



## **Dermatologists' View on Skin Whitening Creams:** *Opinions and Recommendations*



# Dermatologists' View on Skin Whitening Cream:

## Opinion & Recommendation

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## EXECUTIVE SUMMARY

*Mercury is used in skin lightening creams because it inhibits the formation of melanin, resulting in a brighter complexion. Humans are not aware that they are being exposed to mercury directly in this way. Mercury is a common but dangerous ingredient found in skin-lightening creams*

*ESDO has been advocating against the harmful effects of the presence of mercury in several products for so long. This particular study was conducted to know the expert's opinions and suggestions on skin whitening creams and their potential health risks. A key informant interview on skin lightening cream was conducted with dermatologists in Bangladesh, in December 2021.*

*According to experts, about 60-70 percent of patients develop skin problems as a result of using skin lightening and fairness creams, with women accounting for up to 80 percent of those who use skin lightening creams. The average age groups that use skin lightening and fairness products range from 21 to 40 years old. According to them, the common health effects resulting from the use of mercury-added skin lightening products are redness and swelling i.e., skin irritation and inflammation, burning or stinging sensation, itchy and flaky skin, skin turning dark and too light, thinning of the skin, visible blood vessels in the skin, scarring and the long-term damage could be kidney or nervous system damage. The seriousness of damaging skin depends on the duration of using the skin cream containing harmful mercury as well as varying on different product brands. These are used by users twice or more a day.*

*Mercury is absorbed into the body through the skin. People have also reported skin rashes, blackened skin, and allergic reactions as a result of using these skin creams. Experts also added such skin creams contain harmful chemicals, such as steroids, hydroquinone, and mercury when in contact with the skin, can lead to acne, cancer, kidney damage, and deteriorates the nervous system*

*Dermatologists underlined the fact that most of the skin lightening creams are made of mercury, steroids, and other toxic chemicals. The most popular skin lightening creams among Bangladeshi women are Korean and Chinese skin lightening creams, which are readily available for purchase online. Various online platforms (Daraz, Amazon), Facebook, local markets, and other downtown shops are the source of these skin-lightening beauty products*

*Inorganic mercury found in skin lightening creams and personal care products is toxic and causes skin problems. There are several risks of using mercury-added skin lightening creams. Mercury is carcinogenic to the human body. Even a small amount of mercury exposure could result in may cause serious health problems, and is a threat to the development of the child in utero and early in life.*

*To phase out mercury-containing skin lightening products, a variety of steps need to be taken. People who are directly involved in the manufacturing and importation of mercury-containing skin-lightening products should cease operations immediately because they are hazardous to human health. The government of Bangladesh should be aware of the availability and regulation of OTC (over-the-counter) skin products such as cleansing, face creams, and sun creams for users, as well as the manufacturers and importers of those products, must be identified*

## INTRODUCTION

The use of skin-lightening creams and soaps is prevalent around the globe. Skin whitening is a type of cosmetic treatment in which chemical materials are used to lighten the skin tone by lowering melanin levels. Melanin, a type of pigment produced by melanocyte cells, is responsible for a person's skin color. Skin-lightening formulations can cause a variety of direct and indirect skin disorders, as well as other serious health effects, depending on the active ingredients. Mercury is used in cosmetics as a skin-lightening agent and preservative. Cosmetics with mercury are often marketed as skin lightening creams and anti-aging treatments that remove age spots, freckles, blemishes, and wrinkles. Adolescents sometimes use these products as acne treatments.

Mercury is frequently used as an active ingredient in skin-lightening products, and the Minamata Convention on Mercury is the only heavy metal that has been addressed on a global level. Mercury is highly toxic and is a hazard to users of skin-lightening products as well as to their families because the home environment can also become contaminated. Mercury in cosmetics is released into the environment as products are rinsed off, and mercury can also evaporate from the products and contaminate indoor air. In addition, it can be transformed by bacteria into organic forms that accumulate in living organisms and bio-magnify in ecosystem food webs. Because of this, and the high toxicity of mercury, the international community 2010 initiated negotiations on a global mercury treaty to ban and regulate the use of mercury (*MINAMATA CONVENTION ON MERCURY TEXT AND ANNEXES*, n.d.). The negotiations were finalized in 2013 with the adoption of the Minamata Convention on Mercury, which entered into force on 16 August 2017. Article 4 of the Minamata Convention addresses “mercury-added products.” The manufacture, import, and export of products listed in Annex A of the Minamata Convention, including cosmetics with more than 1 part per million (1ppm) mercury, are banned after 2020.

