

Social Media Influencers and Pharmaceutical Products: A Review of Risks, Misuse, and Regulatory Challenges

Aditya D. Deohans, *Shraddha Institute of Pharmacy, Kondala Zambre, Washim 444505.*

Mayur D. Nandeshwar, *Shraddha Institute of Pharmacy, Kondala Zambre, Washim 444505.*

Sakshi A. Kharate, *Assistant Professor, Shraddha Institute of Pharmacy, Kondala Zambre, Washim 444505.*

Dr Swati P. Deshmukh, *Principal, Department of Pharmacology Shraddha Institute of Pharmacy, Kondala Zambre, Washim 444505.*

Manuscript Received: May 05, 2026; Revised: May 06, 2026; Published: May 07, 2026

Abstract: The rise of social media has greatly changed how pharmaceutical and cosmetic products are promoted and used. Influencers have become the main people that Generation Z listens to when making decisions about skincare, over-the-counter medicines, and health supplements. However, since many influencers don't have proper medical training, they often share incomplete or wrong information. This can lead to people using products incorrectly and experiencing side effects like skin irritation, acne, and allergies. To look into this issue, a study was done with 172 participants. It found that many consumers trust influencer advice without checking if it's backed by scientific evidence. This gap between marketing and medical safety shows major problems in the enforcement of India's regulations, including the Drugs and Cosmetics Act (1940), Consumer Protection Act (2019), and the Bharatiya Nyaya Sanhita (2023). The study concludes that protecting public health needs several steps: stronger regulation, holding influencers accountable, and raising awareness among the public. Most importantly, it suggests creating a digital platform with reliable, science-based information about drugs to connect digital marketing with safe consumer practices.

Keywords: Social Media Influencers, Influencer Marketing, Pharmaceutical and Cosmetic Products, Consumer Behavior, Adverse Drug Reactions (ADRs), Self-medication, Digital Health Communication, Public Health Safety, Regulatory Framework (India), Skincare Ingredients

Introduction

The way people get, think about, and decide to use information about health and beauty products has changed a lot because of digital communication and the fast growth of social media. Now, platforms like Instagram, Facebook, YouTube, and Twitter (X) are big places where people get influenced by what others say. These influencers are people who have built trust within certain groups and use their large following to promote things like lifestyle, beauty, and even medicine [1]. Research shows that these influencers are now more important than traditional ads in shaping what people think about products, especially among younger generations like Gen Z and young adults who depend a lot on social media for advice and reviews. The beauty and over-the-counter (OTC) medicine industries have been greatly affected by influencer marketing. Studies show that people are more likely to buy skincare and beauty products if they're recommended by influencers they follow and trust [1,2]. However, unlike doctors or pharmacists, many influencers don't have formal training in medicine or skin care. This can lead to sharing wrong or incomplete info about products [3]. It's especially worrying when products contain strong active ingredients like salicylic acid, retinol, hydroquinone, niacinamide, or vitamins A, C, and E, which need expert advice to use safely, if these products are used incorrectly or too much, because of bad recommendations, it can cause bad reactions, allergies, or even serious health problems [4-7]. In recent years, the line between entertainment and healthcare communication has become less clear, with influencers acting as both promoters and seen as "experts." The pharmaceutical and cosmetic industries have increasingly worked with influencers to promote topical treatments, supplements, and skincare products. While this has helped increase brand awareness, it raises major ethical, legal, and public health issues. Research shows that people often trust influencers more than scientific evidence when deciding on pharmaceutical products. Because of this, audiences may rely too much on influencer advice without talking to healthcare professionals, which can lead to self-medication and using products in unsafe ways [1,8,9].

Considering these problems, it's important to look at the legal and regulatory issues around influencer-sponsored pharmaceutical advertising. In India, laws like the Drugs and Cosmetics Act (1940), Drugs and Magic Remedies (Objectionable Advertisements) Act (1954), and Consumer Protection Act (2019) control how drugs and cosmetics are advertised and sold [14-16]. Also, the Advertising Standards Council of India (ASCI) Guidelines (2021) and the Information Technology Rules (2021) set ethical standards for influencers and online platforms [17-18]. However, even with these rules in place, enforcement is not strong enough, allowing false or misleading pharmaceutical endorsements to spread widely. This review paper seeks to closely look at how social media marketing affects the promotion of pharmaceutical and cosmetic products, with a focus on the ethical, medical, and legal aspects involved. It points out the risks of false claims made by influencers, the potential harm to people's health, and the importance of better regulations and public awareness to promote safe and reliable information in today's digital world.

Social Media Influencers and Pharmaceutical Products

The fast growth of information technology and the changes in how people live, especially because of lockdowns by governments and organizations to stop the spread of COVID-19, have helped e-commerce become more successful. Instead of going to cinemas, people now mainly watch films on Netflix [1]. Instead of traditional TV channels, social media has become the main way people get entertainment.

Social media includes online platforms and apps like Facebook, Instagram, and YouTube, where users can create, share, and exchange information quickly. Instead of celebrities, social media influencers have become the new role models who can change how their followers think and what they buy [2].

Younger generations, like Gen Z, have always seen social media as a tool for both fun and shopping. Millions of people spend a lot of time on these platforms, and a large part of them are from the younger generation. Sites like Facebook, Instagram, Twitter (X), Pinterest, YouTube, and Mauj are where influencer marketing is growing very quickly [1]. Especially in the cosmetics industry, beauty influencers on social media play an important role in setting trends and affecting buying choices [3]. A study shows that women are more likely to buy cosmetics that are promoted by their favorite influencers. This suggests that influencer marketing is a good way to promote cosmetics and build trust with customers [1].

Influencer marketing has become more popular in recent years. A social media influencer is someone who has built a following in a particular area, has a large audience, and can influence others because of their genuine connection and wide reach. Companies work with these influencers to connect with their target customers, build brand awareness, improve how the brand is seen, and boost profits. On social media platforms, brands team up with influencers to introduce new products or highlight their brand's appeal [2]. In recent years, pharmaceutical and cosmetic companies have started using influencer marketing more often to promote over-the-counter products, skincare items, and health supplements. Especially for Generation Z, social media is a key place where they get information about beauty and wellness products, and influencers are often seen as trusted experts in skincare and self-care [1]. Research from India shows that influencers on sites like Instagram and YouTube have a strong effect on young consumers, shaping their preferences, buying choices, and loyalty to brands. However, this influence is usually based on how trustworthy the influencer seems, rather than on actual professional or medical knowledge [1].

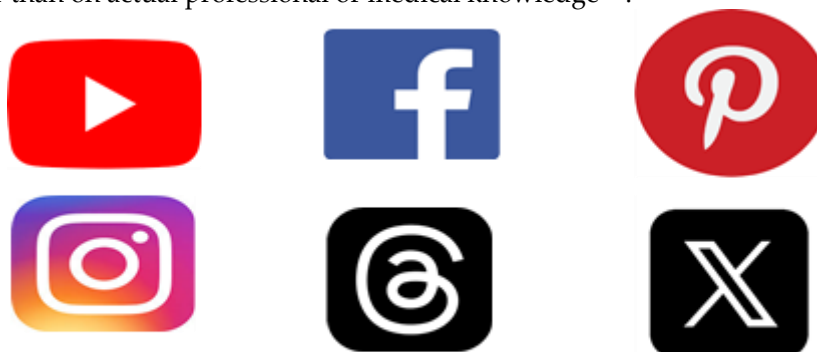


Fig No. 1: social media apps

Influencer marketing can boost brand awareness and connect with consumers, but it also brings up ethical and health issues. Many influencers don't have enough knowledge about medicine or skin care, yet they often promote products with strong ingredients like salicylic acid, retinol, niacinamide, or hydroquinone. These ingredients can be harmful if not used right. Influencers' convincing messages might make people use these products too much or mix them, which can cause bad side effects and wrong information about how safe they are. Social media influencers often talk about skincare products that include ingredients like Niacinamide, salicylic acid, retinol, ascorbic acid (Vitamin C), and Vitamin E. These are used in skin care and dermatology, but how well they work depends on their strength, how they are made, and how they are applied. For example, salicylic acid is safe in small amounts, like up to 2% in store-bought products [5-6], but higher levels can cause skin irritation, peeling, and even toxic effects if absorbed. Retinol, which is a type of Vitamin A, is good for reducing aging signs and treating acne, but using it wrong can lead to dryness, redness, and even birth defects if not used properly [7]

The Impact of Celebrities and Social Media Influencers on Pharmaceutical and Cosmetic Product Promotion

Celebrities and social media influencers both play a big role in shaping how people view products, their attitudes, and what they buy, especially in the pharmaceutical and cosmetic industries. Influencers are good at connecting with people on a personal level, engaging them through interaction, and focusing on specific interests. Celebrities, on the other hand, bring a wide audience and create a sense of aspiration. However, when it comes to promoting products that need expert knowledge or proven clinical results, both celebrities and influencers can sometimes lead to ethical or health-related issues.

Celebrity Support for Cosmetic and Pharmaceutical Promotion

Celebrity endorsements have always been connected with building trust, increasing credibility, and making brands more recognizable. Studies show that how people see advertised products is heavily influenced by a celebrity's popularity, looks, and perceived knowledge, especially in beauty and healthcare [8]. In India, many pharmaceutical and cosmetic companies team up with well-known public figures to increase sales and improve their reputation. When celebrities casually promote medicines or skin care products like vitamin supplements, creams, or fairness creams without knowing what's in them, what they can't be used with, or what side effects they might cause, it becomes ethically questionable. These kinds of casual comments, such as a celebrity saying, "I use this cream every day," make people think the product is safe. According to Menon's doctoral research [9], while celebrity endorsements can attract a lot of attention, in fields like healthcare or medicine, they aren't more effective than endorsements from non-celebrities. The study shows that people trust a product more based on how competent and trustworthy the person and the company seem, rather than just because the person is famous. So, when celebrities use their influence to promote beauty or health products, it can lead to people using these products incorrectly or without proper guidance.

