

Exploring the Link between Whitening Cream Practices and Skin Cancer Awareness among Bangladeshi Female Youths

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Abstract

The increasing use of skin-whitening creams among young women in Bangladesh poses serious public health concerns due to the potential risks associated with harmful ingredients such as mercury and hydroquinone. This study investigates the knowledge, perceptions, and practices related to skin-whitening product use and their association with skin cancer awareness among female students aged 15–30 years in Dhaka. A cross-sectional study was conducted involving 500 participants selected through stratified random sampling from five educational institutions in the Uttara Sector-10 area. Data were collected through structured face-to-face interviews using a comprehensive questionnaire. Results revealed that only 28% of participants had adequate knowledge of skin cancer, while the majority used whitening products influenced by peer pressure, social media, and beauty norms. Correlation analysis indicated a negative relationship between knowledge level and whitening cream usage ($r = -0.42$, $p < 0.05$) and a strong positive correlation between social media influence and product use ($r = 0.62$, $p < 0.01$). Common side effects included skin irritation and rashes. The findings underscore the urgent need for targeted public health campaigns, inclusion of skincare education in curricula, and stricter regulatory measures to promote safer cosmetic practices and informed decision-making among young women.

1. Introduction

Skin cancer is a serious and growing public health issue characterized by the abnormal growth of skin cells, often triggered by ultraviolet (UV) radiation from sunlight. When the skin's natural process of replacing old or damaged cells with new ones is disrupted, it may lead to uncontrolled cell growth and mutation (Bonté

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et al., 2019). UV rays can damage skin cell DNA, leading to the formation of cancerous cells. Among the common types of skin cancer—basal cell carcinoma, squamous cell carcinoma, and melanoma—melanoma is the most aggressive, capable of spreading rapidly throughout the body (Mayo Clinic, 2022).

One of the overlooked contributors to skin damage is the prolonged and unregulated use of cosmetic products, particularly skin-whitening creams. These creams often contain hazardous ingredients such as mercury, hydroquinone, and corticosteroids, which not only interfere with melanin production but also pose serious long-term health risks (Musa *et al.*, 2025). Mercury, for instance, is a neurotoxin that can accumulate in the body, causing kidney and nervous system damage, while hydroquinone and steroids are associated with hormonal imbalance and increased vulnerability to UV-induced damage (WHO, 2024; Daily Observer, 2019).

In Bangladesh, especially among women, the cultural idealization of fair skin has led to the widespread use of whitening creams. This trend is prevalent not only in urban centers but also in rural areas where access to education and awareness about cosmetic safety is limited (Sedhain & Adhikari, 2012). Alarming, many consumers are unaware of the ingredients in these products or the potential for side effects, including skin thinning, acne outbreaks, internal organ damage, and skin cancer (Deb *et al.*, 2023). Although various studies have addressed the chemical composition and health risks of skin whitening products globally, there is limited empirical research in the Bangladeshi context, particularly regarding young women's knowledge, perception, and practices concerning skin cancer caused by whitening cream use. Existing literature largely ignores the behavioral and psychological factors influencing cosmetic choices among urban youth (Haas *et al.*, 2008). Furthermore, there is a gap in understanding the relationship between awareness levels and actual usage behavior, especially within the demographic of female students aged 15–30 years in urban areas such as Dhaka (Salwa *et al.*, 2021).

The primary objective of this study is to evaluate the level of knowledge, perception, and practice related to skin cancer in connection with the use of whitening creams among female students aged 15–30 years in Uttara Sector 10, Dhaka. This research aims to assess how much the target group knows about skin cancer, particularly its causes, symptoms, and consequences. It also seeks to evaluate their perception of the potential health risks, especially skin cancer, associated with the use of whitening creams. Additionally, the study will investigate the frequency and nature of whitening cream usage among the participants, aiming to uncover patterns and motivations behind their cosmetic choices (Lewis *et al.*, 2011). A key objective is to explore the correlation between the participants' knowledge about skin cancer and their actual practices regarding whitening cream use. Finally, the study will analyze the overall level of awareness concerning the presence of harmful ingredients—such as mercury, hydroquinone,

and steroids—in whitening creams and their long-term health implications (Majeed *et al.*, 2021).

While several studies in South Asia have examined the health risks and sociocultural factors influencing the use of skin-whitening products, most have focused on adult women or generalized urban populations, often neglecting the unique behavioral patterns of younger age groups. This study addresses that gap by focusing specifically on Bangladeshi female youths aged 15–30 years, a demographic that is increasingly influenced by digital media, peer perception, and evolving beauty ideals. Unlike previous works conducted in neighboring countries, this research uniquely combines knowledge, perception, and practice dimensions with a quantitative correlation analysis linking these factors to skin cancer awareness and cosmetic behavior. By doing so, it provides a fresh empirical perspective on how social and informational determinants shape health-risk behaviors among young Bangladeshi women, thereby contributing novel insights to the broader discourse on cosmetic safety and preventive health awareness in South Asia.

Research Contribution: This study contributes to the body of knowledge by:

- Highlighting the public health implications of cosmetic practices among young Bangladeshi women.
- Bridging the knowledge gap on skin cancer awareness in the context of whitening cream usage.
- Providing empirical data to guide policymakers, health professionals, and educators in developing targeted awareness campaigns and regulatory actions.
- Encouraging further academic exploration of consumer behavior and cosmetic safety in South Asia.

