



Knowledge Attitude and Practice of Skin Whitening Products among Students in Ahfad University for Women

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Abstract

Background: In the recent years, a significant increase in the use of skin whitening products in Sudan among university students was noted. Serious threatening complications would ensue due to the improper use of them. Therefore, evaluating knowledge, attitude and practice towards the use of skin whitening products is crucial. We aimed to assess the Knowledge, attitude and practice of skin whitening products among students of Ahfad University for Women.

Methods: This was a descriptive cross-sectional study. It was conducted at Ahfad University for Women, which located in Sudan, in Omdurman city. The sample size was 200 participants. Data was collected using a questionnaire in the period from January _ July 2021.

Results: The study sample was 200 participants. Mean participant age was 23 years. high number of participants have a good knowledge about skin whitening products and its side effects but only (32%) know about the contents of these products and most of them from school of medicine and school of health sciences (18%). regarding the attitude we found that the majority of females recognize that practicing Of these products is not a good one . , and the good was found in school of pharmacy only (5%) have a favorable attitudes toward these products .most of the participants (63%) used skin whitening products, the highest percentage recorded using these products was from school of management (22%) .(61%) of the users denied, any undesirable adverse effects and the remainder (39%) reported an group of local and systemic adverse effects.

Conclusion: There is high level of knowledge, With Good attitude and high level of practice of skin whitening product in students of Ahfad University for women. This reflects that a good knowledge about skin whitening products dose not guaranty a proper practice techniques and. they don't pay attention to the dangerous effects of the skin whitening products.

Keywords: Knowledge attitude practice Skin Whitening Products Medical Students

1. Introduction

The term skin whitening (also called skin bleaching) covers a variety of cosmetic methods used in an attempt to whiten the skin (Wikipedia, 2007). Visible pigmentation in mammals results from the synthesis and distribution of melanin in the skin, hair bulbs, and eyes. The melanins can be of two basic types: eumelanins, which are brown or black, and pheomelanins, which are red or yellow, in mammals typically there are mixtures of both types. Melanins are produced by specialized cells, termed melanocytes, which are located primarily in the skin, hair bulbs, and eyes. Melanocytes synthesize melanin within discrete organelles, termed melanosomes, which can be produced in varying sizes, numbers, and densities. The melanosomes are then passed on, in skin to keratinocytes and in hair bulbs to the hair shaft, where the final distribution patterns of the pigment are determined. This distribution plays an important role in determining color; note for example the variety of colors in the skin, hair, and eyes of humans (Hearing and Tsukamoto, 1991). The most essential enzyme in this melanin biosynthetic pathway is tyrosinase and it is the only enzyme absolutely required for melanin production. The main physiological stimulus of melanogenesis is the UV radiation of solar light, which can act directly on melanocytes or indirectly through the re-release of keratinocyte-derived factors such as α -melanocyte stimulating hormone (MSH). Increased production and accumulation of melanins characterize number of skin diseases, which include hyper-pigmentation such as melanoma, post-inflammatory melanoderma, solar lentigo, etc. Several modalities of treatment for these problems are available including chemical agents or physical therapies (Kang et al., 2004; Pravez et al., 2007). Skin lightening (SL), also known as skin bleaching or skin whitening, it involves the use of topical products that are inclusive of ingredients containing corticosteroids, hydroquinone, mercury, Ascorbic acid (Vitamin C), Tretinoin, kojic acid and Glutathione or a variety of other agents to attain a lighter skin color by reducing the melanin concentration in the skin. The reason behind using SL may be to treat a pigmentary disorder, such as melasma, but it often used as cosmetic enhancement [1].

Products with chemicals and toxic compounds have been used to lighten skin color for decades, especially in sub-Saharan Africa. Whiteness of the skin is considered as an important cultural factor in managing female beauty, because white women are thought to be more attractive and superior than other skin colors. Several studies in Africa have been conducted to investigate the motivation behind using SLP in women of color. The most important motives were seeking to be beautiful and attractive, social status and acceptance, to gain self-confidence and symbolizing of the light-colored skin as a form of social advantage for marital and career prospects [2]. The cosmetic use of SL products is common in Africa, Asia and Many other parts of the world [1]. Whitening agents act at various levels of melanin production in the skin, many of them are known as competitive inhibitors of tyrosinase (which is the key enzyme in melanogenesis), other products inhibit the maturation of this enzyme or the transport of pigment granules (melanosomes) from melanocytes to surrounding keratinocytes [3]. We conducted this study To assess knowledge attitude and practices of Ahfad

university student toward skin whitening products during the period 2020-2021.

