presented as mean  $\pm$  SD, whereas non-normally distributed variables were reported as median and interquartile range (IQR). Differences in knowledge, attitude, and practice scores between groups across gender and year-of-study categories were assessed using appropriate inferential statistical methods. Association between categorical variables was analysed using the Chi-square test. Correlation between knowledge, attitude, and practice scores was assessed using Spearman's rank correlation coefficient (Spearman's rho) along with corresponding 95% confidence intervals. Results with a p-value of less than 0.05 were regarded as statistically significant

## RESULTS

The study included 154 participants, of whom 52.6% were second-year students and 47.4% were third-year students. Female participants accounted for 55.8% of the sample, while males comprised 44.2%. Mean knowledge score was  $2.7 \pm 1.3$  (median: 3; IQR: 2–4), indicating moderate knowledge of cosmetovigilance and cosmetic safety. The mean attitude score was  $16.0 \pm 2.0$  (median: 16; IQR: 15–17), reflecting a positive attitude, while the mean practice score was  $7.4 \pm 2.0$  (median: 8; IQR: 6–9), indicating generally good cosmetic safety practices [Table 1].

**Table 1. Baseline characteristics and overall KAP scores of study participants (N = 154)**

Variable	Frequency (n) / Mean $\pm$ SD	Percentage (%) / Median (IQR)
<b>Year of Study</b>		
2nd Year	81	52.6
3rd Year	73	47.4
<b>Gender</b>		
Male	68	44.2
Female	86	55.8
<b>Overall KAP Scores</b>		
Knowledge score	$2.7 \pm 1.3$	3 (2–4)
Attitude score	$16.0 \pm 2.0$	16 (15–17)
Practice score	$7.4 \pm 2.0$	8 (6–9)

IQR is Interquartile range, SD is Standard deviation, KAP is Knowledge, Attitude, Practices, N is number of participants expressed in percentage

Most participants were aware of cosmetovigilance (61.0%) and reporting of cosmetic adverse reactions (72.7%), but only 38.3% knew the reporting procedure. While 85.1% were aware of harmful chemicals in cosmetics, only 14.3% knew that hair colouring could cause allergic reactions [Table 2]. Participants demonstrated a positive attitude towards cosmetic safety, with 76.6% acknowledging the harmful effects of lead-based cosmetics and hair dye during pregnancy, 74.7% recognizing the carcinogenic potential of cosmetics, and 89.0% supporting cosmetovigilance education for healthcare professionals [Table 3]. Participants demonstrated generally good cosmetic safety practices, with 83.1% reading label instructions, 78.6% checking manufacturer and expiry details, and 68.2% removing makeup before sleep. However, 57.8% reported sharing cosmetics. Most participants (70.1%) used fewer than two cosmetic products daily, and shampoo was the most preferred hair care product (79.2%). Adverse reactions following cosmetic use were reported by 63.0% of participants. Among those experiencing ADRs (n = 97), the majority discontinued product use (62.9%), while only 18.6% consulted a physician and very few practiced self-medication (2.1%) [Table 4].

**Table 2. Distribution of responses to knowledge questionnaire items among study participants**

Questionnaire Item of Knowledge	Response Category	Frequency (%)
Awareness of cosmetovigilance	Yes	94 (61.0)
	No	60 (39.0)
Awareness that cosmetic ADRs can be reported	Yes	112 (72.7)
	No	42 (27.3)
Knowledge regarding reporting of cosmetic ADRs	Yes	59 (38.3)
	No	95 (61.7)
Awareness of harmful chemicals in cosmetics	Yes	131 (85.1)
	No	23 (14.9)

Awareness that hair colouring can cause allergy	Yes	22 (14.3)
	No	132 (85.7)

N is number of participants expressed in percentage

**Table 3. Distribution of Responses to Attitude Questionnaire Items Among Study Participants**

Questionnaire Item of Attitude	Response Category	Frequency (%)
Long-term use of lead-based products affects major organs	Strongly agree	39 (25.3)
	Agree	79 (51.3)
	Neutral	29 (18.8)
	Disagree	7 (4.5)
Hair dye is harmful during pregnancy	Strongly agree	30 (19.5)
	Agree	88 (57.1)
	Neutral	32 (20.8)
	Disagree	4 (2.6)
Cosmetics can cause cancer	Strongly agree	22 (14.3)
	Agree	93 (60.4)
	Neutral	36 (23.4)
	Disagree	3 (1.9)
Need to teach cosmetovigilance to healthcare professionals	Strongly agree	48 (31.2)
	Agree	89 (57.8)
	Neutral	17 (11.0)