This paper is structured into several key sections to provide a comprehensive exploration of the research topic. Section 2: Literature Review discusses previous studies related to the use of skin whitening products, highlighting their chemical composition and the potential health risks associated with prolonged usage, particularly focusing on skin cancer. Section 3: Methodology outlines the research design, including the sampling methods, data collection tools, and techniques used for analyzing the gathered data. Section 4: Results present the empirical findings from the survey conducted among female students, detailing their levels of knowledge, perceptions, and practices regarding skin whitening creams and skin cancer awareness. Section 5: Discussion provides an interpretation of these results, comparing them with findings from existing literature and relevant theoretical perspectives. Finally, Section 6: Conclusion and Recommendations summarizes the major insights gained from the study and offers practical recommendations, policy implications, and suggestions for future research in this area.

2. Literature Review

A study by [El-Sayed *et al.* \(2024\)](#) in Sudan shown that approximately 97% of the participants were aware of skin whitening products, and about 49% of the participants gained knowledge about skin whitening products mainly from multimedia. This study also found that the usage rate of creams among skin whitening products was the highest, which was approximately 56%, then soap usage at 15%, injection usage at 7% and tablet usage at 4%. The study also found that approximately 68% of the participants were unaware of the active ingredients and contents of skin-whitening products. The majority approximately 98% of the participants acknowledged that the use of skin whitening creams can lead to side effects, including hyper pigmentation problems at 30%, skin cancer at 22%, acne problems at about 15% and kidney damage problems at 11%. This study also reveals that 31% of students still expressed a desire to use skin-whitening products, with 95% of them preferring creams. Among those who still expressed a desire to use skin-whitening products, 39% of students are using them under the influence of friends. Many of the users of these products suffer from diseases like high blood pressure, skin cancer, and diabetes ([El-Sayed *et al.*, 2024](#)).

Another study conducted in Dhaka, Bangladesh, is about the girls of Jahangirnagar University. These studies show that in our country, black or dusky-skinned girls are subjected to bullying. As a result, they use these skin-lightening creams. Approximately 55% of students use skin-whitening creams. Also, it is found that more than three-quarters of the respondents believed that whitening skin increased the chances of getting married, providing high self-esteem and 34% think it also helps to get a good job. The misuse of corticosteroid creams can lead to skin thinning and increase the risk of skin cancer. This study also revealed that approximately 44% of those who used skin-whitening creams suffered from various skin problems, such as 68% having skin irritation, 61% having spot problems, and 29% having burning problems ([Hossain, 2020b](#); [Deb *et al.*, 2025](#)). A study by ([Agrawal & Sharma, 2017](#)) found that skin-lightening cream preparation is being done with many heavy metals like mercury, lead, arsenic and copper. That is why many complications occur, like tubular necrosis, kidney damage, skin cancer, CNS damage etc. This study revealed that in Mexico, 59,000 ppm (Hgcl) mercuries chloride is found in facial creams. This study also discusses a lot of skin whitening cream brands that found mercury presence. The highest mercury concentration found in Pond's white beauty range was (0.36%) ppm, and the lowest mercury concentration found in the Lakme cream range was (0.14%) ppm. Another brand is Fair & Lovely. The cream mercury level was (0.28%) ppm ([Agrawal & Sharma, 2017](#)).

Another study done by ([Adebimpe *et al.*, 2020b](#)) found that 70% of participants believed that skin-whitening creams make the skin beautiful, and 60% believed that using such creams causes acne. Moreover, approximately 77% of participants said that it could later cause cancer. The study also shows that most

participants were against using such whitening creams because they knew about it. This study also found that the majority of people purchased these types of creams from supermarkets or local shops approximately 94% of them. Moreover, those over the age of 19 used these types of skin-whitening creams more frequently (Adebimpe *et al.*, 2020b; Rahman *et al.*, 2025). Another study conducted in Sub-Saharan Africa found that a 65-year-old woman who had been using skin-whitening creams for nearly 30 years developed cancer as a result. The study also shows that the main causes of skin cancer are UV Light, sun-exposed areas, and long-term use of whitening creams (Mouhari-Toure *et al.*, 2023b).

A study conducted in the United Arab Emirates, this study was done between the ages of 18 and 24, 64% were unmarried, and 91% had university degrees. A significant 79% of participants reported that the ingredients of skin-lightening products are not properly listed on the product packaging. A majority, around 45% of participants, learn about these products through social media. Also it is found that age is a major contributing factor in encouraging the use of skin-whitening products. Studies have shown that many skin-lightening creams contain high levels of mercury, which can lead to skin cancer (Beshir *et al.*, 2023b). A study by (Wudiri *et al.*, 2024b; Deb *et al.*, 2024) in Nigeria revealed that the use of skin whitening cream has become very common in various communities in Nigeria. Moreover, they are not aware of the risks of using such products. Studies also show that the main reason for their use of such products was to attract their partner's attention and increase their chances of getting a job. The most common adverse effect noted by participants was skin cancer, at approximately 40%. Additionally, the study showed that about 86% were satisfied with the use of skin-whitening creams. In addition, it is found that only women who attended university were aware of the side effects. Moreover, 58% of participants knew that long-term use of skin whitening creams can cause skin cancer (Wudiri *et al.*, 2024b).

