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**KNOWLEDGE AND PRACTICES OF SKIN CARE AMONG
PHARMACY STUDENTS**

Siti Nur Fadzilah Muhsain^{1*}, Nur 'Ainun Mokhtar², Siti Nur Fathini Muhsain³, Amirah Rosli⁴,
Amni Syifa Saipol⁵, Anis Sofea Ramli⁶, Maryam Izzati Zulkarnain⁷, Wan Nordini Hasnor Wan
Ismail⁸

- ¹ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: sitinurfadzilah077@uitm.edu.my
- ² Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200Pulau Pinang, MALAYSIA
Email: nurain2942@uitm.edu.my
- ³ Department of Business and Management, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Permatang Pauh, 13500 Pulau Pinang MALAYSIA
Email: fathini@uitm.edu.my
- ⁴ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: 2023817436@student.uitm.edu.my
- ⁵ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: 2023867782@student.uitm.edu.my
- ⁶ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: 2023695958@student.uitm.edu.my
- ⁷ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: 2023873916@student.uitm.edu.my
- ⁸ Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Pulau Pinang Kampus Bertam, 13200 Pulau Pinang, MALAYSIA
Email: nordini.hasnor@uitm.edu.my
- * Corresponding Author

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DOI: 10.35631/IJEMP.725020.**This work is licensed under** [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

Skin care is integral for maintaining skin health and functionality, involving routines like cleansing, moisturising, and appropriate photoprotection. Pharmacy students, as future healthcare providers, play a crucial role to influence public perceptions and behaviours regarding skin health. Furthermore, an efficacious skin care regimen can have a positive impact on students' quality of life which in turn can potentially affect their academic performance. To evaluate the awareness and practices related to skin care, a cross-sectional survey was conducted online among 154 Diploma of Pharmacy students at Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang. The survey employed a mix of close-ended and open-ended questions to assess participants' knowledge regarding skin care, with data analysed using IBM SPSS software version 22. Among the 154 respondents, 80.5% were female, and the remaining 19.5% were male, with ages ranging from 19 to 23 years. A notable 95% of students recognised the importance of appropriate skin care for cleansing and moisturising, while 67.5% reported adhering to a proper daily skin care routine. Most agreed that improper practices could lead to various skin issues. Additionally, while 33.8% were unaware of the ideal sunscreen protection, 66.2% knew it should range between SPF 30 to 50. The majority relied heavily on the internet (95.5%) and influencers (74.7%) for skin care information. In terms of practice, students commonly washed their hands before skin care, and a significant portion (66%) believed that ideally, the face should be washed twice or more daily. Furthermore, 75.3% used cosmetic products, with the primary skin care products being cleansers (92.9%), sunscreen (84.4%), and moisturisers (77.9%). In conclusion, the study indicates satisfactory levels of knowledge and practice regarding skin care among participating students. Nonetheless, there is an opportunity to introduce additional educational programs aimed at enhancing students' understanding of appropriate skin care practices.

Keywords:

Skin Care, Knowledge, Practices, Students

Introduction

Skin acts as a vital defense against various external threats, such as pathogens and environmental factors like sunlight and radiation (Michalak et al., 2021). Proper skin care practices are crucial for maintaining skin integrity and health, emphasising on protection and repair (Draelos, 2021). These practices, that include cleansing, moisturising, and UV protection, are essential for preserving skin's structural and functional integrity, which promote overall well-being, and reducing risks of infection. Establishing a simple skin care routine, especially during the transition from adolescence to adulthood, is critical to prevent long-term damage (Upadhyay et al., 2021; Nitiyarom et al., 2021).

Skin care awareness plays a crucial role in maintaining skin health and promoting overall well-being, particularly among students, that could potentially affect their academic performance. Indeed, understanding the knowledge and practices of skin care among Pharmacy students is crucial due to their pivotal role in patient counselling and adherence, especially to dermatological treatments. Consequently, enhancing pharmacy curricula to focus on skin care, can improve students' confidence and real-world application of knowledge that ultimately benefiting patient care.

Despite the crucial importance of understanding and practicing proper skin care, research in this area remains notably limited, especially among Pharmacy students in Malaysia. The majority of existing studies tend to focus predominantly on the purchasing behaviours associated with skincare products. This gap in the literature has prompted the present study, which aims to assess the knowledge and practices of skin care among Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP).

