



## Knowledge, Attitudes and Practices of Skin Whitening Products Among Female University Students: A public Health Implication

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### Abstract:

This study aimed to assess the knowledge, attitudes, and practices (KAP) related to skin whitening products among female university students and explore demographic factors associated with their use. A cross-sectional survey was conducted among 405 students across various academic disciplines. Descriptive statistics, chi-square test, t-test, logistic regression, and correlation analyses were performed to examine the KAP outcomes and their relationship to the characteristics of the population. The study found that 98.2% of respondents were aware of skin whitening agents, primarily through media (38%) and friends (32.8%). A notable 85.4% acknowledged potential side effects, and 72.3% could identify users based on specific traits. In terms of attitudes, only 43% believed environmental factors influenced skin whitening, while 45% disagreed. A substantial 42% viewed skin whitening as a beauty factor, with 29.1% believing it could lead to better treatment from others. Regarding practices, 53% of users had utilized these products for less than a year, with 40% applying them daily. Most users (74%) combined various agents, primarily creams (73.6%). While 75% were knowledgeable about potential side effects, misconceptions about addiction risk persisted. Younger age, medical and pharmacy education, and lack of awareness about side effects were significant indicators of product use. Higher frequency of use was positively correlated with greater satisfaction. This study highlights the need for targeted public health interventions to promote safer cosmetic practices, especially among young adults. Strengthening educational programs, regulating product safety, and addressing social and psychological drivers of skin whitening are crucial to mitigate the associated health risks.

**Keywords:** Skin whitening, University Students, Knowledge, Attitudes.

## المعرفة والمواقف والممارسات المتعلقة بمنتجات تبييض البشرة بين طالبات الجامعة: تأثير على الصحة العامة

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### الملخص

هدفت هذه الدراسة إلى تقييم المعرفة والمواقف والممارسات المتعلقة بمنتجات تبييض البشرة بين طالبات الجامعة واستكشاف العوامل الديموغرافية المرتبطة باستخدامها. تم إجراء مسح مقطعي بين 405 طالبة جامعية من مختلف التخصصات الأكاديمية. تم إجراء الإحصاءات الوصفية واختبار مربع كاي واختبار t وتحليل الارتباط والانحدار لفحص النتائج. وجدت الدراسة أن 98.2% من المشاركات كن على دراية بمستحضرات تبييض البشرة، في المقام الأول من خلال وسائل الإعلام (38%) والأصدقاء (32.8%). أقر 85.4% بالآثار الجانبية المحتملة، وتمكن 72.3% من تحديد المستخدمات بناءً على سمات محددة. من حيث المواقف، اعتقد 43% فقط أن العوامل البيئية تؤثر على تبييض البشرة، بينما عارض 45% ذلك. اعتبر 42% تبييض البشرة عاملاً للجمال، بينما اعتقد 29.1% أنه يمكن أن يؤدي إلى معاملة أفضل من الآخرين. فيما يتعلق بالممارسات، استخدم 53% منهن هذه المنتجات لأقل من عام، بينما استخدمها 40% منهن يوميًا. استخدم معظمهن (74%) موادًا متنوعة، أبرزها الكريمات (73.6%). وبينما كان 75% منهن على دراية بالآثار الجانبية المحتملة، استمرت المفاهيم الخاطئة حول خطر الإدمان. كان صغر السن، والتثقيف الطبي والصيدلاني، وقلة الوعي بالآثار الجانبية مؤشرات مهمة على استخدام المنتج. وارتبط ارتفاع معدل الاستخدام ارتباطًا إيجابيًا بزيادة الرضا. تسلط هذه الدراسة الضوء على الحاجة إلى تدخلات صحية عامة مُستهدفة لتعزيز ممارسات تجميلية أكثر أمانًا، وخاصةً بين من هن في مرحلة الشباب.

