“Am I light enough?": Mercury Poisoning Due to Skin-Lightening Products, a Policy, and a Culturally Competent Solution

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“Am I light enough?”: Mercury Poisoning Due to Skin-Lightening Products, a Policy, and a Culturally Competent Solution

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August 11, 2023
“AM I LIGHT ENOUGH?”

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Abstract

Introduction: This paper aims to declare skin-lightening products containing mercury as a public health issue that deserves recognition in health and attention in health policy reforms.

Background and Literature Review: The public health issue analyzed with research and literature review encompasses worldwide mercury poisoning cases, databases of illegal skin-lightening creams, cosmetic safety laws, and policies on online selling platforms. The literature review addresses the existing knowledge regarding mercury in skin-lightening products and identifies the gaps in health policy and awareness surrounding this issue.

Methods: The paper includes many articles analyzing the issue from a global perspective, utilizing Scopus and PubMed and government organizations for data, information, and recommendations to explore.

Recommendations: An analysis of two themes of recommendations through feasibility, relevance, and health impact criteria to determine which criteria have gaps. This analysis resulted in two solutions to support recommendations through the California Proposition 65 warning labels in online selling platforms and establishing a clinical diagnosis of mercury poisoning from skin-lightening products. End with an implementation process through Logic Model steps.

Implications/Impact: The solutions above highly impact health behavior and shift against skin-lightening products utilizing the Health Belief Model theory. This section states limitations and future recommendations for the next steps of the solutions.

Conclusion: The narrative of societal beauty standards perpetuates the use of skin-lightening products, and this paper sheds light on this social stigma worldwide.

Keywords: Mercury (Hg), Skin-Lightening Products (SLP), Women of Color, People of Color (POC), Mercury Poisoning
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**Introduction**

Globally, the cosmetic industry has many harmful chemicals that fall through the cracks; one is mercury (Hg) in skin-lightening products (SLP). The Food and Drug Administration (FDA) states that products containing mercury claim to be skin lighteners and anti-aging treatments to remove age spots, freckles, blemishes, wrinkles, and acne treatments, but in actuality, pose a health threat, causing developmental and neurological problems and skin cancer (U.S. Food and Drug Administration, 2022e). Many social and personal factors that dictate the use of SLP stated later in the paper, are different by nation, culture, race, and class (Glenn, 2008). Women, young and old, and even males use these products for any of the reasons above, and it caters to Hispanic, Asian, African, and Middle Eastern communities (U.S. Food and Drug Administration, 2022e).

This paper aims to prove that mercury in skin-lightening products is a public health issue that deserves attention in policy and health reforms. The first recommendation of the paper is to establish effective regulation and enforcement of online selling platforms which sell skin-lightening products, such as Amazon and eBay. The second recommendation is providing an effective, culturally competent approach to women of color to change attitudes toward societal expectations of beauty through improving dermatology practices on identifying mercury poisoning signs and symptoms. These two recommendations above aim to combat all the socio-ecological factors that lead women of color to use SLP and, thus, exposure to mercury poisoning.
Background and Literature Review

The literature review will present six sections. First, addressing the problem statement, the adverse effects of Hg on the human body, and why it is dangerous to human health. Secondly, state the current global cosmetic policies. The significance of presenting cosmetic laws is to analyze the global enforcement and regulation of SLP between countries and see if current laws protect the health of POC communities. Thirdly, common online platforms with illegal SLP listings and the policies and laws that prohibit selling SLP on these platforms. The significance of presenting policies and laws under common online platforms is to analyze policies and laws associated with selling SLP online. Fourthly, a comprehensive collection of case studies of mercury poisoning due to SLP in the U.S. and other countries. The significance of a collection of cases is illustrate the various signs and symptoms of mercury poisoning due to SLP use. Fifthly, introduce database lists of illegal creams that contain mercury, which is essential in the paper's recommendation. Creams are the most common SLP, which has current regulations. Lastly, section six describes social factors that play a role in this global public health issue. To stop the use of SLP among women of color in the U.S. and around the world, there is a need to analyze the driving factors of why the use of SLP.

Problem Statement: Adverse Effects of Mercury on the Human Body

Mercury (Hg) is a naturally occurring element found in nature through the air, water, and soil, and mercury can expose humans to dangerous health consequences (World Health Organization: WHO, 2017). Hg commonly occurs through fish and shellfish consumption, and it is widely known to the public, but its presence in skin-lightening products (SLP) is not well studied (World Health Organization: WHO, 2017). According to the World Health Organization (WHO) (2017), Hg is one of the top ten chemicals proclaimed a public health issue; even
exposure to small amounts can cause serious health problems. Among SLP, mercury is often named in products such as calomel, mercuric, mercurous, or mercurio (Saling, 2011).

First, what are the adverse effects of mercury on the human body? Mercury poisoning causes allergic reactions, skin irritation, or neurotoxic manifestations (Millikan, 2001). Those that have experienced mercury poisoning had symptoms of tremors, changes in vision or hearing, numbness and tingling in hands, feet, or around the mouth, irritability, memory problems developing changes in the brain and nervous system, developmental problems, and cancer (U.S. Food and Drug Administration, 2022d). Mothers can also expose Hg to their babies and children, who are more vulnerable to toxic substances through skin-to-skin contact and contaminating other household objects. Pregnant women are also vulnerable to Hg contamination because the severity of fetuses' exposure to Hg could lead to developmental issues such as physical deformities, cerebral palsy, and other brain disorders (Cooper, 2016). These are the reasons why the use of SLP products is dangerous to the public.

Mercury poisoning depends on the amount used based on the dose and the duration of exposure, which determines the potential exposure to adverse health effects (Saghiri et al., 2016). Age is not a factor, and poisoning can happen at any time in life (National Center for Advancing Translational Science [NIH], 2023). These are the health risks individuals will face when using skin-lightening products that contain Hg.

**Cosmetic Policy Worldwide**

The section below will state that countries around the world, including U.S., Europe, Africa, Asia, and South America, have all implemented cosmetics policies to keep people safe and healthy. These policies serve as a framework for cosmetic laws and their potential to make cosmetics safer for all communities.
Cosmetic Policy in the U.S.