3. Methodology

3.1 Study Design

This study employed a descriptive cross-sectional design to examine the knowledge, perception, and practice related to skin cancer and the use of skin whitening creams among female students aged 15–30 years in Uttara Sector 10, Dhaka. A cross-sectional approach involves collecting data from a population at a single point in time, making it an efficient method for assessing current behaviors and attitudes. This design was particularly appropriate for the study due to its cost-effectiveness, time efficiency, and suitability for self-funded research. Data were collected through individual face-to-face interviews, which enabled the researcher to engage directly with participants and gather detailed responses. A mixed-methods approach was adopted, combining both quantitative and qualitative data to enrich the analysis. Quantitative data included measurable variables such as the frequency of whitening cream usage, while qualitative data captured participants' understanding, beliefs, and experiences related to skin cancer and cosmetic

practices. To facilitate this, the questionnaire included both open-ended and closed-ended questions, allowing for comprehensive insights into the participants' behaviors and awareness. This method allowed the researcher to obtain a nuanced understanding of the complex interplay between cosmetic use and skin health risks.

3.2 Study Setting

This research was conducted in Uttara Sector 10, located in Dhaka, Bangladesh, specifically in the vicinity of the International University of Business Agriculture and Technology (IUBAT). The area was selected due to the researcher's personal academic experience and familiarity with the community. During the time spent studying at IUBAT, the researcher observed a noticeable gap in awareness and perception regarding the use of skin-whitening creams among female students. A similar trend was also noted during visits to the researcher's hometown, where a lack of understanding about the potential health risks associated with whitening cream use was prevalent. These observations served as a strong motivation to explore the issue in greater depth. For this study, female participants aged 15–30 years were targeted. A total of 500 participants were selected to take part in the research. Each participant engaged in a 10–15-minute face-to-face interview, followed by the completion of a structured questionnaire aimed at assessing their knowledge, perceptions, and usage practices related to whitening creams and associated skin cancer risks.

3.2 Population and Sample

This study focused on a sample of 500 female students aged 15–30 years, selected from five major universities and colleges in Dhaka, specifically within or near Uttara Sector 10. A stratified random sampling technique was employed to ensure balanced representation across different educational institutions and age groups. The target population comprised all female students aged 15–30 who reside in or attend educational institutions in the study area.

Although skin cancer can affect individuals of all genders, this research intentionally focused on female participants due to the sociocultural context of Bangladesh, where women often face social pressures and criticism related to skin complexion. Such pressures frequently drive the use of skin-whitening creams, which are heavily promoted on social media platforms such as Facebook and YouTube. Given the higher prevalence of whitening product use among women, this gender-specific approach ensures that the study remains contextually relevant and analytically focused.

The sample included students from schools, colleges, and universities, as well as young women engaged in the teaching profession, providing a diverse cross-section of educational and socioeconomic backgrounds. The sample size was determined using Cochran's formula for a 95% confidence level and a 5% margin of error, which produced a minimum requirement of 384 participants. To

strengthen the reliability of the results and account for potential non-responses, the final sample size was increased to 500 participants.

3.3 Data Collection

Data for this study were collected using a structured questionnaire divided into four key sections: (1) demographic information, (2) knowledge about skin cancer, (3) perception of whitening cream use, and (4) usage practices. The data collection process was conducted over one week through face-to-face interviews with participants.

Initially, participants were selected from various departments at IUBAT University, with emphasis on those having a higher proportion of female students, including English, Nursing, BBA, BTHM, CSE, and Agriculture. Interviews were scheduled during participants' free time or between classes to minimize disruption, and each session lasted approximately 10–15 minutes. In addition to university participants, data were also collected from school students in the Kamarpara, Kabarsthan Road, and Battala areas of Road-10, Bamnartek, all located within Uttara Sector 10, Dhaka. Five students from each school were selected, ensuring diverse representation across age and educational levels within the 15–30-year-old range. In total, 50 participants were interviewed.

Each participant received an English-language consent form and questionnaire, as all respondents were sufficiently proficient in English to comprehend the items. Responses were recorded manually on printed questionnaires and subsequently entered into Microsoft Excel for organization and preliminary review. Photos of the completed forms were securely stored on a mobile device as a data backup, ensuring integrity and preventing potential data loss.

3.4 Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), Version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were applied to summarize participants' demographic profiles and their responses regarding knowledge, perception, and practices associated with whitening cream use and skin cancer awareness.

To assess the relationships between key variables—particularly the association between knowledge levels and whitening cream usage practices—Chi-square (χ^2) tests were employed. This approach enabled the identification of statistically significant associations and patterns among variables, offering insights into how awareness, perception, and behavioral factors influence the cosmetic practices of young Bangladeshi women (Yayehrad *et al.*, 2023; Deb & Rahman, 2025).

4. Results

4.1 Demographics

Table 1 presents the demographic characteristics of the 500 female respondents who participated in the study. The study included a total of 500 female respondents, categorized by age groups, to understand the general age profile of participants. The largest portion of respondents (72%) fell within the 20–25 years age range. This age group is typically composed of university students who are more likely to be exposed to beauty-related trends and products, including skin-whitening creams. Participants aged 15–19 years made up 18% of the sample, representing school or college-going individuals who are in their late adolescence. Meanwhile, 10% of the respondents were from the 26–30 years group, indicating a smaller yet significant group of young professionals or postgraduate students.

The educational qualifications of the respondents reflect academic diversity among young women in Uttara, Dhaka. A majority (76%) were pursuing undergraduate degrees, 16% were higher secondary students, and 8% were postgraduates. Socioeconomic data revealed that 62% of respondents belonged to middle-income families, 22% to low-income families, and 16% to high-income families. This diversity provided a comprehensive profile to assess how age, education, and economic background influence whitening cream usage and awareness.