Literature Review

Skin

The skin, accounting for approximately 15% of total body weight, plays a pivotal role in protecting the body against external and internal threats while fulfilling sensory, regulatory, and protective functions (Benedetti, 2022, Yousef et al., 2022). Its complex structure and cellular composition enable it to perform these multifaceted roles efficiently.

Skin Damage

The World Health Organization has identified over 1000 skin diseases, underscoring the profound importance of skin health across the lifespan (Pilkington et al., 2020). In particular, sensitive areas like the face require meticulous care to mitigate various forms of damage, including inflammation, premature aging, hyperpigmentation, and acne (Kouassi et al., 2022). These conditions not only compromise quality of life but also have significant psychological ramifications (Chilicka et al., 2022).

Skin damage results from both intrinsic factors such as genetics and extrinsic factors including blue light, extensive UV radiation, temperature, humidity, and environmental pollutants (Charitakis et al., 2022). Prolonged exposure to UV radiation, in particular, can induce cellular damage, leading to photoaging and increased cancer risk (Bacqueville et al., 2022). Environmental stressors, compounded by individual predispositions, exacerbate skin vulnerability, necessitating vigilant protection and care.

Elevated temperatures in regions like Malaysia exacerbate skin challenges by amplifying sweat production, resulting in increased hydration, sebum production, and pH alterations (MyGovernment Official Report; Herrero-Fernandez, 2022). Disruption of the skin barrier due to excessive moisture loss and sebum secretion leads to dryness, dullness, and acne formation (Eske, 2020). Additionally, air pollution further degrades the epithelial barrier, underscoring the importance of consistent skin care practices even in indoor environments (Claudel et al., 2018).

Skin Care And Its Application

Skin care involves maintaining skin hygiene and comfort through appropriate products, with the skin care market experiencing significant growth (Kouassi, 2022). Individuals afflicted with skin ailments are willing to invest in effective solutions, underscoring the critical importance of skin care (Kassab et al., 2019).

Tailoring skin care routines to individual skin types and understanding product compatibility are essential for optimal outcomes (Norhuzaimi, 2018). Environmental, hormonal, and lifestyle factors necessitate adaptable skin care regimens. In Malaysia, skin care routines have become entrenched in daily life, particularly among women, reflecting a societal emphasis on skin health (Goh et al., 2021).

Basic skin care routines typically encompass cleansing, sun protection, and moisturizing, customized to address specific concerns like hydration and UV exposure. Additional products such as toners and serums offer targeted solutions for various skin issues (Goh et al., 2021).

Awareness and Practice of Skin Care Among Students

Pharmacy students play a crucial role in healthcare, particularly in providing medication-related advice and health education. Understanding their knowledge and practices is essential for effective preparation. These students, given their academic background are expected to have strong academic foundation in health knowledge and practices. Nonetheless, research shows that while they generally possess good theoretical knowledge, this does not always translate into practical application.

Research on the skin care knowledge and practices in these students is limited, focusing mainly on skincare products purchasing behaviour, skin diseases, and sunscreen usage. Consequently, a study by Nathan et al., 2023 shows community pharmacist in Malaysia demonstrated limited knowledge of sunscreen but had better knowledge of skin cancer. This gap is significant given their counselling role on dermatological issues. While expected to have extensive knowledge in health and personal care practices, specific studies are scarce. A literature review on skin care knowledge and practices among Malaysian Pharmacy students revealed key findings: they demonstrated limited knowledge of sunscreen despite better knowledge of skin cancer. This underscores the need for targeted education and practical training in dermatological care to better prepare them for advisory roles (Table 1).

Elsewhere, studies in medical students in Western India showed that efforts to augment skin care awareness among students are crucial in promoting healthy habits (Upadhyay et al., 2021). Study also indicated that females generally exhibit greater interest and diligence in skin care routines than males (Nitiyarom et al., 2022). Additionally, Pharmacy students show commendable knowledge of the benefits of sun exposure (Ismail et al., 2023).

Skin care awareness is predominantly disseminated through online and social media platforms, influencing consumer preferences and purchasing behaviours (Statista Research Department, 2023; Sheng et al., 2022). Despite advancements, research on skin care habits among university students remains limited, highlighting the necessity for comprehensive studies to inform targeted interventions and mitigate skin health risks. Addressing these gaps is imperative for

advancing skin care education and reducing skin ailments among the younger demographic (Rani and Krishnan, 2018).

