

# Knowledge, pattern and determinants of the use of skin-lightening creams among University Undergraduates in Southwestern Nigeria

Wasiu Olalekan Adebimpe, Olubukunola Omobuwa<sup>1</sup>, Demilade Ibirongbe, Adeola Efuntoye<sup>2</sup>

Department of Community Medicine, University of Medical Sciences, Ondo, <sup>1</sup>Department of Community Medicine, Osun State University, Osogbo, <sup>2</sup>Catholic Relief Service, Abuja, Nigeria

## Abstract

**Background:** Fair skin has been associated with beauty and sexual attraction. Aggressive marketing of skin-lightening products to unsuspecting members of the general population continues despite their numerous side effects.

**Aim:** This study assessed the knowledge and pattern of the use of skin-lightening creams (SLCs) among undergraduates in Osun State, Southwestern Nigeria.

**Methods:** This is a descriptive, cross-sectional study among University undergraduates. Three hundred undergraduates were selected using multistage sampling method. The research instrument used was a semi-structured, self-administered, pretested questionnaire. Data were analysed using the SPSS version 23.0 software.

**Results:** The mean age of the students was 21.0 ( $\pm 3.4$ ) years. Most (283, i.e., 94.3%) of the students were aware of SLCs, with the Internet being the most common source of information. About 69.0% had good knowledge, while 67.0% had a poor attitude towards the use of SLC. Eighty-one (27.0%) respondents knew that SLC had side effects, 114 (38.0%) had ever used SLC, 69 (60.5%) still use SLC now, while 45 (39.5%) have stopped. Among those who had ever used, 108 (94.7%) said that they knew the chemical ingredient in SLC, 34 (29.8%) usually checked the label before use, 108 (94.7%) usually obtained SLC products from the supermarkets/shops. Predictors of the use of SLC in this study were female and age older than 19 years.

**Conclusion:** Good knowledge but poor attitude characterised the significant proportion of SLC users under the study, and this underscored the need for improved public awareness in this regard and targeting this young, vulnerable population.

**Keywords:** Determinants of use, knowledge, skin-lightening creams, undergraduates

**Address for correspondence:** Dr. Wasiu Olalekan Adebimpe, Department of Community Medicine, University of Medical Sciences, Ondo, Nigeria.

E-mail: lekanadebimpe@gmail.com

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## INTRODUCTION

The amount and types of the pigment ‘melanin’ and its distribution within the melanocytes are an important

determinant of the colour of the human skin. In the modern-day African setting, the young population has attributed beauty and sexual attraction to the possession

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of fair/light skin.<sup>1</sup> This opinion has significantly increased the prevalence of the use of bleaching, toning or lightening creams.<sup>2</sup> This trend continues unabated despite several local and systemic complications that could impair the user's health and related quality of life.<sup>3-5</sup>

Skin-lightening or skin-toning creams and soaps are cosmetic products used to bleach the skin to make it lighter. In Nigeria, skin-lightening product sale-regulating agencies exist but enforcement of their regulations is usually a difficult task. The situation is worsened by the observed unchecked importation of substandard products into the country and the aggressive marketing of these products on various mass communication media. Although the issue of beauty is of social concern, evidence-based efforts would be related to knowing the factors that promote use to take informed actions. This study, therefore, assessed knowledge and pattern of the use of skin-lightening creams (SLCs) among University undergraduates in Osun State in Southwestern Nigeria.

## SUBJECTS AND METHODS

This was a descriptive, cross-sectional, institution-based study of knowledge, attitude, pattern and determinants of the use of SLCs among University undergraduates in Osun State, Southwestern Nigeria. The study was carried out between August 2018 and December 2018. There are six Universities in Osun State namely: Osun State University, Ladoké Akintola University of Technology (LAUTECH), College of Health Sciences, and the Obafemi Awolowo University which are owned by the Government, while the privately owned institutions are Adeleke University Ede, Fountain University, Osogbo, and Oduduwa University Ile Ife.

