



PERCEPTION AND BEHAVIOR IN SKINCARE ROUTINE DURING THE COVID-19 PANDEMIC

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ABSTRACT

In the COVID-19 pandemic, several policies have been implemented such as the use of masks and social distancing. This has an impact on lifestyle changes such as skincare routines. The aim of this study was to obtain a demographic, behavioral, and perception overview of skincare use before and during the pandemic in medical students. This cross-sectional study was conducted by distributing a Google form questionnaire to FKIK Unika Atma Jaya students from the 2016-2021 intake. The inclusion criteria used were as follows: (1) FKIK Atma Jaya students from the 2016-2021 intake; (2) Students who completed the questionnaire until the end. Medical students demonstrated a high level of skincare knowledge but showed uncertainty regarding product composition and safety aspects. Their behavior indicated a strong focus on appearance and trust in brand quality, though opinions were divided on halal certification. Despite a strong demand for skincare products, makeup usage declined. Most respondents were aware of skincare benefits and potential side effects, but uncertainty arose about ingredients and disinfecting. This study explored the perceptions and behaviors of medical students regarding skincare use before and during the COVID-19 pandemic. Health promotion is urgently needed to prevent skin disorders due to skincare.

Keywords: behavior; covid-19; pandemic; perception; skincare

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INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the extremely contagious virus that caused the coronavirus disease (COVID-19) epidemic all over the world. To slow the disease's rapid spread, the Indian government implemented a complete lockdown of all non-essential services nationwide. This lockdown's initial two phases lasted from March 25 to April 14, 2020, and April 15 to May 3, 2020, respectively.(Babu et al., 2020; Florindo et al., 2020; Lam et al., 2020) In an effort to slow the pandemic, numerous protocols have been put into practice, including social distancing, mask-wearing, social distancing, and hand hygiene.(Chiu et al., 2020) The general usage of skincare has been affected by the prolonged period of social separation and the use of personal protective equipment (PPE) to avoid infection. Long-term usage of personal protection equipment and additional personal hygiene practices is leading to the emergence of a number of skin disorders.(Masood et al., 2020) With the spread of the virus and the implementation of precautions, such as wearing face masks and frequent hand washing, each individual must adjust their skincare products to address new challenges and prioritize overall skin health amid the pandemic.(Rivers et al., 2021) Healthcare workers, as front-line combatants, are vulnerable to a variety of skin disorders because they wear personal protection equipment for extended periods of time; medical students are no exception. These negative skin conditions include contact dermatitis,

redness, irritation, itching, and exacerbation of existing skin diseases such as acne vulgaris and seborrheic dermatitis.(Masood et al., 2020)

Numerous facets of life, such as social interactions, daily schedules, and skincare practices, have to shift. Some chose to devote their increased free time to hobbies, while others chose to learn new skills or spend it with their families.(Ścieszko et al., 2021) During the pandemic, skincare was seen as crucial by customers worldwide, although makeup's significance declined following the outbreak. This situation has caused a change in customers' behavior in using skincare and cosmetics. There was a decrease in interest and opportunity for some people to wear makeup, therefore, the overall demand for makeup products has decreased. The public's perception of skincare and cosmetics has also evolved. Skincare items benefit from the pandemic's spread (SOP), but makeup goods suffer, with the exception of eye makeup, which benefits.(Choi et al., 2022; Korrapati et al., 2021; R. Lee, 2021) It is widely accepted that lifestyle characteristics, including religion, income, and age-related factors and also product advertisement, impact customer behavior in the cosmetic and skincare sectors. These elements frequently show themselves as an interest in aesthetics and improving one's own appearance (Alaburo Abdulsalam et al., 2024; Mohammed et al., 2021; Radhi et al., 2024) These days, the market is overflowing with various suggestions for having beautiful, perfect skin, which tempts countless customers to research and try out different home skincare routines. The necessity to comprehend consumer perception and behavior about skin health is indicated by the increased desire to have perfect, healthy skin.(Y. B. Lee et al., 2020)

Although it has been noted that people's skincare habits and skin types may alter as a result of the mandated mask-wearing as a preventive measure to fight the COVID-19 pandemic (Kim & Kwon, 2023) no research has looked at how these factors relate to perception and attitude during the pandemic. We hoped that this study can be useful for the community to learn how changes in people's perceptions and behavior in their skincare routines to overcome skin problems that occur during the pandemic and to find out patterns of behavior and changes in people's perceptions of skincare products. Thus, the aim of this study is to evaluate perception and attitude in using skincare during the COVID-19 pandemic in medical students.

