

Skin-lightening practice among women living in Jordan: prevalence, determinants, and user's awareness

Saja H. Hamed¹, PhD, Reema Tayyem¹, PhD, Nisreen Nimer¹, MSc, and Hatim S. AlKhatib², PhD

¹Faculty of Allied Health Sciences, the Hashemite University, Zarqa, Jordan, and ²Faculty of Pharmacy, University of Jordan, Amman, Jordan

Correspondence

Saja H. Hamed, PhD
College of Allied Health Sciences
The Hashemite University
P.O. Box 150459, Zarqa 13115, Jordan
E-mail: hamedsh@hu.edu.jo

Abstract

Background The use and misuse of skin-lightening products among women living in Arab communities have not been documented previously. This study investigates the determinants, the prevalence and users awareness associated with the use and misuse of skin-lightening products among women living in Jordan.

Method Female customers arriving at selected pharmacy stores were randomly asked to complete a questionnaire.

Results A total of 318 women completed the questionnaire, of which 60.7% reported the use of skin-lightening products. Users included women from different age and economic groups. Main reasons for use were preference of lighter skin tone, the treatment of hyperpigmentary disorders or both. More than a third of the users were not aware of the potential side effects of these products. A significantly larger proportion of skin-lightening product users believed that lighter skin tone plays a role in self-esteem, perception of beauty and youth, marriage and employment opportunities when compared with nonusers.

Conclusion Skin lightening is a common practice among women living in Jordan. It is reinforced by the association of lighter skin tone with a number of perceived benefits including perception of beauty, job and marriage opportunity. User's awareness regarding the safety of skin-lightening products and instructions for proper use are important considerations when developing interventions to control the misuse of these products.

Introduction

The use of skin-lightening products by women with dark skin tone is a common practice in the sub-Saharan Africa.¹⁻⁴ This practice has been reported to be associated with many side effects⁵ including dermatological,⁶ nephrological^{7,8} as well as neurological complications.^{9,10}

The occurrence of such adverse events in populations using these products is partially explained by the fact that a number of the available skin-lightening brands have been found to contain toxic substances such as mercury.⁷

Mercurials were popular as lightening agents until they were recognized as toxic. They have been shown to be nephrotoxic via the absorption of mercury through the skin following repeated use.^{7,8} In addition, dermal exposure to skin-lightening creams containing mercury may contribute to infertility as a consequence to accumulation of mercury in the ovaries of treated mice.¹¹

Although banned in many countries, a number of studies showed that a number of marketed lightening products still contain these compounds.^{12,13} About 45% of

commonly used skin-lightening creams in Saudi Arabia were shown to contain mercury above the FDA's acceptable limit of 1ppm.¹⁴

However, even with the best quality products containing approved components, mainly the ones containing hydroquinone, some of the dermatological side effects can be seen and they are usually associated with the misuse of these products.¹⁵

Hydroquinone, the depigmenting standard, has been banned in cosmetic use in Europe and currently available only by prescription. However, in other countries such as Jordan, hydroquinone use is still allowed in cosmetics at a concentration level not more than 2%. Cases of exogenous ochronosis caused by the abuse of hydroquinone-containing products have been reported.¹⁶ It is characterized by progressive darkening of the area to which the cream containing hydroquinone is applied. Such cutaneous side effect is of great importance as it is difficult to treat and is disfiguring.^{17,18}

Health problems secondary to skin-lightening practice, undoubtedly, add a load on health care authorities and services in countries where this practice is common.

It has been reported that the use of skin-lightening agents is usually practiced by men and women with Fitzpatrick skin phototypes IV to VI.¹⁵

Skin of Arab people is classified as "Ethnic skin" with pigmentation darker than that of Caucasians and classified as Fitzpatrick skin phototype V.¹⁹ This shows that Arabs as an ethnic group are with high probability to practice skin lightening and misuse of skin-lightening products.

Lack of data about the extent of this practice among women living in Arab countries as well as concerns about the potential economical as well as psychosocial consequences of possible malpractices provided the main drivers for this work. We aimed to investigate the extent as well as the determinants of the use of skin-lightening agents among women living in Jordan with the objective of using information generated in developing interventions to educate people on the potential consequences of such practice.