According to World Health Organization (WHO), kidney damage is the most significant health effect of inorganic mercury found in skin-lightening products, followed by skin rashes, skin discoloration, and scarring. Anxiety, depression, or psychosis, as well as peripheral neuropathy, are possible side effects.

Environment and Social Development Organization (ESDO) conducted a research study with the Zero Mercury Working Group from 2017 to 2021 on skin lightening creams that are available in market places both physical and online stores and the results showed all skin lightening cream samples have a high level of mercury. Mercury levels in skin lightening creams were found at 16,000 ppm in 2017 and 2018, with a maximum concentration of 131,567 ppm found in 2019 and 26,000 ppm in 2021, respectively. The most common names of skin creams that contain significantly higher levels of mercury are Goree, Chadni, Parley Herbal, Collagen Skin Cream, New Face Whitening Cream, and Noor Herbal Beauty Cream. Pakistan, Thailand, and China are the countries of origin for these skin lightening creams. However, it is visible from the study that in 2019 evident the highest Hg concentration is found for all skin lightening creams that are available in the local market. For the rest, there was a similar trend in Hg concentration for all the skin whitening products. Furthermore, the study on skin lightening creams conducted in 2021 revealed that the use of skin lightening creams has risen significantly among users. Subsequently, the purchase of cosmetics from online stores has increased. These mercury-laced skin creams can be found on websites like Daraz and different illegal online market stores (*Dangerous, mercury-laden, and often illegal skin-lightening products, 2019 and MERCURY-ADDED SKIN-LIGHTENING CREAMS, 2018*).

## BACKGROUND

Mercury (Hg) is considered one of the top ten chemicals or group of chemicals of major public health concern by WHO. Mercury is found in both inorganic and organic forms in cosmetics.

Skin lightening products (also called skin brightening or fade products) contain mercury and are used by both dark and light-skinned individuals to lighten skin tone, fade freckles, or get rid of age spots. Mercury in these creams inhibits the formation of melanin, resulting in a lighter skin tone. Many studies have highlighted the widespread use of skin-lightening creams containing mercury by women during and after pregnancy to remove dark spots. Women, especially pregnant and lactating mothers using these products are at risk of mercury poisoning because they are in direct exposure of mercury through creams.

Mercury poisoning may be dangerous to one's health. People who use mercury-containing items, as well as their families, are at risk. When someone use these products, their family may inhale mercury vapors or become exposed

to mercury through the use of contaminated washcloths or towels. Mercury poisoning affects certain people more than others, particularly pregnant women, breastfeeding infants, and young children. Mercury's effects on growing brains and nervous systems may be particularly harmful to babies. Because mercury is transferred through breast milk, newborns who breastfeed are at risk.

Besides, Mercury is a hazardous contaminant that is persistent and bioaccumulative. It accumulates in water-deposited sediments, where it transforms to harmful methylmercury and enters the food chain after being released into the environment.

## **OBJECTIVE OF THE STUDY**

The purpose of this study is to determine dermatologists' opinions and recommendations on skin lightening creams for consumers to raise community awareness about the dangers of using skin lightening products that contain toxic mercury.

## METHOD

The research was carried out through a survey questionnaire to the dermatologists in Dhaka, Bangladesh 2021. The study considered both physical and virtual key informant interviews (KIIs) with experts. A total of 30 dermatologists were surveyed, with 6 dermatologists taking part in the physical survey and 24 dermatologists taking part in the virtual survey. The survey questionnaire is attached in Annex-I.

