International Journal of Women's Dermatology 5 (2019) 349–355

Contents lists available at ScienceDirect

International Journal of Women's Dermatology

Original Research

Skin lightening practices, beliefs, and self-reported adverse effects among female health science students in Borama, Somaliland: A cross-sectional survey ☆

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ARTICLE INFO

Article history:
Received 15 May 2019
Received in revised form 16 July 2019
Accepted 15 August 2019

Keywords:
Skin lightening
Skin bleaching
Skin whitening
Corticosteroid agents
Hydroquinone
Somaliland

ABSTRACT

Background: Skin-lightening (SL) products are common, especially in Africa. Adverse effects from these products represent a public health concern. Use of these products in Somaliland is unknown.
Objective: This study aimed to determine the prevalence of use of SL products among female health science students, beliefs about these products and practices, and adverse effects experienced.
Methods: This was a cross-sectional survey of a convenience sample of female health science students at Amoud University in Borama, Somaliland.
Results: Of the 400 students who were invited to participate, 265 completed the survey (response rate: 66%). Mean participant age was 21.1 years (standard deviation: 2.0 years). The majority of students were single (91.2%) with a Fitzpatrick skin type of 3 or darker (94.2%). Past or present use of SL products was reported by 25.6% of participants, and 52.2% admitted to current use. Compared with non-users, more SL product users agreed that lighter skin color gives a woman more confidence, helps a woman have better job opportunities, and increases chances of getting married. They also agreed that advertisements on television for SL products influence a women's preference for a lighter skin tone ($p < .05$). More than 60% of participants were unsure what active ingredients were in their SL products. Only 9% denied any undesirable adverse effects, and the remainder reported an array of local and systemic adverse effects. The vast majority realize that SL products may cause undesirable local (92%) and systemic (89%) adverse effects.
Limitations: Generalizability is limited because a nonrandomized convenience sample from one university was studied. Response bias also may have skewed results.
Conclusion: Use of SL products among female health science students in Somaliland is common, and causes cutaneous and systemic adverse reactions. Use appears influenced by beliefs about the benefits of lighter skin color. Education is needed on the proper use of these products, how to avoid harmful products, and how to prevent complications.

Introduction

Skin lightening (SL), also known as skin bleaching and skin whitening, involves the use of topical products that contain corticosteroids, hydroquinone, mercury, and/or a variety of other agents to attain a lighter skin color. The motivation for SL may be to treat a pigmentary disorder, such as melasma, but is often simply for cosmetic enhancement.

The cosmetic use of SL products is common in Africa, Asia, and many other parts of the world. A recent meta-analysis reported a global pooled lifetime prevalence of use of skin bleaching agents of 27.7%, and Africa specifically had an estimated prevalence of 27.1%. The authors warned that these results represent a serious global public health problem and stressed the need for epidemiologic studies in underrepresented regions (Sagoe et al., 2019).

Numerous cutaneous adverse effects (e.g., atrophy, striae, telangiectasias, acne vulgaris, allergic and irritant contact

☆ No human subjects were included in this study. No animals were used in this study.

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https://doi.org/10.1016/j.ijwd.2019.08.006
2352-6475/

dermatitis, hirsutism, hypertrichosis, perioral dermatitis, steroid rosacea, dyschromias, ochronosis, and infections) and even systemic complications (e.g., Cushing's syndrome, diabetes, hypertension, and ocular changes [cataract and glaucoma]) have been associated with the use of these products (Ajose, 2005; Dadzie and Petit, 2009; Giudice and Yves, 2002; Ladizinski et al., 2011; Lu et al., 2010; Mahé et al., 2003, 2007; Mistry et al., 2011; Petit et al., 2006; Vashi et al., 2018). Even if consumers are educated on and advised to avoid potentially harmful components of SL agents, the packaging of SL products is often misleading (Petit et al., 2006).

With the increase in travel and immigration, patients with adverse effects from SL agents can present to health care professionals worldwide. Furthermore, unregulated SL products are accessible in many countries worldwide, including in North America and Europe (Mistry et al., 2011).