N is number of participants expressed in percentage

**Table 4. Distribution of responses to practice questionnaire items among study participants (N = 154)**

Questionnaire Item of Practice	Response Category	Frequency (%)
Read label instructions on cosmetic products	Yes	128 (83.1)
	No	26 (16.9)
Sharing of cosmetics	Yes	89 (57.8)
	No	65 (42.2)
Number of cosmetics used/day	Less than 2	108 (70.1)
	3–5	40 (26.0)
	6–9	6 (3.9)
Check the manufacturer & expiry date	Yes	121 (78.6)
	Sometimes/Maybe	17 (11.0)
	No	16 (10.4)
Remove makeup before sleep	Yes	105 (68.2)
	Sometimes/Maybe	26 (16.9)
	No	23 (14.9)
<b>Preferred hair care product</b>		
Preferred hair care product	Shampoo	122 (79.2)
	Conditioner	23 (14.9)
	Hair spray	6 (3.9)
	Hair gel	3 (1.9)
<b>ADR Experience</b>		
Experienced cosmetic ADR	Yes	97 (63.0)
	No	57 (37.0)
<b>Action Taken Following ADR</b>		
Response following ADR (n=97)	Stopped product use	61 (62.9)
	Consulted physician	18 (18.6)
	Reduced application	11 (11.3)
	ADR settled on its own	5 (5.2)
	Self-medication	2 (2.1)

ADR is Adverse drug reaction; N is number of participants expressed in percentage

The mean knowledge score was significantly higher among second year students ( $3.0 \pm 1.2$ ) compared to third year students ( $2.4 \pm 1.3$ ). This difference was statistically significant ( $p = 0.003$ ), indicating that 2nd year students demonstrated better knowledge regarding cosmetovigilance and cosmetic safety practices than 3rd year students. Attitude and practice scores did not significantly differ according to year of study or gender. Mean attitude scores were comparable between second-year and third-year students ( $p = 0.356$ ), as well as between males and females ( $p = 0.841$ ). Similarly, practice scores showed no significant variation by year of study ( $p = 0.360$ ) or gender ( $p = 0.392$ ). Overall, except for knowledge scores across year of study, no significant differences were observed in KAP scores according to demographic characteristics [Table 5].

**Table 5. Distribution and Comparison of Knowledge, Attitude and Practice Scores According to Year of Study and Gender**

Variable	Group	Mean $\pm$ SD	Median (IQR)	p-value
<b>Knowledge Score</b>				
Year of Study	3rd Year	$2.4 \pm 1.3$	3 (1–3)	<b>0.003*</b>
	2nd Year	$3.0 \pm 1.2$	3 (2–4)	
Gender	Male	$2.7 \pm 1.3$	3 (2–4)	0.631
	Female	$2.8 \pm 1.3$	3 (2–4)	
<b>Attitude Score</b>				
Year of Study	3rd Year	$15.8 \pm 2.3$	16 (15–17)	0.356
	2nd Year	$16.2 \pm 1.8$	16 (15–17)	
Gender	Male	$16.1 \pm 2.1$	16 (15–17)	0.841
	Female	$15.9 \pm 2.0$	16 (15–17)	
<b>Practice Score</b>				
Year of Study	3rd Year	$7.3 \pm 1.9$	8 (6–8)	0.360
	2nd Year	$7.5 \pm 2.1$	8 (6–9)	
Gender	Male	$7.5 \pm 2.1$	8 (6–9)	0.392
	Female	$7.3 \pm 2.0$	8 (6–9)	

**IQR is Interquartile range, SD is Standard deviation, N is number of participants expressed in percentage**

A statistically significant association was found between the year of study and knowledge level ( $p = 0.025$ ), with second-year students more frequently exhibiting good knowledge (38.3%) than third-year students (20.5%). Conversely, poor knowledge was more common among third year students (49.3%) than second year students (30.9%). However, no significant association was found between year of study and attitude ( $p = 0.258$ ) or practice categories ( $p = 0.643$ ) (Table 6). No significant association was found between gender and knowledge, attitude, or practice categories, with p-values of 0.635, 0.946, and 0.584, respectively. Positive attitude and good practice were similarly distributed among males and females. Overall, year of study was significantly associated only with knowledge category, while gender showed no significant association with any KAP category [Table 7]