METHOD

Design

From May 2022 to July 2022, this cross-sectional descriptive study was carried out in Atma Jaya Catholic University of Indonesia. A cross-sectional study was conducted in School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia to evaluate the attitudes and perceptions of medical students regarding cosmetic items. In this article, attitude was defined as the predominant way that customers think about cosmetics. Attitude is a clear and consistent way of thinking that one adopts toward a subject. Contrarily, perception is the process by which an individual gathers information and draws their own opinions about a subject. Perception was defined in this article as the personal knowledge that customers possess regarding cosmetics.

Setting and Participant

Medical students at Atma Jaya Catholic University of Indonesia were invited to participate in this study after gaining approval from the university administration and obtaining a code of ethical clearance (NO: 06/05/KEP-FKIKUAJ/2022). They were assured of the confidentiality of the information. All first-year through final-year medical students were included; 102 of them were chosen as the sample size. In this study, non-probability sampling was employed. Every medical student on the university's list was chosen voluntarily to be included in the study, and sampling was done in accordance with that list.

$$n = \frac{(z_{\alpha} + z_{\beta})^2 \pi}{(p_1 - p_2)^2}$$

$$\pi = (P_1 Q_2) + (P_2 Q_1)$$

$$Z_{\alpha} = 1.96; Z_{\beta} = 0.84; P_1 = 0.19; P_2 = 0.05; Q_1 = 1 - P_1; Q_2 = 1 - P_2$$

$$n = \frac{(1.96 + 0.84)^2 \cdot 0.221}{(0.19 - 0.05)^2} \cong 89$$

Figure 1. Minimum sample size

Data Collection

The inclusion criteria were: (1) medical students of Atma Jaya Catholic University of Indonesia; (2) students in the academic year 2016 to 2021; (3) students who are willing to participate in the study. Meanwhile, the exclusion criteria were students who did not want to continue the procedure and dropped out of the study. Google Forms was used to distribute questionnaires to Atma Jaya Catholic University of Indonesia medical students in order to conduct this study. The data was collected using a validated questionnaire in the previous study by Mohammed et al. (2021). Under the guidance and supervision of a dermatology, venereology, and aesthetic specialists, the distributed questionnaire was adapted from earlier study (Mohammed et al., 2021) A pilot research with 40 cosmetic consumers was then conducted by Mohammed et al. (2021) to test the validity and reliability of the questionnaire. The scales' internal consistency value was 0.81, their content validity was 0.89, and their test-retest reliability was 0.92. The questionnaire essentially consisted of 33 items that were separated into three sections: (a) sociodemographic factors, (b) perceptions, and (c) attitudes. There were 8 questions in the demographic background, consisting: (1) gender; (2) age; (3) marital status; (4) alcohol consumption; (5) smoking; (6) monthly expenditure on skincare products; (7) daily sleep duration; (8) water consumption per day. The perception and attitude towards skincare were divided into two sections, each consisting of nine items. (Mohammed et al., 2021)