To our knowledge, studies have not been published on the use of SL in greater Somalia or Somaliland (self-governing region in northwestern Somalia). The importation and sale of SL products has been banned or strongly regulated in many African, Asian, European, and North American countries, but we are not aware of any such regulations by the government or other agencies in Somaliland (Sagoe et al., 2019). As such, there are few barriers to the widespread use of SL in this population.

Borama, a city in western Somaliland, is home to Amoud University. At the outpatient dermatology clinic within the family medicine residency program at a regional hospital affiliated with Amoud University, we frequently see patients with complications from the cosmetic use of SL products. Health care professionals and members of the local community widely believe that the use of these products is extremely common in the female population of Borama, although many women seem reluctant to report use. SL products are readily available and relatively inexpensive without a prescription in cosmetic shops, pharmacies, and supermarkets.

At the outset of a public education campaign about the potential dangers of SL products in Borama, our program sought to collect data on SL use in the local population. Enlisting the assistance of health care professionals in this educational initiative is imperative; thus, we believed surveying health care preprofessionals about their own personal use of and beliefs about SL products would be informative because they may be expected to counsel patients on the potential benefits and harms of these products in the future. Specifically, we sought to determine the prevalence of female students who use or have used SL products, their beliefs about SL products and practices, and the specific adverse effects experienced.

We hypothesized that the cosmetic use of SL products and associated complications are common among female health science students at Amoud University. We further hypothesized that underlying, firmly held beliefs about skin color perpetuate this practice despite awareness of potential adverse effects.

Methods

The Institutional Review Board at Amoud University School of Postgraduate Studies and Research approved this cross-sectional survey study. A 44-question multiple-choice survey was created by the researchers. Item types included demographic parameters, beliefs regarding lighter skin color, and the use of SL products. Fifteen of the items used Likert scales. To establish content validity, an expert in pigmentary disorders was asked to review the survey, which was refined accordingly. Face validity was also sought through a pilot study with 15 female public health students from a local private university. Subsequently, the survey was modified for clarity based on evaluation of the results and feedback from participants.

Two of the authors (N.M. and J.M.) visited two cosmetic stores, two pharmacies, and two supermarkets in the main market area of Borama and asked to see what SL products were available. Fifty-six products were identified and purchased, including 12 containing clobetasol.

Photographs were taken of the products, and a large poster board was created showing each product. This was used as an aid for the participants for the question that asked what SL products they have used/are using (Fig. 1). Another poster board was

Fig. 1. Poster board of skin-lightening products purchased at the market and used during surveys to assist in answering the question "What skin lightening products have you used/are using?"

constructed showing a photograph of various local and systemic adverse effects, numbered in order of the question on the survey that asked "What undesirable side effects have you personally experienced?" Both poster boards were used for all surveys.

The study took place at Amoud University College of Health Sciences in Borama, Somaliland. The eligibility criteria included female students at this university, aged ≥18 years, who wished to participate in the study. Men were not eligible to participate because the study focused on women. Approximately 400 female students from all faculties (i.e., dentistry, laboratory, medicine and surgery, midwifery, nursing, pharmacy, and public health) were invited to participate in a voluntary survey about SL on 3 days between November 29 and December 3, 2018. The surveys took place in a classroom on campus. After providing written consent, 265 participants (response rate: 66%) completed the self-administered anonymous questionnaire. Both the consent form and questionnaire were in Somali (originally written in English and translated into Somali).

The statistical analyses were performed in SAS, version 9.4, with SAS macros (Liu et al., 2018), and the significance level was set at alpha <0.05. The descriptive statistics were applied to all survey items by frequency and percentage for categorical variables and summary statistics for numerical variables. The comparison between Yes and No for SL-ever-used was carried out by the parametric (analysis of variance, χ^2) or non-parametric (Fisher's exact, Krusakal-Wallis) tests wherever appropriate upon assumption checks.

Results

Three participants were excluded at the beginning of the data analysis because of incorrectly completing the survey. Therefore, 262 participants were included in the data analysis, and 67 participants (25.6%) reported that they had ever used SL products.