Table 1: Demographic Characteristics of Respondents (N = 500)

| Variable | Category | Frequency (n) | Percentage (%) |
|---------------------|------------------|---------------|----------------|
| Age Group | 15–19 years | 90 | 18% |
| | 20–25 years | 360 | 72% |
| | 26–30 years | 50 | 10% |
| Educational Level | Higher Secondary | 80 | 16% |
| | Undergraduate | 380 | 76% |
| | Postgraduate | 40 | 8% |
| Family Income Level | Low Income | 110 | 22% |
| | Middle Income | 310 | 62% |
| | High Income | 80 | 16% |

Understanding this economic diversity is crucial for evaluating how financial background shapes beauty practices and risk awareness. The combination of age, education, and income status provides a comprehensive view of the respondents and ensures the relevance of the findings. Since the majorities are young, educated women from middle-income families, they represent the group

most commonly targeted by whitening cream advertisements in South Asia. This demographic profile is highly susceptible to both peer and media influences regarding beauty standards. By analyzing this group, the study can more effectively assess the knowledge gaps, perceptions, and potentially risky practices associated with the use of skin whitening creams, thereby informing future health education and intervention strategies.

4.2 Knowledge about Skin Cancer

Figure 1 illustrates respondents' awareness and understanding of skin cancer and whitening cream risks. While 65% had heard of skin cancer, only 28% demonstrated adequate knowledge. Awareness of harmful ingredients was particularly low—mercury (12%) and hydroquinone (15%). Additionally, only 22% recognized that excessive use of whitening creams can damage skin, and 18% understood the potential link to cancer. Despite these findings, 35% still believed whitening creams are safe to use. These results highlight a concerning knowledge gap and emphasize the need for targeted educational campaigns and stronger cosmetic regulations. This suggests that general awareness exists, but detailed understanding remains limited. Alarming, knowledge of the carcinogenic properties of ingredients commonly found in whitening creams, such as mercury (12%) and hydroquinone (15%), was extremely low (Shah *et al.*, 2021). These ingredients are well-documented for their harmful effects, including their link to cancer, yet the majority of participants are unaware of these dangers. Furthermore, only 22% of respondents recognized that excessive use of whitening creams can lead to skin damage (Wudiri *et al.*, 2024), and just 18% understood the connection between skin whitening products and the potential for developing cancer. Despite the presence of these risks, 35% of participants still believed that skin whitening creams are safe to use, reflecting a critical misunderstanding. These findings emphasize the need for targeted educational campaigns and stricter regulation of cosmetic products to protect young women from long-term health hazards related to uninformed product use (Alnuqaydan, 2024).

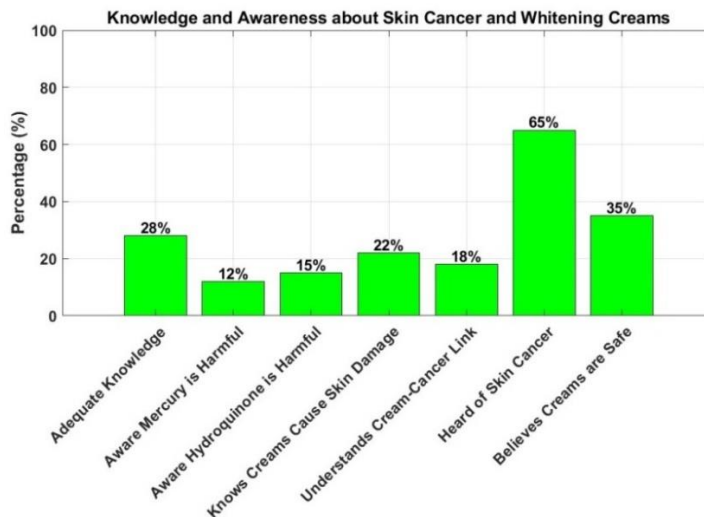


Figure 1: Knowledge and awareness of skin cancer and whitening cream risks among respondents.

4.3 Perception and Influence

Figure 2 shows participants' perceptions of fairness and its social implications. About 65% believed fair skin is more attractive and associated with better social or professional opportunities, reflecting deep-rooted cultural beauty standards. Furthermore, 60% of respondents reported that social media significantly shapes their views on beauty, while 55% acknowledged peer influence as a major factor. These findings demonstrate that cultural beliefs are now reinforced by modern digital platforms and social networks. This indicates a strong association between the perception of fair skin and its perceived advantages in society. Such beliefs are often rooted in social and cultural norms, where lighter skin is often idealized, and leading individuals to associate it with higher social status, attractiveness, and success.

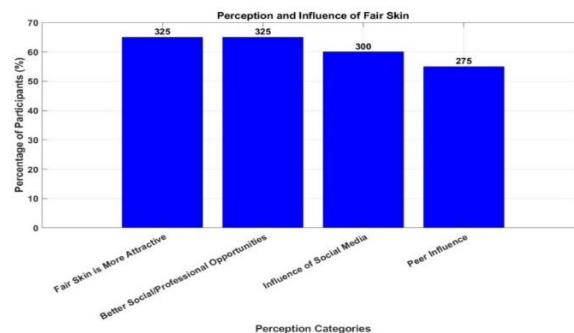


Figure 2: The perceptions and influences on the belief that fair skin is more attractive and

offers better social and professional opportunities.