In 1938, the Federal Food, Drug, and Cosmetic Act was passed by Franklin Delano Roosevelt (FDR) after numerous cosmetics and medical products caused dangerous health concerns throughout the U.S. (U.S. Food and Drug Administration, 2018). This law mandated premarket approval of all new drugs, cosmetics, medical devices, and factory inspections (U.S. Food and Drug Administration, 2018). The FDA is responsible for mercury poisoning linked to skin products through the Federal Food, Drug, and Cosmetic Act, which includes cosmetics in law and prohibits adulterated and misbranded cosmetics (U.S. Food and Drug Administration, 2022b). An adulterated cosmetic contains any poisonous or deleterious substance which could cause harm and injuries, and a misbranded cosmetic is when it has false or misleading labeling (U.S. Food and Drug Administration, 2022b). SLP is misbranded and adulterated because it contains a poisonous substance that causes harm, coupled with misleading labeling that does not include accurate ingredient information.

Unregulated SLP is dangerous because of mercury it contains, compared to what is considered safe in cosmetic products. Many international SLP face cream products contain mercury between 21,000 parts per million (ppm) to 30,000 ppm; however, the FDA’s standard for mercury to be safe in cosmetics is less than one ppm for mercury (U.S. Food and Drug Administration, 2022c; Dickenson et al., 2013). These creams are illegal and tremendously dangerous to women and families exposed. SLP containing hydroquinone, like Hg, is also illegal over the counter and an unapproved drug to be in SLP (U.S. Food and Drug Administration, 2023a). The FDA works closely with The U.S. Customs and Border Protection (CBP) to monitor importation and examine and inspect skin products and cosmetics coming into the U.S. SLP that
enter the country through importation is not all inspected or sampled at importation by the FDA and CBP (U.S. Food and Drug Administration, 2022a).

The most recent U.S. reform is the Modernization of Cosmetics Regulation Act of 2022 (U.S. Food and Drug Administration, 2023c). With the updated federal cosmetic enacted, the new authorities for cosmetics are as follow: complete access to any cosmetics products, conduct mandatory recalls; corporations must have a facility registered with the FDA, manufacturers must list product listings such as the ingredients used to the FDA, and maintain safety substantiation, maintaining Good Manufacturing Practice (GMP), labeling fragrance allergen, and standardized testing methods for asbestos (U.S. Food and Drug Administration, 2023c). Although these are mainly for manufacturers within the U.S., international products should hold the same standards since they are entering the country through importation.

Currently, three states have banned mercury in cosmetic products, Maryland, California, and New York (Environmental Working Group, 2022). However, skin-lightening products remain a problem due to online accessibility for purchase, where state-level enforcement lacks strong regulation of SLP entering states. Based in the U.S., The Environmental Working Group (EWG) is a guide for finding safe cosmetics and other consumer products. In 2018, EWG and 50 environmental and public health agencies called out Amazon and eBay to stop selling skin-lightening creams. However, today one can still find SLP on these platforms (Environmental Working Group, 2022).

**California Proposition 65.** Proposition 65 (Prop 65) requires businesses to warn Californians about significant exposures to toxic chemicals that harm the body and can cause cancer, birth defects, or other reproductive harm (California Office of Environmental Health Hazard Assessment, 2023). The above statement means manufacturing businesses must follow Prop 65
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by determining if they must provide a warning label about significant exposure to the listed chemicals. This proposition has provided labels for many products, including food, alcoholic beverages, and furniture products, but not cosmetics (California Office of Environmental Health Hazard Assessment, 2023). It is essential to require cosmetics to be a part of the Prop 65 list because of its association with the toxic chemical, Hg, and its prevalence in SLP products that enter the state of California.

**Cosmetic Policy in Europe**

In Europe, the cosmetic law in 2003, known as the *7th Amendment in the Cosmetic Directive*, was addressed (Cosmetics Europe, The Personal Care Association, 2023). The two leading changes were banning animal testing for cosmetic ingredients and banning hazardous substances (Cosmetics Europe, The Personal Care Association, 2023). In this Amendment, cosmetic products must not cause damage to human health once applied to the skin. Europe also has a REACH law, where products are registered with a safety data package and pass human and environmental safety assessments (Cosmetics Europe, The Personal Care Association, 2023).

Based in Europe, the Zero Mercury Campaign from the Zero Mercury Working Group, is currently calling out on online purchasing platforms to stop the sale of SLP, which combats the importation gap through international sales; like in the U.S., online surveillance is not proven feasible under government regulation and enforcement (Zero et al. et al., 2023).

**Cosmetic Policy in Africa**

South Africa was the first to regulate active lightening ingredients of hydroquinone, but without the mention of mercury; other countries followed, such as Rwanda, Côte d'Ivoire, Tanzania, Kenya, and Ghana (Pollock et al., 2021). However, SLP are available from street vendors and cosmetic shops in Africa today (Pollock et al., 2021). The lack of sufficient
awareness perpetuates mercury in products, making it imperative to address the issue with the same level of attention and concern as hydroquinone. It is also true for other international regions, such as Asian and South American countries.

**Cosmetic Policy in Asia**

South Korea has banned hydroquinone by federal regulations; however, there are no regulations on imported and online cosmetic products or mercury-contaminated products (Pollock et al., 2021). In India, SLP is readily available in drugstores (Pollock et al., 2021). Like the U.S., The Philippines has banned SLP with Hg levels exceeding the national regulatory limit of 1 mg/kg; however, it continues to be imported and smuggled into the country (Pollock et al., 2021). The United Arab Emirates banned hydroquinone, but other SLP contains Hg and is used among individuals in this country today.

**Cosmetic Policy in South America**

There are no current bans on hydroquinone in Brazil, reflecting the absence of control of SLP associated with Hg (Pollock et al., 2021). South America is under-developed with cosmetic laws and regulations of SLP. Moreover, due to proximity, many SLP entering the U.S. are from South America (California Department of Public Health, n.d.-a).