Influencers play a big role in spreading celebrity messages:

In today's digital world. They often refer to or copy what celebrities say in their online posts. For example, when a celebrity like Kriti Sanon or Alia Bhatt talks about a skincare or medicine product in a simple post, influencers might mention something like, "This is the same product used by..." to make it seem more real and trustworthy. A strong marketing loop that boosts consumer persuasion is created through this multi-layered influence chain, which blends the relatability of influencers with the prestige of celebrities. However, influencers often lack expertise in pharmacology and may unknowingly spread incorrect information about dosage, formulation, or contraindications. This can result in improper use, allergic reactions, or adverse drug reactions when it comes to pharmaceutical and cosmetic products.

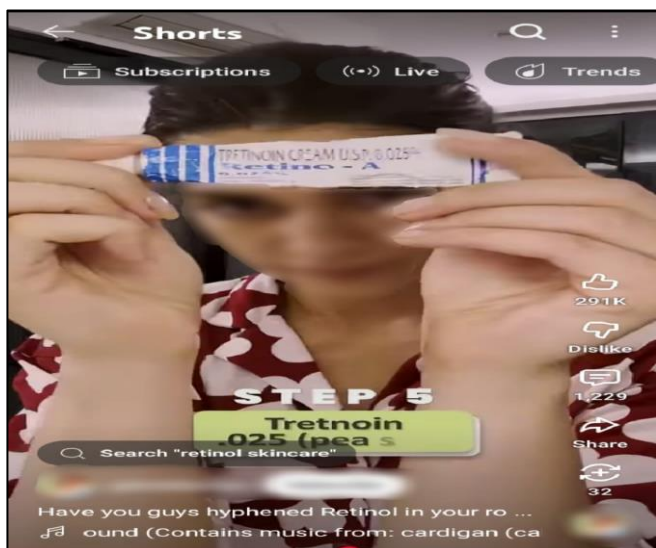


Fig No. 2: Celebrity mentions a skincare or pharmaceutical product in a casual post



Fig No. 3 Influencers promote same skincare product which used by celebrity

The mix of celebrity promotion and influence raises the risk of people using unapproved medicines and beauty products. When viewers keep hearing claims from both celebrities and influencers, those claims get seen as more trustworthy, making it hard to tell the difference between personal experience and medical advice. This lack of control can lead to false information, improper use of products, and unnecessary side effects [9].

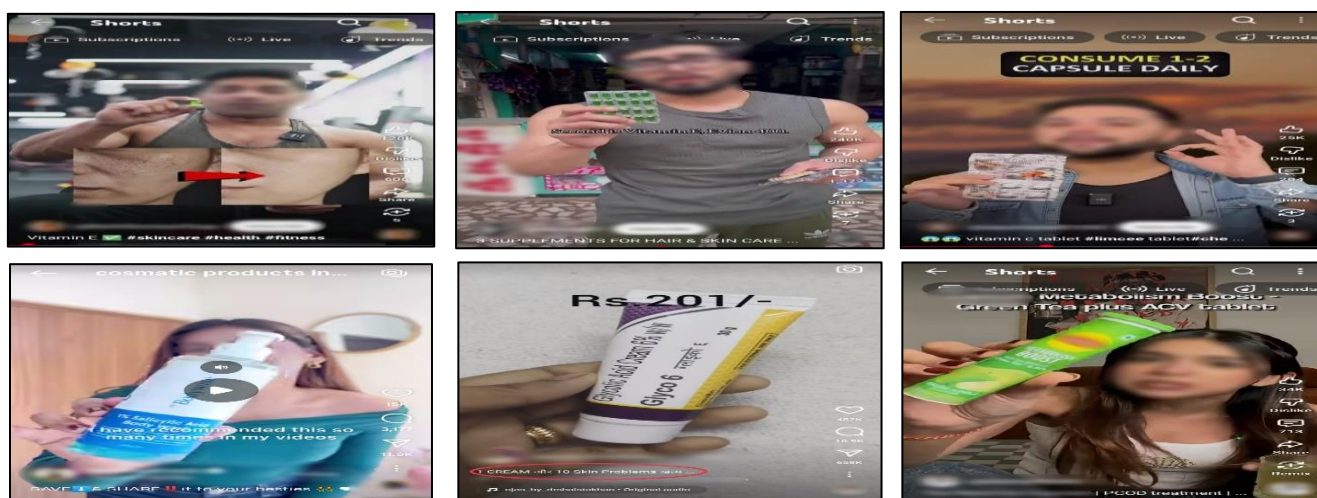


Fig No. 4: Influencers promote Dietary supplements, Tablet for PCOS and creams like Vit E, Vit C, salicylic acid and

Digital Marketing & Consumer Behavior

In today's world, digital media has become a big part of daily life, changing how people talk to each other, decide on things, and buy products. Every industry, including the pharmaceutical sector, is quickly moving towards using digital tools [10]. Now, more and more pharmaceutical companies are using social media and online shopping platforms to promote their products and services. This allows people to get health-related items and information through the internet. To make their brands more known and reach more customers, many companies work with social media influencers. They look for new ways to advertise their products [11]

Digital marketing is an important step for the Indian pharmaceutical industry. Companies are using technology not just to sell products, but also to teach patients, spread awareness about diseases, and help with monitoring health. For example, if a company wants to connect with people who have asthma, they might team up with someone who has asthma themselves. This kind of partnership builds a stronger emotional link with the audience and helps patients with

similar issues feel more connected and trust the brand. This method helps companies build a good reputation and keep customers loyal by using personal and meaningful online communication ^[11].

Pharmaceutical companies use different social media platforms like Facebook, Instagram, WhatsApp, Telegram, and YouTube to reach customers and run digital campaigns. This change to digital marketing is also important for the economy, the Indian pharmaceutical industry is expected to grow by 20% each year for the next five years, according to India Ratings, which is part of Fitch Group ^[12].

Even with new technology and expanding globally, good marketing still relies on four key factors: Product, Price, Place, and Promotion. These are the basics of marketing strategies that focus on customers ^[13]. But unlike old ways of advertising, such as newspapers or TV, social media is a lively and interactive space where customers take an active part in how brands tell their stories. Good reviews from customers can help build a company's reputation, but bad comments can also affect how people see the brand. This back-and-forth communication brings both chances and difficulties for pharmaceutical companies trying to keep ethical

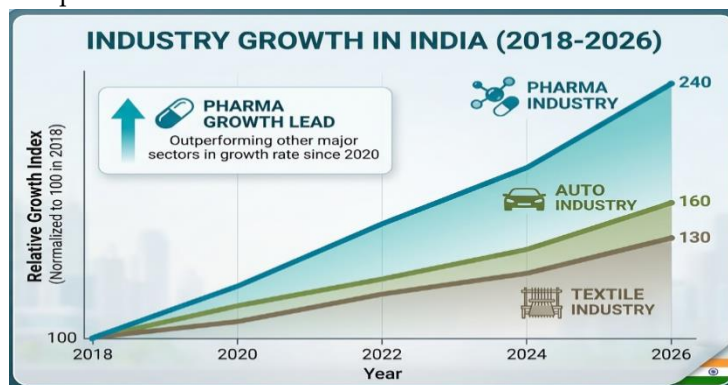


Fig No. 5: growth of pharmaceutical industries India

standards and build trust with customers in the online world ^[13]. In this setting, influencer marketing has emerged as a powerful method for promoting products in various sectors, including beauty, fashion, and pharmaceuticals ^[14].

The main group of people who benefit from these campaigns are modern consumers, especially Generation Z, who were born between the late 1990s and early 2010s. This group is very connected to digital platforms, spending a lot of time on smartphones, computers, and social media. Because of this, they are more likely to respond to influencer marketing that feels genuine, tells heartfelt stories, and includes suggestions from people they trust ^[14].

Additionally, social media influencers are key in shaping how people make buying decisions. Their ads often tap into the emotional, psychological, and social factors that influence choices. They connect with their followers by creating content that feels personal and relatable, especially when it comes to health and beauty topics. For example, skincare has become a big trend among young people looking to prevent issues like acne, pimples, or dark spots. Influencers often share tips about using vitamins like A, C, and E, and creams with ingredients such as niacinamide, retinol, salicylic acid, or hydroquinone. However, many of these influencers don't have enough knowledge about the correct dosages, concentrations, or possible side effects of these products, which can lead to misuse and harmful health effects ^[13].

This shows how effective digital marketing can be in engaging people, but it also shows how it can spread incorrect health information if not handled carefully. The combination of consumer behavior, influencer trust, and brand strategies defines today's pharmaceutical marketing. But it also brings up the need for ethical practices and better education for consumers to ensure safety and informed choices online ^[13].

Analysis of Indian Regulatory Framework

When social media influencers promote pharmaceutical or cosmetic products, several Indian laws and regulations come into play. These laws are designed to prevent false claims, misleading advertising, and endorsements by people who are not qualified to make such claims. Some brands take advantage of these influencers for their own gain, which can negatively affect public health. There are specific Indian laws and Acts that address false advertising, misleading claims, and endorsements related to products that are not properly qualified. These laws and Acts are listed below.



Fig No. 6: Regulatory and Legal Framework

responsible and ensure the claims they make about products are accurate and follow scientific and legal standards, which helps protect people who use these products^[14].

The Drugs and Cosmetics Act (1940) forms the basic regulatory structure for ensuring the safety and quality of pharmaceutical and beauty products in India. Even though the Act was created before the digital era, its rules about advertising, labeling, and quality standards are still fully applicable to promotions made by social media influencers. Important legal sections include Section 17 and 17C, which define misbranded drugs and cosmetics, and Section 18, which prohibits the sale of unapproved or substandard substances. Additionally, Section 29 clearly forbids the use of government laboratory reports in commercial advertising, which is an important rule to stop influencers from using official documents to falsely claim medical authority.

In practice, influencers can be held legally responsible if they promote unapproved products, make unproven therapeutic claims, or fail to disclose paid partnerships. A major concern is the endorsement of products that lead to Adverse Drug Reactions (ADRs). In such cases, influencers may share the legal responsibility with the brand. Under the powers given in Section 33, authorities like the CDSCO (Central Drugs Standard Control Organization), along with ASCI and the CCPA, can take strict enforcement actions to reduce the harm caused by misleading health claims on digital platforms^[14].