Methods

Questionnaire development and contents

A well-structured questionnaire consisting of 33 questions (available from the author upon request) was developed by the researchers. The questionnaire was piloted in a small sample of the general public and subsequently modified to ensure the clarity of questions and that the data would provide reliable information.

The questionnaire was divided into four sections: (a) Demographic profile of the respondent, (b) Respondents' perceptions about lighter skin tone and the determinants of this perception, (c) Prevalence of use of skin-lightening products, (d) Knowledge of skin-lightening products, reasons for use, application practice, and products sources.

Table 1 shows the English translation of questions in parts b and c of the questionnaire.

Sampling procedure and frame

The study was carried out in Amman, the capital of Jordan, with an estimated population of 2,085,100 people.

The questionnaire was distributed to seven pharmacies in major shopping areas in Amman. The locations were chosen to represent different geographical areas of the city with the aim of covering a wider section of the community.

Female customers arriving at the selected pharmacy stores, appearing to be over 15 years of age, were randomly asked to fill the surveys by the attending pharmacist or pharmacist assistant who had been briefed about the study's aims and methods.

Data were collected over a 6-month period (July to December 2006). Numbers of surveys collected were 40–60 surveys/pharmacy.

Table 1 Questions in parts b and c of the questionnaire

7. ^a	A lighter skin tone is more beautiful
8. ^a	Lighter skin tone provides women with higher self-esteem
9. ^a	Lighter skin tone gives female a younger looking
10. ^a	Lighter skin tone implies that a woman belongs to a high social class
11. ^a	Lighter skin tone helps a woman get a better job opportunity
12. ^a	Lighter skin tone increases a woman's chances of getting married
13. ^a	Men consider lighter skin tone more beautiful
14. ^a	The way skin lightening products are advertised on TV has an influence on a woman's preference of lighter skin tone
15. ^b	Have you ever used skin lightening products

^aThe answers for Question 7–14 were: ☐ strongly agree ☐ agree ☐ disagree ☐ strongly disagree ☐ no answer.

^bThe answer for question 15 was: ☐ yes ☐ no.

Data analysis

Responses were coded and entered into SPSS[®] for Windows, version 14, for statistical analysis (SPSS[®] Inc., Chicago, IL, USA). Chi-square test was used to examine the significant differences within variables ($P < 0.05$). In few cases, participants failed to answer every question (for all questions, maximum number of missing data did not exceed 5). Missing data were not used in analyses and the valid percentages were used for each question.

Results and discussion

The demographic characteristics of the participants, including age, marital status, skin tone, level of education and monthly income are shown in Table 2.

The use of skin-lightening products has been reported by 60.7% of the respondents in the study, this lies within the range reported in the previous studies in African countries such as Senegal (67.2%)²⁰ and Lagos (72.4%).²¹

The perception of respondents on light skin tone is shown in Table 3. It shows that the majority of participants (62.3%) believe that lighter skin tone is considered more beautiful regardless of their skin tone ($\chi^2 = 7.8$, d.f. = 12, $P < 0.795$) and age group ($\chi^2 = 17.3$, d.f. = 16, $P < 0.363$) (Fig. 1).

This belief appears to be an important contributing factor to the prevalence of this practice as it is higher ($\chi^2 = 24.4$, d.f. = 4, $P < 0.001$) among skin lightening products users (72%) compared with nonusers (47.2%).

On the influence of lighter skin tone on women's perception of self-esteem and age, the majority of women in the studied population disagree with the notion that lighter skin tone contributes to the perception of higher self-esteem and youth as shown in Table 3 (52.3% and

Table 2 Demographic and socioeconomic characteristics of respondents

Age (years)	n = 318	Marital status	n = 318	Skin tone	n = 318	Level of education	n = 318	Monthly income	n = 318
<20	43	Married	132	Light	102	Elementary	16	<200 JD	91
20–30	160	Single	157	Light brown	126	Secondary	84	200–400 JD	78
31–40	78	Divorced	13	Dark brown	46	Community College Diploma	74	401–600 JD	22
41–50	20	Widow	13	Black	42	BSc degree	134	>600 JD	7
>50	12					Uneducated	8	Unemployed	119
Missing	5		3		2		2		1