**Policy on Online Platforms**

Online selling platforms have rules and regulations for what products are sold online, through cosmetic policies and laws prohibiting products that contain toxic chemicals. **Table 1** below will present policies from online selling platforms related to the rules on cosmetics and skin products that cause danger or damage to health. The table will display the online platforms, the policy name, and what the policy states on cosmetic safety and consumer health. The online platforms listed below have product listings of SLP products; only some platforms are in the
chart, but all the ones stated below have SLP listings. The purpose of presenting a few policies is to show that many online platforms have existing laws prohibiting selling SLP products due to the dangers it causes consumers and how it is illegal under the FDA.

**Table 1**

*Online Selling Platforms and their Cosmetic/Safety Policies*

<table>
<thead>
<tr>
<th>Online Platform</th>
<th>Policy Name(s)</th>
<th>What does the policy state?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon: An online retailer that sells books, music, movies, housewares, electronics, toys, and many other goods, such as beauty products (Hall, 2023).</td>
<td>Cosmetics &amp; Skin/Hair Care</td>
<td>Products and Ingredients: Cosmetics must be safe for use and must not be a product that the Food and Drug Administration (FDA) has determined present an unreasonable risk of injury or illness, such as skin creams containing mercury” (Amazon, n.d.).</td>
</tr>
<tr>
<td>eBay: A global online auction and trading company in America that uses the internet to match buyers and sellers of goods and services (Tikkanen, 2023).</td>
<td>Prohibited and Restricted items: Cosmetic Policy</td>
<td>“While you can sell almost any item on eBay, maintaining the safety of our community is a responsibility we take very seriously (eBay, 2023).” Listing for used cosmetics, sponges, or applicators is not allowed. Homemade cosmetics must comply with government regulations.</td>
</tr>
<tr>
<td>Etsy: This is a global marketplace for unique and creative goods, typical homemade goods (Etsy, 2023).</td>
<td>Our House Rules</td>
<td>Esty specifically calls out chemicals prohibited from being in a cosmetic listed on the Esty platform. The list includes “mercury compounds,” hydroquinone”, and “injectable skin products, including fillers and skin lighteners” (Etsy, 2022).</td>
</tr>
<tr>
<td>Facebook Marketplace: This is an e-commerce platform that connects sellers and buyers</td>
<td>Community Standards</td>
<td>“In an effort to prevent fraudulent activity that can harm people or businesses, Facebook removes</td>
</tr>
<tr>
<td>through Facebook (Facebook Marketplace, n.d.).</td>
<td>content that purposefully deceives, willfully misrepresents, or otherwise defrauds or exploits others for money or property” (Meta, n.d.). To maintain a <strong>safe environment</strong> and empower free expression, Facebook removes accounts that harm the community (Meta, n.d.).</td>
<td></td>
</tr>
<tr>
<td>Google Shopping: Like Google Search, google shopping is browsing products from advertisers and sellers who have chosen to feature their products on the platform (Google, 2023).</td>
<td><strong>Update to Dangerous and Derogatory Policy</strong> Google updated its advertising policy to <strong>ban the promotion of colorism, skin-lightening products, and skin-lightening practices on the Google platform</strong>. This policy update came about through a collaboration between Beautywell Project and Google. Dangerous products: “Google wants to <strong>help keep people safe both online and offline, so we don’t allow the promotion of some products that cause damage, harm, or injury</strong> (Google, 2022).</td>
<td></td>
</tr>
</tbody>
</table>
All online platforms have a policy that if a product by any means causes harm to individuals, it is not allowed to be a product listing on online selling platforms. Some online platforms, like Amazon, Etsy, and Google Shopping, are more explicit regarding identifying mercury and banning products that promote colorism and skin-lightening. Others, like Facebook Marketplace and Etsy, are vague, stating to keep their environment safe, which could mean several things. In this public health problem, a "safe environment" means not causing mercury poisoning to consumers that use SLP from Facebook Marketplace and Etsy. These existing policies are leverages for government agencies to protect consumers from SLP, especially since existing policies and laws created by these online selling platforms prohibit selling items like SLP.

Cases of Mercury Poisoning Due to Skin-Lightening Products

Several cases of mercury poisoning from SLP are in California, New York, Arizona, New Mexico, and Texas. Although cases may be smaller, Table 2, below presents many dangerous outcomes individuals experience due to adulterated and unregulated SLP. The table will describe each mercury poisoning case due to SLP, the duration the individuals have used the skin-lightening product, the symptoms of SLP use, the year, and where the case happened. The table also states the name of the skin-lightening product and manufacture location, if known, and the amount of mercury in parts per million it contains. A limitation of the chart is that the only SLP type on the list is skin-lightening creams. The purpose is to connect to the current databases that are accessible to the public. The importance of presenting mercury poisoning cases is to show the shared signs and symptoms one may face when using SLP, such as neurological changes in the body and mind, leading to losing control of the body and mind. In the most severe case, a woman
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became semi-comatose after using a cream with the deadliest form of mercury, mercurous chloride, a salt form of mercury.
Table 2

**Mercury Poisoning Cases Due to Skin-lightening Products within the United States**

<table>
<thead>
<tr>
<th>Case/ Duration of Use</th>
<th>Symptoms</th>
<th>Year</th>
<th>Where</th>
<th>Skin-Lightening Product/ Where it was Manufactured</th>
<th>Mercury (PPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 39-year-old Latino used the cream for three years to fade freckles and age spots leading to exposing mercury to her four-year-old child and twenty-one friends and family members (California Department of Public Health, 2020).</td>
<td>Women have 482 ug/g creatinine of mercury in their urine, “Numbness and tingling in her hands and lips, dizziness, forgetfulness, headaches, depression, irritability, and anxiety.” A child has 107 ug/g creatinine. No clinical symptoms for the child</td>
<td>2010</td>
<td>California</td>
<td>Skin-lightening creams from Mexico, the name of the cream was not stated</td>
<td>20,000 ppm (first cream) and 57,000 ppm (second cream).</td>
</tr>
<tr>
<td>A 16-year-old boy used the cream twice daily for six weeks, exposing his eleven family members and removing all contaminated furniture and personal belongings (California Department of Public Health, 2020).</td>
<td>“Mercury urine level of 144 ug/g Weakness in legs, involuntary muscle twitching, severe back pain, diffuse and visible fasciculations of the extremities, tongue, and lips, unsteady gait, delirium, agitation,</td>
<td>2013</td>
<td>California</td>
<td>Adulterated cream from Mexico</td>
<td>96,000 PPM to 210,000 PPM</td>
</tr>
</tbody>
</table>
### Symptoms and Effects