2. The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954

The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 is an important law related to this project. It aims to prevent false, exaggerated, or magical claims made in advertising for medicines and treatments. This law is especially relevant today due to the rise of digital marketing, where influencers often promote drugs, beauty products, and herbal items by claiming they work instantly, have miracle effects, or are completely safe without any proof. Sections 3 and 4 of the Act prohibit ads that mislead people about how well a medicine works or call it a "magic cure" for issues like acne, weight gain, diabetes, or sexual health. These types of claims are common in influencer posts, especially for products like fairness creams, detox pills, and skin-lightening items. This law directly connects to the main focus of this project, which is to examine the risks of influencers promoting health and beauty products without proper knowledge. It also highlights the legal responsibility of influencers to avoid making unproven health claims and underscores the need for better enforcement of advertising laws in India to protect public health and prevent the spread of false information^[15].

The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 provides a strong legal framework to stop the spread of misleading health claims and unscientific "miracle" cures. Under this Act, social media posts are considered advertising, which means influencers are directly affected by its strict rules. Section 3 prohibits misleading ads about drugs, while Section 4 specifically stops claims of "magic remedies" – treatments that falsely claim to offer miraculous or instant healing for complex conditions.

1. Drugs and Cosmetics Act, 1940

This Act is closely related to the topic because it governs the production, sale, distribution, and advertising of medicines and beauty products in India. It ensures that all drugs and cosmetics are safe, properly labeled, and do not make false or misleading promises. Influencers often promote products like lotions, supplements, and skincare items without verifying if they are safe, well-made, or officially approved. If an influencer promotes products that are not properly regulated or labeled, such as steroid-based fairness creams, retinol serums, or niacinamide products, they might be violating Sections 17, 17C, and 18 of the Act. These sections prevent misleading branding and false health claims. Therefore, this law offers a clear legal way to identify and stop untrue advertisements for medicines and beauty products on social media. It also shows that influencers must be

Additionally, Section 5 prohibits ads for specific diseases listed in the Act, like chronic endocrine or metabolic disorders, and Section 6 stops the misuse of government reports or official endorsements to promote commercial products. In the digital space, any unverified medical claim or exaggerated testimonial from an influencer is considered an "objectionable advertisement." As a result, both the influencer and their brand can face criminal prosecution and legal action for spreading harmful misinformation that jeopardizes public health and bypasses traditional medical oversight ^[15]

3. Consumer Protection Act, 2019

The Consumer Protection Act, 2019 is closely tied to this project because it establishes rules to deal with misleading and deceptive advertisements. It gives the Central Consumer Protection Authority (CCPA) the power to investigate and punish such ads. Under Section 21, people making untrue, unproven, or exaggerated claims about products can be fined up to 10 lakh rupees and banned for up to a year.

This law is very relevant to this project because many influencers promote products like fairness creams, serums, and supplements without proper knowledge or scientific backing. These promotions can lead to incorrect information and misuse of products, which might result in Adverse Drug Reactions (ADRs) in users. The Act also covers digital ads, which means influencer marketing is now under the legal system and must follow rules. This helps create a strong system that protects consumer rights, which is central to the project's aim of educating people about ethical influencer behavior, safe product use, and honest communication in social media marketing ^[16].

Provisions Relevant to Influencer Promotions

1. Section 2(28) – Definition of Misleading Advertisement
2. Section 21 – Power of Central Consumer Protection Authority (CCPA)
3. Section 21(2) – Penalties for Misleading Endorsements
4. Section 89 – Punishment for False or Misleading Advertisement
5. Consumer Rights under the Act:
 - **Right to Safety** – Protection from hazardous goods/services.
 - **Right to Information** – True and complete product information.
 - **Right to Choose** – Freedom to make informed decisions.
 - **Right to be Heard** – Legal recourse through CCPA.
 - **Right to Seek Redressal** – Compensation for harm or injury.
 - **Right to Consumer Education** – Awareness about safe consumption.

Application to Social Media Influencers, This Act directly covers digital promotions and influencer endorsements; Influencers must:

- Verify the authenticity of all claims before endorsement.
- Disclose paid partnerships (e.g., *ad*, *sponsored*).
- Avoid false or exaggerated claims (like "clinically tested" or "dermatologist approved") unless backed by evidence.

If they fail to do so, both influencer and company are equally liable for misleading consumers ^[16].

4. Advertising Standards Council of India, 2021

The ASCI Guidelines for Influencer Advertising in Digital Media (2021) are relevant to this project because they are India's first official set of rules to regulate influencer ads on social media. These rules focus on transparency, honesty, and clarity in product promotion. Influencers must clearly mark any paid promotions using tags like #ad, #sponsored, or #collaboration. They also need to ensure that all product claims are accurate and backed up by proof. This is especially important for ads related to medicines and beauty products, where influencers often recommend items with active ingredients like niacinamide, retinol, salicylic acid, and hydroquinone. However, many influencers might not fully understand how to use these products, their possible side effects, or when they should not be used.

The ASCI guidelines align well with this project's goal of encouraging ethical behavior from influencers and promoting awareness among consumers. These guidelines require influencers to clearly state when they're being paid to promote a product and to verify the truthfulness of their claims before endorsing a product. This helps prevent false health statements, reduces the spread of incorrect information, and protects consumers from using unsafe products or experiencing adverse drug reactions. As a result, these guidelines play an important role in managing influencer

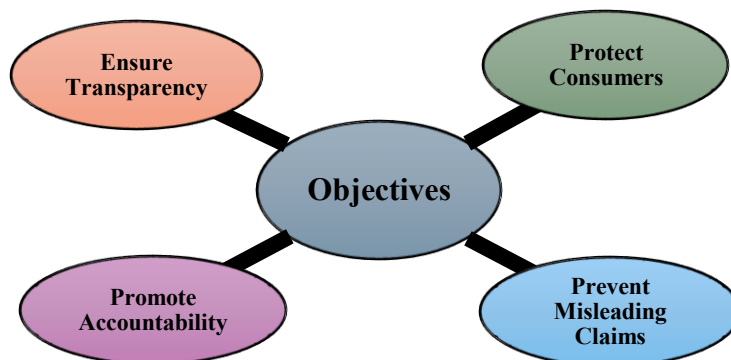


Fig No. 7: Objectives of ASCI

marketing in India, working hand in hand with laws like the Consumer Protection Act (2019) and the Drugs and Magic Remedies Act (1954) [17].

Provisions of the ASCI Guidelines

1. Mandatory Disclosure of Paid Promotions
2. Verification and Accuracy of Claims
3. Restrictions on Certain Categories
4. Accountability
5. Use of Filters and Digital Enhancement

5. Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021

The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 are important for this project because they create a framework for managing online platforms such as Instagram, YouTube, Facebook, and Twitter. These platforms are often used by influencers to promote pharmaceutical and cosmetic products. These rules make both social media platforms and content creators responsible for ensuring the information they share is accurate and legal. According to Rule 3(1)(b)(vii), platforms must block users from posting or spreading false, misleading, or harmful health information. Rule 3(2) also requires platforms to have a process for people to report misleading ads and have them removed.

In this project, these rules help by making it easier to report and remove misleading or unsafe promotional content, such as claims like "instant fairness," "cure for acne," or "herbal immunity boosters." They also ensure that social media companies act quickly, within 36 hours, when content violates Indian laws like the Drugs and Magic Remedies Act (1954) or the Consumer Protection Act (2019). As a result, these rules support the project's goal of promoting digital responsibility, ethical advertising, and consumer safety in influencer marketing for pharmaceutical and cosmetic products [18].

Provisions Relevant to Influencer Marketing

- **Rule 3(1)** – Due Diligence by Intermediaries
- **Rule 4(1)** – Additional Due Diligence for Significant Social Media Intermediaries
- **Rule 3(2)** – Content Removal and Complaint Redressal
- **Rule 3(1)(b)(vii)** – Prohibition of Misleading Information
- **Rule 4A** – Self-Regulation of Digital Media

6. Bharatiya Nyaya Sanhita (BNS), 2023

The Bharatiya Nyaya Sanhita (BNS), 2023 comes into effect on 1 July 2024, replacing the Indian Penal Code (IPC) and significantly modernizing criminal accountability for the digital and influencer-driven era. While civil regulations like the Consumer Protection Act focus on consumer compensation, the BNS introduces strict criminal liability for deceptive marketing that results in financial loss or health crises, such as Adverse Drug Reactions (ADRs).

Detailed BNS Provisions Relevant to Influencer Marketing

- **Cheating & Fraud (Sec. 318 & 319):** Penalizes the use of deceptive claims like "miracle results" to induce followers into buying ineffective products.
- **Forgery (Sec. 335 & 338):** Targets the use of fake certifications, manipulated lab reports, or fabricated expert testimonials to build product credibility.
- **Public Health Risks (Sec. 270 & 271):** Covers negligent or intentional acts, such as promoting unverified medical treatments, that endanger public safety.
- **Drug Adulteration (Sec. 276 & 277):** Punishes the promotion of "herbal" or health products that are secretly spiked with harmful substances like steroids.
- **Negligent Handling (Sec. 286):** Triggered when influencers endorse products containing hazardous ingredients (e.g., high-strength acids) without providing necessary safety warnings.

By integrating the BNS (2023), this project shows that promoting health products without scientific evidence is a punishable offense, not just an ethical issue. If such promotions cause harm, the influencer, brand, and distributor can be held jointly liable. Together with the Consumer Protection Act (2019) and the Drugs and Cosmetics Act (1940), it ensures strong legal protection of public health in the digital market [19].

