


Cosmetic Use and Hygiene Practices and Their Potential Health Effects Among Female University Students

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Abstract

Background: Cosmetic products are widely used by female university students for personal care and appearance enhancement. However, sharing cosmetics and frequent cleaning of applicators and poor storage practices may increase the risk of microbial contamination and associated skin or eye problems such as irritation, redness, itching, acne, and infections. **Aim of the study:** This is the aimed to assess cosmetic use patterns, hygiene practices related to cosmetic tools and product sharing, awareness of contamination risks and self-reported skin or eye health effects among female university student . **Methodology:** A cross-sectional Online questionnaire survey was conducted using Google forms among female university students. The questionnaire collected data on demographics, frequency and type of cosmetic use, sharing of cosmetic, cleaning habits for brushes and sponges, awareness of microbial contamination and reported eye or skin problems. Data were analyzed using descriptive statistics, mainly frequencies and percentages and Person chi-square tests were indeed to examine associations between categorial variables. **Results:** The results showed that cosmetic use and sharing were common among female university students, especially those aged 18–28 years. Cosmetic use was significantly associated with age $\chi^2 \approx 86.19$, “ $p < 0.0001$, and sharing was reported by 61.8% of respondents. Eye irritation was common among those who shared eye cosmetics $\chi^2 = 171.23$,” “ $p < 0.001$, while cosmetic hygiene practices were generally poor, with only 14.5% cleaning brushes or sponges after each use. Overall, the findings suggest frequent cosmetic use, widespread sharing, inadequate hygiene, and notable eye irritation.

Keywords: Cosmetics use; Hygiene practice; Microbial contamination; Eye irritation.

استخدام المواد التجميلية وتأثيراتها الصحية المحتملة بين طالبات الجامعات

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الملخص

الخلفية: تستخدم طالبات الجامعات منتجات التجميل على نطاق واسع من أجل العناية الشخصية وتحسين المظهر. ومع ذلك، فإن مشاركة مستحضرات التجميل وطرق التنظيف للأجهزة وكذلك الممارسات السيئة في التخزين قد تزيد من خطر التلوث الميكروبي ومشاكل الجلد أو العين مثل التهيج، والاحمرار، والحكة، وحب الشباب، والالتهابات بشكل عام. **هدف الدراسة:** تهدف إلى تقييم أنماط استخدام مستحضرات التجميل، وممارسات النظافة المتعلقة بأدوات التجميل ومشاركة المنتجات التجميلية، والوعي بمخاطر التلوث، والتأثيرات الصحية على الجلد أو العين بين طالبات الجامعات. **المنهجية:** تم إجراء استبانة باستخدام نماذج جوجل بين طالبات الجامعات العراقية. حيث كانت بيانات عن التركيبة السكانية، وتكرار ونوع الاستخدام التجميلي، ومشاركة مواد التجميل، وعادات التنظيف للفرش والإسفنجة المستخدمة في التجميل، والوعي بالتلوث الميكروبي، والإبلاغ عن مشاكل العين أو الجلد. تم تحليل البيانات باستخدام الإحصاء الوصفي، خاصة التكرارات والنسب المئوية، وكانت اختبارات لتقييم الارتباطات بين المتغيرات التصنيفية. **النتائج:** أظهرت النتائج أن استخدام ومشاركة التجميل كان شائعاً بين طالبات الجامعات، خاصة اللواتي تتراوح أعمارهن بين 18 و28 سنة. ارتبط استخدام مستحضرات التجميل بشكل كبير بالعمر $p < 0.0001$ ، $\chi^2 = 86.19$ ، وتم الإبلاغ عن المشاركة من قبل 61.8% من المستجيبين. كان تهيج العين شائعاً بين من يشاركون مستحضرات تجميل العين $p < 0.001$ ، $\chi^2 = 171.23$ ، بينما كانت ممارسات النظافة التجميلية سيئة عموماً، حيث كانت نسبة 14.5% فقط من يمارسون تنظيف الفرش أو الإسفنج بعد كل استخدام. بشكل عام، تشير النتائج إلى الاستخدام المتكرر للتجميل، والمشاركة الواسعة لمواد التجميل بين الطالبات، وسوء النظافة، وتهيج ملحوظ في العين.