<table>
<thead>
<tr>
<th>Case Description</th>
<th>Symptoms/Effects</th>
<th>Year</th>
<th>Location</th>
<th>Cream Source</th>
<th>Mercury Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 20-month-old baby was exposed by a mother who was using a skin-lightening cream; additional six households (40 individuals, half were children) were also exposed. Personal belongings were discarded (California Department of Public Health, 2020).</td>
<td>sleep disturbances, diaphoresis, persistent tachycardia, hypertension. Baby’s mercury urine level is 52 ug/g. The baby experienced “hypertension, refusal to walk, irritability, difficulty sleeping, required nasogastric tube for poor appetite.”</td>
<td>2014</td>
<td>California</td>
<td>Adulterated cream from Mexico</td>
<td>38,000 ppm</td>
</tr>
<tr>
<td>A 47-year-old Latino woman used a skin-lightening cream that contained mercury salt (mercurous chloride, a more deadly form of mercury), causing serious health effects (California Department of Public Health, 2020).</td>
<td>Numbness in their hands and face, gait, and slurred speech worsened for a few weeks. She was unable to respond verbally, which led to a semi-comatose with agitated delirium</td>
<td>2019</td>
<td>California</td>
<td>Adulterated cream from Mexico</td>
<td>12,000 ppm</td>
</tr>
<tr>
<td>9 of 13 cases in the report identified mercury-containing skin-lightening creams; women were of Hispanic racial/ethnic groups, and Caribbean-born blacks (McKelvey et al., 2011).</td>
<td>Among the 13 cases, all women had urine mercury concentrations that equaled or exceeded the reportable level of 20 ug/l. Symptoms not stated in 2011.</td>
<td>2011</td>
<td>New York</td>
<td>Recetas De La Farmacia Normal, Crema Blanqueadora From the Dominican Republic</td>
<td>Recetas De La Farmacia Normal (6,190-41,600 ug/g) Cream Blanqueadora</td>
</tr>
</tbody>
</table>
| The 15-year-old boy used skin-lightening cream to treat acne, the listed ingredient “calomel.”  
(Centers for Disease Control and Prevention, 1996). | “Fatigue, weakness, insomnia, myalgias of his extremities, severe headache, sore throat, cough, constipation, paresthesias of his feet and hands” | 1995 | Texas | Crema de Belleza – Manning | Not stated in the study |
|--------------------------------------------|--------------------------------------------------------------------------------|----|------|----------------------------|------------------------|
| A 35-year-old woman used the skin-lightening cream for approximately ten years (Centers for Disease Control and Prevention, 1996) | Urinary Mercury Levels 355 ug/g  
Woman experienced “paresthesias (left forearm, right leg, and ear), irritability, and insomnia.” | 1996 | New Mexico | Crema de Belleza – Manning | Not stated in the study |
| A 33-year-old woman who used the skin-lightening cream for six years used it daily on her face, hands, and chest (Centers for Disease Control and Prevention, 1996). | “Severe migraine headaches of 3-4 days’ duration, irritability, fatigue, short-term memory loss, night blindness, inability to eat products from tin cans because of vert metal taste” | 1996 | California | Crema de Belleza – Manning | Not stated in the study |
| Media announcements across the states leading to 238 reports use of | Elevated mercury levels | 1996 | Arizona, California, | Crema de Belleza – Manning | Not stated in the study |
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| the cream (Arizona-89, California-65, New Mexico-36, Texas-48). Also, these cases infected their family members. (Centers for Disease Control and Prevention, 1996). |  | New Mexico, Texas |  |
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Mercury Poisoning Case Studies from Africa and Asia

**Africa.** Skin bleaching became popular in Africa in the 1950s; it is popularly used in Nigeria, Senegal, Mali, and Ghana (Pollock et al., 2021). In the Minnesota Department of Health, a study tested 27 skin-lightening products used among Somali women, and 11 of the 27 contained mercury (Adawe, 2013). This study suggests a risk for Somali women using SLP products. The use of SLP continues to be profound in Africa today.

**Asia.** A study in Pakistan investigated two women who experienced nephrotic syndrome with increased mercury urine levels (Chakera et al., 2010). Both did not disclose the use of skin-lightening creams until after the test results, once their physician asked if they used SLP products, implying that the two women were unaware that SLP could cause renal problems and health concerns (Chakera et al., 2010). In China, a study analyzed data from 288 mercury poisoning patients in 2014, in which mercury-containing cosmetics were one of the three exposures to mercury; the other two were occupational factory exposures and Chinese folk remedies (Yawei et al., 2021). A study in Hong Kong interviewed 286 cream users, of whom 99% were women, all with elevated mercury levels in urine or blood samples (Sin, 2003). Another set of cases in Hong Kong evaluated four women exposed to mercury containing SLP with 7,420 to 30,000 parts per million (Tang et al., 2012). All the patients were given steroids to normalize their urine mercury levels which took 9 to 16 months (Tang et al., 2012). In Saudi Arabia, 146 out of 409 participants indicated using SLP commonly on their faces, elbows, and knees (Bamerdah et al., 2023). Within Asian communities, many SLP contains the dangerous element mercury; however, women from several Asian ethnicities continue to use SLP today, and there continues to be a significant demand for SLP among this group.

**Lists of Creams that Contain Mercury from State and Federal Databases**
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Federal and state levels have developed databases of all the creams tested for mercury. SLP that are mainly creams were tested in comparison to other product types. The FDA stated that 18 creams contain mercury above one ppm of the legal limit (U.S. Food & Drug Administration, 2023b). Furthermore, several of these creams originate from countries outside the U.S., including Mexico, Japan, France, Pakistan, and West Africa (U.S. Food & Drug Administration, 2023b). States, such as California and New York, have also created a list of creams tested to have mercury above the FDA's legal limit in cosmetic products. The California Department of Public Health (CDPH) has 48 labeled face creams that contain mercury, tested through the department or other state agencies (Department of Public Health, n.d.-b). The CDPH lists creams manufactured in Mexico, Cambodia, The Philippines, Pakistan, China, Vietnam, Thailand, and Japan. As for the City of New York database, there are 14 searched mercury and skin cream-related products (City of New York, 2023). The products in New York's database are from the Dominican Republic, Pakistan, India, The Philippines, Spain, and the United Kingdom.