2. Methods

2.1 Study Design and Settings

This cross-sectional study was conducted among undergraduate medical students the study was conducted at Ahfad University for Women, Omdurman, Sudan. It is a private women university in Omdurman, Sudan that was founded in 1966 by Yusuf Badri. The university began with only 23 students and 3 teachers, it was the first Sudanese college. the current president is dr. Gasim Badri, Yusuf Badri son. The university has the following schools: school of health science, school of Rural Extension Education and Development, school of medicine and school of pharmacy. We conducted this cross-sectional study following the STROBE statement for reporting cross-sectional studies.

2.2 Participants

We included all undergraduate medical at the faculty of medicine in the selected university. All undergraduate medical students who refused to participate were excluded from the study Instruments. We used to measure the variables of interest in the study Data were collected from undergraduate medical students using this questionnaire contained both open and close-ended questions. The questionnaire was distributed online to undergraduate medical students using google form. The questionnaire consisted of many sections of questions.

2.3 Data collection and Sampling

A convenience sampling method was used to acquire the responses from the participants via online distribution of google form during the study period. We recruited medical students from university using an online google form. Investigators sent the online questionnaire to the online groups of included universities using social media such as Facebook and WhatsApp and telegram to undergraduate medical students. Weekly, Investigators were reminding undergraduate medical students during the study period in their online groups to participate to ensure broader participation in the study among undergraduate medical students.

2.4 Sample Size Calculation

The sample size for this study was calculated via the following equation $n = z^2 P(1-P)/d^2$. With a 95 % Confidence Interval (CI), 50 % response distribution and 0.05 margin of error, a sample of 384 participants can be considered as a minimal sample to represent the population.

2.5 Statistical Analysis

We analyzed and described data using R software version 4.0.2. Continuous data were presented as mean \pm SD, and categorical data were presented as numbers (percentage). We used the Kolmogorov-Smirnov test to check the normality of the data. To find a significant difference between groups, we used an independent t-test for normally distributed data and Mann-Whitney U after rejecting the null hypothesis of the Kolmogorovian test of normal distribution. We used the Chisquare test or Fisher exact test

to find if there was a significant difference between the groups for categorical data. A P-value less than 0.05 is considered significant.

2.6 Ethical Clearance

Written ethical clearance and approval for conducting this research will be obtained from Faculty of Ahfad university Ethical Committee. Privacy of participants' data will be considered secret and since the data will be taken from involved in the study, and they will also be informed about the research, its objectives and methodology. Since the research data will depend on structured questionnaire from the patient, no harm is expected to result; nevertheless, full agreement will be insured in addition to privacy and secrecy.

3. Results

The study found that a significant portion of respondents (66%) fell within the age group of 21 to 25 years. The participants were distributed across various schools, with (17%) from the schools of Management, Health Sciences, Medicine, and Pharmacy, and (16%) from Psychology and the School of Rural Extension Education and Development. A notable majority of students were in their sixth year of study, constituting 26% of the participants. The overwhelming majority of respondents were of Sudanese nationality, accounting for 95% of the total. A substantial number of participants (50%) resided in Omdurman. More than half of the participants reported being single, with a percentage as high as 90%. The majority of participants indicated having a "half-cast" skin colour, comprising 42% of the total.

A significant proportion of participants (55%) reported having an oily skin type. An overwhelming majority (97%) of participants were found to be aware of skin whitening products. Participants primarily gained knowledge about skin whitening products through multimedia (49%), followed by friends and relatives (28%), and other sources (18%). Creams were the most recognized form of skin whitening products (56%), followed by soap (15%), gel (10%), powder (8%), injections (7%), and tablets (4%). A significant portion of participants (68%) reported being unaware of the active ingredients and contents of skin whitening products.

Among those familiar with the ingredients, Corticosteroids (44%) and Hydroquinone (25%) were the most recognized. The majority of participants demonstrated awareness of other uses of skin whitening products. Participants expressed varied beliefs about the medical uses of skin whitening products, with 45% associating them with treating hyperpigmentation. A majority (65%) of participants claimed knowledge about the correct application of skin whitening products. Most participants (69%) believed that skin-whitening products should be used once a day. A substantial number of participants (89%) believed that skin whitening agents were applied in small amounts. Regarding the duration of use, a majority (50%) believed that skin whitening products were applied for two hours daily. A significant percentage of participants associated allergies (65%) and pregnancy (44%) with contraindications for using skin whitening products. The majority of participants (98%) acknowledged that skin whitening agents

have associated side effects, while a minority (2%) claimed not to be aware of any side effects.