الكلمات المفتاحية: استخدام مستحضرات التجميل؛ ممارسة النظافة؛ التلوث الميكروبي؛ تهيج العين.

1- Introduction

Cosmetic products widely used by female universities students as a part of personal care, appearance enhancement, and social identity. Product such as lipsticks, mascaras, eyeliners, face borders, face creams, and sunscreens often used daily and may have stored for prolonged periods after opening. Although these products are considered safe when properly manufactured, where they are used, there is a repeated opening, direct skin contact, exposure to air, and sharing among users can increase the risk of microbial contamination. Once contaminated, cosmetics may become reservoirs for bacteria and fungi and may contribute to skin irritation, acne, eye infections, allergic reactions, and other adverse health outcomes (A. Bashir and P. Lambert, 2020).

The risk is especially important among university students, who often use cosmetics regularly and may engage in behaviour such as sharing product, using testers, applying makeup with unwashed hands, and keeping products beyond recommended periods after opening. Awareness of product safety and microbial contamination may be finite despite the healthy implications of poor cosmetic Hygiene. A cross-sectional survey among university students on sunscreen use also showed that student cosmetic-related behaviours are suitable for questionnaire-based public health research and that female students often have higher use, better knowledge in some cosmetic dominance (S. S. Bello, 2025).

Despite the widespread use of cosmetics among female university students, many users may not follow safe hygiene practices such as avoiding product sharing, cleaning applicators regularly, storing products properly or discarding products after prolonged use. These behaviours may increase the likelihood of microbial contamination and subsequent health problems such as acne irritation, itching, redness, allergic reactions, and eye infections. Recent evidence shows that opened, used or shared cosmetic products can harbor microorganisms, including potentially pathogenic bacteria and fungi (Lambert, Microbial contamination of cosmetic products, 2020).

Evidence from previous studies shows that used and opened cosmetic products can contain bacteria and fungi and that contamination is influenced by hygiene practice, storage condition, product type,

and frequency of use. Another study on opened skincare a product also reported contamination concern and products kept after opening (Lambert, Microbiological study of used cosmetic products: Highlighting possible impact on consumer health, 2020). Study on used cosmetic products found microbial contamination in several product categories, including lip and eye cosmetics, emphasizing the need for better cosmetic hygiene and the safe use behaviour (S. Neuhaus, 2023).

However, there is still limited survey- beside evidence focusing specifically on female university student and how their cosmetic practise related to awareness and reported healthy effects.

This study therefore aims to assess the relationship between cosmetic use, microbial pollution risk, and human health effects among female university students.

2-Methodology

This study used cross-sectional questionnaire service distributed online through Google forms. More than 900 female students from 24 Iraqi universities participated during the period from 10 January 2026 to 30. April 2026. The questionnaire collected information on demographic characteristics including age, gender and education level to enable demographics specific analysis of frequency and type of cosmetic use shearing of cosmetic products, cleaning habits for brushes and sponges, awareness of microbial contamination, self-reported eye and skin problems.

The data were analyzed using frequencies and percentage, and person's chi-square test was intended to examine associations between categorical variables. Cross-sectional questionnaires surveys are commonly used in universities beside healthy behavior studies because they allow efficient collection of self-reported data from relatively large groups at one point in time, while chi-square analysis is often applied to examine association between categorical variables as shown in recent student hygiene studies. (Akter, 2025) (Mishika, 2025) (Ivena, 2025) .

The collected data were summarized using descriptive statistics including frequencies and percentage and where applicable, Anonymity and confidentiality were maintained to promote honest and unbiased response. The data were then analyzed using statistical software to identify trends, patterns, and relationships among the variable of interest.