The study population comprised all undergraduates in selected Universities in Osun state. Only registered students who were within the reproductive age 15 and 49 years were considered eligible for this study. Using Fisher's formula for the calculation of sample size for population <10,000,<sup>6</sup> a sample size of 279 was calculated. This was rounded up to 300 to make room for 5%–10% attrition and possible non-response. A multistage sampling method was adopted in the subjects' recruitment into the study. In the first stage, one of the three government-owned universities (Osun State University) was selected by simple random sampling using simple balloting. Similarly, one of the three privately owned universities (Fountain University) was selected by simple random sampling employing simple balloting.

Questionnaires were equally allocated to the selected institutions.

In stage 2 in each university, one level of study of four levels was selected by simple random sampling employing simple balloting. In stage 3, a course of study amongst several was selected by simple random sampling employing simple balloting. In stage 4, in a class containing students offering the selected course, a systematic sampling of one in three students was made after collecting a list of students (sampling frame) who were in class and according to the day's sitting arrangement on the day of data collection. This continued until the questionnaires allocated to that class were exhausted. In classes where questionnaires were not exhausted, another course was chosen using simple random sampling and the participants were recruited in the same way.

Data collection was quantitative, and the research instrument was a semi-structured, self-administered questionnaire. The study instrument was pretested among twenty Oyo Technical University students in Ibadan, Oyo state. The study variables included knowledge, awareness and practice of skin-bleaching creams or use of SLCs. Two female nurses trained as research assistants helped in supervising data collection sessions.

Ethical clearance to conduct the study was sought and obtained from LAUTECH Teaching Hospital. The study approval was obtained from the Ethical Review Committee. The heads of the selected departments also gave permission to conduct the study while written informed consent was obtained from the individual student who took part in the study, having assured them of confidentiality of all information supplied by them.

SPSS software version 23.0 was used for the data analysis after validating data entered through manual random checks and double entry. Relevant frequency distribution tables and summary indices were generated. Knowledge, attitude and practice scores of the use of bleaching creams were computed after pooling together the seven relevant questions for each of knowledge and attitude. Correct or favourable answers were scored +1, while wrong answers were scored zero. Scores below the mean were regarded as poor, while those above the mean were classified as good (that is mean knowledge or attitude scores). The Chi-square test was used to determine relationships between categorical variables. Regression models were used for multivariate analysis of quantitative variables, while the level of significance was set at  $P \leq 0.05$  for all inferential statistical analyses.

**RESULTS**

Table 1 shows the sociodemographic characteristics of the study respondents. More than half (166, 55.3%) of the respondents were within the age group of 20–24 years, 168 (56.0%) of them were female, majority (277, 92.3%) of these students were single and 224 (74.7%) of them were Christians. The mean age of the respondents was 21.0 (±3.3) years. Table 2 shows that majority (283, 94.3%) of the respondents were well aware of the

**Table 1: Sociodemographic information of respondents (n=300)**

| Variable                         | Frequency (%) |
|----------------------------------|---------------|
| Age groups (years), mean±SD      | 21±3.3        |
| 15-19                            | 86 (28.7)     |
| 20-24                            | 166 (55.3)    |
| 25-29                            | 39 (13.0)     |
| 30-34                            | 9 (3.0)       |
| Sex                              |               |
| Male                             | 132 (44.0)    |
| Female                           | 168 (56.0)    |
| Occupation                       |               |
| Strictly students                | 257 (85.7)    |
| Student and self-employed worker | 36 (12.0)     |
| Student and trader               | 7 (2.3)       |
| Marital status                   |               |
| Single                           | 277 (92.3)    |
| Married                          | 18 (6.0)      |
| Cohabiting                       | 3 (1.0)       |
| Divorced/widowed/separated       | 2 (0.7)       |
| Religion                         |               |
| Christianity                     | 224 (74.7)    |
| Islam                            | 71 (23.7)     |
| Traditional                      | 5 (1.7)       |