## Introduction

Skin whitening, also known as skin lightening or bleaching, is defined as the process of reducing the pigmentation of the skin through the application of chemical or natural products. This exercise is common in many regions, including Asia, Africa and Middle East, where light skin is often associated with beauty, high social status and wealth [1]. The global market for skin-light products is rapidly expanding, consumers now have access to a wide range of creams, soaps and medicines [2, 3]. Nevertheless, the prevalence of mild skin practices leads to important public health concerns. A significant number of dangerous substances have been found in dangerous substances including mercury, hydroquinone and corticosteroids. These substances are associated with a series of adverse health effects, such as kidney damage, skin disorders, and systemic complications [4]. In many countries, the implementation of legal rules applies either inadequate or poorly applied, resulting in continuous availability of dangerous products within the market [5].

Despite the above dangers, the use of skin-smelling products remains due to complex social and cultural reasons as well as the general lack of awareness about the effects of media and potential health results [6-8]. As exhibited in previous research, significant knowledge intervals and misconceptions have been identified in relation to the safety and efficacy of these products. In addition, it has been established that there is the ability to fulfill health concerns under prevalent social beliefs and pressures [9, 10].

Despite the well -recorded health risks associated with skin bleaching products, there is a lack of intensive knowledge of scientific evidence, beliefs and practices of using these products. This knowledge difference hinders the development of effective educational and policy intervention to reduce skin bleaching abuse and reduce related health risks.

The objectives of this study were: first, to evaluate the knowledge, approaches and practices (KAP) associated with the skin -white products among the university students; And secondly, to examine the relationship between demographic factors and KAP results.

## Methods

### Study design and setting

With the estimated completion date of January 2023, cross-sectional study was conducted among female students at Sebha university, Sebha, Libya. The use of cosmetics is more prevalent among women, while men demonstrate low inclination for such practices. As a result, the current study focuses on female students. Participants represented various types of areas, including drug, pharmacy, dentistry, nursing, science, literature and education. The participants were admitted using an online questionnaire.

### Data collection procedure

The questionnaire was developed and administered by the website itself, based on already valid research and experience by KAP (knowledge, behavior and practice). The survey was designed as the Google web search. Potential participants were obtained through the use of various social media platforms, including WhatsApp, Facebook Messenger and Telegram. In addition, the functioning was adapted to align with the preferences of the target audience. For the convenience of participation, it is requested to click on the subject provided and complete the questionnaire. In such examples where email addresses were available, the link was also sent via email. The study was divided into four classes. The first section collected demographic data, including age, gender and education levels. The second section measured the knowledge of the respondents of skin whitening products and any possible health issues associated with their use. The third section examined perceptions, use and satisfaction with these products. The fourth and final section focuses on real use. All reactions were collected through Google Form (<https://docs.google.com/forms/>, 20 January 2023) and later processed in data analysis software. The current study was approved by the faculty of pharmacy, Sebha University. As the data collected were anonymous, informed consent was not obtained.

### Sample Size Calculation

The study size was calculated using a formula developed by Miller and Brever (2003) [11]. The calculation determined that 369 would serve as a representative sample size for the study among the students of the University but decided to include 405 in total to make our results stronger and more reliable.

### Statistical Analysis

In summary, demographic characteristics and knowledge, approaches and practices (KAP) reactions were presented briefly to employ descriptive data. Planned descriptive data included frequencies, instruments and standard deviations. To detect the relationship between academic backgrounds and side effects as well as

awareness between age group and product use, researchers used the Chi-Square test. Independent T-testing were employed to compare the duration of use among users who reported high satisfaction and who reported minimal satisfaction. In addition, a logistic regression analysis was performed to identify the prophets of product usage, while the correlation coefficient of Pearson was used to assess the relationship between the frequency and level of satisfaction. The data was subject to analysis using the SPSS version 25. A p-value of less than 0.05 was employed to represent a statistically significant result.

## Results and Discussion

### Demographic characteristics of the participants

As illustrated in Figure 1, 405 participants were characterized by specific demographic characteristics. The average age of the participants was 27 years (SD = 3.2), in which the majority (169; 41.7%) belongs to the age group of 20–22, which is specific to the undergraduate students (Figure 1). Of the 405 participants, students were distributed into seven faculties (Figure 2).