## RESULTS AND DISCUSSIONS

### Age Group of Patients:

The average age groups that use skin lightening and fairness products range from 21 to 40 years old. Furthermore, the seriousness of damaging skin depends on the duration of using the skin cream containing harmful mercury as well as varying on different product brands. These are used by users twice or more a day.

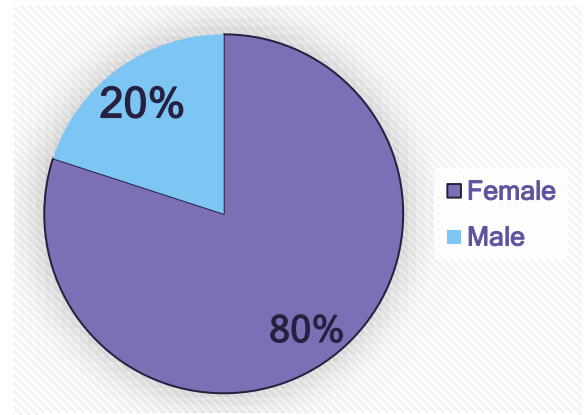


Figure 1: Skin lightening Creams User percentage of women and men among the patients

### Effects of mercury-added skin lightening creams

According to the dermatologist, about 60-70 percent of patients develop skin problems as a result of using skin lightening and fairness creams, with women accounting for up to 80 percent of those who use skin lightening creams.

Mercury is used in skin lightening creams because it inhibits the formation of melanin, resulting in a brighter complexion. Humans are not aware that they are being exposed to mercury directly in this way. Mercury is absorbed into the body through the skin. People have reported skin rashes, blackened skin, and allergic reactions as a result of using these skin creams. Expertise added that such skin creams contain harmful chemicals, such as steroids, hydroquinone, and mercury when in contact with the skin, can lead to acne, cancer, kidney damage, and deteriorates the nervous system.

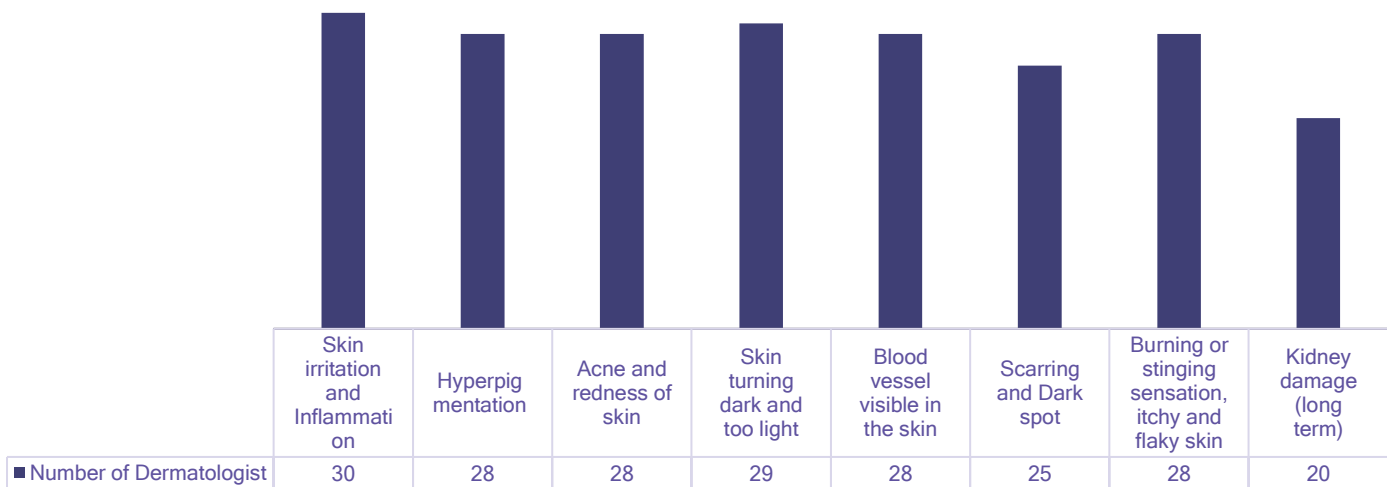


Figure 2: Common effects of mercury-added skin lightening cream



It is sometimes clinically possible to distinguish mercury poisoning from other poisonings, and other times it is difficult due to consumer use of multiple products. The following are some of the most common side effects associated with the use of mercury-added skin lightening creams that the experts have seen in their patients (figure 2).