RESULT

Demographic Data

The largest percentage of research participants were female (86.6%), and the largest age group was 22 years old (22.68%). All of the participants did not smoke, and the majority of them did not drink alcohol (87.63%). The respondents had a high level of education because they were medical students. Of all respondents, 36.08% spent less than IDR 200,000 on skincare products, and 42.27% spent between IDR 200,000 and IDR 400,000. Most of the participants have 4-6 hours of sleep duration (50.52%) and 5-8 glasses of water consumption per day (51.55%). Based on data obtained from the perception questionnaire on skincare products used by respondents, most respondents expressed doubts about the statement "ingredients written on product labels can be misleading" with a percentage of 40.2%, "skincare products made from natural ingredients are better than chemicals" as much as 38.2%, "using skincare products together with others can increase the possibility of contracting COVID-19" as much as 30.4%, and "skincare products must be disinfected regularly" as much as 36.3%. Meanwhile, most agreed with the statement "branded skincare has good quality" with a percentage of 40.2%, "The effects of skincare products have been proven through scientific studies" with a percentage of 52%, "Some skincare products have side effects" as much as 57.8%, "Using skincare products together with family members or friends can transmit bacterial infections" as much as 40.2%. and most respondents stated that they strongly agree with the statement "Skincare products have an expiration date" as much as 53.9%. The overall perception of Adult Consumers shows a fairly high level of knowledge but there is still uncertainty about the composition and effects of cosmetic products, as shown in Table 2.

Table 1.
Demographic Data

Parameter	f	%
Gender		
Female	84	86.6
Male	13	13.4
Total	97	100
Age (years)		
18	5	5.15
19	9	9.28
20	10	10.31
21	16	16.49
22	22	22.68
23	17	17.53
24	17	17.53
26	1	1.03
Marital Status		
Not married	96	98.97
Married	1	1.03
Alcohol Consumption		
Yes	12	12.37
No	85	87.63
Smoking		
Yes	0	0
No	97	100
Monthly Expenditure on Skincare Products		
< Rp 200.000	35	36.08
Rp 200.000 - Rp 400.000	41	42.27
Rp 400.000 - 800.000	9	9.28
> Rp 800.000	12	12.37
Daily Sleep Duration		
<4 hours	5	5.15
4-6 hours	49	50.52
6-8 hours	38	39.18
>8 hours	5	5.15
Water Consumption per Day		
<2 glasses	4	4.12
2-4 glasses	16	16.49
5-8 glasses	50	51.55
>8 glasses	27	27.84

Table 2.
Knowledge of participants toward cosmetic products

Questions	Strongly Disagree f(%)	Disagree f(%)	Uncertain f(%)	Agree f(%)	Strongly Agree f(%)
Ingredients stated on the product label can be misleading	2 (2.1)	16 (16.5)	41 (42.3)	37 (38.1)	1 (1)
Branded skincare products have good quality	3 (3.1)	19 (19.6)	31 (32.0)	40 (41.2)	4 (4.1)
The effects of skincare products have been proven through scientific studies	1 (1)	3 (3.1)	29 (29.9)	52 (53.6)	12 (12.4)
Natural skincare products are better than chemical-based ones	5 (5.2)	17 (17.5)	38 (39.2)	32 (33.0)	5 (5.2)
Some skincare products have side effects	0 (0)	3 (3.1)	15 (15.5)	59 (60.8)	20 (20.6)
Skincare products have expiry dates	0 (0)	0 (0)	0 (0)	43 (44.3)	54 (55.7)
Sharing skincare products with family members or friends can transmit bacterial infection	2 (2.1)	14 (14.4)	25 (25.8)	41 (42.3)	15 (15.5)
Sharing skincare products with others increases the likelihood of contracting COVID-19	1 (1)	28 (28.9)	31 (32.0)	30 (30.9)	7 (7.2)
Skincare products should be disinfected regularly	20 (20.6)	37 (38.1)	37 (34.0)	33 (34.0)	7 (7.2)