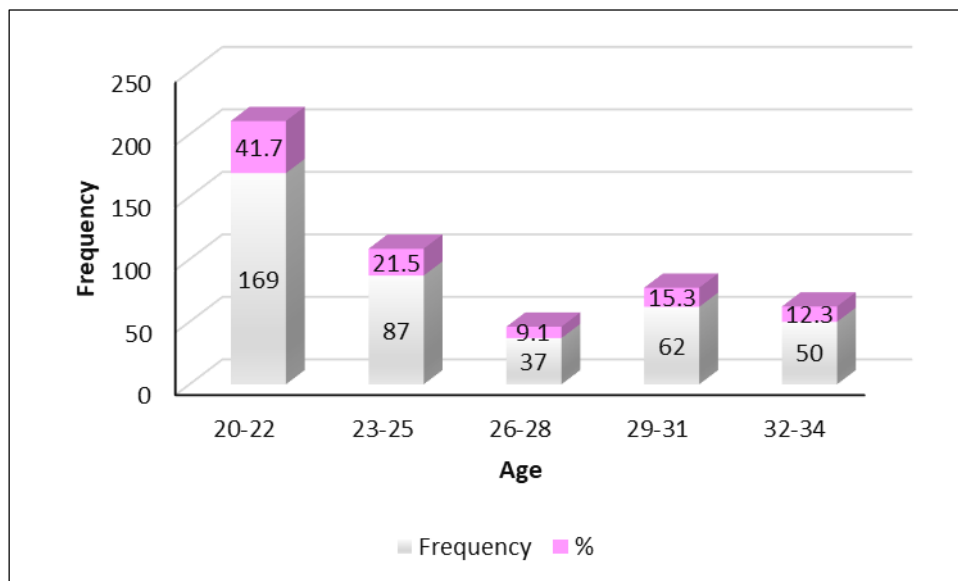


Figure 1. Distribution of participant's age

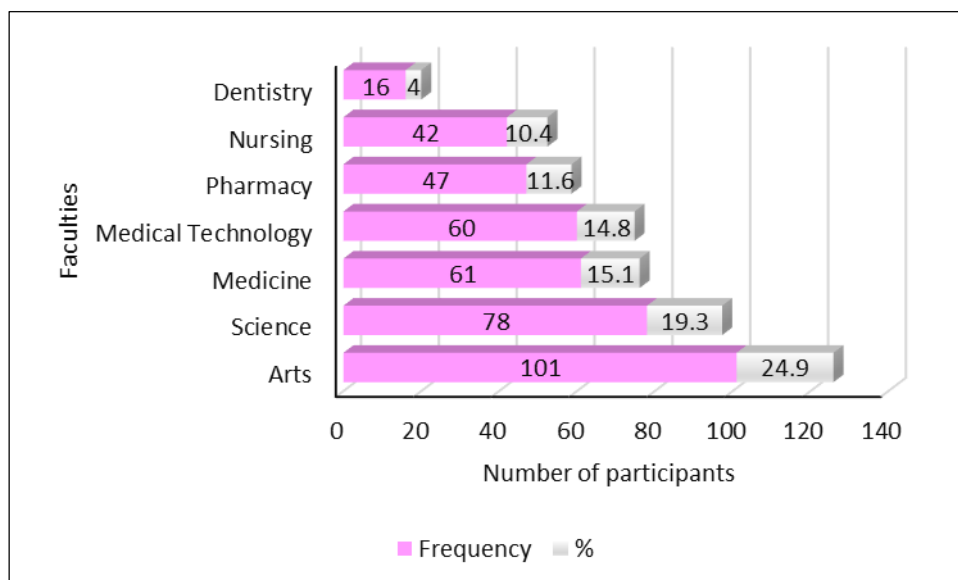
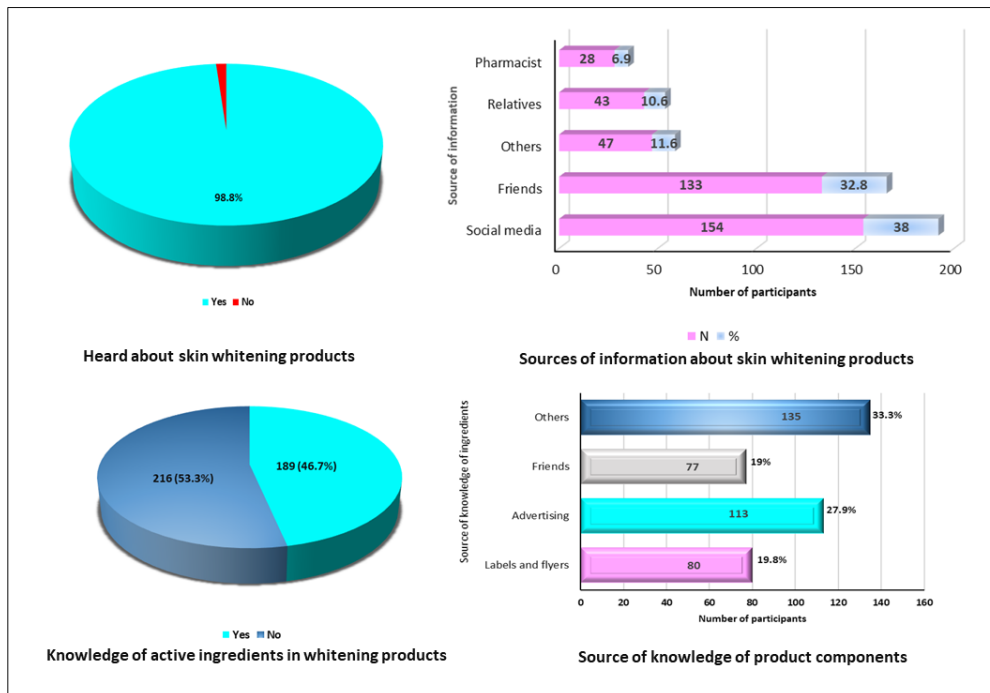