The importance of skin care on the quality of life of university students cannot be overstated. Quality of life encompasses an individual's overall well-being and satisfaction with different aspects of their lives. Implementing a quality skin care regimen can significantly enhance various facets of a student's quality of life. Firstly, a quality skin care routine can positively impact physical appearance. Clear, healthy-looking skin can boost confidence and self-esteem, which are crucial for navigating the challenges of university life. When students feel good about their appearance, they are more likely to engage confidently in social interactions and academic endeavors. Additionally, skin care practices play a pivotal role in improving psychological well-being. Research suggests that maintaining a consistent skin care routine can have a positive effect on mental health by reducing stress and anxiety levels (Nitiyarom et al., 2021). Engaging in self-care activities like skin care can serve as a form of relaxation and self-soothing, providing students with a sense of control and empowerment over their well-being.

Table 1: Summary of Studies Focused on the Skin Care Knowledge and Practices in Students.

Study	Focus	Key Findings	Significance
Nathan et al., 2023	Knowledge of sunscreen and skin cancer among community pharmacists in Malaysia	Limited knowledge of sunscreen but better knowledge of skin cancer.	Highlights the need for targeted education in dermatological care for effective patient counselling.
Upadhyay et al., 2021	Skin care awareness among medical students in Western India	Efforts to enhance skin care awareness promote healthy habits.	Demonstrates the importance of skin care education in promoting healthy practices among students.
Nitiyarom et al., 2022	Gender differences in skin care routines	Females generally exhibit greater interest and diligence in skin care routines than males.	Indicates the need for tailored skin care education addressing gender-specific behaviours.
Wan Ismail et al., 2023	Knowledge of sun exposure benefits among Pharmacy students	Pharmacy students show commendable knowledge of the benefits of sun exposure.	Emphasizes the strength in certain areas of health knowledge among Pharmacy students.
Statista Research Department, 2023	Influence of online and social media on skin care awareness	Skin care awareness is predominantly disseminated through online and social media platforms.	Highlights the role of digital platforms in shaping consumer behaviors and preferences.

Study	Focus	Key Findings	Significance
Sheng et al., 2022	Consumer preferences and purchasing behaviors	Online and social media platforms significantly influence purchasing behaviors.	Underlines the impact of digital media on skin care practices and preferences among students.
Rani and Krishnan, 2018	Comprehensive studies on skin care habits among university students	Limited research on skin care habits highlights the need for comprehensive studies to inform targeted interventions.	Calls for more research to address gaps and improve skin care education among university students.
Nitiyarom et al., 2021	Psychological impact of skin care routines	Maintaining a consistent skin care routine can reduce stress and anxiety levels, improving mental health.	Shows the psychological benefits of skin care routines, emphasizing the holistic impact on students.

Methods

Study Design

The survey and methods (Figure 1) were subjected to Universiti Teknologi MARA's (UiTM) Research Ethics Committee (REC) reference number BERC/05/2022 (UG/MR/54). A cross-sectional study utilising an online survey instrument was conducted among Diploma of Pharmacy students at Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang (UiTM CPP). Participants were recruited based on their expressed interest in participating in the study. According to the Raosoft sample size calculator, the recommended sample size for this research is 144 with a 95% confidence level, 5% margin of error, 50% response distribution and the population size is 228. The survey achieved a response rate of n=154, indicating high participation.

Data Collection

Data collection involved gathering comprehensive information on skin care knowledge from students enrolled at UiTM CPP during the second, fourth, and sixth semesters. The questionnaire was developed based on existing scholarly literature by Nitiyarom et al. (2021) and Upadhyay et al. (2021). All respondents were requested to complete the survey through a questionnaire that was sent through WhatsApp with request letters for their responses.

A questionnaire was created using Google Forms and distributed online. The survey comprised of three sections: Demographic information, pre-existing knowledge, and skin care practices. Demographic characteristics included gender, age, semester of study and presence of underlying skin disease. The second section included open-ended and closed-ended questions assessing respondents' existing knowledge of skin care. The final section consisted of closed-ended questions evaluating students' basic skin care practices.

Data Analysis

The data analysis was conducted comprehensively, assessing the frequency and average of student responses and findings were presented as percentages. The respondents' details on demographic information, responses on students' knowledge, awareness, and practices towards skin care were presented in a table with percentages (%). Statistical tests were employed to interpret the data. The Chi-square test was performed using IBM SPSS Statistics software version 22, with a significance level set at $p < 0.05$.