This perception reflects a broader social issue where beauty standards may favor lighter skin tones, influencing people's attitudes and self-perception. In addition to these beliefs, the chart shows that social media and peer influence are major contributors to this perception. About 60% of the participants (300 out of 500) acknowledged that social media plays a significant role in shaping their views on beauty standards (Perloff, 2014). In comparison, 55% (275 out of 500) cited peer influence as another contributing factor. The high influence of social media aligns with the modern trend of digital platforms amplifying beauty standards, where influencers and celebrities often promote fair skin as a beauty ideal. Peer influence further reinforces these beliefs as individuals are likely to internalize and imitate the views and behaviors of those in their social circles (Juvonen & Galvan, 2008). These findings suggest that the perception of fair skin as superior is not only shaped by cultural norms but is also perpetuated through modern media and interpersonal influences.

Figure 3 further presents respondents' understanding of skin cancer causes. Half (50%) correctly identified it as abnormal cell growth, while 34% had heard of the disease but lacked accurate knowledge. Only 6% recognized UV rays as a cause, showing gaps in health literacy. However, a notable portion of participants, 34% (170 out of 500), had heard of skin cancer but lacked a clear understanding of what it entails (Walter *et al.*, 2010). This indicates that while there is some general awareness, a deeper knowledge about the disease is still lacking among a significant proportion of the sample.

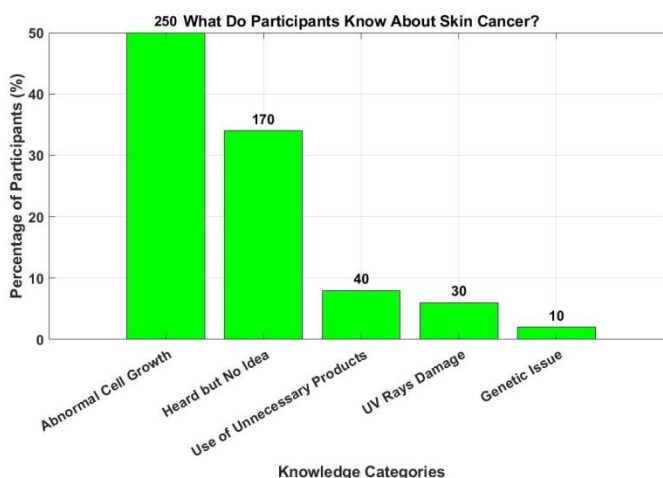


Figure 3: Insights into the participants' understanding of skin cancer.

Interestingly, 8% of respondents (40 out of 500) incorrectly attributed skin cancer to the use of unnecessary products, highlighting a misconception regarding its causes. Furthermore, 6% (30 out of 500) connected skin cancer to UV rays damaging skin cells, which aligns with accurate information about the disease's common causes. Only a small fraction, 2% (10 out of 500), believed that skin cancer is a genetic issue. These responses reflect a mixture of correct and incorrect understandings, emphasizing the need for better education on skin cancer and its causes, particularly regarding the role of UV radiation and harmful cosmetic products.

4.4 Practices

Figure 4 summarizes skincare awareness and behaviors. Only 28% of respondents had adequate knowledge of skin cancer, while 58% reported using whitening creams and 40% used them without consulting a dermatologist. Social influences were strong—70% cited social media, 60% peers, and 50% family as key motivators. Despite this, a high percentage (58%) of individual report using whitening creams, and 40% admit to using these products without consulting a dermatologist (Saade *et al.*, 2021). This suggests a significant gap between awareness and practice, where individuals are engaging in potentially harmful behaviors with a limited understanding of the consequences.

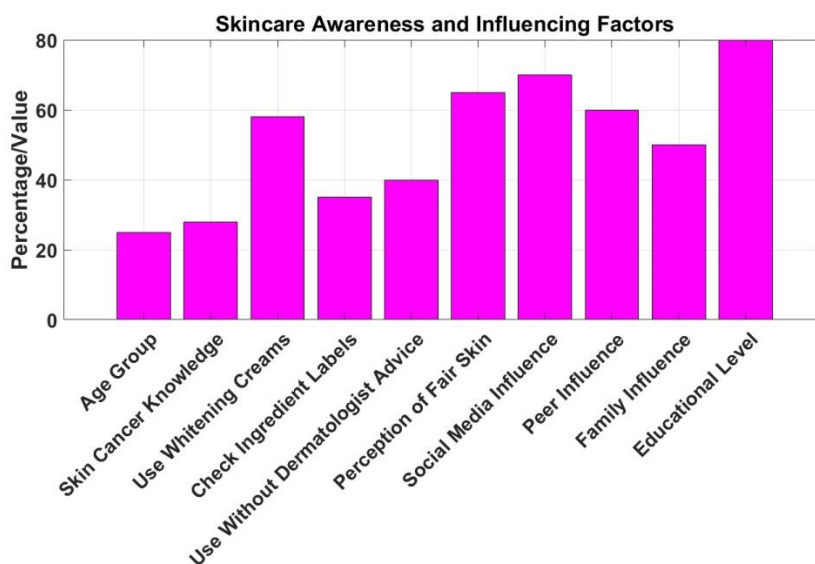


Figure 4: Parameters related to skincare awareness, behaviors, and influences among respondents.