Aim and Objectives

Aim – To survey the Social Media Influencers and Pharmaceutical Products: Risks, Misuse, and Regulatory Challenges

Objectives

1. To understand how much people, know about using pharmaceutical and cosmetic products safely as promoted on social media.
 2. To check how people, view social media influencers compared to doctors and other trusted sources when it comes to health information.
 3. To find out the common dangers and side effects from using skin and beauty products like retinol, steroids, and fairness creams incorrectly.
 4. To look at how influencer recommendations, affect people's choices and buying habits.
 5. To look at real cases where people used the wrong products because of what influencers or friends told them.
- To see what happens when people ignore professional advice and depend on unverified information for health decisions.

Research Methodology

1. **Study design (survey-based study):** The present study is a cross-sectional, descriptive study conducted to evaluate the impact of social media influencers on consumer behavior related to pharmaceutical and cosmetic products. The study also aims to assess awareness regarding adverse drug reactions (ADRs) and risks associated with product misuse.
2. **Population Study:** This study mainly focuses on the population who regularly use social media and purchase the cosmetics and medicinal products (contain Pharmaceutical ingredients) in the influence of social media influencers.
3. **Sample size:** The target sample size was approximately 200; however, a total of 172 valid responses were collected.
4. **Sampling Method:** To execute the survey, Convenience sampling method was used by the selection of easily available peoples.
5. **Data Collection Tool:** For the data collection from peoples we used a structured questionnaire which was designed by using Google Forms (It is online form)
6. **Inclusion criteria:** The inclusion criteria (who is eligible) for survey participation is given bellow.
 - Individuals using Social media
 - Individuals who purchase products in the influence
 - Students, office-staffs, (anyone above the age of 12)

7. **Exclusion Criteria:** The exclusion criteria (who is not eligible) for survey participation is given below.

- Individual who not using social media
- Incomplete filled survey form
- Below the age 12

8. **Data Collection Procedure** The questionnaire was distributed through online platforms such as WhatsApp, E-mail, Telegram and other social media. Responses were collected over a defined period and recorded automatically.

9. **Data Analysis:** Data was analyzed using descriptive statistics. Results were expressed in percentages and represented using graphs and charts.

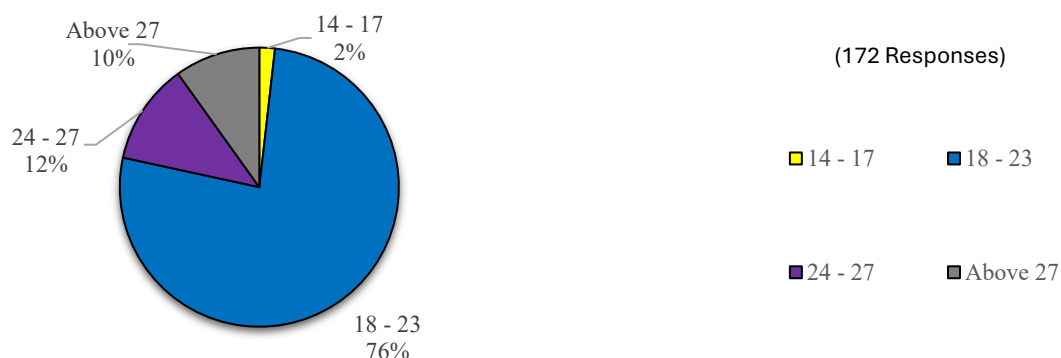
10. **Ethical Considerations:** The ethical consideration of the survey is given below.

- Participation was voluntary, which means candidate participate in survey by their free choice, willingly, and without being forced or paid.
- No personal data collected like income, profession.
- Responses kept confidential (their names, e-mails, numbers and responses never disclosed to anyone)

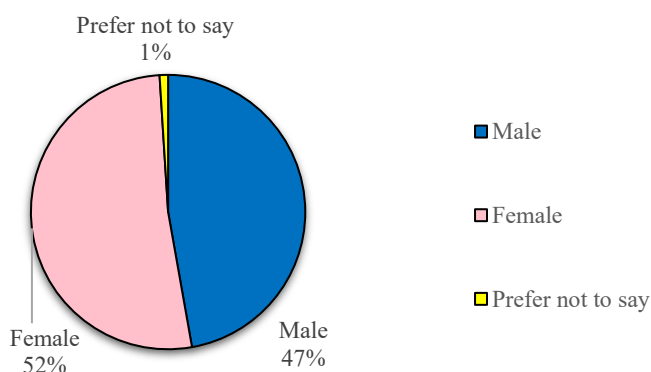
Survey Outcome: The survey provided insights into consumer behavior, influence of social media, and awareness regarding adverse effects of products.

Survey Results and Analysis

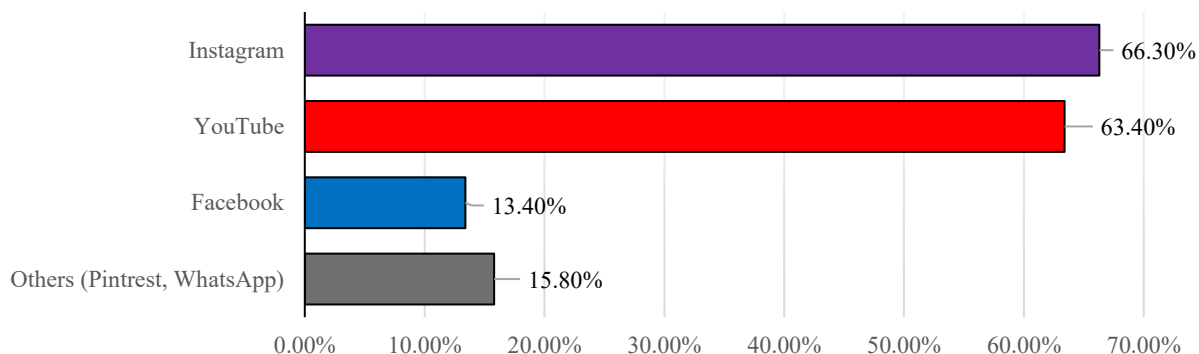
Q1. Age Group



Q2. Gender

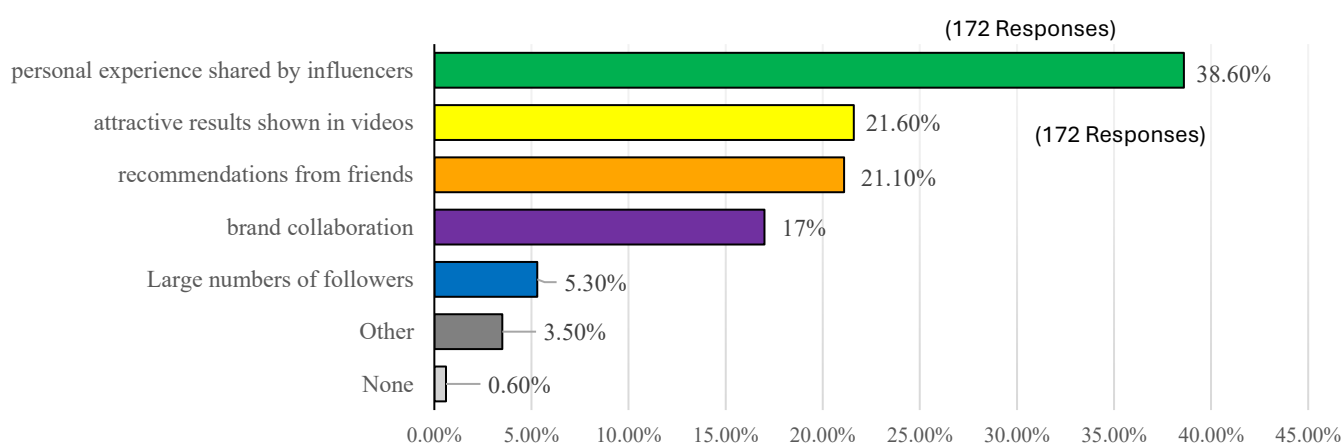


Q3 Which social media platforms do you use most frequently?

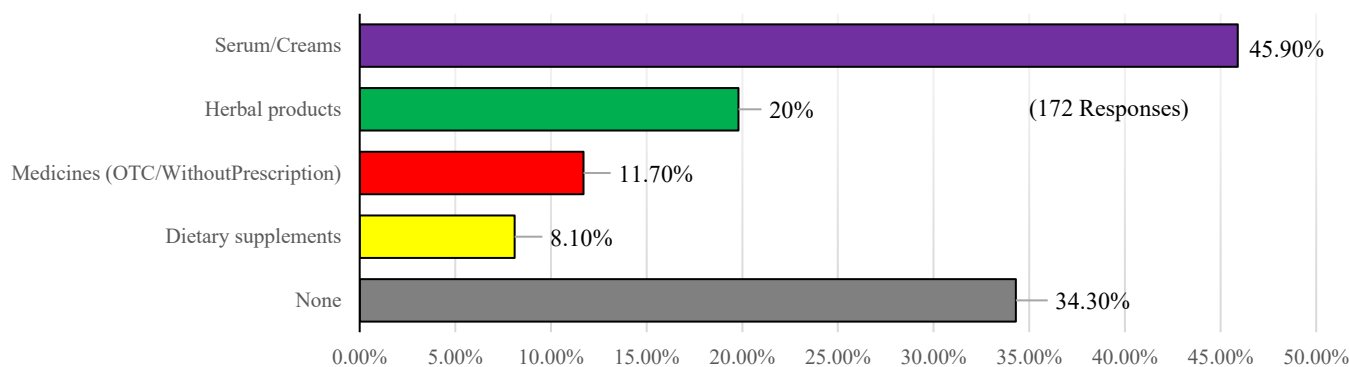


Q4. Have you ever purchased a skincare, cosmetic, or health product recommended by a social media influencer?

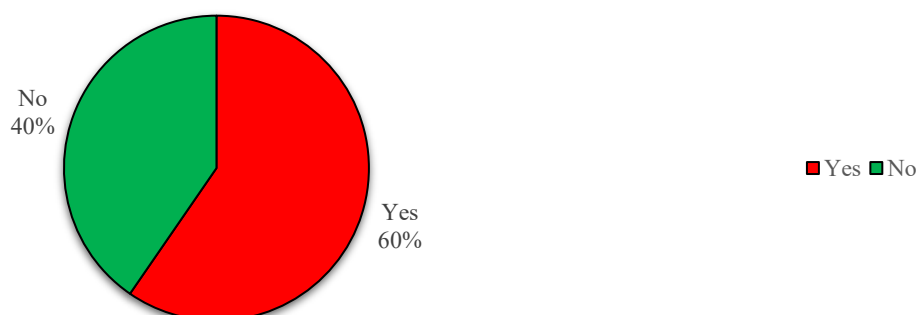
Q5. What influences are decision to trust an influencer's recommendations?