Among the participants, the following perceptions were reported regarding potential side effects of skin whitening agents: Hyperpigmentation: 30%, Skin Cancer: 22%, Acne: 15%, Renal Failure: 11%, Fat Accumulation (Face, Chest, Stomach): 5% and Thinning of the Skin: 2%. Regarding the causes of side effects, the majority of participants thought that using a high dose (33%) or high concentration (23%) of skin whitening agents could lead to adverse effects. When asked about overcoming side effects, participants suggested the following: Consulting a dermatologist: 35%, Using natural products at home: 24%, Using cold water: 18%, Visiting a pharmacy: 11, Uncertain/Don't know: 8% and Going to a boutique: 4%. Among the participants, a significant majority (69%) expressed that they would not use skin whitening agents, while 31% indicated a willingness to use such products. For the subset of students willing to use skin whitening agents (63 students): Creams were the preferred choice for the majority (95%), while a minority (5%) preferred powder. The majority (94%) planned to get the products from a dermatologist.

A minority (6%) intended to obtain the products from a pharmacy. 63% of participants reported a history of using skin whitening products at least once. Creams were the most commonly used form (62%), followed by pills (12%). Among those who used skin whitening products: 31% used 72 hours cream, 16% used pure skin, 16% used mix cream, 8% used civic cream and 8% used orange gel.

Distribution of Sources for Obtaining Products: 39% obtained products based on a friend's prescription, 31% used products based on self-prescription, 24% used products with a prescription from a doctor or pharmacist and 6% used products based on prescriptions from other sources. 63% of respondents who used skin-whitening products did so once per day. 39% used only one product without combination, while 61% used a combination of products. 39% used the products for weeks, 37% for days, and 24% for months. No respondents reported using the products for a year or more. 39% kept the products in the room, 29% in the fridge, 16% in a dark place, and 16% in a hot place. 79% used skin-whitening products for all body parts. 63% preferred applying the products to the whole body and face. 39% of users reported experiencing adverse effects, while 61% did not. 52% reported dissatisfaction due to uneven skin colour. 13% suffered from systemic disease, redness, darkness of the skin, and acne each. 79% of users suffered from side effects, while 21% did not. A majority (40%) of respondents who experienced side effects chose to discontinue the use of skin-whitening products.

4. Discussion

This research provides data regarding knowledge attitude and practice of skin whitening products in a sample of students in Ahfad University for women. We conducted a survey of 200 students from different schools. Most of the respondent belong the age group of 21 to 25 years (80%), which is the typical age of undergraduate

students. The study, which was done on University students, in Malaysia, illustrated the same results as the majority of the respondents aged less than 25 years (71.2%) [5-9]. This similarity came from the fact that both of the study, populations were young females and they are highly concerned with their appearance.

Most of the student were Sudanese (95%). About half of the participants 50% lived in Omdurman. The majority of the respondents 90% were single. The same results were observed in the 2019 study that was done in female students in Saudi Arabia in which the majority of the students (80.1%) were single [16]. This similarity is because most of students are single at that age. Regarding the color of the skin, most of the participants have half cast skin color (42%). This corresponds to the study that conducted in Saudi Arabia on female student, which shows that most of the users were Light brown (48.9%) [16]. This attributed to the fact that the dark-skinned females are the ones who want to whiten their skin. Regarding the type of the skin, more than half of participant had oily skin type (55%) unlike the study that conducted in Saudi Arabia on female student, which indicated that most of participants were with dry skin type (42.6%) [16]. The reason of this diversity might be high temperature climate in Sudan associated with the frequent exposure of student to the sun in a daily basis as high temperature causes the fat within the skin to liquefy making the skin oilier.

Regarding the knowledge the majority of participants have heard about skin whitening product (97%) a significant number of the students came to know about the skin whitening product by multimedia (49%) followed by their friends (28%) as a source of knowledge, while in a study done in Northeastern Nigeria, the majority of the participants heard about skin whitening agents mainly from their friends (51.6%) and media (24.3%) [10-14]. More the half of students (68%) unaware of the active ingredient and content of skin whitening products. This is like Northeastern Nigerian study, which showed (54.2%) [15].

Regarding the knowledge, the most common place to offer skin-whitening products was from the dermatologist (94%), followed by pharmacy (6%) and this result is similar to a study (preliminary study on the skin lightening practice and health symptoms among female students in Malaysia) in which most of participants reported that they offer the products from the drug store (61.9%) [15]. Regarding knowledge, majority of students (98%) agree that skin whitening products can produce side effects on their skin. and this is agreed with the study which was done in Malaysia [15]. This similarity could be due to high education Level in both studies (45%) of students believe that skin whitening agents have another medical use and this agree with the Nigerian study in which they believed that it may be used to treat depigmentation, sun burns, skin rash and dark spots [17]. Students also could identify the side effects of skin whitening products like hyperpigmentation, redness, acne and skin rash. This look similar to the Nigerian study [17].