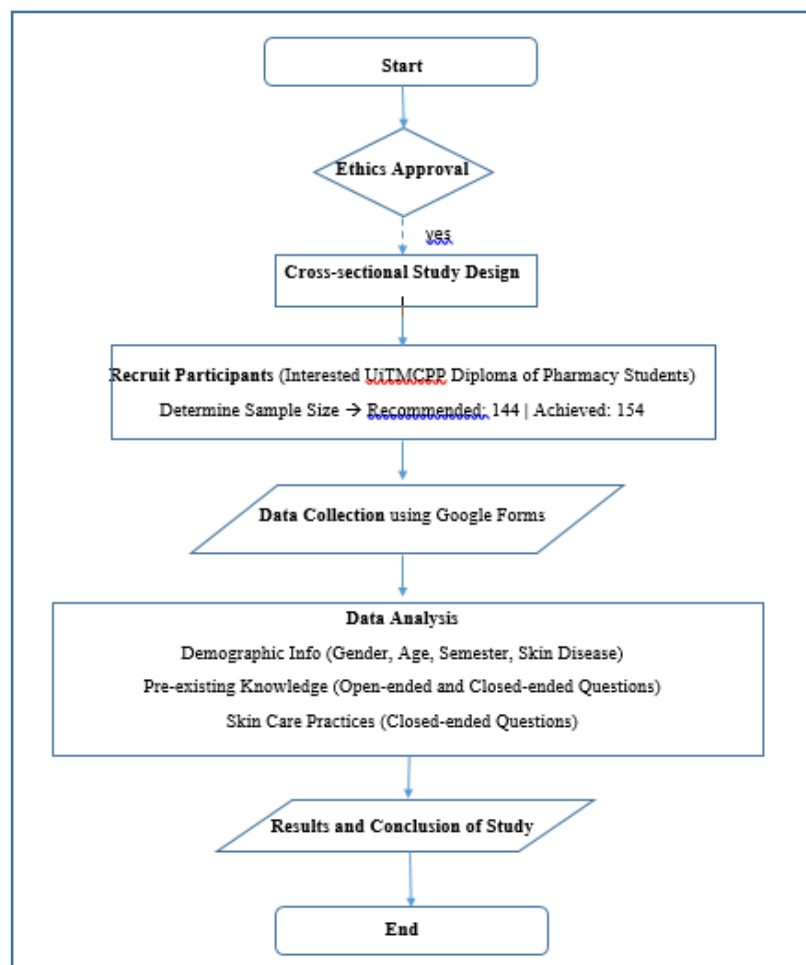


Figure 1: Flowchart of Methodology Process of the Study

Results

In this study, a comprehensive analysis was conducted among Pharmacy students from semesters 2, 4, and 6 at UiTM CPP. A total of 154 students, aged between 19 and 23, participated in the survey, providing valuable insights into their knowledge, awareness, and practices regarding skin care. Among the respondents, a significant majority of 124 (80.5%) were female, highlighting the predominance of female representation in the Pharmacy student population. Conversely, male students constituted a smaller proportion, with only 30 (19.5%) participating in the study. Additionally, a notable proportion of respondents, accounting for 20 (13%) of the total, reported having underlying skin diseases such as acne, allergies, eczema,

and urticaria, indicating a diverse range of skin conditions prevalent among Pharmacy students (Table 2).

Table 2: Demographic Profile of Participants (n=154)

Characteristics	n (%)
Gender	
Male	30 (19.5)
Female	124 (80.5)
Age (years)	
19	33 (21.4)
20	31 (20.1)
21	81 (52.6)
22	7 (4.5)
23	2 (1.3)
Semester	
2	38 (24.7)
4	34 (22.1)
6	82 (53.2)
Do you have any underlying skin disease	
Yes	20 (13.0)
No	134 (87.0)
Skin disease (if yes)	
Acne	11 (7.1)
Eczema	6 (3.9)
Allergies	2 (1.3)
Urticaria	1 (0.6)

Students' Knowledge and Awareness

According to Table 3, 95% of students agreed that moisturising the skin is the primary benefit of an appropriate skin care routine, followed by skin cleansing (94%) and skin brightening (73%). Regarding ideal sun protection factor (SPF) usage in Malaysia, Table 3 indicates that the majority of respondents knew the recommended minimum SPF to be SPF 30, while 24 (15.6%) respondents were unaware. Table 3 also presents the current knowledge of Pharmacy students regarding skin care routines, with 104 (67.53%) claiming to implement a proper skin care routine and 50 (32.5%) not following a suitable regimen for their skin types.