Besides databases, there are product reports, which will be stated in this section to show other forms of identifying dangerous SLP. Product reports: are alerts of a specific product to provide the community with immediate awareness of a harmful product within a state or specific geographical location. For example, the Maryland Department of Health and Mental Hygiene had one skin-lightening product reported in 2011 warning consumers of "Aguamary" skin-lightening cream and reported the risk of mercury poisoning from the use of the cream (Maryland Department of Health and Mental Hygiene, 2008). Toxic poisoning reports, and alerts are essential for warning consumers of a specific SLP in a general location.

The Europe Environmental Bureau has also tested and created a list of 34 skincare products between 2017 and 2018; all exceeded the legal limit of 1 part per million, which is the same standard as the U.S. (European Environmental Bureau, 2023). The countries that
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manufacture the creams are Pakistan, Bangladesh, Dominican Republic, China, Hong Kong, Jamaica, The Philippines, Malaysia, and Taiwan (European Environmental Bureau, 2023).

**International Use of Skin-lightening Products by Women of Color**

Women around the world use skin-lightening products and treatments. The study "Skin-Lightening Products: Consumer Preferences and Costs" stated that half the population of Korea, Malaysia, and The Philippines and 77% of Nigerian women use SLP (Cheng et al., 2021). The study also stated that 61% of the SLP in the market are manufactured in India (Cheng et al., 2021). Skin-lightening products contain dangerous chemicals, such as mercury, disproportionately affecting women of color worldwide and in the United States (Mahé, 2014). Skin-lightening products continue to lead the cosmetic industry worldwide in Africa, Asia, the Middle East, the Americas, and Europe (Pollock et al., 2021). The impact of SLP use is a global issue increasing the chances of mercury poisoning cases worldwide.

Based on the article "The dark skin of skin lightening: An international collaboration and review of public health issues affecting dermatology" by Samara Pollock et al. (2008) consist of reasons why women of color use skin-lightening products and the personal drivers to lighter skin. The chart below, **Table 3**, organizes the countries and regions.

**Table 3**

<table>
<thead>
<tr>
<th>Countries/Regions</th>
<th>Common beliefs towards SLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Individuals use skin-lightening products claiming to make them attractive and increase their career opportunities.</td>
</tr>
<tr>
<td>South Korea</td>
<td>Desire for lighter skin is a shared desire between women and men, and the hope for glass skin is a trend for even-toned skin like crystal clear glass.</td>
</tr>
<tr>
<td>Country</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>India</td>
<td>Half of spending on skincare products is on skin-lightening products. The term &quot;fairness&quot;, regarding skin tone, represents beauty and virtue and was first created due to the caste system.</td>
</tr>
<tr>
<td>The Philippines</td>
<td>One in two Filipina women uses skin-lightening products hoping that using skin-lightening products will improve social acceptance and economic opportunities.</td>
</tr>
<tr>
<td>Malaysia</td>
<td>The desire for youthful skin and a boost of self-esteem through lightening skin is sought.</td>
</tr>
<tr>
<td>Middle East</td>
<td>Saudi women and Jordanian women use skin-lightening products to even skin tone and improve texture, appear lighter, and boost self-esteem.</td>
</tr>
<tr>
<td>United States</td>
<td>The history of colorism in the U.S. first stems from the 1700s among the African American community; reporting skin-lightening products is uncommon due to cultural stigma, and it is often not accepted in the U.S. to express the want to have lighter skin. Also, colorism is often not accepted or spoken about. Women of color who reside in the U.S. also want to be more attractive and not &quot;feel a restricted sense of freedom,&quot; having darker skin tones, where they feel discriminated against for the color of their skin in society and within career opportunities.</td>
</tr>
</tbody>
</table>

Also, from the same article, dermatologists worldwide collected data on women seeking skin-lightening treatment; **Figure 1** compares what patients seek when they go for dermatology treatment, either for skin pigmentary disorder or to lighten skin across countries/regions. The countries/regions in the chart include South Africa, East Asia, Southeast Asia, the Middle East, South America, South Asia, Nigeria, and Ghana. Skin pigment disorders affect skin color due to melanin changes in skin cells called melanocytes (American Academy of Dermatology)
“AM I LIGHT ENOUGH?”
Association, 2023). In contrast, skin-lightening has no condition where a dermatologist must prescribe medication. The graph indicates that South Africa, Nigeria, and Southeast Asia have more patients seeking dermatology to lighten their skin. The countries/regions where the difference is less than 10% are East Asia, Southeast Asia, South Asia, and Ghana (Pollock et al., 2021). The two regions where skin pigmentation disorder is more than 10% higher are the Middle East and South America. Understanding the demographic of each region will provide a better representation of why skin-lightening is more prevalent in dermatology treatment. For example, South Africa has banned skin bleaching that contains more than 4% hydroquinone, which suggests that skin pigmentation disorder is higher in these regions due to strong regulation of SLP (Pollock et al., 2021). Nevertheless, six out of eight regions/countries seek treatment for lightening skin higher than for skin pigmentation disorder among patients when attending dermatology.

Media and celebrities also influence the want for lighter and fair skin. Among all the countries stated above, media and celebrities influence the use of skin-lightening products. In India, the Bollywood film industry stars are fair-skinned individuals in films and advertisements. In other Asian countries, like South Korea and The Philippines, celebrities and pop idols frequently appear to have lightened skin. Additionally, South American countries such as Brazil, the Dominican Republic, and Puerto Rico only have protagonists with a lighter complexion in films and media (Pollock et al., 2021). Media and celebrities are significant societal factors that set the standard of beauty that influence women of color worldwide.