Regarding the attitude (69%) of students recognized that practicing of skin whitening products is not a good one whereas

(31%) have favorable attitude toward skin whitening products, this is contrasting with the fact that (63%) of the students practicing skin whitening products, that is mean students using skin whitening products they believed it is harmful. The same observation has been previously made by Kouotou et al in Cameroon who found (64.5 %) of participants, using skin whitening products recognized that it is not a good one [18]. This is disagreement with another study of Female Sudanese College Students' it showed that (87.9%) of the students reported favorable attitude toward skin whitening products while (74.4%) of these students reported using skin whitening products within past years [2]. This diversity may relate to socioeconomic status or these products is not available in the conducted area that is explain high number of attitudes with low number of practices. (95%) of the respondents who have favorable attitude toward skin whitening products will use creams, (52%) of them will use these products just for a day, (94%) will get the products from the dermatologist. Creams are the skin whitening agents that are most frequently used (95%). This seems similar to the Nigerian study as they report that (59%) will use Creams [17]. The reason behind this may be that creams are the most available and accessible form, and have reasonable price and they are easy to apply.

Regarding the practice we could inform from our findings (63%) of respondents practicing skin whitening products, high proportion of students (62%) using skin whitening creams compared to skin whitening (pills soap and injection) this is similar to study in university of Abuja showed that students who use SL body creams are 2.6 times as likely to use lightening soap [20], and this is in contrast to study made by study of Female Sudanese College Students' were 76.2% of undergraduate female students used SL soaps compared to 30.6% who used SL creams [2]. This is maybe related to the difference in methodology of each study. (39%) of students motivated by their friends This is a strong motivating factor that can make a change in skin lightening practice very difficult. Most of the respondents (39%) who used SLP got these products from Boutique [6-9], (32%) from pharmacy, (21%) from market and (21%) from other sources this is agree with study mad by Kouotou et al in Cameroon showed that skin whiteners were used to buying the bleaching products in non-specialized stores (72.4%) [18], and from the pharmacy (24.3%). (63%) of skin, whiteners used these products once per day. A significant number of skin whiteners (61%) used SLP in a combination (39%), while few of them (39%) used one cream. the most common combination is Pure skin with Civic and mixed cream (39%). Interestingly our study showed that (39%) of skin whiteners used SLP only for weeks, (37%) for days and only (24%) for months. (39%) store these products in the room, while (29%) store them in fridge. A considerable percentage of skin whiteners (79%) used SLP for all the body and only (21%) used SLP for the face. (36%) prefer to apply SLP on a whole body and face [10-14]. A few number (31%) of the respondents practicing skin whitening products developed side effects (52%) of them developed un united skin color, (13%) developed redness, (13%) developed darkness of the skin after stopped the products, (13%) developed systemic disease and (9%) developed acne this is in line with another study of Najran university in Saudi

Arabia showed that A quarter of girls using cosmetics notice the appearance of redness or skin rash, Almost one third suffered from darkening of the skin, Less than one third suffered from severe facial redness due to increased dose. 19% suffered from severe sensitivity to light. A minority of the contributors suffered from severe cortisone effects like hypertension and diabetes [21].The majority of respondents who used SLP overcome the side effects by stopping the products ,(20%) of them go to the dermatologist ,(10%) of them go to the pharmacy ,(10%) of them used cold water ,(10%) of them used natural product available in house ,(5%) Go to the boutique and (5%) they did nothing just continue the products. These findings indicate a relation between knowledge and attitude but unfortunately there is absences of any relation between (knowledge, attitude) and practice. this is related to many reasons: women don't pay attention to the side effects and ignore the dangers of skin-lightening product usage, the racist standards of beauty in Sudanese female students appear to have internalized, easy accessibility to SLP (e.g., along the sides of roads), and the SLP advertised on TV channels promise the products will make. Several limitations raise methodological and theoretical concerns about the current research. The findings were based on a cross-sectional study where association does not indicate causation. The university population does not represents all Sudanese women. We did not assess psychological effects in students who bleach.

5. Conclusion

The level of knowledge and attitudes towards skin whitening products of the students of Ahfad University for Women were found to be good. However, the practice was found to be high in the majority of the students. Despite knowledge and being aware of the danger of skin whitening products, it does not stop them from using it. This reflects that a good knowledge about skin whitening products dose not guaranty a proper practice techniques and. they don't pay attention to the dangerous effects of the skin whiting products. Interventions and education about these irreversible effects of SW need urgent implementation in Ahfad University, they should be counselled and encouraged to use adapted products to take care of their skin without aggressing it. Also, they can use natural whiting products it can give a near effects of whiting for a long duration and it is safe. However, this study results may not fit to the general population of Sudan because it was not only limited to female's university students, but also to the public, therefore, more studies involving females in different fields and wider age groups, are needed.

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