Table 3: Knowledge Towards Skin Care Routine in Diploma of Pharmacy students, Universiti Teknologi MARA, Cawangan Pulau Pinang (n=154)

Topics	n (%)
Benefit of appropriate skin care routine	
Moisturizes the skin	146 (94.8)
Makes the skin clean	145 (94.2)
Brightens the skin	112 (72.7)
Get rid of germs	103 (66.9)
Washes away the sweat	75 (48.7)
Eliminates the body odour	42 (27.3)

	n (%)	
Do you practice proper skin care routine?	Yes	No
Male	15 (9.7)	15 (9.7)
Female	89 (57.8)	35 (22.7)

Do you know the recommended SPF to be used in Malaysia	n (%)
<30	1 (0.6)
30-50	102 (66.2)
>50	27 (17.5)
I don't know	24 (15.6)

Table 4 displays students' awareness of the consequences of improper skin care routines and their information sources. 94.8% students were aware of the effects of improper skin care routine. The majority (91.6%) of participants believed that improper skin care could cause acne or back acne, and 136 (88.3%) believed it could damage the skin barrier. In line with these findings, 147 (95.5%) of students reported learning about skin care from the internet, while 115 (74.7%) learned from influencers.

Table 4: Awareness About Skin Care Routine in Diploma of Pharmacy students, Universiti Teknologi MARA, Cawangan Pulau Pinang (n=154)

Topics	n (%)	
	Yes	No
Are you aware of the effects of improper skin care routine?	146 (94.8)	8 (5.2)
Effects of improper skin care routine		
Acne/back acne	141 (91.6)	
Damage skin barrier	136 (88.3)	
Dryness	117(76.0)	
Sun burned	106 (68.8)	
Dull	93 (60.4)	
Wrinkle	74 (48.1)	
I don't know	6 (3.9)	
Sources of awareness		
Internet	147 (95.5)	
Influencer	115 (74.7)	
Friends	113 (73.4)	
Advertisement	83 (53.9)	
Family	67 (43.5)	
School	27 (17.5)	
Dermatologist	1 (0.6)	

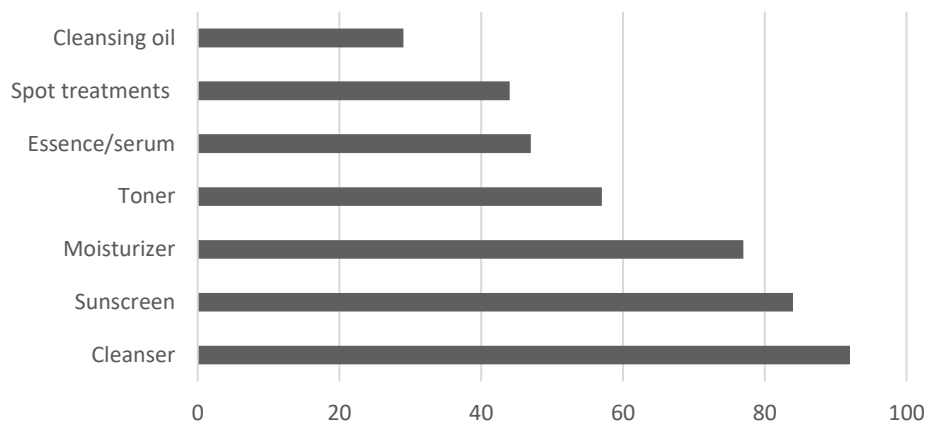
Students' Practice of Skin care Routine

The section on students' skin care routines examines their practices. According to Table 5, 147 respondents (95.5%) reported washing their hands before applying skin care, while 7 (4.6%) did not. Furthermore, 66% of students indicated washing their face twice a day or more, and 75.3% used cosmetic products, with cleansers, sunscreen, and moisturisers being the primary skin care products, as depicted in Figure 2.

Table 5: Practise of Skin Care Routine in Diploma of Pharmacy students, Universiti Teknologi MARA, Cawangan Pulau Pinang (n=154)

Topics	n (%)	
	Yes	No
Do you wash your hands before applying your skin care routine	147 (95.4)	7 (4.5)
How often do you wash your face		
Once a day	52 (33.7)	
Twice a day	90 (58.4)	
More than twice per day	12(7.8)	

SKIN CARE PRODUCTS USED AS PART OF SKINCARE ROUTINE

**Figure 2: Skincare Products Used by Diploma of Pharmacy students Universiti Teknologi MARA, Cawangan Pulau Pinang (n=154)**

Discussion

The knowledge and practices related to various aspects of health and personal care among students in Malaysia have garnered increasing attention. Pharmacy students, in particular, are positioned to play a pivotal role in the healthcare system, especially in providing medication-related advice and promoting health education among patients. Understanding their knowledge and practices in various health-related domains is crucial to ensure they are well-prepared for these responsibilities.