SD: Standard deviation

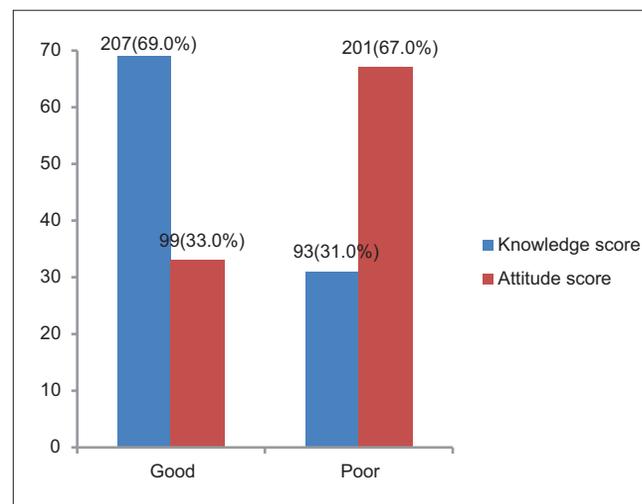
**Table 2: Knowledge and attitude to skin-toning cream**

| Variable (yes options)   | Frequency (%) |
|--|---------------|
| Knowledge of toning creams   |               |
| Aware of existence of skin toning cream                            | 283 (94.3)    |
| Source(s) of information or awareness (n=283)                      |               |
| Friends/relatives  | 40 (14.1)     |
| Health-care workers  | 14 (4.9)      |
| Newspaper/Radio  | 88 (31.1)     |
| Internet services  | 53 (18.7)     |
| Others/No response   | 88 (31.1)     |
| Toning cream has side effects on skin                              | 81 (27.0)     |
| Toning cream bleaches the skin                                     | 266 (88.7)    |
| Toning cream is a drug, not just a cream                           | 131 (43.7)    |
| Toning cream causes cancer   | 233 (77.7)    |
| Toning cream makes skin susceptible to other disease or infection. | 229 (76.0)    |
| Toning cream beautifies the skin                                   | 211 (70.0)    |
| Attitude to toning creams  |               |
| Toning creams treat some skin disease                              | 152 (50.7)    |
| Toning gives multi-coloured skin with time                         | 233 (77.7)    |
| Toning could cause pimples   | 182 (60.7)    |
| One may be addicted to it  | 255 (85.0)    |
| It could peel and burns the skin                                   | 233 (77.7)    |
| There is nothing bad in using toning creams                        | 107 (35.7)    |
| I do not mind using toning cream                                   | 100 (33.3)    |
| Bleaching is not good  | 263 (87.7)    |
| I use it before but have stopped                                   | 45 (15.0)     |
| I am using it now but would like to stop                           | 32 (10.7)     |

existence of SLCs. Less than one-third (88, 31.1%) of them reported that their major source of information about skin-lightening cream was the Internet, followed by friends and relatives (40, 14.1%). Furthermore, 81 (27.0%) knew that SLCs have side effects, while majority (211, 70.0%) believed that toning cream beautifies the skin and 182 (60.7%) believed that toning peels the skin and causes pimples. Majority (233, 77.7%) said that SLCs could cause burns to the skin, another majority (233, 77.7%) said that it could result in cancer later in life, while about one-third 107 (35.7%) said that there was nothing bad in using toning creams. Hundred (33.3%) of the respondents said that they did not mind using toning cream, while (255, 85.0%) believed that one may be addicted to its use [Table 2].

Figure 1 revealed the percentage distribution of knowledge of respondents on SLC. More than two-third (69.0%) of the respondents had good knowledge, while 31.0% of them had poor knowledge about SLC. More than two-third (67.0%) of the university students had a poor attitude towards the use of lightening cream, while one-third (33.0%) of them had a good attitude towards the use of SLC.