Table 3 Women's perceptions of lighter skin tone. Numbers represent valid percentage (%)

Questions	Strongly agree	Agree	Disagree	Strongly disagree	No answer
Lighter skin tone is more beautiful	15.4	46.9	27.4	6.3	4.1
Lighter skin tone provides women with higher self-esteem	12.6	32.2	41.3	11	2.8
Lighter skin tone gives female a younger looking	10.4	26.2	45.4	14.2	3.8
Lighter skin tone implies that a woman belongs to a high social class	5.7	19.5	47.8	24.5	2.5
Lighter skin tone helps a woman get a better job opportunity	11.4	36.3	38.2	10.1	4.1
Lighter skin tone increases a woman's chances of getting married	20.2	43.2	25.9	7.9	2.8
Men consider lighter skin tone more beautiful	18.6	44	26.1	6.6	4.7
The way skin lightening products are advertised on TV has an influence on a woman's preference of lighter skin tone	16.7	60.7	13.2	5	4.4

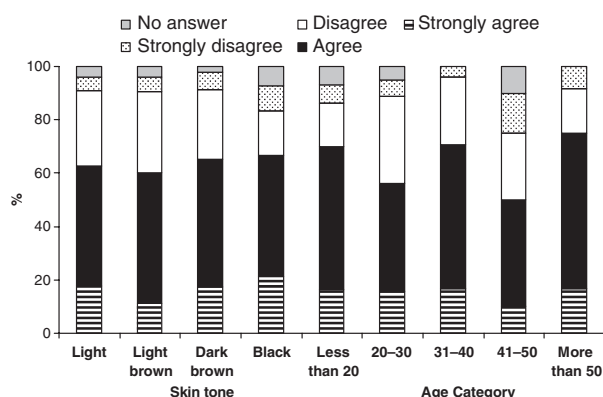
59.6%, respectively), however, the percentage of women who associate lighter skin tone with self-esteem and youth is highly significant among skin lightening products users compared with nonusers ($\chi^2 = 19.5$, d.f. = 4, $P < 0.001$ and $\chi^2 = 13.5$, d.f. = 4, $P < 0.009$, respectively).

On the other hand, the social classification does not appear to be a determinant of the practice of using skin-lightening agents as the majority of user's and nonuser's (69.9% and 76%, respectively) do not associate lighter

skin tone with being from a higher social class ($\chi^2 = 7.7$, d.f. = 4, $P < 0.102$).

The respondents were almost equally divided on the issue of the influence of having a lighter skin tone on getting a better job opportunity (Table 3). However, a statistically significant ($\chi^2 = 15.1$, d.f. = 4, $P < 0.004$) higher percentage of users (55.4%) believe that a lighter skin tone contributes to a better employment opportunity compared to non users (35.5%). The position of the respondents on this issue was clearly affected by their skin tone ($\chi^2 = 26.9$, d.f. = 12, $P < 0.008$) where 59.5% of women with dark skin tone believe in the influence of lighter skin tone in getting a better job opportunity compared to 43.6% of women with light skin tone as shown in Fig. 2. This points out job opportunities and employment as a significant factor promoting this practice. It is noteworthy to mention that as the level of education increases the perception of the importance of this factor decreases significantly ($\chi^2 = 32.7$, d.f. = 16, $P < 0.008$) as shown in Fig. 3.

The role of lighter skin tone in mate selection and the potential perception by men that a lighter skin tone is more attractive are two important reinforcing factors for the use of skin-lightening products. The majority of respondents believe that lighter skin tone is perceived by men as being more attractive and increases a women's chances of getting married (62.6% & 63.4%,

**Figure 1** Women's perception of lighter skin tone as more beautiful classified by their skin tone and age category ($n = 318$)