The demographic data are summarized in Table 1. The mean participant age was 21.1 years (standard deviation [SD]: 2.0 years; range, 18–30 years). There was no significant difference (20.7 vs. 21.2; $p = .123$) in age between those who reported using SL products and those who reported no use. The vast majority of participants were single (91.2%). Most participants were from Borama (73.7%), and the remainder were either from other locations in Somaliland (12.2%) or were not from Somaliland (14.1%). No significant difference (23.5% vs. 26.2%; $p = .696$) was detected in SL use between those who had and had not lived outside of Somaliland. Fitzpatrick type 4 skin type was the most common (60.8%), and

Table 1
Univariate association with ever-used-product.

Survey item	Level	Total n = 262	Have you ever used any skin-lightening products?		*p*-value
			No n = 195	Yes n = 67	
Age, years	Mean (standard deviation)	21.1 (2)	21.2 (2.1)	20.7 (1.8)	0.123
	Median (range)	21 (18–30)	21 (18–30)	20 (18–25)	
Marital status	Married	23 (8.8)	19 (9.74)	4 (5.97)	0.346
	Single	239 (91.2)	176 (90.26)	63 (94.03)	
Where from	Borama	193 (73.7)	148 (75.9)	45 (67.16)	0.340
	Awdal, Marodigeex, Saahil, Togdheer, Sanag, Sool	32 (12.2)	21 (10.77)	11 (16.42)	
	Not from Somaliland	37 (14.1)	26 (13.33)	11 (16.42)	
Lived in a country outside Somaliland for >1 year?	No	210 (80.5)	155 (73.8)	55 (26.2)	0.696
	Yes	51 (19.5)	39 (76.5)	12 (23.5)	
Fitzpatrick skin type before using any products?	6	25 (9.8)	22 (11.7)	3 (4.48)	0.448
	5	22 (8.6)	15 (7.98)	7 (10.45)	
	4	155 (60.8)	114 (60.64)	41 (61.19)	
	3	38 (14.9)	25 (13.3)	13 (19.4)	
	2	7 (2.7)	6 (3.19)	1 (1.49)	
	1	8 (3.1)	6 (3.19)	2 (2.99)	
Lighter skin color is more beautiful.	Disagree	90 (34.5)	63 (32.47)	27 (40.3)	0.331
	Neutral	84 (32.2)	67 (34.54)	17 (25.37)	
	Agree	87 (33.3)	64 (32.99)	23 (34.33)	
Lighter skin color gives a woman more confidence.	Disagree	164 (62.6)	131 (67.18)	33 (49.25)	**0.006**
	Neutral	31 (11.8)	24 (12.31)	7 (10.45)	
	Agree	67 (25.6)	40 (20.51)	27 (40.3)	
Lighter skin color makes a woman look younger.	Disagree	209 (80.1)	161 (82.56)	48 (72.73)	0.216
	Neutral	19 (7.3)	12 (6.15)	7 (10.61)	
	Agree	33 (12.6)	22 (11.28)	11 (16.67)	
Lighter skin color implies that a woman belongs to a high social class.	Disagree	203 (78.1)	157 (80.93)	46 (69.7)	0.071
	Neutral	20 (7.7)	15 (7.73)	5 (7.58)	
	Agree	37 (14.2)	22 (11.34)	15 (22.73)	
Lighter skin color helps a woman have better job opportunities.	Disagree	220 (84.0)	171 (87.69)	49 (73.13)	**<0.001**
	Neutral	17 (6.5)	14 (7.18)	3 (4.48)	
	Agree	25 (9.5)	10 (5.13)	15 (22.39)	
Lighter skin color increases a woman's chances of getting married.	Disagree	177 (67.8)	138 (70.77)	39 (59.09)	**0.022**
	Neutral	28 (10.7)	23 (11.79)	5 (7.58)	
	Agree	56 (21.5)	34 (17.44)	22 (33.33)	
Men consider women with a lighter skin color more beautiful.	Disagree	100 (38.2)	81 (41.54)	19 (28.36)	0.136
	Neutral	24 (9.2)	18 (9.23)	6 (8.96)	
	Agree	138 (52.7)	96 (49.23)	42 (62.69)	
Advertisements on television for skin-lightening products influence a women's preference for a lighter skin tone.	Disagree	66 (25.2)	57 (29.23)	9 (13.43)	**0.015**
	Neutral	16 (6.1)	9 (4.62)	7 (10.45)	
	Agree	180 (68.7)	129 (66.15)	51 (76.12)	