3- Results And Discussion

3-1. As showed at Table (1) cosmetic use was most common among the 18–28-year age group, which had the highest numbers across all use frequencies, especially 3-5 times per week (50.1%) and daily use (25.8%), among all age groups 48.2%. followed by those who used cosmetic daily (23.8%), sometimes (14.8 %) and one to two times a week (13.0%) among all age groups. Overall, the findings indicate the cosmetic use was coming among the respondents, with the most using cosmetics frequently. Chi-square statistic: $\chi^2 \approx 86.19$, P-value: $p < 0.0001$. There is a highly significant association between age groups and the frequency category.

Table 1. Distribution of respondents by age and frequency of cosmetic use

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Age group	Daily	1–2 times/week	3–5 times/week	Sometimes	Total
18–28	207	82	401	110	800
29–39	2	30	22	15	69
40–45	-	2	-	5	7
Total	209	114	423	130	876

3-2. As showed at table (2), data show that cosmetic shearing was common among female university students, 541 of 876 respondents (61.8%) reporting that they shared cosmetics, while 335(38.2%) did not. The largest age group was 18-28 years, which accounted for 800 students. Within this group, 523 students (59.7%) reported shearing cosmetics, compared with 277 (31.6 %) who did not. In the 29-39-year group, 17 (1.9%) shared cosmetics and 52 (5.9%) did not. Among students aged 40-45 years, only 1 (0.1%) shared cosmetics and 6 (0.6%) did not. These findings indicate that younger female students were more likely to share cosmetics than older students. The pattern suggests that sharing behavior is concentrate in the youngest age group, likely because of peer influence, convenience social interaction, and beauty- related practices.

Table 2. Demographic Characteristics and Behaviour of Sharing Cosmetics among Female Students at the University

Age group	Yes	Percentage.	No	Percentage.	Total
18–28	523	59.7 %	277	31.6%	800
29–39	17	1.9%	52	5.9 %	69
40–45	1	0.1%	6	0.6 %	7
Total	541	61.8	335	38.2%	876

3-3. As showed the Table 3. The results showed that many participants reported side effects after sharing eye cosmetics among female students,349 respondents (63%) of them felt eye irritation due to sharing eye cosmetics with their fellow students at the university, while 37% of them did not show symptoms of eye irritation.

These results suggested potentially unsafe cosmetic practices among the respondents and raise concerned about the possibility of the microbial contamination and transmission of infections. Chi-square statistic: (171.23), p-value: (p<0.001). There is highly statistically significant association between shearing cosmetics and irritation among the female students.

Table 3. Participants' Response Data on the Association of Eye Irritation with the Participation of Eyelash and Eye Cosmetics among Female Students at the University.

Variable.	Eye irritation: Yes	Percentage	Eye irritation: No	Percentage	Total
Share cosmetics: Yes	349	63 %	205	37%	554
Share cosmetics: No	45	14%	276	86%	321
Total	394		481		875

3-4. In Table 4, Cleaning the cosmetic brushes or sponges turned out to be uncoordinated. Only 129 respondents (14.5%) cleaned their brushes or sponges after each use, while 307 (34.6%) cleaned them

weekly. Another 220 students (24.8%) cleaned them monthly, 178 (20.0%) did so rarely, and 22 (2.5%) never cleaned them. This suggests that most respondents did not follow ideal hygiene practices for cosmetic tools.

Table 4. Frequency of cleaning brushes or sponges among respondents.

How often do you clean your brushes spoons?	Frequency.	Percentage.
After each use	129	14.5
Weekly	307	34.6
Monthly	220	24.8
Rarely	178	20.0
Never	22	2.5
Total	888	100.0

The present findings show that cosmetic use was concentrating among younger respondents, with the (18 – 28) year age group accounting for most users and reporting the highest frequency of cosmetic use, particularly (3-5) times per week and daily use. This pattern suggests that cosmetic consumption is more common in younger female students, reflecting greater appearance consciousness peer influence, and increased exposure to beauty trends.