Figure 2. Distribution of the participants by Faculties

### Knowledge of participants about skin whitening

Most of the participants (98.8%) reported awareness about light products (Figure 3) of the skin, which corresponds to previous studies, such as Hussain's studies, where 95.7% of the participants reported the levels of knowledge

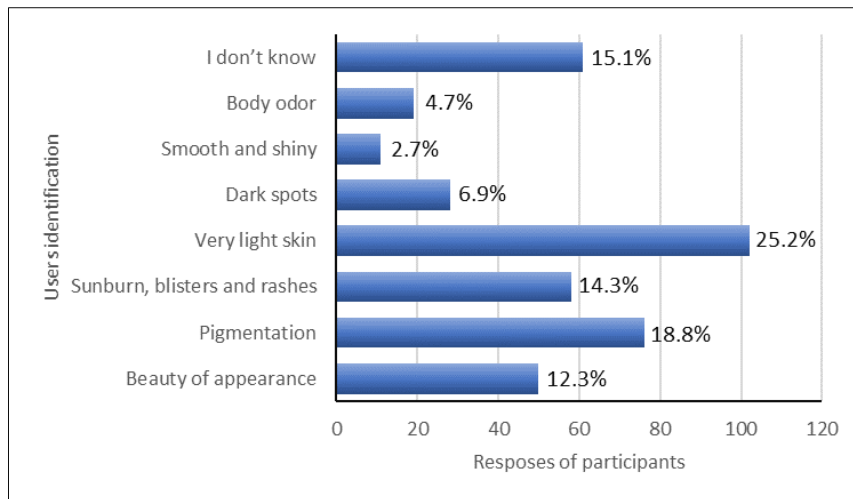
[12]. Social media (38%) was identified as the primary source of information about skin bleaching, followed by friends (32.8%) [13]. This discovery is contrary to the results of the previous study conducted in Somalia, where family members and friends formed primary sources of information [13]. A survey of participants has shown that only 46.7% of respondents reported familiarity with material contained within skin-flourish products. In contrast, 53.3% of the respondents accepted the lack of knowledge related to the composition of these products (see Figure 3). These results are less than those shown in earlier research; For example, a study in Somaliland found that 61.7% of the participants lacked knowledge about product ingredients [13].