**Table 6. Association of year of study with KAP categories and correlation between KAP Scores**

Variable	Category	Third Year n (%)	Second Year n (%)	p-value
Knowledge	Good	15 (20.5)	31 (38.3)	<b>0.025*</b>
	Moderate	22 (30.1)	25 (30.9)	
	Poor	36 (49.3)	25 (30.9)	
Attitude	Positive	47 (64.4)	59 (72.8)	0.258
	Neutral	26 (35.6)	22 (27.2)	
Practice	Good	40 (54.8)	48 (59.3)	0.643
	Moderate	30 (41.1)	28 (34.6)	
	Poor	3 (4.1)	5 (6.2)	

**KAP is Knowledge, Attitude, Practices, N is number of participants expressed in percentage**

**Table 7. Association between gender and KAP categories and correlation between KAP Scores**

Variable	Category	Male n (%)	Female n (%)	p-value
Knowledge	Good	18 (26.5)	28 (32.6)	0.635
	Moderate	23 (33.8)	24 (27.9)	
	Poor	27 (39.7)	34 (39.5)	
Attitude	Positive	47 (69.1)	59 (68.6)	0.946

	Neutral	21 (30.9)	27 (31.4)	
Practice	Good	42 (61.8)	46 (53.5)	0.584
	Moderate	23 (33.8)	35 (40.7)	
	Poor	3 (4.4)	5 (5.8)	

KAP is Knowledge, Attitude, Practices, N is number of participants expressed in percentage

**Table 8 Overall, gender-wise and year-wise correlation between knowledge, attitude and practice Scores**

Group	Variables Compared	Spearman's rho	95% Confidence Interval	p-value
Overall (N = 154)	Knowledge vs Attitude	0.216	0.055 to 0.366	<b>0.007**</b>
	Knowledge vs Practice	0.009	-0.154 to 0.171	0.915
	Attitude vs Practice	0.051	-0.113 to 0.212	0.532
Male (n = 68)	Knowledge vs Attitude	0.165	-0.084 to 0.394	0.180
	Knowledge vs Practice	0.120	-0.129 to 0.355	0.329
	Attitude vs Practice	0.073	-0.176 to 0.312	0.556
Female (n = 86)	Knowledge vs Attitude	0.257	0.041 to 0.450	<b>0.017*</b>
	Knowledge vs Practice	-0.069	-0.282 to 0.151	0.529
	Attitude vs Practice	0.036	-0.184 to 0.252	0.744
3rd Year (n = 73)	Knowledge vs Attitude	0.132	-0.108 to 0.358	0.264
	Knowledge vs Practice	0.175	-0.064 to 0.395	0.139
	Attitude vs Practice	0.268	0.033 to 0.474	<b>0.022*</b>
2nd Year (n = 81)	Knowledge vs Attitude	0.281	0.060 to 0.476	<b>0.011*</b>
	Knowledge vs Practice	-0.159	-0.371 to 0.068	0.156
	Attitude vs Practice	-0.162	-0.373 to 0.065	0.148

\*Correlation significant at  $p < 0.05$

\*\*Correlation significant at  $p < 0.01$

Correlation analysis demonstrated a weak but significant positive association between knowledge and attitude scores ( $\rho = 0.216$ ,  $p = 0.007$ ), indicating that improved knowledge was linked to a more positive perception of cosmetovigilance. No statistically significant association was observed between knowledge and practice scores or between attitude and practice scores. Among females, higher knowledge scores were weakly associated with more positive attitudes toward cosmetovigilance ( $\rho = 0.257$ ,  $p = 0.017$ ). Likewise, second-year students demonstrated a significant positive correlation between knowledge and attitude scores ( $\rho = 0.281$ ,  $p = 0.011$ ). A weak positive relationship was observed between attitude and practice scores among third-year students ( $\rho = 0.268$ ,  $p = 0.022$ ). However, no other significant correlations were found across the knowledge, attitude, and practice domains. [Table 8].

## DISCUSSION

An assessment of knowledge, attitude, and practice regarding cosmetovigilance and cosmetic safety was conducted among undergraduate medical students in the present study. The study findings revealed moderate awareness, a positive attitude toward cosmetovigilance, and relatively good cosmetic safety practices among the respondents. However, notable gaps were identified in practical knowledge regarding adverse reaction reporting and awareness of specific cosmetic-related adverse effects.