Table 3 shows that 114 (38.0%) of the respondents had ever used SLCs, of which half (57, 50.0%) were using it only on the face, majority (83, 72.8%) used it all over the body, about one-third (36, 31.6%) used it all of the time, while 69 (60.5) used it some of the time. About three-fifth (69, 60.5%) of the respondents who have ever used SLC were currently using toning cream as at the time of conducting this study, while 45 (39.5%) had stopped using toning creams. Close to half (32, 46.4%) of the respondents said that they were currently using it



**Figure 1: Mean knowledge and attitude scores of respondents on toning cream**

but want to stop. Among those who had ever used toning creams, majority (108, 94.7%) of them said that they knew the chemical ingredient that the SLCs contained, less than one-third (34, 29.8%) usually checked the label before use, while majority (108, 94.7%) usually obtained skin-lightening products from the supermarket/shop. Major reasons for using toning creams include skin bleaching (50, 43.9%) and to remove rashes (56, 49.1%). Reasons for having never used SLCs include not just liking it (133, 44.3%) and the belief that it is not good or harmful to engage in the use of SLCs (151, 50.3%).

Table 4 shows that a statistically significant association exists between age, marital status and religion of respondents with their knowledge about lightening cream ( $P < 0.05$ ), while there is no significant statistical association between gender of respondents and their knowledge on lightening cream ( $P > 0.05$ ). Furthermore, there is a significant association between age, sex, religion of respondents and their attitude towards SLC ( $P < 0.05$ ), while there is no significant association between marital status of respondents and their attitude towards the use of SLC ( $P > 0.05$ ). There is also a significant association between age, marital status, religion of respondents and their use of lightening cream ( $P < 0.05$ ) but none with gender ( $P > 0.05$ ).

Table 5 shows binary logistic regression analysis to determine the strength of statistical associations between age and sex of respondents and their knowledge and practice scores. Male respondents were four times (1/0.53) less likely to have good knowledge of the use of SLCs compared to female, but this observation was found not to be statistically significant (odds ratio [OR]: 0.53, 95% confidence interval [CI]: 0.196–1.433,  $P = 0.109$ ). Respondents <19 years were 1.4 (1/0.72) times less likely to have good knowledge of the use of SLCs compared to those above 19 years of age, and this observation was also found not to be statistically significant (OR: 0.72, 95% CI: 0.2585–2.0194,  $P = 0.268$ ). Male respondents were one time (1/0.99 meaning no difference) less likely to have a good practice of the use of SLCs compared to female, and this observation was found not to be statistically significant (OR: 0.99, 95% CI: 0.624–1.593,  $P = 0.496$ ). Respondents with age above 19 years were 1.88 times more likely to have a good practice of the use of SLCs compared to those below 19 years of age, and this observation was found to be statistically significant (OR: 1.88, 95% CI: 1.1315–3.1322,  $P = 0.007$ ). Thus, the identified predictor of the use of SLCs (from this study) was being a female and being older than 19 years of age.

**Table 3: Pattern of use of skin-lightening creams among respondents**

| Variable (yes options)   | Frequency  |
|--|------------|
| I have ever used toning cream  | 114 (38.0) |
| Parts of the body on which SLCs were used* (n=114)                               |            |
| Only on the face   | 57 (50.0)  |
| All over the body  | 83 (72.8)  |
| Other parts  | 13 (11.4)  |
| Frequency of use of SLCs* (n=114)  |            |
| Everyday of the week   | 36 (31.6)  |
| Some days of the week  | 69 (60.5)  |
| Occasionally   | 9 (7.9)    |
| Respondent still use toning cream now (n=114)                                    | 69 (60.5)  |
| If yes, respondent used it (n=69)  |            |
| All the time   | 41 (59.4)  |
| Some of the time   | 20 (29.0)  |
| Only occasionally  | 8 (11.6)   |
| Respondent used SLC before but have stopped (n=114)                              | 45 (39.5)  |
| Respondent is using SLC now but wants to stop (n=69)                             | 32 (46.4)  |
| Respondent know the chemical ingredient SLC contains (n=114)                     | 108 (94.7) |
| Respondent usually check the SLC label before use? (n=114)                       | 34 (29.8)  |
| Where respondent normally purchase the cream (n=114)                             |            |
| Drug store   | 50 (43.9)  |
| Supermarkets/shops   | 108 (94.7) |
| Others   | 29 (25.4)  |
| Respondent usually add local materials to bleaching creams e.g., sulphur (n=114) | 19 (16.7)  |
| Why respondent have used toning cream (n=114)                                    |            |
| Skin bleaching or lightening purposes  | 50 (43.9)  |
| To remove rashes   | 56 (49.1)  |
| Others   | 14 (12.3)  |
| Why respondent have never used toning cream (n=300)                              |            |
| I do not like it   | 133 (44.3) |
| Not heard much about it  | 16 (5.3)   |
| Not good   | 151 (0.3)  |