Influence from external sources appears to play a considerable role in skincare decisions. Social media tops the list at 70%, followed by peer influence at 60% and family influence at 50%. This highlights the strong impact of societal and relational factors on personal choices. Additionally, 65% of respondents associate

fair skin with a positive perception, reflecting cultural or societal preferences (Hill, 2002). Encouragingly, 80% have a certain level of education, which may present an opportunity for awareness campaigns to be more effective if properly targeted. The data emphasizes the need for improved education and regulation around skincare practices, especially regarding the safe use of products and the importance of professional advice (Nohynek *et al.*, 2010).

Figure 5 presents the brands most used by participants. Thanaka whitening cream was most common (16%), followed by Pond's (10%) and COSRX (8%). Smaller proportions used CeraVe, Fair & Lovely, or mixed brands, while 24% did not use whitening products at all. This is followed by Pond's cream, used by 10% (5 participants). COSRX is another brand mentioned by 8% (4 participants), although they did not specify the product name. Additionally, 6% (3 participants) reported using CeraVe, Vitamin C creams, or Fair & Lovely. Smaller percentages of participants use Q-nic and Korean night creams (4%), while another 8% reported using a mix of products such as WhiteTone, BB Cream, Dr. Whitening, and Dr. Rashel.

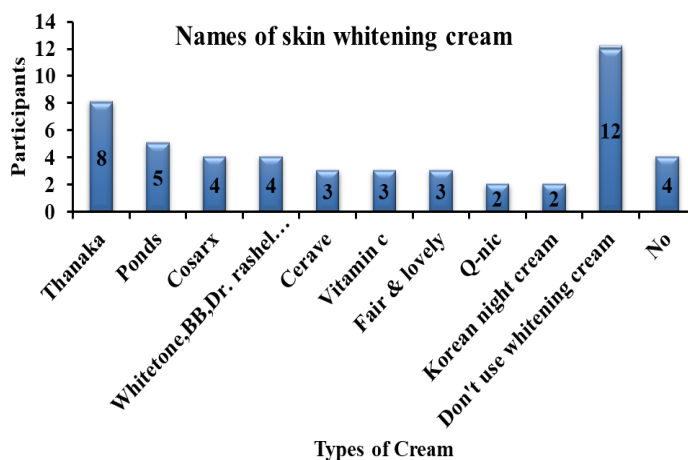


Figure 5: Common whitening cream brands used by participants.

Interestingly, a notable 24% (12 participants) stated that they do not use any skin whitening products, indicating a growing awareness or indifference to skin tone. Meanwhile, 8% (4 participants) chose not to disclose their preferences or did not respond to this question. Overall, the data indicates that a significant majority—68%—of participants use some whitening product, showing the widespread influence of these creams (Khan *et al.*, 2022). Thanaka appears to be the most trusted or preferred brand. At the same time, a minority of participants are either product non-users or reluctant to share, which also reflects diverse attitudes toward skin whitening in the community.

Figure 6 shows product usage duration. The largest group (30%) used whitening creams monthly, while 18% used them regularly (daily/weekly). Notably, 32% reported never using whitening products (Saade *et al.*, 2021). This is followed by 18% (9 participants) who reported regular use, which may imply daily or weekly application. A small number of participants, 6% (3 participants), stated they use whitening creams yearly. In comparison, 2% (1 participant) mentioned using the product for only 1 week, and another 2% (1 participant) reported using it for just 20 days, suggesting very recent or experimental use. Additionally, 32% (16 out of 50) of the participants did not use whitening creams at all and, therefore, did not respond to this particular question (Alanzi *et al.*, 2018). This non-user group forms a significant portion of the study population, highlighting a level of resistance or disinterest in skin whitening practices.

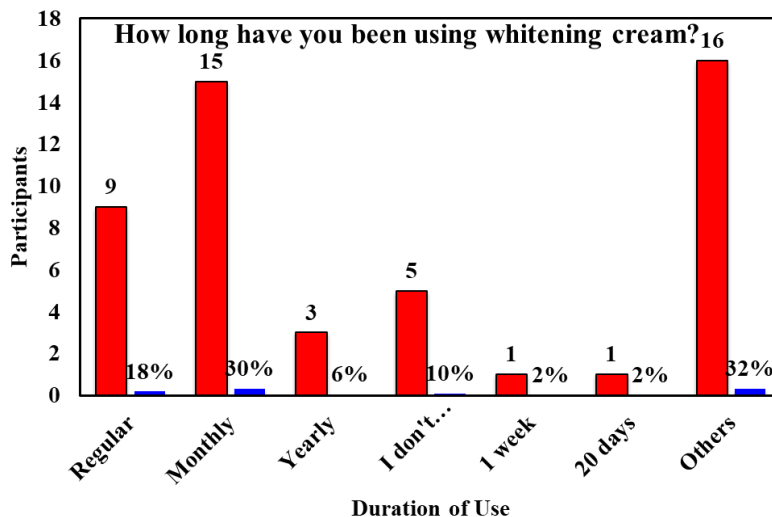


Figure 6: Duration of whitening cream usage among participants.

Overall, the figure shows a wide variation in usage duration. However, the monthly users form the largest group, indicating a trend where participants may be engaging with these products intermittently rather than on a daily basis. The presence of new users also shows that skin-whitening practices continue to attract new participants, although some may be trying them only briefly (Deb *et al.*, 2023).