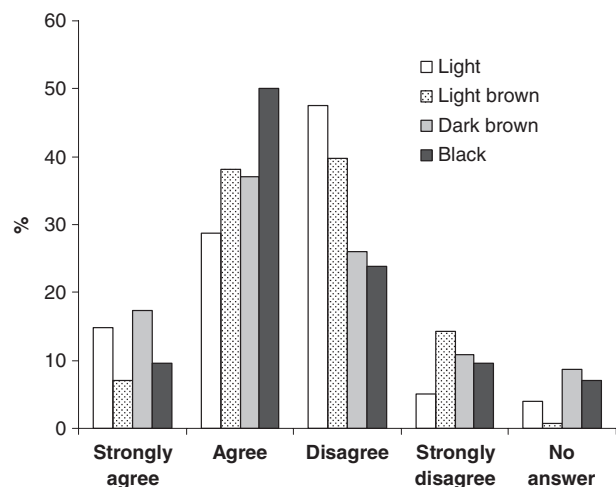


Figure 2 Women's perception of the influence of having lighter skin tone on getting better job opportunity classified by their skin tone ($n = 318$)

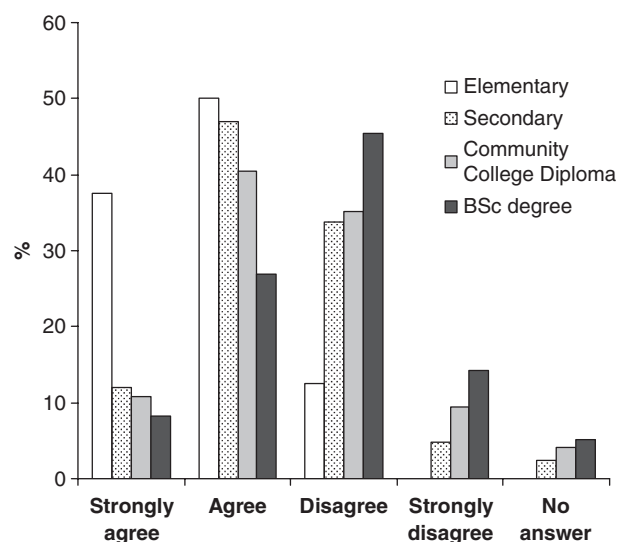


Figure 3 Women's perception of the influence of having lighter skin tone on getting better job opportunity classified by their level of education ($n = 318$)

respectively), these beliefs are, as expected, more common among skin lightening products users (71.5% and 70.5%).

TV advertisements contribute to the practice of using skin-lightening products by presenting models with light skin tone as being more attractive and more likely to achieve success in their life (i.e. employment opportunity and mate selection). This is evident from the higher percentage of respondents (77.4%) who believe that the way TV advertises skin-lightening products influences women

to prefer lighter skin tone (Table 3) regardless of their level of education ($\chi^2 = 16.4$, d.f. = 16, $P < 0.424$), skin tone ($\chi^2 = 15.9$, d.f. = 12, $P < 0.196$), and age category ($\chi^2 = 0.5$, d.f. = 3, $P < 0.922$) (Fig. 4).

Users of skin-lightening products are distributed among women from all age groups, economic levels, and marital status (Fig. 5a–c). Interestingly, the prevalence of usage among women from the lowest (less than 200 JD) and the highest economic status (more than 600 JD) are almost equal (69.2% vs. 71.4%).

In addition, although the prevalence of usage increases ($\chi^2 = 21.17$, d.f. = 3, $P < 0.001$) as the skin tone becomes darker (Fig. 5d) the percentage of users in the light skin tone population is considered high (44.1%).

Regardless of the accuracy of their knowledge, 22.6% and 1.9% of skin lightening products users reported that they use products containing hydroquinone or corticosteroids as the active ingredients, respectively.

Most users obtain their skin lightening products from either pharmacy (52.6%) or from small make up and skin care products stores (31.8%). This points a spotlight on the role of pharmacists in recommending skin-lightening products and instructing the customers on their use.

Most skin lightening products users (54.7%) reported duration of use of more than 1 year and products were applied mostly on the face (81.9%).

The monthly cost of these products for most users was equal to or less than 20 JD/month (~28 US \$/month) regardless of the respondent's monthly income ($\chi^2 = 11.5$, d.f. = 12, $P < 0.49$).