\*Multiple responses. SLC: Skin-lightening cream

**Table 4: Bivariate analysis showing association between knowledge and practice score of use of skin lightening cream and some sociodemographic variables**

| Variables      | Outcome variables |             | $\chi^2$ | P     |
|----------------|-------------------|-------------|----------|-------|
|                | Knowledge score   |             |          |       |
|                | Good, n (%)       | Poor, n (%) |          |       |
| Age (years)    |                   |             |          |       |
| <19            | 80 (93.0)         | 6 (7.0)     | 3.153    | 0.004 |
| >19            | 203 (94.9)        | 11 (5.1)    |          |       |
| Sex            |                   |             | 1.607    | 0.205 |
| Male           | 122 (92.4)        | 10 (7.6)    |          |       |
| Female         | 161 (95.8)        | 7 (4.2)     |          |       |
| Marital status |                   |             | 1.021    | 0.018 |
| Never married  | 264 (95.3)        | 13 (4.7)    |          |       |
| Ever married   | 19 (82.6)         | 4 (17.4)    |          |       |
| Variables      | Practice score    |             | $\chi^2$ | P     |
|                | Good, n (%)       | Poor, n (%) |          |       |
| Age (years)    |                   |             | 65.770   | 0.001 |
| <19            | 42 (48.8)         | 44 (51.2)   |          |       |
| >19            | 72 (33.6)         | 142 (66.4)  |          |       |
| Sex            |                   |             | 2.564    | 0.278 |
| Male           | 51 (38.6)         | 81 (61.4)   |          |       |
| Female         | 63 (37.5)         | 105 (62.5)  |          |       |
| Marital status |                   |             | 38.432   | 0.001 |
| Never married  | 103 (37.2)        | 174 (62.8)  |          |       |
| Ever married   | 11 (47.8)         | 12 (52.2)   |          |       |

**Table 5: Binary logistic regression analysis showing association between knowledge and practice score of use of skin-lightening cream and some sociodemographic variables**

| Variables              | OR   | 95% CI | P      |
|------------------------|------|--------|--------|
| <b>Knowledge score</b> |      |        |        |
| Age (years)            |      |        |        |
| <19                    | 0.72 | 0.2585 | 2.0194 |
| >19*                   |      |        | 0.268  |
| Sex                    |      |        |        |
| Male                   | 0.53 | 0.196  | 1.433  |
| Female*                |      |        | 0.109  |
| Marital status         |      |        |        |
| Never married          | 4.27 | 1.2704 | 14.387 |
| Ever married*          |      |        | 0.018  |
| <b>Practice score</b>  |      |        |        |
| Age (years)            |      |        |        |
| <19*                   | 1.88 | 1.1315 | 3.1322 |
| >19                    |      |        | 0.007  |
| Sex                    |      |        |        |
| Male                   | 0.99 | 0.624  | 1.593  |
| Female*                |      |        | 0.496  |
| Marital status         |      |        |        |
| Never married          | 0.65 | 0.2750 | 1.5164 |
| Ever married*          |      |        | 0.161  |