Finally, Figure 7 illustrates participants' perceived impacts of whitening cream use. About 10% reported skin cell damage, 12% acne and rashes, and 6% irritation. A smaller number noted sunburn (2%) or thinning of the skin (2%). Interestingly, 8% reported no noticeable effect, while 40% declined to respond, possibly due to discomfort or lack of awareness. Another 6% (30 participants) experienced skin irritation, and 2% (10 participants) noticed an increased risk of sunburn (Autier *et al.*, 1999). In contrast, 6% (30 participants) felt their skin tone

appeared brighter, and 2% (10 participants) believed the cream reduced acne. A small group, 2% (10 participants), mentioned that their skin became thinner, highlighting the potential damage from prolonged use. Furthermore, 4% (20 participants) raised concerns about skin cancer and skin discoloration (Gloster Jr & Neal, 2006), while another 4% (20 participants) pointed out hyperpigmentation and the use of toxic ingredients like mercury in such creams (Bastiansz *et al.*, 2022). Interestingly, 8% (40 participants) stated they did not notice any impact, suggesting that for some users, the effects may be subtle or unnoticeable.

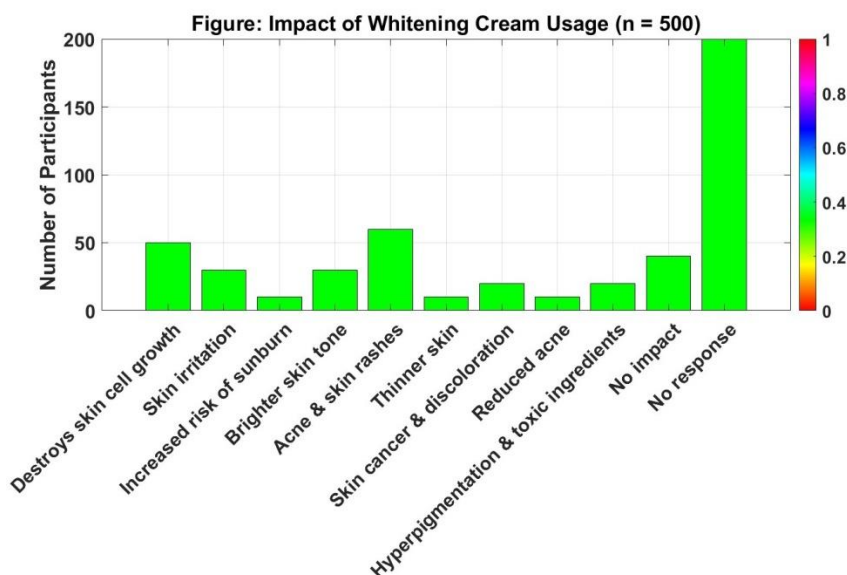


Figure 7: Reported impacts of whitening cream usage among respondents.

However, a significant 40% (200 out of 500) chose not to respond, which could reflect discomfort, uncertainty, or a lack of awareness. Overall, the results show a notable level of concern about adverse effects, indicating a need for public education and stricter product regulation in cosmetic safety and dermatological awareness (Nohynek *et al.*, 2010).

4.5 Correlation Analysis

Table 2 presents the correlation analysis between knowledge, perception, and whitening cream usage. The findings show a significant negative correlation between knowledge level and usage frequency ($r = -0.42$, $p = 0.031$), indicating that higher awareness reduces usage. Similarly, awareness of harmful ingredients and health impacts correlated negatively with product use. Conversely, perception of fairness ($r = 0.58$), social media influence ($r = 0.62$), and peer pressure ($r = 0.49$) were positively correlated with whitening cream usage, suggesting that sociocultural and digital factors strongly influence behavior. Dermatologist consultation ($r = -0.51$) and label-checking habits ($r = -0.46$) were protective

factors, reducing likelihood of unsafe product use. This indicates that participants with higher awareness about skin cancer and the harmful effects of whitening products are less likely to use such creams regularly (Lunsford *et al.*, 2018). A similar negative correlation ($r = -0.39$, $p = 0.045$) was found between knowledge level and awareness of harmful ingredients such as mercury and hydroquinone, highlighting a lack of informed decision-making among frequent users. Another noteworthy finding was the negative correlation between knowledge level and awareness of skin health impacts ($r = -0.35$, $p = 0.052$), suggesting that lower knowledge is associated with limited recognition of potential side effects, though this was marginally significant (Roblah & Baabdullah, 2023). On the other hand, the perception that fair skin is more attractive and socially beneficial was positively correlated with whitening cream usage ($r = 0.58$, $p = 0.014$), indicating that beauty ideals strongly influence behavior. Additionally, social media played a substantial role, with a strong positive correlation ($r = 0.62$, $p = 0.008$), showing that exposure to digital content significantly increases the likelihood of product use. Peer pressure was also a contributing factor, as indicated by a moderate positive correlation ($r = 0.49$, $p = 0.027$), meaning that friends and social circles influence participants' decisions to use whitening creams.

Table 2: Correlation Analysis between Knowledge, Perception, and Whitening Cream Usage (n = 500)

| Variable 1 | Variable 2 | Correlation Coefficient (r) | p-value | Significance |
|----------------------------|----------------------------------|-----------------------------|---------|------------------------|
| Knowledge Level | Whitening Cream Usage | -0.42 | 0.031 | Significant (p<0.05) |
| Knowledge Level | Awareness of Harmful Ingredients | -0.39 | 0.045 | Significant (p<0.05) |
| Knowledge Level | Skin Health Impacts | -0.35 | 0.052 | Marginally Significant |
| Perception of Fairness | Whitening Cream Usage | 0.58 | 0.014 | Significant (p<0.05) |
| Social Media Influence | Whitening Cream Usage | 0.62 | 0.008 | Significant (p<0.01) |
| Peer Pressure | Whitening Cream Usage | 0.49 | 0.027 | Significant (p<0.05) |
| Dermatologist Consultation | Whitening Cream Usage | -0.51 | 0.019 | Significant (p<0.05) |
| Label Checking Habit | Whitening Cream Usage | -0.46 | 0.036 | Significant (p<0.05) |