Table 3.
Attitude of participants toward skincare products

Questions	Strongly Disagree f(%)	Disagree f(%)	Uncertain f(%)	Agree f(%)	Strongly Agree f(%)
Use skincare products because they enhance beauty and appearance	0 (0)	4 (4.1)	6 (6.2)	65 (67.0)	22 (22.7)
Choose skincare to achieve good skin condition rather than knowing side effects	4 (4.1)	27 (27.8)	17 (17.5)	38 (39.2)	11 (11.3)
Improper use of skincare products can cause rashes, skin darkening, and wrinkles	0 (0)	0 (0)	10 (10.3)	62 (63.9)	25 (25.8)
Past experiences influence my purchase of skincare products	1 (1.0)	4 (4.1)	7 (7.2)	53 (54.6)	32 (33.0)
I buy skincare products with natural ingredients if they are inexpensive	3 (3.1)	18 (18.6)	30 (30.9)	37 (38.1)	9 (9.3)
I believe the information on the product label	1 (1.0)	9 (9.3)	24 (24.7)	59 (60.8)	4 (4.1)
I prefer to use 70% alcohol to sanitize my skincare packaging	1 (1.0)	21 (21.6)	20 (20.6)	47 (48.5)	8 (8.2)
I use halal-certified skincare products	11 (11.3)	28 (28.9)	27 (27.8)	25 (25.8)	6 (6.2)
I use halal skincare products because they are of good quality	9 (9.3)	30 (30.9)	38 (39.2)	18 (18.6)	2 (2.1)

Based on data obtained from the behavioral questionnaire on skincare products used by respondents, most respondents agreed with the statement "Using skincare products because they can improve beauty and appearance" as much as 63.7%, "Choosing skincare to get good skin conditions compared to knowing the side effects" as much as 37.3%, "Inappropriate use of skincare can cause rashes, skin darkening, and wrinkles" as much as 61.8%, "Past experiences influence my purchase of skincare products" as much as 52.9%, "I buy skincare products with natural ingredients if the price is not expensive" as much as 36.3%, "I trust the information on the product label" as much as 58.8%, and as much as 47.1% on "I choose to use 70% alcohol to sanitize my skincare packaging". Meanwhile, on the statement "I use halal-certified skincare, respondents' opinions are divided quite evenly between disagreeing (27.5%), hesitant (26.5%), and agreeing (24.5%). The overall behavior questionnaire of participants shows similar behavior towards the use of skincare because they have a fairly high level of knowledge, as shown in Table 3.

DISCUSSION

The study is the first to analyze the level of attitudes and perceptions towards skincare products throughout the COVID-19 Pandemic in Indonesia. It is crucial to comprehend people's knowledge and preferences for skincare products, given Indonesia's cultural and demographic diversity. Furthermore, the recent COVID-19 pandemic has profoundly influenced numerous facets of our daily lives, including our skin condition and our approach to using skincare products. Although attention to skincare products for men is also slowly increasing, the dominance of women in the use of skincare products will persist for at least the next period. This dominance is linked to the increasing financial independence of women as well as increasing awareness of appearance, personal well-being, and self-care.(Abbas & Karadavut, 2017; Duarte et al., 2025; Kenalemang-Palm, 2023; Shabib & Ganguli, 2017) In addition there are other factors such as higher education for women and high exposure to skincare products influence the increasing interest in knowledge and guidelines on basic skincare regimens, the finding is in alignment with respondents in this study who are medical school students with 72.5% already finish their undergraduate (S1) education.(Alamer et al., 2023; Oktaviani et al., 2023; Park et al., 2019)

The results of research conducted in 2022 showed that facial skincare products had dominated the skin care product market in Indonesia, aligning with this study's findings.(Oktaviani et al.,

2023) Increased interest in information and guidelines on skincare and awareness of self-appearance among consumers, especially during the COVID-19 pandemic period, has had a positive impact on market growth. The social restriction and mask usage cause some changes in skin conditions that result in skin disorders. This phenomenon leads to an increased emphasis on skincare routines rather than makeup usage. In this study, the use of high-quality and sanitized skincare product awareness also increases to ensure maximum results and minimize the occurrence of adverse side effects from poorly manufactured products.(Bukhari et al., 2022; Kaul et al., 2021; Ku et al., 2023; Ścieszko et al., 2021) In addition, the implementation of Halal regulations by the Indonesian Government and the increase in local brands with a penchant for Halal skincare products also support the growth of the skincare industry in Indonesia.(Baron et al., 2022; Oktaviani et al., 2023) There is considerable uncertainty among participants about whether sharing skincare products can facilitate the spreading of bacterial infection and increase the likelihood of contracting COVID-19. Previous research has examined cases of bacteria spreading through shared cosmetics in publicly accessible samples in a cosmetic product store in the United Kingdom has contributed to the spread of shingles. The finding is consistent with a study by Butschke et al. (2016), which revealed that consumers were generally more concerned with the appearance and texture of products on the skin rather than considering the hygienic implications.(Butschke et al., 2016) Nevertheless, this attitude is slightly changing due to heightened awareness of the highly contagious level of the coronavirus.(Mohammed et al., 2021)