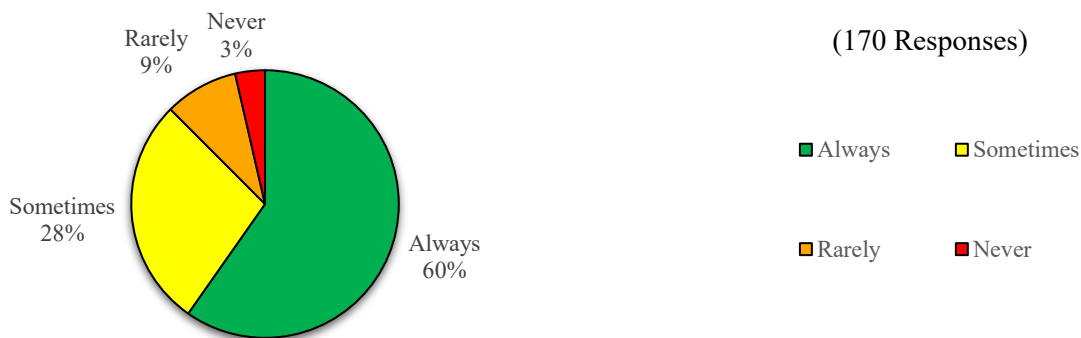


Q6. What type of products have you purchased based on influencer recommendations?

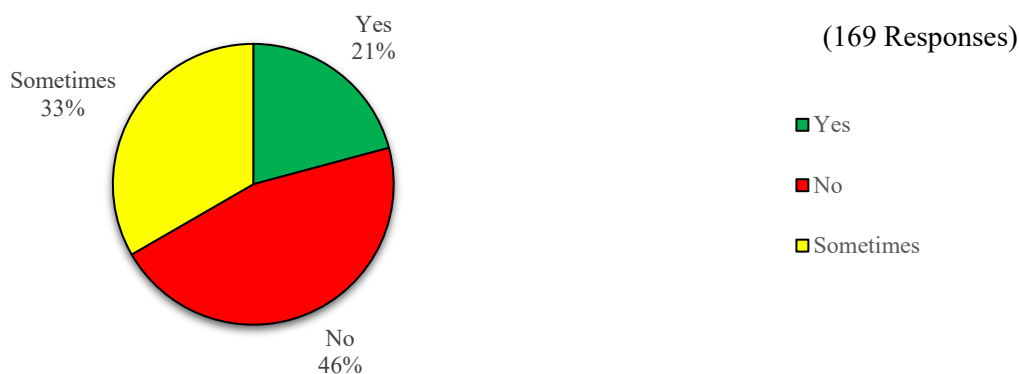


Q7. Before using such products, do you check the ingredients or drug information?

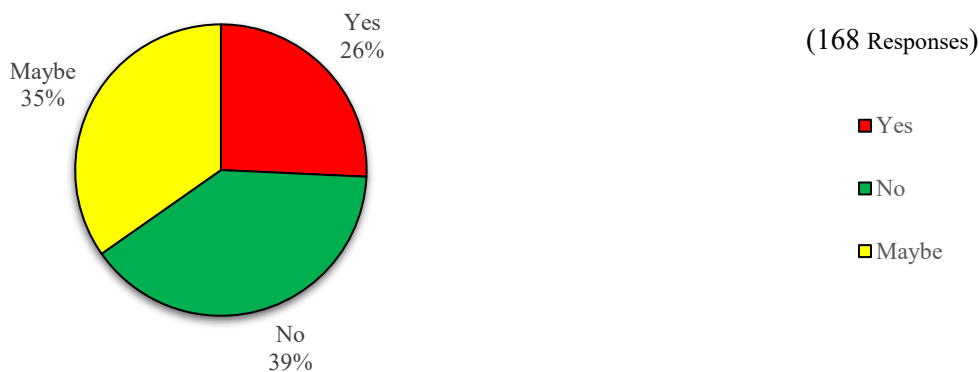




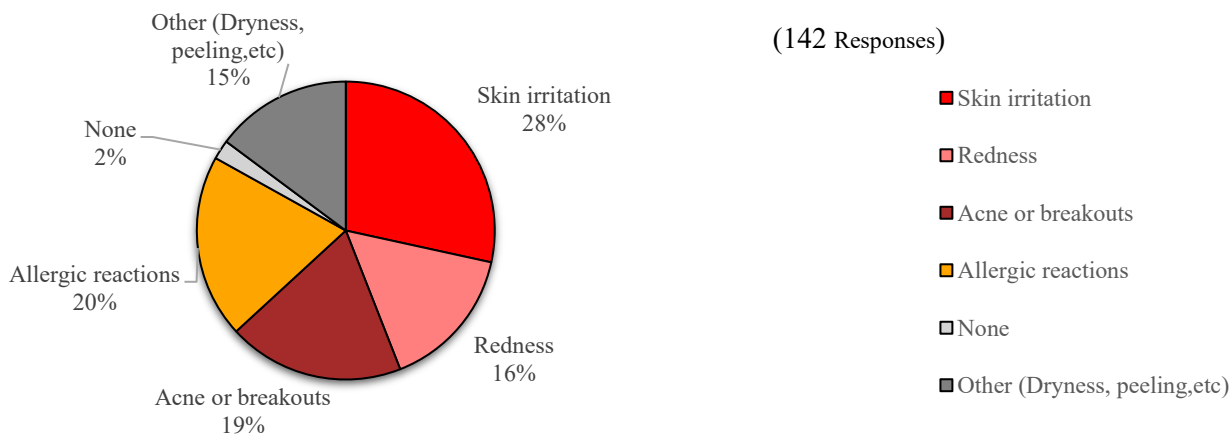
Q8. Do influencers usually mention possible side effects or adverse drug reactions?



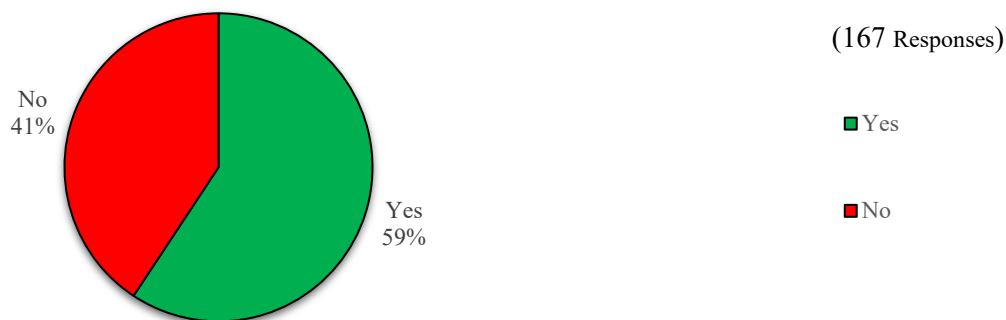
Q9. Have you ever experienced any side effects after using an influencer-promoted product?



Q10. If yes, what type of side effects did you experience?



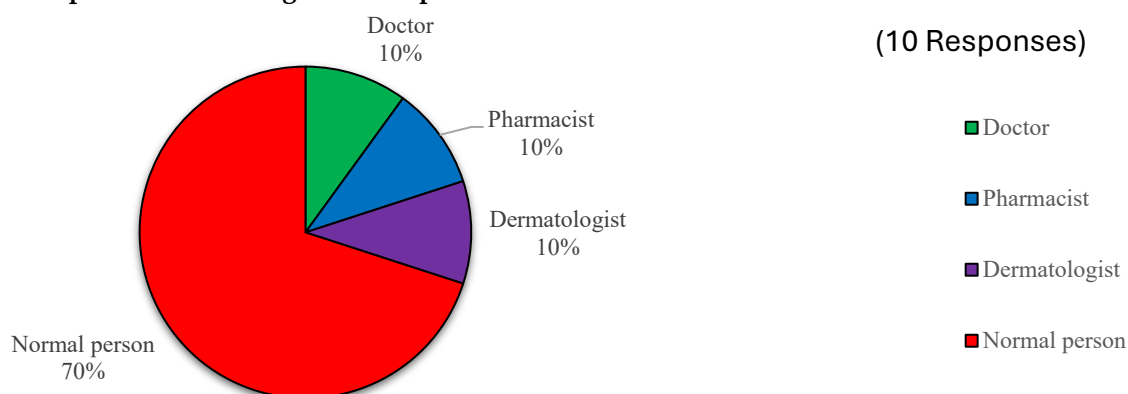
Q11. Would you use a digital platform that verifies influencer-promoted products and provides scientifically validated safety information



Q12. Do Let us know, if you have any suggestions for us.

- I think that rather than advertising products provided by the company, one should advertise products that one has experienced first-hand
- Just don't buy blindly any medication based on influencer marketing
- When you advertising any product to others, one should first disclose its potential side effects.
- Social media does not show the side effects or adverse effects of the product. They should show the proper ways of using the product.
- I'm not interested for influencer & digital or online health related products sale, I am trusted on only physicians and Pharmacist by physically sale and proper information about drug also proper doses of the drugs.
- Don't trust anything you saw online.
- Just don't buy blindly any medication based on influencer marketing

Q13. The influencer promotes the drug/cosmetic product is a (Focused Observation on Influencer Credibility)



Results & Discussion

Demographic Distribution: The majority of people surveyed were aged 18 to 23, making up 77.1% of the group. This means the study mostly includes young adults who are very active on social media. The gender split was almost equal, with 52.4% being female and 47.1% male, showing that both genders were equally involved. This suggests that the data reflects the main digital consumer group, which is also the key audience for influencer marketing.