(*continued on next page*)

Table 1 (*continued*)

Survey item	Level	Total n = 262	Have you ever used any skin-lightening products? No n = 195	Yes n = 67	*p*-value
Family owns a business that sells skin-lightening products	No	222 (85.1)	168 (86.15)	54 (81.82)	0.642
	Yes	21 (8.0)	14 (7.18)	7 (10.61)	
	Not sure	18 (6.9)	13 (6.67)	5 (7.58)	
Skin-lightening products may cause undesirable side effects for the skin.	Disagree	18 (6.9)	16 (8.21)	2 (2.99)	**0.028**
	Neutral	4 (1.5)	1 (0.51)	3 (4.48)	
	Agree	240 (91.6)	178 (91.28)	62 (92.54)	
Skin-lightening products may cause undesirable side effects to the inside of the body.	Disagree	22 (8.5)	16 (8.33)	6 (8.96)	0.569
	Neutral	7 (2.7)	4 (2.08)	3 (4.48)	
	Agree	230 (88.8)	172 (89.58)	58 (86.57)	

94.2% of participants had type 3 skin type or darker. There was no significant difference ($p = .448$) in skin types between those who reported using SL products and those who reported no use.

With regard to beliefs about lighter skin color, in comparing SL users with non-users, more SL users agreed that a lighter skin color gives a woman more confidence (40.3% vs. 20.5%; $p = .006$), helps a woman have better job opportunities (22.4% vs. 5.1%; $p < .001$), and increases a woman's chances of getting married (33.3% vs. 17.4%; $p = .022$) and that advertisements on television for SL products influence a women's preference for lighter skin tone (76.1% vs. 66.1%; $p = .015$). More SL users than non-users also thought that a lighter skin color makes a woman look younger (16.7% vs. 11.3%) and implies that a woman belongs to a high social class and that men consider women with a lighter skin color more beautiful (22.7% vs. 11.3%), but these differences did not reach statistical significance. Interestingly, 21 of participants (8%) have a family member who owns a business that sells SL products.

In Table 2, the survey items for the 67 SL users (25.6%) are summarized. More than half of SL users (52.2%) admitted to current use of SL products. The average age when use was initiated was 17.1 years (SD: 2.5 years), and the mean number of years of product use was 3.4 years (SD: 2.2 years). Just over half of SL users (52.3%) answered that no one had encouraged them to use SL products, a third (35.4%) said that friends had encouraged them, and fewer SL users (12.3%) were encouraged by family members. The majority of SL users purchased the products at a supermarket

Table 2
Descriptive statistics for previous and current product users.