## The Route Exposure and Health Concerns of Mercury with Use of Skin Whitening Creams

According to experts, mercury can inactivate a key enzyme responsible for melanin production, hence its skin-lightening effect. Routes of mercury exposure associated with the use of skin lightening products may involve skin absorption and also the inhalation of mercury vapors, particularly with prolonged use. Thus, these products may potentially affect not only the user but also members of the household, who might be at risk of exposure through direct contact with contaminated items or inhalation of mercury vapors released from the products. Inorganic mercury-containing products have been found in the form of creams, serums, masks, toners, lotions, emulsions, gels, liquids, powders, and soaps.

Dr. Mahfuza Akhter, a dermatologist in Japan Bangladesh Friendship Medical Services LTD stated even though the Bangladesh Standards and Testing Institution (BSTI) has set a limit of 1ppm for mercury content in skincare products, the products contain a high level of toxic mercury.

However, the dermal absorption of skin lightening products is influenced by too many different factors, making inorganic mercury intake estimate through the dermal route difficult to assess.

Moreover, accidental ingestion of skin-lightening products applied around the mouth, hand-to-mouth transfer of inorganic mercury compounds from the hands, or food prepared by the user of skin-lightening products, cannot be excluded. In the latter case, the whole family of the user of skin-lightening products may be at risk. Children might touch clothes or towels that are contaminated with a mercury-containing cosmetic, or they might simply touch a person's face or kiss their cheek.

Another, though largely unexplored, potential exposure route for mercury from skin-lightening

products is the inhalation of elemental mercury formed when mercury salts are chemically reduced. For example, UV-light has been shown to catalyze the reduction of mercury in mercuric chloride to elemental mercury. It is not known whether this could happen in the skin when the skin-lightening product is exposed to sunlight, or on clothing or other surfaces contaminated by inorganic mercury. High temperatures also enhance the reduction of inorganic to elemental mercury and even take place at room temperature (Copan et al., 2015).

Particularly alarming is the evidence that the use of inorganic mercury in skin lighteners during pregnancy may place the unborn fetus at risk for neurological, kidney, and dermatological disorders, cataracts, and anemia.

After absorption into the body, inorganic mercury is potentially distributed to all. The liver and kidneys readily accumulate inorganic mercury.



Figure 3: Route Exposure of Mercury in human body through skin lightening creams

According to WHO, there is no safe level of Mercury in human body



According to dermatologists, symptoms of mercury poisoning are slow and insidious and may be mistaken to have other causes, not least since patients may be reluctant to admit their use of skin-lightening products, because of the stigma surrounding this complexion-altering behavior. And the stigma is also the reason why existing estimates of the prevalence of skin-lightening in various parts of the world have most likely been underestimated.

Dr. Mehran Hossain, a dermatologist in City Hospital LTD said onset and severity of health effects are associated with different exposure factors, such as the mercury concentration in the product, product compounds with varying solubility, skin characteristics, time length of exposures, and other factors, all affecting mercury distribution in the body. Thus, mercury poisoning symptoms do not follow a standard pattern, posing an additional challenge for appropriate diagnosis. The renal system may be critically affected following inorganic mercury exposure.

## Sources of mercury-added skin whitening products

The dermatologists stated the sources of mercury-added skin whitening creams are different illicit online and physical market stores that sell different beauty products containing high levels of mercury. The skin lightening beauty products are imported from different online platforms names daraz, amazon, aliexpress. To spread popularity and boost the selling of the beautifying product, the online seller demonstrates the working performance of those products on social media through Facebook, Instagram lives to lure customers.