Social Media Usage Pattern: The survey results show that Instagram (66.3%) and YouTube (63.7%) are the most commonly used platforms. These are also the primary channels for influencer marketing, which explains why they have a big impact on what people buy.

Influence of Social Media on Purchasing Behavior: A large number of respondents (59.4%) said they buy products recommended by influencers, Additionally:

- Some of the most popular items they bought were skincare products (45.9%)
- followed by herbal products (19.4%) and over-the-counter medicines (11.7%)

This shows that influencer marketing strongly affects consumer buying choices, especially in the skincare area.

Factors Influencing Trust in Influencers: The most important factor influencing trust was Personal experience shared by influencers (38.5%), Other factors included:

- seeing good results in videos (21.6%)
- getting recommendations from friends (21.1%)

This suggests that emotional and visual content has a bigger impact than scientific evidence.

Awareness Regarding Product Information: Around 60% of respondents always check product ingredients, but 28% only check sometimes Even though people are aware of this, their habits aren't consistent, which means they might not fully understand the information they find.

Disclosure of Side Effects by Influencers: A major concern was that 45.5% of people said influencers do not mention side effects, and only 21% said they did. This indicates a lack of transparency in influencer marketing, which could lead to misleading consumers.

Experience of Side Effects: According to the survey, 25.3% of respondents experienced side effects, and 34.9% were unsure whether they had them. This suggests that a lot of people are affected, but they may not know how to recognize adverse effects or drug reactions.

Types of Side Effects Observed: The most common side effects faced by the respondents were given below.

- Skin irritation (27.9%)
- Acne/breakouts (20%)
- Allergic reactions (19.3%)
- Redness (15.7%)

These findings match what dermatologists have found before. For example, retinol can cause irritation [24], salicylic acid can lead to dryness or peeling [29], and vitamin-based products can make skin more sensitive [28]

Need for a Verified Information Platform: 59.6% of respondents said they would like to use a platform that provides verified safety information. This clearly shows that there's a strong need for a separate website or app that gives accurate, well-researched details about products, including their ingredients, strength, possible side effects, how they interact with other drugs, and whether they're safe for specific skin types. For medicines or tablets, people would also like to know the recommended daily dose

Discussion: The study clearly shows that social media influencers have a big effect on how people make buying decisions, especially among younger people. Most of the respondents depend on influencer recommendations when buying skincare and health products. However, this influence isn't backed by enough scientific knowledge or safety awareness. One of the most important findings was that influencers don't always tell people about the side effects of the products they promote. Nearly half of the respondents said they weren't told about these effects, showing a big gap between how products are advertised and how safe they really are. Also, although many people say they check ingredients, their actions aren't consistent, and they may not understand them well, which can lead to using products in the wrong way. People are experiencing real problems like skin irritation, breakouts, and allergic reactions, which show the dangers of using products without proper information. These results match what dermatologists have found before, which is that using active ingredients incorrectly can cause harm. Another key point is that a strong majority (59.6%) are eager to use a digital platform that has been scientifically tested and is easy to use. This shows there's a clear need for a reliable, user-friendly way to get accurate information. This supports the idea that your proposed system could be a real and useful solution to help connect influencer marketing with safe consumer choices.

Consumer Suggestions and Perceptions: In response to an open question about suggestions, several respondents raised key concerns about influencer marketing and product safety. A common theme was the lack of trust in products promoted by influencers, especially with pharmaceutical and cosmetic items.

Many participants emphasized that products should only be promoted after personal experience, and influencers should clearly mention any possible side effects. Some respondents said people should not buy medications based on online recommendations and should instead consult healthcare professionals like doctors and pharmacists. Others pointed out that social media often only shows positive results while ignoring side effects and proper usage instructions. This shows that consumers are becoming more aware of the risks of unverified digital promotions. These insights further support the quantitative results of the study and highlight the need for better transparency, responsible influencer behavior, and access to reliable drug information.

Selected Responses:

- “Do not buy blindly any medication based on influencer marketing.”
- “Influencers should disclose side effects before promoting products.”
- “Social media shows benefits but not risks.”
- “I trust doctors and pharmacists more than influencers.”

Informal Observation on Influencer Credibility: During the data collection process, an informal observation was made among a small group of participants (n=10) to understand perceptions regarding influencer qualifications. The majority of respondents indicated that influencers promoting pharmaceutical and cosmetic products are generally non-medical individuals without professional qualifications. Although this observation is limited in scope, it provides insight into consumer awareness, suggesting that users recognize the lack of medical expertise among influencers but may still rely on their recommendations

Case-Based Analysis

A. Case-Based Analysis of Misleading Promotion of a Dietary Supplement for PCOS Management

This case shows how dangerous it can be when people don't follow medical advice, companies use misleading marketing, and fake science spreads on social media. A well-known influencer with 4 million followers turned down a doctor's advice, which focused on simple, healthy habits like exercising, eating right, quitting smoking, and getting enough sleep. Instead, they promoted a supplement made with lysine, green tea extract, and apple cider vinegar as a "cure" for PCOS. They didn't clearly say it was an advertisement, which is required by law, and claimed the product could get rid of PCOS symptoms and the condition itself without going to a doctor.

The science doesn't back this up, PCOS is a long-term hormone problem that needs a mix of medicine and lifestyle changes to avoid serious issues like high blood sugar and trouble getting pregnant. Studies show that lysine, which is a type of protein, isn't proven to treat or cure PCOS.^[20] This is a big problem for public health. As more young women in India are getting PCOS, this kind of false information could make them avoid real medical care and try unproven treatments, which might make their symptoms worse or cause harmful side effects.^[21]

B. Case-Based Analysis of Misuse of Topical Steroid Combination Following Non-Prescription Recommendation

This real-life case from a rural Indian setting illustrates the significant medical and public health dangers of peer-to-peer medication sharing. After a woman successfully treated a skin condition using a prescribed steroid-based combination cream, she recommended the same medication to a friend who had not undergone a medical consultation. Although the friend initially experienced a visible improvement in her skin, continued and unsupervised application eventually resulted in severe Adverse Drug Reactions (ADRs) and skin damage.

From a scientific perspective, the medication involved is a potent combination drug containing a strong topical corticosteroid, an antifungal, and an antibacterial agent. Such formulations are strictly designed for short-term, targeted

therapy under professional supervision. When used inappropriately or for extended periods, these steroids can cause skin atrophy (thinning of the skin), persistent redness, irritation, and steroid-induced acne. Furthermore, improper use often leads to a "rebound" effect, where the original skin condition returns with significantly higher intensity once the medication is stopped. [22].

This case highlights a pervasive public health crisis in rural and semi-urban areas, where the sharing of prescription drugs is a common but hazardous practice. The ease of obtaining these creams over the counter, combined with a lack of awareness regarding drug safety, fuels a cycle of self-medication. As dermatological research indicates, the misuse of topical steroids is a widespread problem in India that often leads to both local and systemic side effects, emphasizing the urgent need for stricter regulation and consumer education to prevent permanent skin damage. [23]

Classification of Benefits, Risks and ADRs

Retinol (in form of Cream/serums)

Retinol is a strong skincare ingredient that works well for oily skin types, but it needs to be used carefully on dry or sensitive skin, only starting at a very low concentration [24,28,29]. The safest concentration range is between 0.5% and 2.5%, and it's best to start at the lower end and apply it only at night [26,31]. When used correctly, retinol can improve skin texture, brighten the complexion, and help reduce acne, fine lines, and comedolytics like blackheads and whiteheads [25]. However, common side effects may include redness (erythema), dryness (xerosis), peeling (desquamation), and some irritation [24,32]. If misused, retinol could lead to more serious Adverse Drug Reactions (ADRs), such as skin barrier damage, increased sensitivity to the sun, sunburn, hyperpigmentation, or rare allergic reactions [25]. When combining retinol with other products, it's safe to use with Niacinamide (Vitamin B3), moisturizers like Ceramides or Hyaluronic Acid, sunscreen, and Hydroquinone [29]. However, it's not safe to mix retinol with Salicylic acid, Benzoyl peroxide, or AHAs (such as Glycolic acid), as they can cause significant irritation [29]. While retinol and Vitamin C can be used together, it's important to do so carefully to avoid damaging the skin or making the ingredients less effective [29]

Niacinamide (in form of Cream/serums)

Niacinamide (Vitamin B3) is a versatile ingredient particularly suited for oily skin types [29]. However, it should be used cautiously on dry or sensitive skin, and generally isn't ideal for sensitive skin unless started at a low concentration. The ideal concentration for safety and effectiveness ranges between 2% and 5%, though up to 10% is acceptable. Concentrations higher than 10% can increase the risk of skin irritation significantly [30]. When applied correctly, niacinamide helps strengthen the skin barrier, reduce acne and inflammation, brighten skin tone, and calm redness [30]. Although it is generally mild, common side effects may include slight redness (erythema), irritation, itching, and a tingling or burning sensation [30]. High concentrations can cause more serious Adverse Drug Reactions (ADRs), such as severe irritation, rare flushing, or allergic reactions. Users are advised to avoid overuse and high concentrations unless guided by a healthcare professional [30]. Niacinamide works well with other active ingredients, making it a great addition to most skincare routines. It's considered safe to use with retinol moisturizers like Ceramides or Hyaluronic Acid [29], moisturizers like Ceramides or Hyaluronic Acid [32], and Benzoyl peroxide [32]. It can also be combined effectively with salicylic acid for a single application [29]. However, the combination of niacinamide and Vitamin C should be used carefully and under specific conditions to ensure the ingredients remain stable and don't damage the skin [29,32]

Vitamin C - Ascorbic Acid (in form of Cream/serums)