Thus, mercury poisoning may appear rare, but it is an under-reported and under-recognized condition in the U.S. and worldwide, changing behavioral attitudes among users and the healthcare and dermatology sectors. Thus, the information stated are the types of behaviors towards skin-lightening and why women of color worldwide desire to lighten their skin.
“AM I LIGHT ENOUGH?”

Socio-ecological Model

Mercury poisoning due to SLP is a public health issue that affects race and ethnicity across nations. Federal, state, and international lists of SLP containing mercury and several cases worldwide exist. Many SLP are sold online, which is illegal, under the FDA and within their safety policies (U.S. Food and Drug Administration, 2023a). There are several gaps throughout the socio-ecological model under the cosmetic policy and importation regulation and enforcement, including individual attitudes on using SLP and reasons to meet societal beauty standards of lighter skin, and interpersonal/ societal factors, such as media and celebrity influences. These socio-ecological factors, the policy, environmental, organizational, interpersonal, and intrapersonal factors, all play a role in the health of those affected by mercury poisoning due to SLP use. These socio-ecological factors address the recommendations to perform regulations and enforcement and health education awareness within dermatology practices to users in the U.S. and worldwide.

Figure 2

Socio-ecological Model of Why Skin-Lightening Products Continue to Persist Today
Method

This literature review focused on skin-lightening products, primarily creams containing mercury, a dangerous toxic chemical that affects women of color worldwide. The paper aims to find solutions for regulating SLP and enforcing restrictions on the selling, buying, and use of SLP, which pose a health risk to women of color worldwide.

The keywords used for the research are listed: skin-lightening, cosmetics, facial cream, face cream, skin creams, mercury, legislation, laws, regulation, and regulatory. These keywords identify skin-lightening products/cosmetics, and types of creams, focus on mercury contamination, and review recommended policies and regulations for public health issues. Skin-lightening products also are known to have hydroquinone or topical corticosteroids but are not focused on in this paper.

The literature review used two databases: Scopus and PubMed. Forty articles appeared in Scopus using the keywords. In Scopus, there was no adjustment to the year of publication; of the 40 articles, 21 utilized in the literature review. For PubMed, only six articles appeared using all the keywords. Five of the six are articles utilized, with the time adjusted from 2015 to 2023. Articles that were not focused on mercury or did not pertain to cosmetics were excluded from the analysis. Another factor that excluded articles is if the article was a duplicate between the two databases. By observing the articles, 14 scholarly journals were selected from related documents. All 14 articles were used in the literature review. The journals present several cross-sectional studies and surveys, several graphs and charts of cases, and current cosmetic policies in countries globally.

In a review of state and federal organizations in the United States, state departments from California, New York, and Maryland utilized federal government entities, such as the U.S. Food and Drug Administration (FDA) and WHO: World Health Organization. Plus used an
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international source from the European Environmental Bureau. The SLP databases and mercury
poisoning cases were collected through these entities and scholarly articles.
Recommendations

Research shows two recommendations to decrease and eliminate access to skin-lightening products through online platforms. The first recommendation works directly to enforce and regulate the importation of SLP from international countries. The second recommendation is to implement a culturally competent approach to change the consumer health of SLP. The recommendations will be focused on the U.S. despite my literature review being a global analysis to implement solutions within one country.

First, each recommendation was subjected to a policy analysis looking primarily at feasibility, relevance (cost-efficiency), and impact explored through current FDA laws and articles. Feasibility measures the capacity of countries to accomplish the two recommendations regarding the public health issue, but do countries have the feasibility to regulate and enforce the selling of illegal and harmful SLP? Secondly, analyzing relevance, what is the cost-benefit analysis of ignoring the recommendations that affect POC communities worldwide, especially women of color? Thirdly, what is the global impact on health if individuals have access to skin-lightening products and continue to use them? The purpose of exploring a global perspective within the policy analysis is to see gaps in current laws and interventions.

Recommendation 1

The first recommendation is to improve enforcement and regulation practices of skin-lightening products of manufacturers worldwide, primarily in Asia, Africa, and South American countries (U.S. Food and Drug Administration, 2023a). The United States and European countries with existing cosmetic laws request more regulation of importing SLP into their countries. Countries like Africa and The Philippines that lack cosmetics laws request to establish policy reform (Lartey et al., 2016). Research suggests specific components to establish effective regulation and enforcement of skin-lightening products (Michalek et al., 2019). The first is
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tracking unsafe cosmetics as a solution through product recalls, detention of illegal products from importation, and establishing strong, alert systems (Michalek et al., 2020). Secondly, the enforcement of labeling products with specific ingredients allows consumers to make educated decisions (Marinovich et al., 2014). For example, instead of labeling the SLP to have "minerals," labels should include the specific minerals found, such as mercury. This way, consumers can make informed decisions about using the product.

**Feasibility of Recommendation 1**

SLP is under the radar of products detained by the FDA (U.S. Food & Drug Administration, 2022). However, CBP oversees 11 million maritime container shipments each year, suggesting that capabilities in the U.S. have limitations for enforcing the importation of SLP (U.S. Customs and Border Protection, 2022). Feasibility illustrates the limitation in enforcing laws on SLP in countries such as the U.S., Europe, Africa, and Asia. The feasibility is unfortunately restricted by countries' limited capability in enforcing laws, expressing the lack of capacity for the FDA and CBP to regulate the importation of SLP in the U.S. Thus, this indicates a reason why these products are highly accessible to POC communities around the world.

The FDA has two sources of funding, annual funding from Congress and user fees that pay by industries that make and market FDA-regulated products budget reports (U.S. Food and Drug Administration, 2023b). There is a current 2023 Budget Proposal to contribute an additional $100 million for importers of all deemed products; within this proposal, it is appropriate to include SLP imported to the U.S. (U.S. Food and Drug Administration, 2023b). Due to the current budget, there is no available funding (U.S. Food and Drug Administration, 2023b).