ESDO's study on skin lightening creams conducted in 2021 revealed the use of skin lightening creams has risen significantly among users. Subsequently, the purchase of cosmetics from online stores has increased. According to the finding of the study, skincare users reported using beautifying products more often now than before the COVID pandemic. The use of skin care products, such as cleansers and moisturizers, as well as treatments including whitening soaps, exfoliators, scrubs, and masks, saw the most significant increase in 2021. The effects of Covid-19, including spending more time at home, have brought a great focus on self-care and the online platform has reaped the benefits. The most common names of skin creams that contain significantly higher levels of mercury are Goree, Chadni, Parley Herbal, Collagen Skin Cream, New Face Whitening Cream, and Noor Herbal Beauty Cream. Pakistan, Thailand, and China are the countries of origin for these skin lightening creams.

Dr. Md. Jamal Uddin, a dermatologist at Bangladesh Medical College inorganic mercury salts, such as mercurous chloride, mercuric chloride, and mercuric oxide have been found in skin-lightening and anti-acne cosmetic products imported into Bangladesh from small-scale, unregulated suppliers, downtown shops, and through the Internet. He added another point that when customers come to beauty salons for beautification services, these beauty parlors offer and brand their products of skin lightening creams which are made of mercury, steroids, and other toxic chemicals. Furthermore, the most popular skin lightening creams among Bangladeshi women are Korean and Chinese skin lightening creams, which are readily available for purchase online.

In recent days, Korean and Chinese skin creams are the most popular skin products among the people of Bangladesh. Regular use of skin bleaching or skin-lightening creams and soaps containing mercury can lead to rashes, skin discoloration, and blotching. Long-term exposure can have serious health consequences, including damage to the skin, eyes, lungs, kidneys, digestive, immune and nervous systems. In addition, according to experts, these skin creams containing mercury, steroid, and hydroquinone have negative health effects because these toxic chemicals penetrate damaged skin.

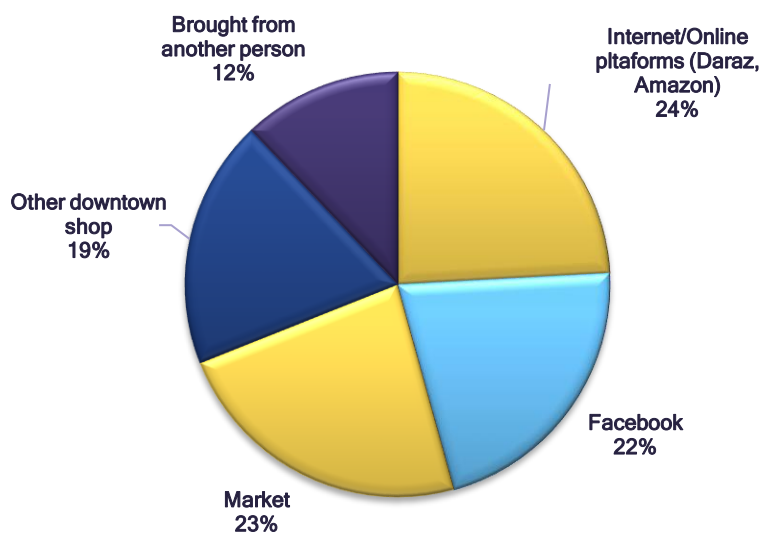


Figure 4: Major Sources of mercury-added skin creams

## Suggestions and Recommendations from the Dermatologists to Avoiding Skin Whitening Creams

Dr. Mahfuza Akter, a dermatologist at Japan Bangladesh Friendship Medical Services LTD., stated that the government of Bangladesh should be aware of the availability and regulation of OTC (over-the-counter) skin products such as cleansing, face creams, and sun creams for users, as well as the manufacturers and importers of those products, must be identified.

To phase out mercury-containing skin lightening products, a variety of steps should be taken. People who are directly involved in the manufacturing and importation of mercury-containing skin-lightening products should cease operations immediately because they are hazardous to human health.