Vitamin C, or ascorbic acid, is a powerful antioxidant that works well for oily skin. However, those with dry skin should use it with a moisturizer, and sensitive skin should use it at lower concentrations to avoid irritation. For topical use, a concentration of 10% to 20% is ideal. Using more than 20% can increase the risk of skin irritation [30,31]. Oral supplements are available, but it's important to avoid daily use of 500mg tablets due to the risk of kidney stones [30,31]. The main benefits of Vitamin C include strong antioxidant protection, collagen stimulation for anti-aging, skin brightening, and overall skin texture improvement [33]. Despite its benefits, common side effects may include mild redness (erythema),

tingling, irritation, or dryness [31,35]. Misuse or high doses can lead to more serious Adverse Drug Reactions (ADRs), such as severe skin irritation, rare photosensitivity, or allergic contact dermatitis [31,35]. When using Vitamin C, it's important to combine it carefully with other ingredients. It's safe and effective when paired with sunscreen, Vitamin E (Tocopherol), or Ferulic Acid. It can also be safely combined with Niacinamide and moisturizers like Ceramides or Hyaluronic Acid. However, combining Vitamin C with AHAs (Glycolic or Lactic Acid) or Benzoyl Peroxide can be risky due to the potential for irritation and ingredient instability. When used with Niacinamide or Retinol, caution is needed, and it should only be done under specific conditions to protect the skin barrier [30,31]

Vitamin E - Tocopherol (in form of Cream/serums)

Vitamin E, specifically in the form of Tocopherol, is an excellent therapeutic option for individuals with dry skin due to its moisturizing properties. However, it should be used cautiously on acne-prone skin as it can be comedogenic. For oily skin types, it may lead to a greasy feeling and potentially clog pores. A safe and ideal topical concentration generally ranges from 0.5% to 5%, with the risk of irritation significantly increasing above 20%. Regarding oral intake, there is a critical medical warning: daily consumption of 500mg tablets should be avoided, as it has been associated with an increased risk of cancer, heart disease, and diabetes [34]. The main benefits of Vitamin E include strong antioxidant protection, skin barrier repair, faster wound healing, and anti-aging effects [35]. Despite these advantages, common side effects such as redness (erythema), mild irritation, and a greasy texture are often reported, more severe Adverse Drug Reactions (ADRs) can occur, especially allergic contact dermatitis, severe irritation at high doses, and the development of acne due to its comedogenic nature [34]. Therefore, it is advisable not to overuse the product without professional guidance. In terms of ingredient synergy, Vitamin E is safe and effective when combined with Vitamin C, Ferulic Acid, Sunscreen, and Niacinamide. It also works well with moisturizers like Hyaluronic Acid and Ceramides to enhance hydration. However, caution is needed when using Vitamin E with Retinol. Furthermore, it is considered risky to combine Vitamin E with heavy oils if you have acne-prone skin or to use high concentrations of the vitamin alongside occlusive products, as this may worsen pore-clogging and irritation.

Salicylic Acid (in form of Cream/Facewash)

Salicylic Acid is a highly effective beta-hydroxy acid (BHA) that is ideal for oily and acne-prone skin due to its oil-soluble nature.

However, it may increase dryness in dry skin types and carries a high risk of irritation for sensitive skin. For daily acne management, a concentration of 0.5% to 2% is safe for over-the-counter use [29]. Higher concentrations, ranging from 20% to 30%, are used for chemical peels and should only be administered by a medical professional. The main benefits of Salicylic Acid include the treatment of active acne, oil control, reduction of hyperpigmentation, and its keratolytic effect, which helps in exfoliating dead skin cells and dirt [30,31]. Despite its efficacy, common side effects such as dryness, peeling, redness, and a temporary burning sensation are frequently experienced more serious Adverse Drug Reactions (ADRs) can include irritant dermatitis and allergic reactions. A rare but critical systemic concern is salicylism (salicylate toxicity), making it important that users do not overuse the product without professional advice [29]. In a skincare routine, Salicylic Acid is safe to pair with Niacinamide, moisturizers containing Hyaluronic Acid or Ceramides, sunscreens, and gentle cleansers [32]. However, caution is needed when combining it with Retinol, Vitamin C, or Benzoyl Peroxide, as these combinations may increase skin sensitivity. While it is generally advisable to avoid mixing Salicylic Acid with other AHAs like Glycolic or Lactic Acid, some formulations may be suitable for sensitive skin under specific conditions [31]. Finally, it is strongly advised to avoid using high concentrations of Salicylic Acid alongside multiple other actives or physical scrubs, as these combinations significantly raise the risk of skin barrier damage.

Prevention Strategies

1. Public Awareness and Education

- In country like Indian which is largest market in the world, where due to lack of awareness peoples purchase Pharmaceutical creams/medicines in the influence of social media influencers.
- To make peoples aware about the side effects and ADRs of this pharmaceutical creams/medicines the government needs to conduct the awareness campaigns in school, colleges and also on social media.
- Provide education about safe use, side effects and there ADRs.

2. Encouraging Ingredient Awareness

- The core idea of encouragement about ingredient awareness is Consumers should be encouraged to verify product ingredients and understand their effects before use.
- If consumer check the label properly and check about the ingredients online platforms, then there is chances that consumer avoids the side effects of the product.

3. Responsible Influencer Marketing

- Based on survey results there are 45% responders reported that influencers don't mention the side effects about the drug/creams.
- To make peoples aware about side effects influencers should follow ethical guidelines to avoid harm to their audience
- Influencers should avoid false claims about product and also add a disclaimer in there contain.

4. Strengthening Regulatory Enforcement

- The regulatory authorities of India
 - For drugs/cosmetics is Central Drug Standard Control Organization (CDSCO)
 - For advertisement regulation Advertising Standards Council of India, 2021 (ASCI)
 - And for cyber surveillance Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021
- These regulatory authorities are available in India but due to weak enforcement and lack of awareness peoples still don't know what to do.
- Regulatory authorities should strengthen monitoring of digital advertisements to prevent misleading promotions
- If they able to take strict action on this type of misinformation like misleading ads, false claim than consumer safety will increase.

5. Promotion of Doctor Consultation

- Now days people Trusts more on social media influencer rather doctors
- This will lead to them for Self-use of Pharmaceuticals products without proper knowledge of the product.
- To overcome this problem peoples should encourage for Dermatologist consultation especially before using the products which active pharmaceutical ingredients.

6. Development of Verified Digital Platforms

- Development of a scientifically validated digital platform can help consumers access reliable information and make informed decisions.
- According to results were found that 59.6% want such platform (website/app) which will provide not only the drug/ingredients information but also about its side effects, ADRs, and Combinations in easily understandable language for non-medical background person.
- Also with disclaimer – This platform is for informational purposes only and does not replace medical consultation.

7. Safe Usage Guidelines

- Before using any type of creams, serums, tablets and supplements the consumer needs to understand/Educate about that product.
- They need to follow some guidelines for using such as given below.
 - Purchase according to you skin type
 - Always Start with low dose
 - Avoid mixing strong active ingredients
 - Before using on face firstly do Patch testing on hand

Avoid using high concentration before consultation of health professional

Conclusion

The study shows how much social media influencers affect the buying decisions of young people, especially those aged 18 to 23. Most people who were surveyed said they bought skincare and health products because of the recommendations of influencers, showing how influential digital marketing is in the pharmaceutical and beauty industries. However, the study also found serious issues when it comes to consumer safety. Many people reported that influencers don't clearly explain the possible side effects of the products they promote. Also, a lot of those who used the products said they had problems like skin irritation, breakouts, and allergic reactions. This suggests that influencer marketing often lacks scientific evidence and can lead people to use products incorrectly.

Even though some people try to look up product details, they don't fully understand the ingredients. This lack of knowledge leads to the wrong use of products, which increases the risk of harmful effects. It shows the need for better education and awareness around the safe use of products. The study also found that there is a strong desire for a trustworthy, science-backed digital platform. Most people would be willing to use such a tool. This suggests that creating such a platform is not only possible but also necessary. It could provide accurate information on drug safety, side effects, and correct usage.

In short, there is a big gap between what influencers promote and what is safe for consumers. To fix this, we need better awareness campaigns, more responsible marketing, stricter rules, and new technology solutions. These steps can help lower health risks and make consumers more informed when making choices.

Future Scopes

1. **Expansion of Survey to Larger Population:** The current study is limited to a college-level sample. Future research can include a wider range of age groups and both rural and urban populations. Increasing the sample size will make the results more reliable and applicable to a larger audience.
2. **Inclusion of Clinical and Dermatological Data:** Future studies can include real clinical cases and work with dermatologists. This will help establish a direct link between influencer-promoted products and actual adverse drug reactions (ADRs). This will make the research more scientifically valid.
3. **Development of Advanced Digital Platform:** The proposed platform can be upgraded with AI-based recommendations and personalized skin analysis. Features like drug interaction checkers can be added. This could evolve into a practical healthcare tool or a startup.
4. **Integration with Regulatory Authorities:** The platform can include a system for users to report side effects. This data can be stored in a centralized database. It will help in monitoring product safety in a way similar to pharmacovigilance systems.
5. **Real-Time ADR Reporting System:** The platform can include a system for users to report side effects. This data can be stored in a centralized database. It will help in monitoring product safety similar to pharmacovigilance systems.

6. **Awareness Campaigns and Public Health Programs:** Future efforts can include awareness campaigns in collaboration with colleges and NGOs. These programs can educate people about the safe use of products and reduce misinformation and unsafe practices.
7. **Inclusion of More Drug Categories:** The study can be expanded beyond skincare to include OTC drugs, supplements, and hair care products. This will make the platform more comprehensive and serve a wider group of consumers.
8. **Machine Learning and Data Analytics:** Future systems can use machine learning to analyze user data and behavior. It can predict risks and provide personalized alerts. This will improve the innovation and efficiency of the platform.

Policy-Level Research: Further research can evaluate the effectiveness of existing regulations like ASCI guidelines. It can also suggest improvements in digital marketing policies. This will support better decision-making by authorities.