Skin care plays a pivotal role as it constitutes the primary protective barrier for the human body. With advancing age, individuals tend to be more conscious of their appearance, prompting a greater emphasis on skin care routines. The majority of respondents in this study were female Pharmacy students from semester 6, highlighting the female predominance within the student population. Notably, a significant proportion of students reported underlying skin diseases, with acne being the most prevalent issue among female students. This underscores the misconception that acne is solely confined to adolescents (Padmavathy et al., 2014).

Students' Knowledge Towards Skin care Routine

This study aimed to assess the knowledge of Pharmacy students regarding skin care routines. Results revealed that most students correctly identified the recommended SPF sunscreen range for use in Malaysia (more than SPF30). As the majority of students were female, this finding is consistent with previous research that indicated a higher level of sunscreen understanding among female students (Awadh et al., 2016). Moreover, these students exhibited greater awareness of ideal SPF usage compared to their Indian counterparts, in which the majority of Medical students in Western India failed to identify the recommended SPF level (Upadhyay et al., 2021). Given the detrimental effects of UV exposure on skin health, especially for individuals with acne, consistent sunscreen application is crucial (Acne, 2022).

A majority of students acknowledged the benefits of proper skin care routines, with most agreeing that it moisturises and cleanses the skin effectively. Additionally, a significant percentage believed it could brighten the skin, possibly influenced by cultural preferences for fair skin among Asian females (Low et al., 2021). While a considerable proportion of female students practiced proper skin care, male students lagged behind, indicating a gender disparity in skin care knowledge and practices (Nitiyarom et al., 2021).

Students' Awareness Towards Skin Care Routine

Awareness of skin care routines is essential for maintaining healthy skin. Understanding one's skin type allows for tailored skin care regimens that address specific concerns. Most students were aware of the consequences of poor skin care habits, including acne and skin barrier damage. Acne results from the clogging of hair follicles with sebum, dead skin cells, and bacteria, while harsh skin care practices exacerbate skin barrier damage (Branch, 2023). The internet emerged as a primary source of skin care information, although reliance on online sources may pose risks of misinformation and adverse outcomes (Mehta-Ambalal and Nisarta, 2021). Influencers, particularly those with dermatological expertise, can play a significant role in shaping students' skin care awareness (Zeljko et al., 2018).

Students' Practice Towards Skin care Routine

Proper handwashing before skin care application is essential for preventing bacterial transfer and acne exacerbation. A majority of students adhered to this practice, highlighting its importance in skin care routines. Daily skin care routines, when performed correctly, nourish and hydrate the skin. However, over-exfoliation and irregular routines can damage the skin barrier, leading to dryness and pore congestion (Upadhyay et al., 2021). The use of lukewarm water for cleansing is recommended to preserve skin health (Herrero-Fernandez et al., 2022) as excessive water exposure contributes to skin barrier disruption.

Female students exhibited a higher inclination towards makeup use to enhance their appearance, albeit on specific occasions, aligning with previous research findings (Nitiyarom et al., 2021; Padmavathy et al., 2014). However, prolonged makeup use without proper cleansing can lead to skin irritation and acne breakouts (Sadeq and Omer, 2019). Simplifying skin care routines to include essential products such as cleansers, sunscreen, and moisturisers is advisable to prevent skin irritation.

Promoting skin care education and fostering healthy skin care practices is essential for maintaining optimal skin health and well-being (Zhang et al., 2020) that consequently can significantly improved their academic quality of life.

Conclusion

Although participants' perceptions and behaviours were self-reported, making it complex to measure the gap between theoretical knowledge and actual practices, this study certainly provides valuable baseline data on skin care knowledge and practices among Diploma of Pharmacy students at UiTM CPP. It highlights the importance of students recognising the significance of skin care and consistently implementing proper routines, which could translate into effective patient counseling and care in dermatology. The findings suggest that most respondents demonstrated satisfactory knowledge and practices regarding skin care. However, there is a need for ongoing education about the benefits and correct methods of skin care through initiatives and awareness campaigns to ensure students are well-informed.

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Conflict of Interest

The authors declare no conflict of interest.

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