In the present study, 61.0% of participants were aware of cosmetovigilance and 72.7% knew that cosmetic-related adverse reactions could be reported. However, only 38.3% were aware of the actual reporting procedure, indicating inadequate practical knowledge despite reasonable awareness. Similar findings were reported by Geetha Yohini et al. and Isai Amuthu et al., who observed limited awareness and poor reporting practices despite satisfactory attitudes towards cosmetovigilance among medical students and healthcare trainees despite growing concerns regarding cosmetic adverse effects.<sup>[1,7,8]</sup> Siddiqui et al. also reported inadequate awareness regarding formal reporting systems among cosmetic users in India.<sup>[9]</sup> Such inadequate awareness may contribute to underreporting of cosmetic-related adverse events.<sup>[1,9]</sup>

The majority of participants in the present study were aware of harmful chemicals in cosmetic products; however, awareness regarding specific adverse effects such as allergy due to hair colouring was considerably low. This finding suggests that although general awareness regarding cosmetic safety exists, detailed knowledge regarding individual product risks remains insufficient. Similar concerns regarding inadequate awareness of cosmetic adverse effects have been highlighted in previous cosmetovigilance studies and systematic reviews.<sup>[1,3,10]</sup> The rapid expansion of the cosmetic industry and increasing exposure to chemical ingredients further emphasize cosmetovigilance as an important public health concern.

Participants demonstrated a positive attitude towards cosmetic safety and cosmetovigilance. Most respondents acknowledged the harmful effects of lead-based cosmetics, risks associated with hair dye use during pregnancy, and possible carcinogenic potential of cosmetic products. In addition, nearly all participants supported the inclusion of cosmetovigilance education for healthcare professionals. These findings are encouraging and are in agreement with previous studies that have reported positive attitudes toward cosmetic safety despite limited knowledge of cosmetovigilance and suboptimal adverse event reporting practices. [7,8,9] The positive response toward cosmetovigilance education observed in this study reflects a recognized need for formal training programs within medical undergraduate education. [4,7,8]

Regarding practices, most participants reported reading product labels, checking expiry dates, and removing makeup before sleep, indicating generally safe cosmetic practices. However, sharing of cosmetics was common among participants, which may predispose individuals to infections and allergic reactions. Similar cosmetic-sharing behaviours have been reported in previous studies among medical students and cosmetic users. [9, 10, 11] A considerable proportion of participants also experienced adverse reactions following cosmetic use, but only a minority consulted a physician. Most preferred discontinuing the product rather than seeking professional medical advice, which may contribute to underreporting of cosmetic adverse events. Similar observations were reported in observational cosmetovigilance studies. [1, 12, 13]

The present study observed significantly higher knowledge scores among second-year students compared to third-year students. A significant association was observed between the year of study and knowledge category; however, attitude and practice levels were similar across different academic years and between genders. The better knowledge among second-year students may be due to more recent exposure to pharmacology and related academic discussions. Similar variations in awareness based on educational exposure have been documented in earlier research on cosmetovigilance and pharmacovigilance. [7,8]

Correlation analysis revealed a weak but significant positive association between knowledge and attitude scores, suggesting that improved knowledge may contribute to more positive attitudes towards cosmetovigilance. Despite the observed relationships involving knowledge and attitude, neither knowledge-practice nor attitude-practice scores demonstrated significant correlations, indicating that awareness alone may be insufficient to influence cosmetic safety behaviors. The results highlight the need for educational interventions that focus not only on awareness but also on the development of practical skills and behavioural change. Similar findings have been reported in previous KAP studies assessing cosmetovigilance awareness and safety practices. [4,9,10]

Recent literature has increasingly emphasized the importance of cosmetovigilance due to increasing reports of cosmetic-related adverse effects worldwide. Studies from different countries have highlighted insufficient public awareness, inadequate reporting practices, and the need for structured cosmetovigilance systems. [2,3,13,14] Integrating cosmetovigilance into undergraduate medical education may therefore improve awareness, reporting behaviour, and patient counselling related to cosmetic safety. [4,7,8] Enhancing public awareness and establishing robust cosmetovigilance systems are essential for promoting the safe use of cosmetic products and safeguarding public health. [12,13,15]

Several limitations should be considered when interpreting the results of this study. Being conducted at a single institution with a cross-sectional design, the generalizability of the findings is limited. The questionnaire-based approach may have been subject to recall and social desirability biases, which could have affected the validity of participants responses. Despite the inherent limitations, this study serves as a valuable source of baseline data on cosmetovigilance awareness among medical students and reinforces the need for targeted educational interventions promoting safe and responsible cosmetic practices.

Overall, the findings suggest that although medical students possess positive attitudes and relatively good cosmetic safety practices, there remains a significant need to improve practical knowledge regarding cosmetovigilance and adverse event reporting systems. Incorporation of cosmetovigilance into undergraduate medical education may help strengthen awareness, reporting behaviour, and patient counselling related to cosmetic safety.