There is uncertainty or divided opinion among the participants regarding the use of natural or chemical-based skincare, while there's another study that stated there's a significant rise in natural and organic product interest among the younger generation in Indonesia.(Oktaviani et al., 2023) Chemicals-based skincare can offer desired outcomes more rapidly, but there are concerns that the active ingredients listed may cause a variety of undesirable side effects, especially for people with sensitive skin and potential allergic reactions. underlies the shift in preference for skincare products with more natural ingredients.(Kumar, 2016; Zulfa & Jusuf, 2024) Based on data obtained from respondents, Nearly half of the respondents expressed doubts about the statement "ingredients written on product labels can be misleading" with a percentage of 42.3%, this shows that there is still uncertainty about the composition of the ingredients of each product written on the label because its implementation can be different for each individual. A majority of respondent in this study (64,9%) have trust and view product labels positively, considering them as a medium to discover new products, understand their benefits, and make informed choices. The label generally provides a brief overview of the main active ingredients, claims, and promises that are designed to attract consumers for solutions to their specific skin concerns. However, some consumers are more cautious and perceive labels only as 'promotional' or as a marketing tool designed to persuade consumers into buying products that may not live up to their claims. As a result, that causes some consumers to question the accuracy and validity of claims on promotional labels and often prefer to rely on other alternative sources of information, such as personal recommendations, expert opinions, or unbiased reviews.(Baron et al., 2022) The current study was limited to the focus on medical students and self-reported data by using a questionnaire, but the study showed some results that can be used as a basis for further study to explore broader populations and the long-term effects of altered skincare habits during the pandemic COVID-19 in Indonesia.

CONCLUSION

This study explored the perceptions and behaviors of medical students regarding skincare use before and during the COVID-19 pandemic. Education on skin care should be done to prevent skin disorders. Randomized controlled trials need to be conducted to draw a higher evidence-

based conclusion.

REFERENCES

Abbas, O. L., & Karadavut, U. (2017). Analysis of the Factors Affecting Men's Attitudes Toward Cosmetic Surgery: Body Image, Media Exposure, Social Network Use, Masculine Gender Role Stress and Religious Attitudes. *Aesthetic Plastic Surgery*, 41(6), 1454–1462. <https://doi.org/10.1007/s00266-017-0882-3>

Alaburo Abdulsalam, T., Bolanle Tajudeen, R., Seun Ogungbemi, S., & Francis, E. (2024). Impact of Forensic Marketing on Consumer Behavior: Evidence From Beauty Products\’ Purchase Decision. *Business Ethics and Leadership*, 8(1), 129–148. [https://doi.org/10.61093/bel.8\(1\).129-148.2024](https://doi.org/10.61093/bel.8(1).129-148.2024)

Alamer, M. A., Alrashed, H., Abuageelah, B. M., Kinkar, L. I., Alwayel, Z. A., Alfaifi, M. H., Alfataih, M. T., Alzakry, L. M., Alruwaili, Z. M., & Alhumam, A. A. (2023). Impact of Social Media on Choosing Skin Care and Cosmetic Products Among Females in Saudi Arabia. *Cureus*, 15(12), e49922. <https://doi.org/10.7759/cureus.49922>

Babu, N., Kohli, P., Mishra, C., Sen, S., Arthur, D., Chhablani, D., Baliga, G., & Ramasamy, K. (2020). To evaluate the effect of COVID-19 pandemic and national lockdown on patient care at a tertiary-care ophthalmology institute. *Indian Journal of Ophthalmology*, 68(8), 1540. https://doi.org/10.4103/ijo.IJO_1673_20