However, doctors and dermatologists are finding other means to enforce importation due to the need for more feasibility at the federal level. For example, dermatologist Amira Adawe,
“AM I LIGHT ENOUGH?”
founder of the Beautywell Project, recently worked with Sierra Club to collect 25,000 petitions in the United States to remove Amazon from selling skin-lightening creams, which were eventually taken down (Beautywell Project, 2023). After removing the products, Amazon proclaimed they had proactive measures and would continue monitoring the online website (Beautywell Project, 2023). Furthermore, sellers that violate and sell illegal SLP have a high chance of removal from selling on Amazon is an action step Amazon claimed to make (CNN, 2021). Adawe's experience proved that it is possible to regulate SLP online, with proactive online platforms taking the initiative and measures.

**Relevance and Health Impact of Recommendation 1**

To examine the relevance of the lack of enforcement for SLP results in POC communities putting them at risk for various side effects, including intense cystic acne all over their body, irreversible skin thinning causing stretch marks and telangiectasias, and ochronosis (American Academy of Dermatology Association, 2023). In addition to this risk, using SLP leads to skin cancer. The skin has an inability to replace itself; it cannot protect itself from UV radiation, pathogens, and toxins from entering the body through the skin, increasing the chance of disease and cancer (Owolabi et al., 2020). The cost to treat skin cancer was an average annual treatment of $8.1 billion for about 4.9 million U.S. adults from 2007 to 2011 (American Academy of Dermatology Association, 2022). Thus, emphasizing the relevance and impact of health on this public health issue further outweighs the cost of poor regulation and enforcement of SLP worldwide via online and international manufacturers.

**Recommendation 2**

The second recommendation is to promote culturally competent health promotion to POC communities of women in the United States and around the world. Research states that culturally competent promotion aims to promote healthy skin and inclusive concepts of beauty (Pollock et
"AM I LIGHT ENOUGH?" al., 2021). There are two specific components to establish health behavior changes and attitudes. One is to increase health education by building awareness of the dangerous effects of SLP on one's health, family, and children (Kampalath & Jay, 2015). Secondly, to increase awareness of online purchasing and how to be more intelligent consumers of beauty products (Gopinath et al., 2021). There are several solutions from the literature review. First, utilize dermatologists to raise health awareness and diligently protect patients from the health risk of using SLP to their patients (Pollock et al., 2021). The second tool is to utilize social media to raise public awareness about the dangers of SLP as more individuals worldwide gain easy access to the internet (Dlova et al., 2015). There is also a lack of clinical diagnosis in the healthcare system for mercury poisoning caused by SLP, which is a focus among dermatologists (Johnson-Arbor et al., 2021).

Feasibility for Recommendation 2

The looming social issue behind the need to promote culturally competent health promotion through dermatologists and social media is the historical concept of colorism. Sociologist, Margaret Hunter, defined colorism as "the process of discrimination that privileges light-skinned people of color over their dark-skinned counterparts," which was rooted in slavery and colonialism (Hunter, 2011). The feasibility may seem impossible to fight a systematic issue perpetuating cultural ideals and beauty standards for centuries; however, several critical social media, nonprofit campaigns, and companies have fought against colorism. One social media campaign promoted the hashtag "unfair and lovely" towards younger generations to empower women of color to embrace natural beauty (Pollock et al., 2021). A nonprofit in India called Dark is Beautiful was created to challenge the belief of fairness and association with beauty (Pollock et al., 2021). Also, celebrities like Afro-Latina singer, Amara La Negra, encourage the media to promote more dark-skinned Latin performers (Pollock et al., 2021). Johnson and Johnson's company has stopped creating and promoting skin-lightening lotions; others have not,
“AM I LIGHT ENOUGH?” like Unilever (Pollock et al., 2021). All these proactive actions help generate momentum in changing colorism ideals and strengthen the feasibility of recommendation two.

**Relevance and Health Impact of Recommendation 2**

Two studies demonstrate the relevance of the social and, thus, public health issue, proving the need for recommendation two in a global society. A 2011 study in North Carolina found alarming results that women in prison who were perceived to have lighter skin received a 12% shorter prison sentence than their darker-skinned peers (Viglione et al., 2011). Another study from San Francisco State University resulted in darker skin persons being deemed less educated in a job interview than counterpart peers with lighter skin, even of the same ethnicity (Ben-Zeev et al., 2014). Even in the present day, microaggressions continue to play a significant role in perpetuating colorism, which adversely impacts POC communities in the United States and various other countries. Further emphasizing why women of color lighten their skin to climb social ladders to be "better candidates" for marriage and employment opportunities. Thus, it impacts the health and well-being of POC communities; it is a harsh reality for women of color that, psychologically, beauty standards affect women to change their bodies despite the dangers attached.

Allowing individuals to gain the autonomy to protect their health and make educated consumer decisions through the encouragement from a dermatologist, social media, organizations, and even cosmetic companies will decrease mercury poisoning and reduce healthcare costs from skin cancer.

**Figure 3**

*Analysis of Recommendations from Literature Review*
Implementing the Recommendations

This section aims to provide successful solutions for the two recommendations above. Each solution is explained through a Logic Model, applying inputs, activities, outputs, and short-term and long-term outcomes for each solution. The purpose is to establish solutions that will impact women of color by shifting consumer behavior and eliminating individual drivers to meet beauty standards.

**Implementation 1**

A solution to implementing recommendation one is to utilize California Proposition 65 under the Office of Environmental Health Hazard Assessment (OHHEA). As stated in the background, Prop 65 is an initiative that addresses toxic chemicals in consumer products. There is also a warning regulation under Prop 65 that platforms must add warnings for products sold over the internet for businesses that wish to comply with the "safe harbor" warning requirements (California Office of Environmental Health Hazard Assessment, 2023). "Safe Harbor" is a measurement tool for companies to determine if their product is safe for humans. By demanding "safer harbor" measurement as a requirement for all online selling of products, Prop 65 has the
potential to make an impact against toxic chemicals entering the U.S. and thus eliminate SLP from entering the country. The hope is that countries will implement this solution in their country, and slowly SLP products will no longer be a high-demand commodity.