With regard to the objective of using such products, 29.3%, 29.3% and 20.7% of the users used skin-lightening

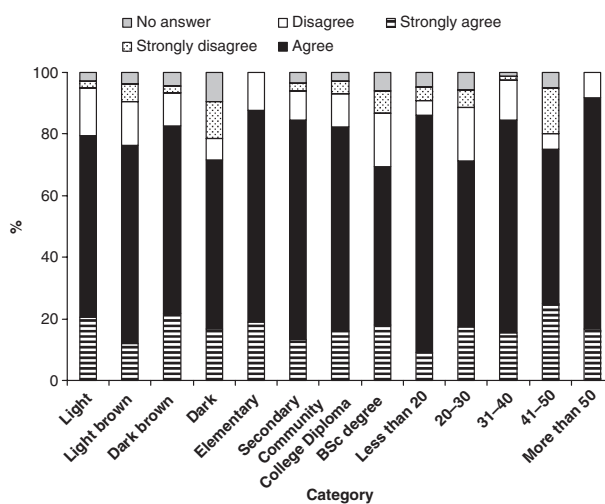


Figure 4 Women's perception of the influence of TV advertisements on women preferences of lighter skin tone classified by their skin tone, level of education, and age category ($n = 318$)

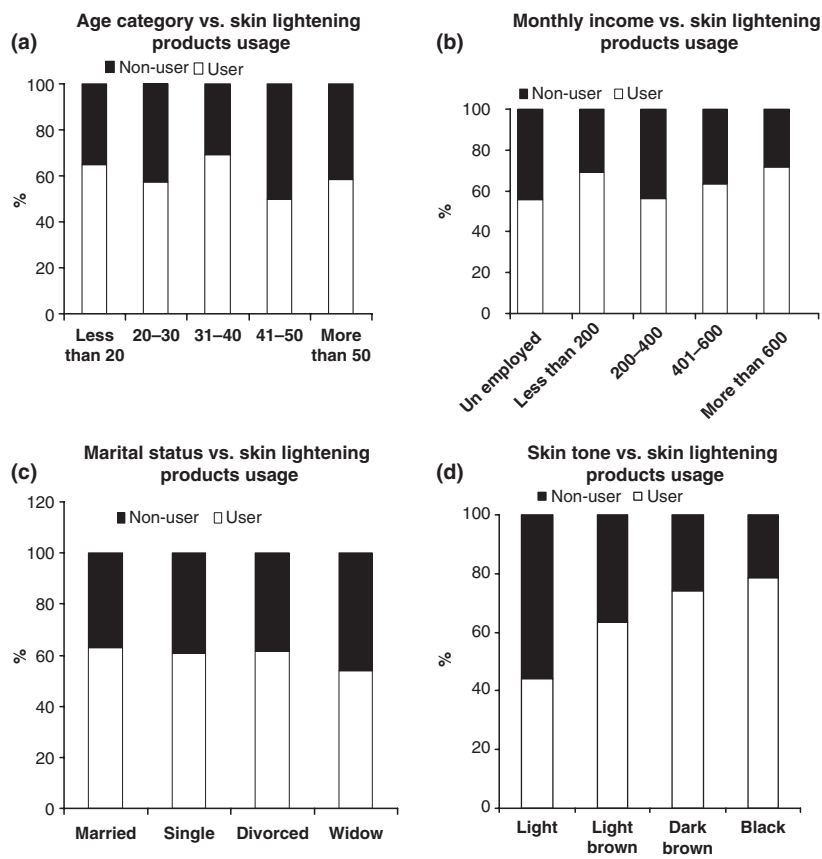


Figure 5 Percentage of skin lightening products usage among participants classified by their (a) age category (b) monthly income (c) marital status (d) skin tone

products to lighten their darker skin tone, to treat hyperpigmentary disorders on their faces such as melasma, and for both reasons, respectively.

Women with light skin tone use the skin-lightening products mainly to treat hyperpigmentary disorders (50%) rather than to lighten their skin tone (9.1%). As the skin tone becomes darker the driver for usage is mainly the women's preference of lighter skin tone rather than the need to treat hyperpigmentary disorders as shown in Fig. 6.

In addition, women with low educational level appear to use the skin-lightening products mainly because of their preference of a lighter skin tone (66.7%) compared with women with higher educational level (bachelor degree); just 13.5% of them use these products solely because they prefer lighter skin tone, 33.8% use it to treat hyperpigmentary disorders, and 27% use it for both reasons.