Baron, I. S., Melania, M., & Agustina, H. (2022). Understanding the effect of cosmetics brand perception, halal label, and product composition on habitual buying behaviour through perceived price. *GATR Journal of Management and Marketing Review*, 7(3), 138–149. [https://doi.org/10.35609/jmmr.2022.7.3\(6\)](https://doi.org/10.35609/jmmr.2022.7.3(6))

Bukhari, A., Bin Dakhil, A., Albrkheil, A., Almutlq, M., Alolayan, O., Alqahtani, M., Alsubaie, F., Alessa, D., & Alzamil, F. (2022). Face mask-induced skin changes: a new common phenomenon during the coronavirus disease 2019 pandemic. *Dermatology Reports*. <https://doi.org/10.4081/dr.2022.9526>

Butschke, A., Droß, A., Dünnebier, K., Laube, I., & Weiler, A. (2016). Experiences and Statistical Evaluation of Serious Undesirable Effects of Cosmetic Products in the EU. *Cosmetics*, 3(3), 25. <https://doi.org/10.3390/cosmetics3030025>

Chiu, N.-C., Chi, H., Tai, Y.-L., Peng, C.-C., Tseng, C.-Y., Chen, C.-C., Tan, B. F., & Lin, C.-Y. (2020). Impact of Wearing Masks, Hand Hygiene, and Social Distancing on Influenza, Enterovirus, and All-Cause Pneumonia During the Coronavirus Pandemic: Retrospective National Epidemiological Surveillance Study. *Journal of Medical Internet Research*, 22(8), e21257. <https://doi.org/10.2196/21257>

Choi, Y.-H., Kim, S. E., & Lee, K.-H. (2022). Changes in consumers' awareness and interest in cosmetic products during the pandemic. *Fashion and Textiles*, 9(1), 1. <https://doi.org/10.1186/s40691-021-00271-8>

Duarte, P., Silva, S., & Carvalho, M. J. (2025). Is masculinity ruining the male skincare market? Comprehensive insights on consumer behavior in cosmetics. *Journal of Consumer Marketing*, 42(2), 159–173. <https://doi.org/10.1108/JCM-01-2024-6510>

Florindo, H. F., Kleiner, R., Vaskovich-Koubi, D., Acúrcio, R. C., Carreira, B., Yeini, E., Tiram, G., Liubomirski, Y., & Satchi-Fainaro, R. (2020). Immune-mediated approaches against COVID-19. *Nature Nanotechnology*, 15(8), 630–645. <https://doi.org/10.1038/s41565-020-0732-3>

Kaul, S., Kaur, I., & Jakhar, D. (2021). Facial Mask-related Acne and Acneiform Eruption During the Coronavirus Disease 2019 Pandemic: A Case Series. *The Journal of Clinical and Aesthetic Dermatology*, 14(10), 32–34.

Kenalemang-Palm, L. M. (2023). The beautification of men within skincare advertisements: A multimodal critical discourse analysis. *Journal of Aging Studies*, 66, 101153. <https://doi.org/10.1016/j.jaging.2023.101153>

Kim, T.-O., & Kwon, K.-H. (2023). The Association between Skin Type and Skin Care

Behavior and Stress Perception during COVID-19 Pandemic. *The Journal of Industrial Distribution & Business*, 14(4), 33–46.

Korrapati, N. H., Perera, M. H., Swamy, P. K., Ranganath, P. A., Ankireddy, K., Thomas, S. A., & Bathala, R. P. (2021). Skin-care Routine During The COVID-19 Pandemic: An Online Survey. *International Journal of Progressive Sciences and Technologies*, 25(2). <https://doi.org/http://dx.doi.org/10.52155/ijpsat.v25.2.2910>

Ku, J.-L., Sun, M.-H., Yen, Y.-C., & Chi, C.-C. (2023). Mask-related adverse skin reactions and risk factors: A literature review. *Dermatologica Sinica*, 41(3), 153–159. <https://doi.org/10.4103/ds.DS-D-23-00100>