\*Reference category. OR: Odds ratio, CI: Confidence interval

## DISCUSSION

The mean age of the students recruited for this study being around 21 years is in agreement with the findings of similar studies.<sup>7-9</sup> This suggests that majority of the students in Nigerian universities are youths. A little more than two-third of our respondents had good knowledge about lightening creams, a finding similar to that of another study in which a significant majority of their respondents had good knowledge of SLCs.<sup>5</sup> When someone has a good knowledge of the consequences of using SLC, one can then decide whether to use it or not. In contrast to the findings from our study in which as many as two-third had a poor attitude towards lightening their skin, another study reported that most students had a positive perception of having a lighter skin tone.<sup>10</sup> In yet another contrasting study, majority of the respondents had good attitudes towards the use of SLC.<sup>11</sup> The knowledge level appeared to be an indicator of having a good attitude and eventual use of the product. Several reasons were given by the respondents for the use of lightening creams. These included lightening of dark spots, removing acne, white skin being more attractive than black skin, attracting men and to look pretty amongst others. This is in keeping with findings from another study.<sup>11</sup>

In another study,<sup>12</sup> respondents said that women with lighter skin were more beautiful than those with dark skin. However, lightening creams are not without side effects. In this study, about two-third said that lightening creams peeled the skin and eventually caused pimples, and this is

in agreement with another study.<sup>12</sup> In another study,<sup>10</sup> about three-quarter of the respondents said that the use of SLC can harm the skin. In yet another similar study, respondents believed that lightening creams would significantly impede the person's health status and related quality of life.<sup>3-5</sup>

A little over one-third of the respondents have ever used lightening creams, while only about one-third of them were current users. This was in agreement with results from another study<sup>10</sup> that reported a little over one-third being current users, but a significant majority were 'ever' users, as was the case in other studies as they reported a significant number of their respondents using SLCs.<sup>5,13</sup> The significance of this trend is that users probably found it difficult to discontinue use once it is initiated. The reasons for the difficulty in discontinuing SLC use may not be unconnected with their motives behind the use of the creams in the first instance and their perception of being accepted beyond their peers in the society. The use of lightening creams for medical reasons found among one-third of our respondents agreed with another study which reported that 26.7% used bleaching agents for medical purposes.<sup>15</sup> Although medically indicated, most of these creams were being used without doctor's prescription and their side effects may not be ascertained. However, majority of our respondents still believed that bleaching is not good, in agreement with another study.<sup>4</sup>

Among the users of SLC, about three-quarter applied it all over their body and used it only sometimes. Another study, however, reported that SLCs were applied to <10% of the body.<sup>13</sup> Without taking cognizance of the anatomy of some skin creases, the use of SLCs in those areas could predispose to skin burns and some degree of injury to the skin. More than two-third of our respondents did not know the chemical ingredients that lightening cream contained. One-third did not usually read the labels of lightening cream before use. This is in contrast with findings from another study.<sup>12</sup> It is important to read the labels and content of SLC for safety reasons, as some of the contents may be potentially carcinogenic. Bleaching creams should be sold under strict prescription, and should not be freely available in the markets or supermarkets as reported in our study and supported by another study.<sup>9</sup> A statistically significant association found between age, marital status and knowledge and practice of the use of SLC is in agreement with another study.<sup>13</sup> This is, however, in contrast with yet other studies in which older age and being a female were significant predictors of the use of lightening creams.<sup>10,12</sup> In yet another Nigerian study,<sup>14</sup> about three-quarters of users of lightening creams were women. This may not be unconnected with the habit

of women making concerted efforts to look attractive and appealing to men, most especially those who are in social and sexual relationships. A limitation of this study was the apprehension among respondents to take part in this study once the topic of SLC use was introduced to them. The reason may not be unconnected with some societal stigma and discrimination being meted out to 'bleaching cream' users most especially when there are side effects of the cream on the face and some other body parts. This was overcome by assuring respondents about the confidentiality of data collected and we did not show interest in their names and physical address for identification purposes.

## CONCLUSION

A significant proportion of our respondents were the current users of SLCs, and this was not unconnected to social issues that are related to beauty and attractiveness. This is ongoing despite the many side effects of its persistent use. We suggest that health education and sensitization campaign in this regard be stepped up and targeted at the young people, especially females in Nigerian Universities.

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## Conflicts of interest

There are no conflicts of interest.

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