Efforts to control often illegally imported cosmetics and track down manufacturers and distributors of high mercury-containing cosmetics in Bangladesh must be scaled up as sales increasingly shift to the informal economy or illegal markets.

- As most cosmetics are imported, reinforced border controls can help reduce the entry of hazardous products into the market, while identifying the responsible importers.
- Governments at all levels should develop continuously updated listings of illegal products.
- To discourage unregulated products from entering a country, all cosmetics should be labeled consistent with national regulations, which should require an accurate and complete list of the ingredients as well as current information on the manufacturer, including the address and country of production.
- Retailers, including physical stores, e-shops, and internet websites should be obliged to remove hazardous or illegal products from sale.
- There is a clear and ongoing need for more effective public outreach and communication concerning the risks of toxic cosmetics and consumer rights.

## Recommendations for patients using skin lightening products

- Mercury-containing products should be stopped using right now so the human body naturally gets rid of the mercury over time.
- The products should not be thrown in the trash or disposed of open place. If it has mercury in it, it can harm others if it gets into the environment.
- Consult with a dermatologist is a must for treatment.
- Strict enforcement and regulation of mercury content should be implemented.

## CONCLUSION

In this study, the opinion and recommendation of skin expertise on the harmful impact of using skin Lightening Creams have been covered up. To stop the illegal trade in mercury-added skin creams, there needs to be awareness and strict enforcement of the law. Government regulatory actions, including customs agent training, as well as major media and advocacy campaigns, are required to stop the manufacture, import, and export of skin-lightening products per the Minamata Convention.

According to WHO, Mercury in soaps, creams, and other cosmetic products is eventually discharged into wastewater and can enter the food chain as highly toxic methylmercury in fish. Pregnant women who consume fish containing methylmercury can transfer the mercury to their fetus, which can result in neurodevelopmental deficits in the children. Mercury in skin lightening creams and soaps has been linked to kidney damage, skin rashes, skin discoloration, and scarring decreased skin resistance to bacterial and fungal infections, anxiety, and depression.

High-mercury skin lightening creams are widely and consistently available in both physical and online stores in Bangladesh. In the meantime, the number of internet purchases continues to rise around the world. As a result of this situation, implementation and enforcement become extremely crucial. Mercury is a global threat to health and the environment worldwide. The Government of Bangladesh has the intention of actively proceeding toward the ratification of the Minamata Convention on Mercury and has undertaken the Minamata Initial Assessment (Minamata Convention on Mercury Initial Assessment Report for Bangladesh, 2019). With the Minamata Convention's provisions on cosmetics soon to enter into force, a range of measures is emerging to end mercury use in these products and to reduce the health risks of skin lighteners.

## Annex-I



### **Assessing the prevalence of use and effects of mercury added skin lightening creams, cases of mercury poisoning as well as sources of such creams in Bangladesh**

#### **Questionnaire**

#### **Introduction**

**Environmental and Social Development Organization (ESDO)** is implementing a project entitled, “Dermatological Survey and Investigative Journalism on Illicit Trade of Mercury-Laden Skin Lightening Creams”. As part of the project, ESDO is conducting a survey among dermatologists on the use of mercury added skin lightening creams, symptoms of mercury poisoning and possible sources of the creams in the country. ESDO has been actively participating and supporting the Zero Mercury Working Group Mercury Added Skin lightening cream campaign since 2017.

Mercury is a chemical of global concern due to its long-range transport in the atmosphere, its persistence in the environment, its ability to bio-accumulate in ecosystems and its significant negative effect on human health and the environment.

#### **Objective**

The overall objective of the survey is to assess the prevalence of use and effects of mercury added skin lightening creams, cases of mercury poisoning as well as the possible sources of such creams.

To reach this objective we aim to:

- Collect information about who the main users are (women/men/age)
- Check the symptoms reported
- Check which creams are used
- Check where these creams are bought from
- Verify (if possible) the presence of mercury in the creams

**Sample Size:** 30 Dermatologists (Physical 6 and Virtual 24)

It's envisaged that the data collected through the survey will be analyzed and reported in aggregated form. Survey results will help inform strategies by the relevant enforcement authorities towards phasing out mercury containing cosmetics from the market place of Bangladesh.