	Level	N = 67 (%)
Do you currently use skin-lightening products?	No	32 (47.8)
	Yes	35 (52.2)
How old were you when you started using skin-lightening products?	Mean (standard deviation)	17.1 (2.5)
	Median (range)	17 (12–24)
How many years have you been/did you use skin-lightening products?	Mean (standard deviation)	3.4 (2.2)
	Median (range)	2.5 (0.25–9)
Who encouraged you to use skin-lightening products?	Husband/sister/other family member	8 (12.3)
	Friends/advertisement	23 (35.4)
	No one	34 (52.3)
Where do/did you buy/acquire the skin-lightening product(s) you use/used?	Cosmetic store	8 (12.3)
	Supermarket	48 (73.8)
	Pharmacy	4 (6.2)
	Convenience store	4 (6.2)
	Gift from someone	1 (1.5)
How do/did you choose the skin-lightening product(s) you use/used?	Advice from cosmetic store	5 (7.6)
	Advice from pharmacist	3 (4.5)
	Advice from physician	7 (10.6)
	Advice from friend	23 (34.8)
	>1 of the above	8 (12.1)
	Other	20 (30.3)
Why do/did you use skin-lightening product(s)?	Skin has a pigment disorder (e.g., melasma, other skin problem)	32 (51.6)
	Prefer lighter skin color	24 (38.7)
	Both 1 and 2	6 (9.7)
How many skin-lightening products do/did you use at one time?	1	41 (64.1)
	2–5	23 (35.9)
How often do/did you apply skin lightening products?	Greater than once a day	10 (15.9)
	Once/day	22 (34.9)
	2–3 times/week	7 (11.1)
	Weekly	8 (12.7)
	Occasionally	16 (25.4)
Where do/did you apply skin-lightening products?	Face only	53 (84.1)
	Other body parts	2 (3.2)
	Face and some other body parts	7 (11.1)
	Almost entire body (including face)	1 (1.6)

Table 2 (*continued*)

	Level	N = 67 (%)
What is/are the active ingredient(s) in the skin-lightening product(s) you use/used?	Clobetasol	1 (2.1)
	Betamethasone	1 (2.1)
	Vitamin C (ascorbic acid)	4 (8.5)
	Hydrogen peroxide	1 (2.1)
	Alpha-hydroxy acids	1 (2.1)
	Aleosin	1 (2.1)
	Tretinoin	2 (4.3)
	Vitamin A	3 (6.4)
	Calomel and ammoniated mercury chloride	1 (2.1)
	Sunscreen (name not specified)	3 (6.4)
	Not sure	29 (61.7)
Approximately how much do/did you spend monthly on skin-lightening products?	<$3	45 (70.3)
	$3–5	12 (18.8)
	≥$6	7 (10.9)
What skin-lightening products have you used/are using?	White Express	2 (5.0)
	Moovate Cream	2 (5.0)
	Fairness Cream	2 (5.0)
	Dermoquin 2% Cream	1 (2.5)
	Carotone	1 (2.5)
	Faiza Beauty Cream	1 (2.5)
	Perfect White	1 (2.5)
	Aneeza Gold Beauty Cream	1 (2.5)
	Noor Herbal Beauty Cream	1 (2.5)
	Layla Beauty Cream	1 (2.5)
	Fairness Cream - Paris collection	10 (25.0)
	Fair and Lovely	11 (27.5)
	Natural Face Beauty Cream	2 (5.0)
	Chandni Whitening Cream	2 (5.0)
	Other	2 (5.0)
How difficult would it be for you to stop using skin-lightening products?	Very difficult	10 (15.6)
	Somewhat difficult	4 (6.3)
	Neutral	10 (15.6)
	Somewhat easy	4 (6.3)
	Very easy	36 (56.3)
Who has talked with you about stopping your use of skin-lightening products?	Doctor	9 (13.8)
	Health care professional besides doctor	2 (3.1)
	Mother	11 (16.9)
	Other family besides mother	2 (3.1)
	Friend	2 (3.1)
	No one	39 (60.0)

(73.8%), 12.3% at cosmetic stores, 6.2% from convenience stores, and 6.2% from pharmacies. Many SL users (34.8%) chose their particular SL product based on the advice of a friend, and fewer took advice from a cosmetic store, pharmacist, or physician.

When asked for the reason for using SL, about half of SL users (51.6%) said they had a pigment disorder, such as melasma, 38.7% prefer a light skin color, and 9.7% reported both reasons. Most participants reported using only one product at a time, but 35.9% of participants reported using two or more products at a time. The mean number of products used was 1.5 (SD: 0.8). Half of SL users (50.8%) apply their product(s) once a day or more. Most apply the product to the face only (84.4%), and the remainder apply the products to various parts of the body in addition to the face.

The majority of SL users (61.7%) were unsure what active ingredients were in their SL products. Active ingredients reported included clobetasol, betamethasone, vitamin C, hydrogen peroxide, alpha-hydroxy acids, aleosin, tretinoin, vitamin A, calomel and ammoniated mercury chloride, and sunscreen.