References

- [1] Sharma JK. A study of effectiveness of influencer marketing on Generation Z with respect to cosmetic products in Pune City. *Int J Prod Technol Manag (IJPTM)*. 2018;9(2):134–53.
- [2] Chan F. A Study of Social Media Influencers and Impact on Consumer Buying Behaviour in the United Kingdom. *International Journal of Business & Management Studies*. 2022 Jul;3(7).
- [3] Upathamphan S, Puapradit A. The effect of social media influencer marketing on cosmetic products and strategic uses. *Asian J Bus Mark Res*. 2020;6(3):55–65.
- [4] Madan RK, Levitt J. A review of toxicity from topical salicylic acid preparations. *J Am Acad Dermatol*. 2014;70(4):788–92.
- [5] Schwarb FP, Gabard B, Ruffli T, Surber C. Percutaneous absorption of salicylic acid in man after topical administration of three different formulations. *Dermatology*. 1999;198(1):44–51.
- [6] Von Weiss JF, Lever WF. Percutaneous salicylic acid intoxication in psoriasis. *Arch Dermatol*. 1964;90(1):614–9.
- [7] Mejo CK, Rahman J, Rajeshwari R, Behanan A, Paul EP, Sivakumar T. Adverse effects and side effects on vitamin therapy: A review. *Int J Pharm Pharm Sci*. 2019;11(3):22–8.
- [8] Mishra A, Singh S, Yadav R. Celebrity endorsement and its impact on consumer buying behaviour in India: A study of pharmaceutical and FMCG products. *Int J Pharm Manag Bus*. 2024;12(3):45–52.
- [9] Menon AM. The effect of endorser credibility and product involvement on attitudes toward celebrity endorsements in medicine [dissertation]. Texas: The University of Texas–Pan American; 2004.
- [10] Bhattacharya S, Banerjee T. Celebrity endorsements in medicine: Who should be held accountable? *J Med Ethics Mark*. 2021;8(2):33–9.
- [11] Sharma P, Gupta A. Digital marketing in the pharmaceutical sector: Opportunities and ethical challenges. *Indian J Pharm Sci*. 2020;82(5):789–97.
- [12] Patel R, Deshmukh K. Pharmaceutical marketing and product promotion: A paradigm shift in the Indian pharmaceutical industry. *J Pharm Healthc Manag*. 2021;15(2):101–10.
- [13] Singh M, Mehta R. The impact of social media on consumer behavior in the healthcare and cosmetics sectors. *Int J Bus Soc Sci Res*. 2022;13(1):25–36.
- [14] Ministry of Health and Family Welfare. *The Drugs and Cosmetics Act, 1940* [Internet]. Government of India. Available from: <https://cdsco.gov.in>
- [15] Ministry of Health and Family Welfare. *The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954* [Internet]. Government of India.
- [16] Ministry of Consumer Affairs. *The Consumer Protection Act, 2019* [Internet]. Government of India.
- [17] Advertising Standards Council of India. *Guidelines for Influencer Advertising in Digital Media, 2021* [Internet]. ASCI; 2021. Available from: <https://ascionline.in>
- [18] Ministry of Electronics and Information Technology. *Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021* [Internet]. Government of India.
- [19] Ministry of Home Affairs. *The Indian Penal Code, 1860* [Internet]. Government of India.
- [20] Teede HJ, Misso ML, Costello MF, et al. Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome. *Hum Reprod*. 2018;33(9):1602–1618.

- [21] Ye Z, Zhang C, Wang S, et al. Amino acid signatures in relation to polycystic ovary syndrome and metabolic disturbances. *Reprod Biol*. 2022.
- [22] Coondoo A, Phiske M, Verma S, Lahiri K. Side-effects of topical steroids: A long overdue revisit. *Indian J Dermatol*. 2014;59(5):416–425.
- [23] Hengge UR, Ruzicka T, Schwartz RA, Cork MJ. Adverse effects of topical corticosteroids. *J Am Acad Dermatol*. 2006;54(1):1–15
- [24] Khalil, S., Bardawil, T., & Stephan, C. (2017). Retinoids: a journey from molecular structure to clinical uses and adverse effects. *Journal of Dermatological Treatment*.
- [25] Mukherjee, S., Date, A., & Patravale, V. (2006). Retinoids in the treatment of skin aging: clinical efficacy and safety. *Clinical Interventions in Aging*.
- [26] Miloshevska D, Roškar R. Use of retinoids in topical antiaging treatments: a focused review of clinical evidence for conventional and nanoformulations. *Advances in therapy*. 2022 Dec;39(12):5351-75..
- [27] Zhong J, Zhao N, Song Q, Du Z, Shu P. Topical retinoids: Novel derivatives, nano lipid-based carriers, and combinations to improve chemical instability and skin irritation. *Journal of Cosmetic Dermatology*. 2024 Oct;23(10):3102-15.
- [28] Mejo CK, Rahman J, Rajeshwari R, Behanan A, Paul EP, Sivakumar T. Adverse effects and side effects on vitamin therapy: A review. *Int J Pharm Pharm Sci*. 2019;11(3):22–8.
- [29] Boo YC. Mechanistic basis and clinical evidence for the applications of nicotinamide (niacinamide) to control skin aging and pigmentation. *Antioxidants*. 2021 Aug 21;10(8):1315.
- [30] Jafry M, Guan LL, Mohammad TF. A practical guide to over-the-counter treatments for hyperpigmentation. *JEADV Clinical Practice*. 2024 Jun;3(2):433-47.
- [31] Dattola A, Silvestri M, Bennardo L, Passante M, Scali E, Patruno C, Nisticò SP. Role of vitamins in skin health: A systematic review. *Current nutrition reports*. 2020 Sep;9(3):226-35.
- [32] Adebuseye OC, Srivastava G. Clinical approaches in vogue for combination therapies for acne and post-inflammatory hyperpigmentation—A comprehensive review. *CosmoDerma*. 2025 Jan 10;5.
- [33] Al-Niaimi F, Chiang NY. Topical vitamin C and the skin: mechanisms of action and clinical applications. *The Journal of clinical and aesthetic dermatology*. 2017 Jul 1;10(7):14.
- [34] Brigelius-Flohé R. Adverse effects of vitamin E by induction of drug metabolism: A hypothesis. *Free Radic Biol Med*. Hypothesis Paper
- [35] Hamishehkar H, Ranjdoost F, Asgharian P, Mahmoodpoor A, Sanaie S. Vitamins, are they safe? *J Clin Diagn Res*. Review article.

Appendix A: Questionnaire

The questionnaire of survey is given below.

1. Age Group

- 14-17
- 18-23
- 24-27
- Above 27

2. Gender

- Male
- Female
- Prefer not to say

3. Which social media platforms do you use most frequently?

- YouTube
- Instagram
- Facebook
- others

4. Have you ever purchased a skincare, cosmetic, or health product recommended by a social media influencer?

- Yes
- No

5. What type of products have you purchased based on influencer recommendations?

- Creams/Serums
- Medicines(OTC)
- Herbal Products
- Dietary Supplements

6. What influences are decision to trust an influencer's recommendations?

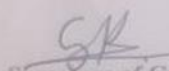
- Large numbers of followers
- personal experience shared by influencers
- attractive results shown in videos
- brand collaboration
- recommendations from friends

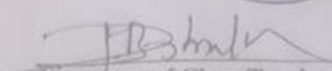



Principal
Shradha Institute of Pharmacy
Kondga Zambre, Washim

7. Before using such products, do you check the ingredients or drug information?
- Always
 - Sometimes
 - Rarely
 - Never
8. Do influencers usually mention possible side effects or adverse drug reactions?
- Yes
 - No
 - sometimes
9. Have you ever experienced any side effects after using an influencer-promoted product?
- Yes
 - No
 - Maybe
10. If yes, what type of side effects did you experience?
- Redness
 - Skin irritation
 - Allergic reactions
 - Acne or breakouts
 - Others
11. Would you use a digital platform that verifies influencer-promoted products and provides scientifically validated safety information?
- Yes
 - No
12. Do Let us know, if you have any suggestions for us.
13. The influencer promotes the drug/cosmetic product is a (Focused Observation on Influencer Credibility.)
- Doctor
 - Pharmacist
 - Dermatologist
 - Normal person




Signature of Guide


Signature of Class-Teacher
M. N. B. Deshmukh


Signature of Principal
Principal
Shradha Institute of Pharmacy
Kondal, Zambre, Washim

Appendix B: Proof of Ethical Declaration

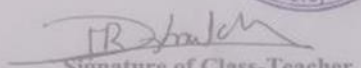
Appendix B: Ethical Declaration

This survey was conducted for academic purposes to understand the impact of social media influencers on the use of pharmaceutical and cosmetic products.

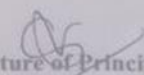
The survey was conducted over a period from 1 March 2026 to 31 March 2026. The target sample size was 200 participants; however, a total of 172 valid responses were collected. Participation was completely voluntary, and respondents were free to answer based on their own opinions.

No personal information such as name, contact details, or identity was collected. All responses were kept confidential and used only for research purposes. The data has been analyzed in a general form, and no individual response has been identified or disclosed.


Signature of Guide


Signature of Class-Teacher
M.E. N. B. Deshmukh




Signature of Principal
Principal
Shradha Institute of Pharmacy
Kondala Zambre, Washim

Appendix C: Permission Letter

To,

The Principal

Dr. Swati P. Deshmukh

At Shraddha Institute of Pharmacy, Washim

Subject: The Application for Permission for Conducting Survey

Respected Madam,

I Aditya D. Deohans, a student of B. Pharmacy 4th year VIIIth semester, request permission to conduct a survey for my academic research project titled "Social Media Influencers and Pharmaceutical Products: Risks, Misuse, and Regulatory Challenges."

The survey was conducted from 1 March 2026 to 31 March 2026, with a target sample size of 200 participants. The purpose of this survey is purely academic. Participation was voluntary, and no personal or confidential information was collected from respondents.

I kindly request you to grant permission for including this survey as part of my academic project.

Thank you.

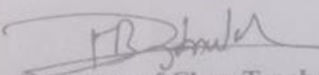
Yours sincerely,

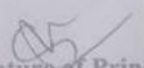
Aditya D. Deohans

Roll No. 07




Signature of Guide


Signature of Class-Teacher
M. N. B. Deshmukh


Signature of Principal
Principal
Shraddha Institute of Pharmacy
Kondala Zambre, Washim