**Figure 3.** Knowledge of participants about skin whitening

Around 33.3% of the participants reported to gain knowledge about active ingredients in skin -white products through other sources, while 27.9% received this information from the advertisement (see Figure 3). The discovery is in line with earlier research that found that 43.9% of the participants quoted product letters and friends as sources of knowledge [14]. Despite the fact that 85.4% of the participants are aware of the possible side effects associated with skin whiteness, they still continue to engage in this exercise. This discovery corresponds to the results of a study conducted in Senegal [15]. In the above study, 85% of the participants reported to be aware of the harmful effects of substances in the question. The results of the study showed that the prevalence of awareness about adverse events was more than 64.5%, which was described in four university complexes in the Yaoundé, Cameroon [16]. Most of the participants (72.3%) demonstrated the ability to identify individuals who use skin -white products, while 15.1% did not have this capacity and 12.6% had a lack of expected knowledge. This figure is lower than the result of Nigerian study, which identified 77.2% of the participants [14].

The results of the study also indicate that 85% of the participants identified users based on different characteristics, such as very light skin (25.2%) and pigmentation (18.8%) (see Figure 4). Compared to the findings of Amodu, the current study performed high percent of the identity based on the characteristics [14].



**Figure 4.** identification of users of skin whitening

### Awareness

The adequate proportion of the population is the cognizance of adverse effects associated with the use of bleaching products. According to the findings of the study, 85.4% individuals believe that whitening products can result in undesirable results.

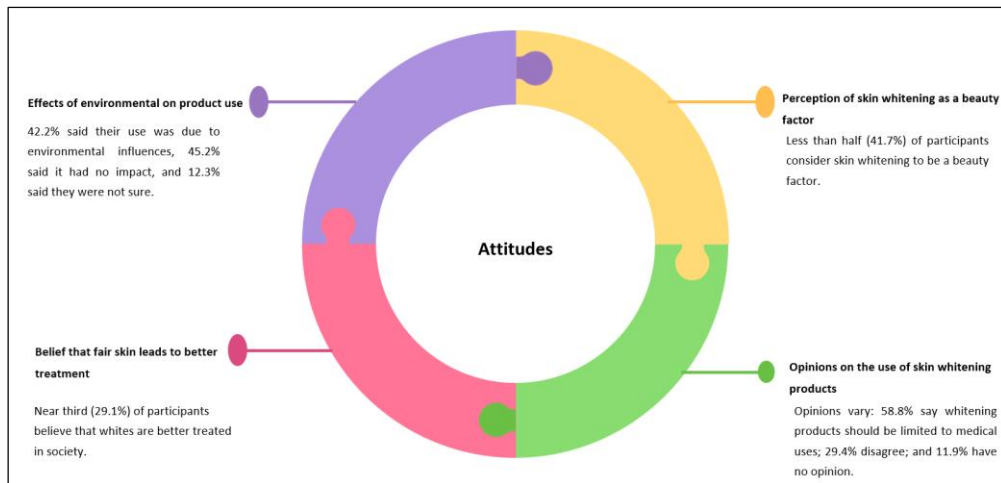
Regarding awareness about the possible health risks associated with skin whitening products, 73.1% of the respondents expressed their opinion that whitening could result in the onset of diseases, while 17% did not agree with the scene and 9.9% expressed uncertainty. The figure represents the fall from the results of the previous study, in which 82.7% of the respondents accepted the presence of negative effects [17]. In addition, in relation to awareness about the tendency of drug addiction associated with skin whiteness, most participants (about 67.2%) expressed the opinion that whiteness of the skin does not form an addictive practice. However, 21% of the participants indicated uncertainty about the case, while 11.9% expressed the belief that white can cause potentially intoxicating addiction. This figure exceeds the results of the previous study, which has documentation of 50.5% [14].

### Attitudes

As illustrated in Figure 5, 42.2% of the participants expressed confidence that environmental factor plays a role in white, while 45% clarified a perception that the purpose is to increase the skin tone. This discovery aligns with the findings of earlier studies, which indicated that the motivation to whiten the skin was mainly centered around the appearance [18-20]. A total of 41% of the respondents considered the appropriate skin as a beauty factor, while 42% expressed a contrast opinion. It is noteworthy that 17% of the remaining respondents have not yet reached any decision on the matter. This observation corresponds to the results of the study conducted by Mahi et al. in Dakar, which found that 21% of women were desired for fair skin [15].