The lower use among older respondents may indicate different lifestyle priorities or reduce interests in routine cosmetic application. This finding is consistent with recent evidence showing that cosmetic practise and related self- care behaviours are more prevalent among younger female university population. For example, a 2023 multicentre study among female university students reported that cosmetic use was common in this group and was intricately linked to daily personal care habits and a beauty- related practices (Addis, 2023) . In addition, recent work in 2026 on female students also highlighted the continuing relevance of cosmetic safety practices and age -linked patterns in cosmetic behaviour (Ali, 2026) (R. A. Alharbi, 2025) .

Overall, the results imply that younger female students remain the dominant cosmetic use group underscoring the need for targeted healthy education on safe cosmetic practices and hygiene. A present is study showed that cosmetic sharing was highest among student aged 18 - 28 years, with 65.4 % reporting that they shared cosmetics compared with 24.6 % in the 29 -39 age group and 14.3 % and the 40-45 age group. This suggests that cosmetic sharing decreases with increasing age, due to better hygiene awareness and greater caution among older students. The finding consistent with recent studies showing that cosmetic- related behaviours are more common among younger female student and that age influences cosmetics a practice (Yusuf, 2024) (Dadashi, 2016).

In addition, observed early initiation and sustained use of cosmetic among young females. Since shared cosmetic can be contamination with microorganisms, the present findings also support the need for health education on avoiding the sharing of cosmetic products especially eye cosmetics (Shah, 2021) (Wang, 2018).

In practical terms a significant result would suggest that frequent cosmetic use poor cleaning habits and sharing of products are linked to higher reported of irritation or infections supporting the

public-health concern that cosmetic can act as nutrimental for microorganisms such as *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Candida spp*, this interpretation is consistent with the previous studies that reported significant chi square association between hygiene related behaviours and health skin, (Minerva, 2023) (N. M. Alzoabi, 2025) (Ghach, 2023).

More than half reported sharing cosmetic (64.4 %), a practise that may facilitate. microbial transmission through direct contact with contaminate lip, eye, and facial product, especially when hands. Brushers or sponges are not thoroughly clean poor allow organisms to increasing the risk of acne, dermatitis itching, redness, conjunctivitis, blepharitis, and other skin or eye infections. This interpretation is consistent with prior studies showing that shared cosmetics and non-adequately maintained beauty tools are frequently contaminated and associated with skin problems, while poor personal hygiene and shared personal items significantly increase infections risk (M. Khodadadi, 2024) (R. A. Alharbi, 2025) (Miller, 2024)

Conclusion

The findings across all tables showed that cosmetics is quite common among respondents, especially young female university students, with many using cosmetics several times a week or daily. At the same time, the study highlights unsafe hygiene practise, such as regularly sharing cosmetic products and rarely cleaning brusher or sponges, which may create favourable condition for microbial contamination transmission. The reported eye irritation after eye makeup use further suggests that repeated cosmetic exposure, especially when combined with the poor tool hygiene may contribute to ocular discomfort and possible inflammatory eye problems.

based on the findings of this study, it encourages students to give more attention that healthy education program implemented to increase students' awareness of the risks associated with the sharing cosmetics and using unclean brushes or sponges. Students should also clean cosmetic tools after each use, or at least extensively using appropriate disinfecting methods. In addition, cosmetic should not be sharing between users, particularly eye products such as mascara, eyeliner, and applicators to reduce cross- contamination.

Users should be advising to replace old or expired cosmetic products and to discard items that show change and smell, texture, or appearance. Universities and healthy educators should organize personal hygiene campaigns that emphasize skin and eye safety in relation to cosmetic use.

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Ethical Approval

The study design was approval by the local research ethics committee of the Department of aesthetic and laser techniques at Yarmouk University College, under Order No. 2 dated January 6, 2026. Informed consent was obtained from the participants.

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Conflict of Interest

The authors declare no conflict of interest.

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