## CONCLUSION

The present study showed that undergraduate medical students had moderate knowledge, positive attitudes, and generally good practices regarding cosmetovigilance and cosmetic safety. However, important gaps existed in awareness of adverse reaction reporting procedures and specific cosmetic-related risks. Although participants demonstrated favourable attitudes towards cosmetovigilance, unsafe practices and poor reporting behaviour were still observed. These results emphasize the need for structured cosmetovigilance education and training in undergraduate medical curricula to improve awareness, reporting practices, and safe cosmetic use.

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## REFERENCES

1. Mehta G, Tyagi DR, Sachdeva M, Tripathi R, Tyagi H. An observational study on cosmetics use-related adverse effects: cosmetovigilance need of the day. *Drug Res (Stuttg)*. 2024;74(4):164–170. doi:10.1055/a-2251-6655.
2. Nayak M, Sreedhar D, Prabhu SS, Ligade VS. Global trends in cosmetics use-related adverse effects: a bibliometric analysis of literature published during 1957–2021. *Cosmetics*. 2021;8(3):75. doi:10.3390/cosmetics8030075.
3. Fathahudheen C, Ajnas VM, Safvan E, et al. A comprehensive review of cosmetovigilance practices and trends. *J Pharm Biol Sci*. 2025;13(1):35–38. 10.18231/j.jpbs.2025.006
4. Jones J, Toklu HZ. Cosmetovigilance: a new concept for the residency curriculum. *HCA Healthc J Med*. 2020;1(4):181–183. 10.36518/2689-0216.1112
5. Vigan M, Castelain F. Cosmetovigilance: definition, regulation and use “in practice”. *Eur J Dermatol*. 2014;24(6):643–649. doi:10.1684/ejd.2014.2450.
6. Sautebin L. A cosmetovigilance survey in Europe. *Pharmacol Res*. 2008;58(5-6):316–322. doi:10.1016/j.phrs.2008.09.013.
7. Yohini GG, Meghana D, Indushree T, Riyaz AK, Sandosh RM, Narasimha Murthy KM. Cosmetovigilance: knowledge, attitude and practice study. *Int J Basic Clin Pharmacol*. 2023;12(3):434–438. doi:10.18203/2319-2003.ijbcp20231124.
8. Isai Amuthu B, Vijayalakshmi S, Raja TAR, Senthil G, Razia AR, Renuga Devi P. A cross-sectional survey-based study on knowledge, attitude and practice towards cosmetic usage and cosmetovigilance among medical students at a tertiary care institute. *Int J Med Pharm Res*. 2025;6(6):155–160. doi:10.5281/zenodo.17577618.
9. Siddiqui A, Ali N, Pandey A, et al. A cross-sectional survey-based study of knowledge, attitude, and practice towards uses of cosmetics and cosmetovigilance in India. *J Pharm Bioallied Sci*. 2024;16(1):31–37. doi:10.4103/jpbs.jpbs\_413\_23.
10. Girish K, Vasundara K, Jyothi R, Vijayamathy A. Knowledge and practice towards cosmetics and their adverse reactions among undergraduate medical, pharmacy, and physiotherapy students. *Asian J Pharm Clin Res*. 2022;15(9):20–25. doi:10.22159/ajpcr.2022.v15i9.45429.
11. Abiramy P, Maharani B, Saritha M, Mathiyalagen P. The pattern of use of cosmetics and awareness of cosmetovigilance among medical students in Puducherry: a cross-sectional study. *Cureus*. 2025;17(2):e78335. doi:10.7759/cureus.78335
12. Lucca JM, Joseph R, Hussain AIK, et al. An observational study on adverse reactions of cosmetics: the need of practice the cosmetovigilance system. *Saudi Pharm J*. 2020;28(6):746–753. 10.1016/j.jsps.2020.04.017.
13. Aljallal MA, Alhumaid MI, Alkathiri FA. Evaluating reporting trends and adverse effects of cosmetic products in Saudi Arabia based on SFDA cosmovigilance data. *Sci Rep*. 2025; 15:26605. 10.1038/s41598-025-08739-z.
14. Abusamak M, Al Zoubi S, Alomari AF, et al. Ocular adverse events associated with eye makeup: a cosmetovigilance-based cross-sectional study of prevalence and predictors among Jordanian women. *Front Public Health*. 2025;13: 1681656. 10.3389/fpubh.2025.1681656
15. Yazar S, Çorba BŞ, Ertuğrul H, Başaran AN. An exploratory survey of knowledge, attitudes, and behaviors toward cosmetic products. *Toxics*. 2026;14(1):68. 10.3390/toxics14010068