Further, women with higher income levels (more than 600 JD) are more driven by the therapeutic application of skin-lightening products (80%) rather than using them solely to lighten their skin tone (20%) compared with women with low income level whom only 24.6% of them use these products to treat hyperpigmentary problems.

A total of 48 different brands of skin-lightening products were reported. Twenty two of the reported products

do not contain ingredient label, seven products contain hydroquinone, one product contains corticosteroid, and seven products are sunscreens. All brands can be bought from make-up and skin care stores with the exception of steroid- and hydroquinone-containing creams having a pharmaceutical presentation which can be obtained only from a pharmacy. However, all brands regardless of their composition can be obtained without any medical prescription from pharmacies.

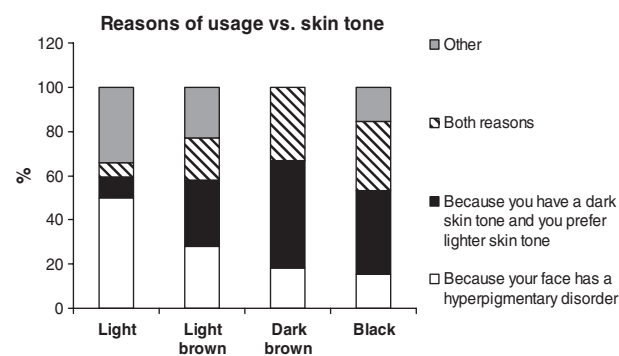


Figure 6 Reasons of skin lightening products usage among participated women as classified by their skin tone

In regard to the products knowledge, most users (72.5%) reported that they do not know the active ingredients in the product they use. This takes on a special importance considering the potential side effects of some of these ingredients. This observation emphasizes the importance of user education by the pharmacist and the sales persons in the locations in which the products are sold.

A total of 63.5% of users believe in the importance of using sunscreen over the skin-lightening products when going out during the day compared with 27.1% of users who do not believe in that.

User's awareness of possible side effects associated with the use of skin-lightening products appears to be lacking as 37.5% of users do not believe that skin-lightening products may cause undesired cutaneous adverse effects. The underestimation of the risk associated with this practice is a key issue in developing interventions to change it.

With regard to the level of users' satisfaction with the performance of skin-lightening products, 70.9% of users are satisfied with the efficacy of the products they used.

Conclusions

This study is the first report on the issue of using skin-lightening agents in Jordan as well as an Arab community; it takes a special importance as a result of possible adverse effects associated with the chronic use or misuse of these products and their impact on health care services.

The results show that the use of skin-lightening products is a common practice among women living in Jordan. This practice is reinforced by a number of perceived benefits associated with having a lighter skin tone including perceptions of beauty, personal and professional success (i.e. job opportunity and marriage).

Regarding the objective of usage, one-third of the respondents used such products solely to lighten their darker skin tone and one-third of respondents used it solely to treat hyperpigmentary disorders on their faces.

Hence, skin-lightening practice is a double-edged sword. These products are considered an important step in ameliorating melasma and postinflammatory disorders²² but at the same time, they can be misused while trying to achieve a light skin complexion that is valued by a number of cultural beliefs.

Thus, these findings show the importance of developing realistic interventions to educate women in Jordan, in particular, and other countries on the proper use of skin-lightening products.

The safety of these products and the potential hazards associated with their misuse (e.g. products that contain hydroquinone, corticosteroids, or ones adulterated with mercury) are key issues to address in educating Arab

women to start to change their beauty perception and to value their natural blemish-free even-toned skin especially that individuals of color have recently gained a greater presence in leadership positions and in the media worldwide.¹⁹

Even for women who use the skin-lightening products for the treatment of pigmentary disorders, there is a need for increasing awareness on the proper use, factors that may hinder the efficacy of the used products, and how to avoid the use of misbranded or adulterated skin-lightening products.

Acknowledgments

This work was supported by the Deanship of Academic Research at The Hashemite University. Authors would like to thank the pharmacists and pharmacist assistants of each of the seven pharmacies for their co-operation during the study.