Kumar, V. (2016). Perspective of Natural Products in Skincare. *Pharmacy & Pharmacology International Journal*, 4(3). <https://doi.org/10.15406/ppij.2016.04.00072>

Lam, S., Lombardi, A., & Ouanounou, A. (2020). COVID-19: A review of the proposed pharmacological treatments. *European Journal of Pharmacology*, 886, 173451. <https://doi.org/https://doi.org/10.1016/j.ejphar.2020.173451>

Lee, R. (2021). Factors related to COVID-19 Anxiety and Stress: Focusing on Demographic Characteristics and Neighborhood Satisfaction. *The Journal of the Korea Contents Association*, 21, 71–80.

Lee, Y. B., Shin, M. K., Kim, J. S., Park, Y. L., Oh, S. H., Kim, D. H., Ahn, J. Y., Lee, S. J., Kim, H. O., Kim, S. S., Lee, H. J., Lee, M. W., Lee, Y. W., & Park, M. Y. (2020). Perceptions and Behavior Regarding Skin Health and Skin Care Products: Analysis of the Questionnaires for the Visitors of Skin Health Expo 2018. *Annals of Dermatology*, 32(5), 375. <https://doi.org/10.5021/ad.2020.32.5.375>

Masood, S., Tabassum, S., Naveed, S., & Jalil, P. (2020). COVID-19 Pandemic & Skin Care Guidelines for Health Care Professionals. *Pakistan Journal of Medical Sciences*, 36(COVID19-S4). <https://doi.org/10.12669/pjms.36.COVID19-S4.2748>

Mohammed, A. H., Blebil, A., Dujaili, J., & Hassan, B. A. R. (2021). Perception and attitude of adults toward cosmetic products amid COVID-19 pandemic in Malaysia. *Journal of Cosmetic Dermatology*, 20(7), 1992–2000. <https://doi.org/10.1111/jocd.14147>

Oktaviani, D. J., Susilawati, Y., Tjitraresmi, A., & Zuhrotun, A. (2023). Potential of Natural Based-Skincare Cosmetic Ingredients for Naturally Glowing Skin. *Borneo Journal of Pharmacy*, 6(4), 417–436. <https://doi.org/10.33084/bjop.v6i4.5013>

Park, M., Kim, S., Kim, Y., Nam, D. J., Ryoo, J.-H., & Lim, S. (2019). Relationship between personal care products usage and triclosan exposure: the second Korean National Environmental Health Survey (KoNEHS 2012–2014). *Annals of Occupational and Environmental Medicine*, 31(1). <https://doi.org/10.1186/s40557-019-0283-y>

Radhi, A., Hamdan, A., & Al Mubarak, M. (2024). Factors Influencing Consumer Buying Behavior of Beauty and Personal Care (pp. 409–424). https://doi.org/10.1007/978-3-031-62106-2_32

Rivers, J. K., Arlette, J. P., DeKoven, J., Guenther, L. C., Muhn, C., Richer, V., Rosen, N., Tremblay, J.-F., Wiseman, M. C., Zip, C., & Zloty, D. (2021). Skin care and hygiene among healthcare professionals during and after the SARS-CoV-2 pandemic. *SAGE Open Medicine*, 9. <https://doi.org/10.1177/20503121211062795>

Ścieszko, E., Budny, E., Rotsztejn, H., & Erkert-Polgaj, A. (2021). How has the pandemic lockdown changed our daily facial skincare habits? *Journal of Cosmetic Dermatology*, 20(12), 3722–3726. <https://doi.org/10.1111/jocd.14059>

Shabib, F., & Ganguli, S. (2017). Impact of CSR on consumer behavior of Bahraini women in the cosmetics industry. *World Journal of Entrepreneurship, Management and Sustainable Development*, 13(3), 174–203. <https://doi.org/10.1108/WJEMSD-08-2016-0041>

Zulfa, R. A., & Jusuf, N. K. (2024). Skin Care in Dermatology: Between Organic versus Synthetic Products. *Sumatera Medical Journal*, 7(2), 79–86. <https://doi.org/10.32734/sumej.v7i2.10427>.