The results of the study, as presented in the table, indicated that 29.1% of the participants consumed that fair skin is associated with more favorable treatment, while 59.3% expressed a different opinion. Furthermore, this discovery corresponds to the results of other studies, who have demonstrated that aspirations for better care standards inspire major data to seek skincare treatments [21].

Regarding the desired application of products in question, 58.8% of the participants of the study expressed the opinion that their use should be limited to medical references. In contrast, 29.4% of the respondents expressed a deviation approach, stating that the products should not be subject to such limits (see Figure 5).



**Figure 5.** Participants' attitudes towards skin whitening

### Practices of skin whitening

The current study found that about 60% of the participants currently use skin whitening products. The practices Preliminary reports indicated the growing prevalence in Saudi Arabia [22] and the growing trend in Nigeria [23]. In addition, more than half of the participants (53.1%) used the skin -white products for less than a year, while about one quarter (25.4%) reported to use them for one to four years (see table 1). This period is different from that seen by Amodu, in which half the participants used these products for less than a year [14]. Application of Whitening agents on a daily basis was a popular practice among users, in which 40% of respondents reported their daily applications of such agents. This discovery corresponds to the results of previous studies, showing that a significant ratio of users applies these products once or twice daily. The cream was identified as the main form of the skin whitening agent, with 73.6% of the participants report its use. This observation is contradictory of earlier research, indicating greater spread of natural products [24]. In relation to the results obtained, most participants only experienced moderate effectiveness, and a significant number (82) expressed uncertainty about the actual efficacy of products. In selecting which products for testing, recommendations of friends (33.3%) and brand reputation (31.9%) were found to be the most important factors. This is an interesting deviation from previous studies that highlighted a considerable impact of media [12].

The results of the survey indicated that a significant ratio of users (72%) demonstrated a trend for their entire bodies from the application of these products. In contrast, a small percentage (28%) demonstrated a selective approach in the use of these products, which only applies them to specific body areas. Most respondents (95%) preferred to use products on their faces, contrary to new conclusions that show that many users apply skin white on their body [25].

Finally, a significant ratio of participants (74%) reported the use of a combination of diverse skin white products, a discovery that aligns with previous research, shows that users often employ a combination of various types of preparations [26].

**Table 1.** Practices with skin whitening product

Practices with skin whitening product	Response	N	%
Currently use of whitening products	Yes	242	60
	No	163	40
Ability to identify skin whitening product users	Yes	293	72.3
	No	51	12.6
	Don't know	61	15.1
Duration of whitening product use	<1 year	215	53.1
	1-4 yrs	103	25.4
	5-9 yrs	46	11.4
	>10 yrs	41	10.1
Frequency of product application	Twice a day	71	17.5
	Once a day	162	40
	Once every 3 days	38	9.4
	Once a week	20	4.9
	Once every 2 weeks	17	4.2
	Others	97	24

Types of whitening products used	Cream	298	73.6
	Soap	21	5.2
	Herbes	13	3.2
	Others	73	18
Effectiveness of skin whitening products that participants use	Few	87	21.5
	moderate	159	39.3
	High	50	12.3
	Very high	27	6.7
	I don't know	82	20.2
Factors considered during purchasing whitening products	Brand name	129	31.9
	Friends	135	33.3
	Medias	45	11.1
	Free sample	11	2.7
	Relatives	85	21
Areas of application of skin whitening products	Face	384	95
	Upper part	14	3.5
	Lower part	7	1.7
Mixing of whitening products with some medical preparations	Yes	300	74
	No	105	26

### Satisfaction with skin whitening product

Figure 6 shows the Satisfaction with skin whitening product.