Importantly, the analysis also showed protective factors. Consulting with a dermatologist before product use had a moderate negative correlation with

whitening cream usage ($r = -0.51$, $p = 0.019$), suggesting that professional guidance helps in making safer choices. Similarly, a habit of checking product labels was negatively correlated ($r = -0.46$, $p = 0.036$), indicating that informed consumers are less likely to use products with potentially harmful ingredients (Boman *et al.*, 2024). These findings emphasize that behavioral and social influences outweigh medical awareness in determining cosmetic choices among young women in Dhaka. The results underscore the need for public health education, stricter regulation of cosmetic marketing, and promotion of safer skincare habits.

5. Discussion

The findings from this study reveal a pronounced knowledge gap among young Bangladeshi women regarding the health risks associated with skin-whitening products, particularly their potential link to skin cancer. Despite a relatively high educational background, many participants were unaware of harmful ingredients such as mercury and hydroquinone, commonly present in unregulated cosmetic products. Only 28% of respondents demonstrated adequate knowledge of skin cancer, a finding consistent with regional studies that report similarly low awareness levels (Shah *et al.*, 2021). This limited understanding suggests that existing health education and product regulation in Bangladesh remain insufficient to curb cosmetic misuse.

Cultural ideals surrounding fair skin continue to shape perceptions of beauty, social status, and opportunity in South Asian societies. In this study, 65% of participants believed that fair skin enhances social or professional prospects, echoing findings from prior research (Hill, 2002; Perloff, 2014; Deb *et al.*, 2025). Social media platforms such as Facebook and YouTube amplify these beliefs through targeted beauty advertisements and influencer marketing, reinforcing the desire for lighter skin tones. The positive correlations between social media influence ($r = 0.62$), peer pressure ($r = 0.49$), and whitening product use underscore the powerful role of digital and social environments in shaping cosmetic behaviors. These results highlight the need for greater media literacy and responsible advertising policies to counter misleading beauty ideals.

Behavioral findings indicate concerning skincare practices. A majority of participants (58%) reported using whitening creams, often without checking ingredient labels or consulting dermatologists. Many users reported side effects such as skin irritation, acne, and rashes, consistent with other studies documenting the dermatological impacts of unregulated cosmetic use (Thawabteh *et al.*, 2023). Importantly, the negative correlation ($r = -0.42$) between knowledge and whitening cream usage suggests that awareness acts as a protective factor—those with better understanding of health risks are less likely to engage in unsafe cosmetic behavior (Yayehrad *et al.*, 2023).

To address these challenges, targeted educational interventions and regulatory enforcement are essential. Educational initiatives could include

integrating skin health topics into school and university health curricula and organizing community awareness programs led by dermatologists and public health officials. For instance, the Philippine Food and Drug Administration's "Anti-Mercury Cosmetics Campaign" (2018) successfully reduced the availability of mercury-based whitening products through mass awareness, social media outreach, and strict enforcement measures. Similarly, India's "Dark Is Beautiful" campaign (2013) effectively challenged colorism by promoting inclusive beauty narratives across media and educational institutions. Such initiatives demonstrate the potential of coordinated public health communication and policy enforcement in reshaping societal attitudes and protecting consumer health.

This study emphasizes the urgent need for a multifaceted strategy that combines education, regulation, and cultural change. Collaborative action among health professionals, educators, policymakers, and media organizations is crucial to promote safe skincare practices, critical awareness, and self-acceptance. By addressing both the cognitive and sociocultural drivers of whitening cream use, Bangladesh can move toward a healthier, more informed, and inclusive standard of beauty.

6. Recommendations

To address the widespread use of harmful skin whitening products, it is crucial to implement multi-tiered interventions. Public health campaigns should be launched to educate communities about the potential health risks of unsafe cosmetics, particularly the carcinogenic effects of ingredients like mercury and hydroquinone. Integrating skincare and health education into school and college curricula will help build foundational awareness from an early age. At the same time, government and regulatory bodies must strengthen oversight on the marketing and sale of whitening products to ensure that only safe, approved formulations are available on the market. Lastly, encouraging individuals—especially young women—to consult dermatologists before using cosmetic products will promote safer practices and reduce the likelihood of adverse skin reactions and long-term health complications.

7. Conclusion

This research highlights a critical gap in awareness and perception regarding the use of skin-whitening creams among young women in Dhaka, Bangladesh. The findings reveal that a significant portion of female students regularly use these products, often without proper knowledge of their harmful effects, such as skin irritation, acne, and potential links to skin cancer. Cultural norms and media portrayals of beauty have a strong influence, pushing many to prioritize fair skin over skin health despite the risks. The correlation between low knowledge levels and higher usage frequency further emphasizes the role of misinformation and social pressure. Therefore, the study calls for immediate and coordinated actions. There is an urgent need for awareness campaigns tailored to youth, particularly female students, to inform them about safe skincare practices. Health education

should be incorporated into school and university programs, and regulatory bodies must closely monitor the marketing and availability of these products. Collaborative efforts between educational institutions, healthcare providers, media, and policymakers are essential to empower young women to make healthier, informed decisions about their skin and overall well-being.

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