References

- 1 Muchadeyi E, Thompson S, Baksessr N. A survey of the constituents, availability, and the use of skin lightening creams in Zimbabwe. *Central Afr J Med* 1983; 29: 225-227.
- 2 del Giudice P, Yves P. The widespread of skin lightening creams in Senegal: a persistent public health problem in West Africa. *Int J Dermatol* 2002; 41: 69-72.
- 3 Petit A, Cohen-Ludmann C, Clevenbergh P, et al. Skin lightening and its complications among African people living in Paris. *J Am Acad Dermatol* 2006; 55: 873-878.
- 4 Mahé A, Perret JL, Ly F, et al. The cosmetic use of skin-lightening products during pregnancy in Dakar, Senegal: a common and potentially hazardous practice. *Trans R Soc Trop Med Hyg* 2007; 101: 183-187.
- 5 Olumide YM, Akinkugbe AO, Altraide D, et al. Complications of chronic use of skin lightening cosmetics. *Int J Dermatol* 2008; 47: 344-353.
- 6 Mahé A, Ly F, Aymard G, Dangou JM. Skin diseases associated with the cosmetic use of bleaching products in women from Dakar, Senegal. *Br J Dermatol* 2003; 148: 493-500.
- 7 Al-Saleh I, Shinwari N, El-Doush I, et al. Comparison of mercury levels in various tissues of albino and pigmented mice treated with two different brands of mercury skin-lightening creams. *Biometals* 2004; 17: 167-175.
- 8 Mahé A, Ly F, Perret JL. Systemic complications of the cosmetic use of skin-bleaching products. *Int J Dermatol* 2005; 44(Suppl 1): 37-38.
- 9 Weldon MM, Smolinski MS, Maroufi A, et al. Mercury poisoning associated with a Mexican beauty cream. *West J Med* 2000; 173: 15-18.

- 10 Karamagi C, Owino E, Katabira ET. Hydroquinone neuropathy following use of skin bleaching creams: case report. *East Afr Med J* 2001; 78: 223–224.
- 11 Al-Saleh I, Shinwari N, Al-Amodi M. Accumulation of mercury in ovaries of mice after the application of skin-lightening creams. *Biol Trace Elem Res* 2009; 131: 43–54.
- 12 Al-Saleh I, Khogali F, Al-Amodi M, et al. Histopathological effects of mercury in skin-lightening cream. *J Environ Pathol Toxicol Oncol* 2003; 22: 287–299.
- 13 Al-Saleh I, El-Doush I, Shinwari N, et al. Does low mercury containing skin-lightening cream (fair & lovely) affect the kidney, liver, and brain of female mice? *Cutan Ocul Toxicol* 2005; 24: 11–29.
- 14 Al-Saleh I, Al-Doush I. Mercury content in skin-lightening creams and potential hazards to the health of Saudi women. *J Toxicol Environ Health* 1997; 51: 123–130.
- 15 Dadzie OE, Petit A. Skin bleaching: highlighting the misuse of cutaneous depigmenting agents. *J Eur Acad Dermatol Venereol* 2009; 23: 741–750.
- 16 Camarasa JG, Serra-Baldrich E. Exogenous ochronosis with allergic contact dermatitis from hydroquinone. *Contact Derm* 1994; 31: 57–58.
- 17 Findlay GH, Morrison JG, Simson IW. Exogenous ochronosis and pigmented colloid milium from hydroquinone bleaching creams. *Br J Dermatol* 1975; 93: 613–622.
- 18 Bellew SG, Alster TS. Treatment of exogenous ochronosis with a Q-switched alexandrite (755 nm) laser. *Dermatol Surg* 2004; 30: 555–558.
- 19 Talakoub L, Wesley NO. Differences in perceptions of beauty and cosmetic procedures performed in ethnic patients. *Semin Cutan Med Surg* 2009; 28: 115–129.
- 20 Wone I, Tal-Dia A, Diallo OF, et al. Prevalence of the use of skin bleaching cosmetics in two areas in Dakar (Sénégal). *Dakar Med* 2000; 45: 154–157.
- 21 Adebajo SB. An epidemiological survey of the use of cosmetic skin lightening cosmetics among traders in Lagos, Nigeria. *West Afr J Med* 2002; 21: 51–55.
- 22 Grimes PE. Management of hyperpigmentation in darker racial ethnic groups. *Semin Cutan Med Surg* 2009; 28: 77–85.