Personal information collected will be kept confidential.

Accordingly, ESDO would be most grateful for your kind participation in contributing to the gathering of information on the use of mercury added skin lightening creams, symptoms of mercury poisoning, and possible sources of the creams based on victims' accounts among others.

Should you be agreeable to participate in this survey, provided below are several questions we would like you to answer. The questionnaire should take only around 15 minutes to complete.

Thank you in advance and looking forward for your participation.

### A. Respondent Information

|                           |                                                                                                                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                      |                                                                                                                                                                              |
| Gender                    | <input type="checkbox"/> Male <input type="checkbox"/> Female                                                                                                                |
| Telephone                 |                                                                                                                                                                              |
| Address                   |                                                                                                                                                                              |
| Qualifications/Education: |                                                                                                                                                                              |
| Country:                  |                                                                                                                                                                              |
| Name of Facility          |                                                                                                                                                                              |
| Type of facility/clinic:  | <input type="checkbox"/> Public- government<br><input type="checkbox"/> Training institution<br><input type="checkbox"/> Private<br><input type="checkbox"/> Others(specify) |
| Date                      |                                                                                                                                                                              |

### B. Patients, Use and Effects of mercury-added Skin Lightening Creams

- On average, how many patients do you treat in a month for skin-lightening or fairness creams?
- Is it likely that the skin problems are caused by the use of mercury or lead added skin or lightening creams or personal care products?  
☐ Yes                      ☐ No
- Have you in your practice treated patients with symptoms/effects resulting from the use of mercury-added skin lightening cosmetics?  
☐ Yes                      ☐ No

If Yes, how many such cases have you handled/treated over the past 6 months?

If No, the survey ends here.

4. Could you please indicate the percentage of women and men among these patients?

Women.....%

Men ..... %

5. What is the average age of these patients?

☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ over 61

6. Is it clinically possible to distinct mercury poisoning from another chemical poisoning? And if yes, how?

7. Do you have any case of the victim of mercury cream user?

8. What are some of the common effects resulting from the use of mercury-added skin lightening products you have treated your patients on?

- redness and swelling (skin irritation and inflammation)
- a burning or stinging sensation
- itchy and flaky skin
- skin turning dark or too light
- thinning of the skin
- visible blood vessels in the skin
- scarring
- kidney, liver or nerve damage
- abnormalities in a newborn baby (if used during pregnancy)
- Other (please describe).....

.....

9. When such patients come to you with skin problems, how serious is the damage to their skin?

10. Is there a risk of mercury added skin lightening creams?

☐ Yes

☐ No

If yes, please describe.

11. How often were these products applied?

☐ Twice a day (or more) ☐ Once a day ☐ Twice a week or more ☐ Once a week

☐ Once a month ... ☐ They were not applied regularly



12. What are the common skin lightening products that are prevalently used for bleaching, which caused symptoms as above?

Please list:

.....

.....

### C. Sources of mercury added skin lightening products

13. Are you aware from which sources the skin-lightening creams are being supplied?

☐ Yes

☐ No

If yes, what are the sources of these creams?

☐ Internet/ Online Platforms (Aliexpress, Amazon.....)

☐ Facebook

☐ Pharmacies

☐ Market

☐ Other Downtown shops

☐ Bought from another person

☐ Others (please specify) .....

14. Do any skin lightening product company come to you for branding their product?

☐ Yes

☐ No

If Yes, who are they?

.....

15. How do you know that indeed these products contain mercury?

- a. Because is written on the label/ingredients list .....
- b. Because they have been analysed by government or private laboratories.....
- c. Because the symptoms/effects are directly and only related to mercury
- d. Others.....

16. What suggestions will you have for people who use skin lightening creams?

17. In your opinion, what measures need to be put in place to enhance enforcement and control of mercury containing cosmetics?

.....  
.....

**Thank you very much for responding to our questions.**

Name of the Interviewer:

Signature:

## REFERENCE

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