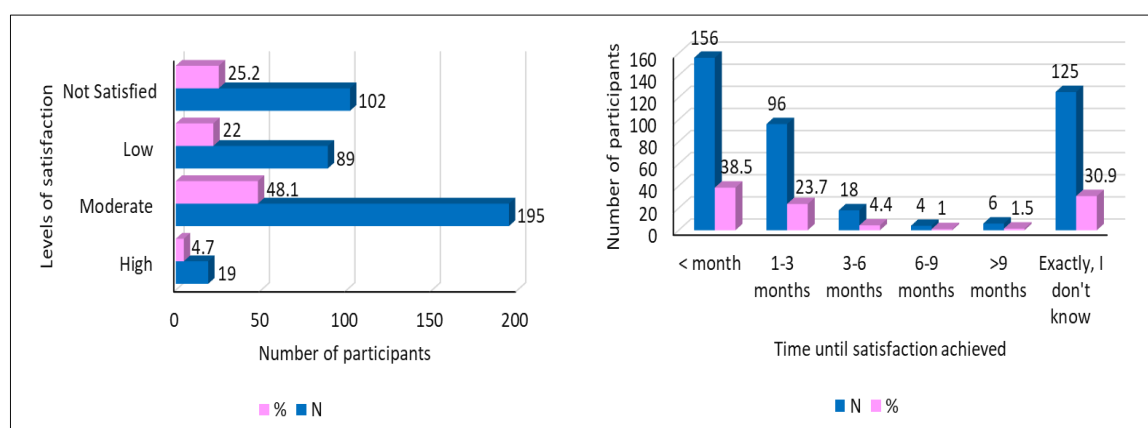


Figure 6. Satisfaction with skin whitening products

### Associations with demographic factors

Chi-Square test revealed a significant relationship between age group and product use ( $p = 0.002$ ), which is more likely to use white products compared to older people (26–33 years) with young respondents (18–25 years). This cross-sectional survey of university students provides valuable insight into the knowledge, approaches and practices (KAP) about skin whitening products. The high levels of awareness and use, especially among young demographics, correspond to global trends and reflect strong sociological effects and aesthetic standards running this practice [27].

In addition, students with medical and pharmacy specialized demonstrated high level of knowledge about side-effects compared to non-medical participants ( $p < 0.001$ ). Especially the knowledge interval observed between non-medical students, the need for the understanding of the potential health risks associated with skin products, enhances the need for educational interventions. The ability to induce addiction is an important factor in the ongoing use of such substances, which underlines the need for effective public health communication [28].

Table 2 summarizes logistic regression. The current study revealed that each additional year age (younger age) was associated with low obstacles of skin-strict product use. The findings of the study have shown that the possession of a medical/drug education was associated with higher obstacles, as well as no addiction. In contrast, awareness about side effects was associated with low obstacles.

**Table 2.** Practices with skin whitening product

Variables	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value
Age	0.92	0.88-0.96	<0.001
Field of study	1.8	1.2-2.7	0.004
Awareness of side effects	0.6	0.4-0.9	0.02
Perception of no addiction risk	1.5	1.1-2.2	0.03

All the above factors proved to be statistically important. Medical and drug education and more awareness about side effects [29, 30] suggests that formal training can play an important role in shaping the practices of safe skin. However, the findings of logistic regression results suggest that behavioral changes are not only run by knowledge [31, 32]; Other factors, including the risk of addiction to age and skin power [33], also affect the use patterns [34]. In addition, t-Test demonstrated that users who expressed high satisfaction were using products for more time than those who expressed low or moderate satisfaction ( $p < 0.001$ ). Correlation analysis demonstrated a moderate positive relationship between further use frequency and satisfaction levels ( $R = 0.38$ ,  $p < 0.001$ ).

Skin-lighting products have raised concerns about the frequency of use and the possible existence of a positive correlation between satisfaction with the above products [28]. Prolonged or excessive use of these products is displayed to increase the possibility of fatal side effects [35]. This outlines the requirement for promoting moderation for public health initiatives and facilitating consumers informing the informed skincare [36].

The limitations of the current study are: First, the data is self-reported, which can be subject to prejudice. Secondly, the university's student may limit the generality of focus on the population. It is recommended that future research detects KAP in a more diverse sample, and that the system of white -run skin is examined by the underlying social, psychological and regulatory factors.

### Conclusion

This study emphasizes the significant spread of skin -whitening product use among young adults, which highlights notable variations in knowledge and practices based on age and academic background. The implementation of targeted educational programs, reinforcement of product regulations, and the recognition of social determinants of skin white is essential for reducing affiliated public health risks. Interdisciplinary cooperation between healthcare providers, policy makers and community stakeholders are important to promote safe cosmetic practices and body positivity.

### Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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