Most participants (70.3%) spent less than U.S. $3 monthly on SL products, 18.5% spent U.S. $3 to $5, and 10.9% spent U.S. $6 or more. The gross domestic product per capita is estimated at U.S. $347 (per year) by the World Bank (The World Bank, 2014). The most commonly self-reported undesirable side effects from use of SL products were skin atrophy, acne vulgaris, allergic contact dermatitis, and inability to cook due to skin irritation (Table 3).

Of the 56 SL products purchased at the market by the authors, 22 listed a corticosteroid as one of the main ingredients, of which 12 were clobetasol. Five products listed hydroquinone, and no products listed mercury-related agents. Twenty products listed sunscreen as one of the ingredients, and all but two of these products listed other SL agents in addition to sunscreen. Two products did not list any ingredients. Other commonly listed agents included kojic acid, vitamin A, ascorbic acid, niacinamide, and licorice extract. Many different SL products are/were used by the participants (Table 4).

Most SL users (62.6%) thought stopping use of SL products would be somewhat or very easy, and 21.9% thought it would be somewhat difficult or very difficult. About half of current SL users (52.3%) plan to stop using SL products in the future. When asked who has talked with them about stopping their use of SL products, most (60.0%) said no one, but 20.0% said their mothers or another family member and 16.9% said their doctors or another health care professional. Of all participants, 91.6% agreed that SL products may cause undesirable side effects for the skin, and 88.8% agreed that SL products may cause undesirable side effects to the inside of the body.

Table 3
Self-reported undesirable side effects from use of skin lightening products.

Side effect*	n = 67 (%)
Skin atrophy	7 (10.4)
Acne vulgaris	4 (5.9)
Allergic contact dermatitis	4 (5.9)
Unable to cook due to skin irritation	4 (5.9)
Impaired wound healing	3 (4.5)
Flushing, redness of the skin	3 (4.5)
Erythroderma	3 (4.5)
Hypopigmentation	2 (2.9)
Striae	2 (2.9)
Hypertrichosis	1 (1.5)
Ochronosis	1 (1.5)
Telangiectasias	1 (1.5)
Excessive weight gain	1 (1.5)
Mental problems	1 (1.5)
Kidney damage	1 (1.5)
Peripheral neuropathy	1 (1.5)
High blood pressure	1 (1.5)

*Participants could select >1 side effect. Six participants (8.9%) reported that they had no undesirable side effects.

Table 4
Products and main skin-lightening ingredients.

Skin-lightening products used by participants	Main skin-lightening ingredient(s)
White Express	Clobetasol
Moovate Cream	Clobetasol
Dermoquin 2% cream	Hydroquinone
Carotone	Hydroquinone
Faiza Beauty Cream	Kojic acid, vitamin A, zinc oxide
Perfect White	Alpha hydroxy acid, kojic acid, titanium dioxide
Aneeza Gold Beauty Cream	None listed
Noor herbal Beauty Cream	Arbutin, kojic acid, licorice extract, vitamin A
Layla Beauty Cream	Kojic acid, titanium dioxide
Fairness Cream – Paris collection	Niacinamide, methoxycinnamate
Fair and Lovely	Titanium dioxide
Natural Face Beauty Cream	Ascorbic acid, vitamin A
Chandni Whitening Cream	None listed
Brown Cream face	Unknown*
Golden	Unknown*

*Handwritten in the Other category by survey responders; therefore, the packaging was not available to determine ingredients.

Discussion

To our knowledge, this is the first published report on the use of SL in Somaliland. Our results indicate that the use of SL products among female health science students is common and close to the high global and African prevalence as reported by Sagoe et al. (2019); 25.6% vs. 27.7% vs. 27.1%, respectively).

A variety of cutaneous and systemic adverse reactions were reported by participants. SL use in this population may be influenced by certain beliefs, including that a lighter skin color gives a woman more confidence, helps her have better job opportunities, and increases her chances of getting married. Although many participants who have used SL products use them to treat pigmentary disorders, more than one-third used them only to achieve a lighter skin color in the absence of a pigmentary disorder. The vast majority of participants, including those who have used SL products, realize that SL products may cause undesirable local and systemic adverse effects.

Specific education for consumers is needed on the proper use of SL products, how to avoid harmful products, and how to prevent complications. Additionally, health care professionals, including pharmacists who dispense SL products, need to be educated on local SL practices and the numerous potential complications associated with misuse of SL products (particularly those that contain corticosteroids and hydroquinone). This training will help health care professionals identify adverse effects, provide counseling, and recommend safe and effective alternative treatment options, including high-quality and affordable sunscreen.

Interestingly, 8% of participants have family members who own a business that sells SL products. Health care professionals with family members who sell SL products may be a special target for education.

Several years ago, a workshop was held in neighboring Nairobi, Kenya, where 80 delegates and experts deliberated on the issue of SL and produced important recommendations that bear repeating, given the results of our study (Table 5; Dlova and Ajose, 2014).

Limitations of our study include self-reported data, which are susceptible to recall and response biases. In addition, there is a lack of reliability of self-reported Fitzpatrick skin types (Eilers et al., 2013). Social desirability bias, in which participants tend to answer questions in a way that will be viewed favorably by others, is a potential contributor of bias in survey research of this nature. Some participants, especially pre-professional health students, likely are aware of the dangers and reputation of SL among health care professionals and may have been reluctant to answer questions honestly about their own SL practices, beliefs, and adverse effects. This may have produced an underestimation of the prevalence of SL use in this population and skewing of other data from the survey. The generalizability of the results is limited because we used a nonrandomized convenience sample by recruiting only pre-professional health students at one university. Additionally, all participants were young women.

Conclusion

The current study offers a novel look at SL in Somaliland and provides the impetus for a public education initiative and further studies targeting the general population.

Table 5
Workshop recommendations.

Workshop recommendations from Nairobi, Kenya
1) All Ministries of Health in Africa should embark on advocacy programs to educate their citizens on the dangers of using skin-bleaching cosmetics.
2) All relevant African government agents should take appropriate steps to restrict access to bleaching products that contain hydroquinone, mercury, phenol, resorcinol, and all forms of corticosteroids.
3) All governments should implement strict measures to remove all known skin-bleaching cosmetics from over-the-counter shelves.
4) Education of the youth about the dangers of skin lighteners should target schools and other youth programs.
5) Heavy penalties should be levied on companies that continue to manufacture the implicated products.
6) Advertisements that promote fair skin as a symbol of beauty and use fair-skinned models to promote cosmetics that target the black market should be restricted or at least discouraged.
7) The media should be used to create awareness about the dangers of skin bleaching (e.g., television, radio, newspapers, magazines) to all African women and men.

Source: Dlova and Ajose (2014).

Acknowledgments

The authors thank the Amoud University College of Health Sciences Deans who were supportive of this research project, and their students who participated in the study. In addition, the authors thank the following Hope Family Medicine resident physicians who assisted in administering the surveys: Abdiqadir Omer Rabile, Ayan Abdurrahman Egeh, Bilan Mohamed Adem, Mohamed Abdirashid Nuur, Mohamed Ahmed Abdillahi, Mohamoud Abdi Aabi, and Mohamoud Hashi Abdi. The authors also thank the following Amoud University intern physicians who assisted in administering the surveys: Abdikadir Ibrahim Suleiman, Adnan Said Abdullahi, Ayan Abdi Ali, Mohamed Ahmed Abdurrahman, and Zamzam Ibraahim Abdilahi.

The authors thank the students from Horn International University public health department who participated in the pilot study, as well as Lydia Francis for the photography of the SL products used in the study. The authors are grateful to Dr. Sarah Kent for her guidance early in the process of planning and initiating the project and Dr. Sulochana Bhandarkar for assisting in establishing the content validity of the survey.

Conflict of Interest

None.

Funding

None.

Study Approval

The authors confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijwd.2019.08.006.

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