**Implementation 2**

The solution for the second recommendation aims to utilize dermatologists to implement clinical diagnosis of mercury poisoning due to SLP, which needs to be improved based on current research. Currently, dermatologists can write prescriptions for lighteners that contain less than 2% hydroquinone but not for mercury (Saling, 2011). The American Academy of Dermatology has expressed concern about the growing trend and the unintended health consequences of pursuing lighter skin; in favor of reform, dermatologists are combating unregulated SLP in the market that is often more dangerous and cheaper, typically products that contain mercury (American Academy of Dermatology Association, 2023). Dermatologists also encourage individuals to seek dermatology for conditions like post-inflammatory hyperpigmentation after using unregulated products (American Academy of Dermatology Association, 2023). There is a lack of clinical diagnosis regarding mercury poisoning because there are nonspecific signs and symptoms, so it is often dismissed and misdiagnosed (Johnson-Arbor et al., 2021). Research suggests that although mercury poisoning is rare, it is a public health concern due to the morbidity of affected individuals by incorporating an enhanced clinical understanding of mercury toxicity and gaining unified knowledge of specific signs and symptoms (Johnson-Arbor et al., 2021). The American Academy of Dermatology will be able to address mercury poisoning due to SLP by including effective identification of mercury toxicity in patients through knowledge and training of nonspecific signs and symptoms.

**Figure 4**

*Logic Model of Implementation 1 and 2*
There are three primary inputs to implement phase 1 for both solutions. First, make Prop 65 mandatory for all online selling platforms, provide warning labels on all SLP product listings, and utilize "safe harbor" measurements. Secondly, improve and update dermatology guidelines on identifying mercury poisoning patients due to SLP by establishing a clinical diagnosis.

The second phase is activities; several activities are taking place to conduct both solutions. The first action is to require all online selling companies to provide "safe harbor" eligibility for their SLP products. Secondly, all online selling companies must establish Prop 65 warning labels for all known SLP products; found in the FDA, CDPH, City of New York, and Europe Environmental Bureau database list. Third, establish funding for both solutions: implementing Prop 65 warnings by building the capacity to add and maintain labeling and implementing dermatology guidelines for identifying mercury poisoning of SLP use. The last action is to conduct a pilot study implementing clinical diagnosis to measure the effectiveness of testing and medical devices.

The third phase is output; there are two distinct outputs of implementing the two solutions. First, all known SLP products under the four lists stated previously will have Prop 65

There are three primary inputs to implement phase 1 for both solutions. First, make Prop 65 mandatory for all online selling platforms, provide warning labels on all SLP product listings, and utilize "safe harbor" measurements. Secondly, improve and update dermatology guidelines on identifying mercury poisoning patients due to SLP by establishing a clinical diagnosis.

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The third phase is output; there are two distinct outputs of implementing the two solutions. First, all known SLP products under the four lists stated previously will have Prop 65
warning labeling on all online selling platforms. The second output is that dermatologists practice clinical diagnosis to conduct and identify mercury poisoning cases due to SLP use.

Under phase four, there are several short-term outcomes. The first is that there will be consistent funding for SLP enforcement of Proposition 65 and clinical diagnosis of mercury poisoning. The second short-term outcome is the "safe harbor" measurement for all new SLP entering the market. The third short-term outcome is that both solutions will be analyzed and tested for effectiveness of feasibility to see what improvements need to occur to improve inputs.

The last phase, long-term outcomes, emphasizes the results in which this issue will no longer be a public health concern. The first is that Prop 65 will shift consumer behavior against the use of SLP and fewer sales of SLP from online selling platforms. The second long-term outcome is data on mercury poisoning due to SLP use, and thus morbidity and mortality rates that currently lack information on this public health issue. The third long-term outcome is that there will be fewer cases of mercury poisoning due to SLP in the U.S. and worldwide. The last, most crucial long-term outcome is that after all the efforts to make SLP less desirable, there will be changes in beauty standards among women of color and a shift in society's beauty standards to embrace all skin tones and colors.
Implications/ Impact

The recommendations and solutions above will impact global health by shifting behavior to eliminate the use of SLP products among women of color. The Health Belief Model will illustrate how Prop 65 warnings on online selling platforms impact behavior change compared to if women of color did not have an initial warning when deciding to purchase an SLP product.

Figure 5

Health Belief Model of Status Quo

The status quo is that culture, acquaintances, and societal beauty standards still influence women. For example, in the hypothetical example above, a Filipino American woman, aged 30 years old, grew up in a lower-class household but managed to earn her bachelor's degree. The proposed model has a perceived susceptibility that she needs to lighten her skin to be desirable for a better job and a better match for marriage. The cues of action that took place is she saw her lighter skin friends that use SLP getting married. Because of all three factors, her perceived threat is that her skin is dark, and she is afraid she will never be desirable. The perceived benefit is that if she uses SLP, all her shortcomings will disappear, and she will finally have a
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better life. Thus, her self-efficacy is that she believes she will get married and have a better job if she lightens her skin.

**Figure 6**

*Health Belief Model with Proposition 65 on Online Product Listings*

For the same example, if the cues of actions were different and a California Proposition 65 label was on the SLP online listing that her friends were using, her health behavior would change. Being informed that the cream is proven dangerous to her health if she uses it, she will be at risk of mercury poisoning and other health threats, such as developmental and neurological complications. Also, she can affect her family if exposed to mercury. Her perceived threat would be different. Although she still feels less desirable because her skin is dark, she is not willing to jeopardize her health to become lighter. Her perceived benefit has changed, as well as her self-efficacy. Her new perceived benefit is that she will not use SLP, especially because many have a Prop 65 warning label, and she will not be at risk of mercury poisoning due to SLP if she avoids using them; her new self-efficacy is that she knows one day she will get married and have a better job; even if she does not lighten her skin to do so, she knows that she will find...
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someone who will love her for who she is and not the tone or color of her skin. Furthermore, if a
cOMP* company discriminates against her based on her skin tone, then she knows that the company's
values do not align with her beliefs, and she will search for one that will value her based on her
skills, leadership, and strong work ethic.

The true barrier that allows SLP to continue to be a high-demand commodity is the desire
for it; women feel that it is an acceptable action to gain economic opportunities and social
acceptance in their society and for marriage. The issue of SLP use is behavioral, and changing
behaviors is the main pivotal solution in stopping women of color from the risk of mercury
poisoning that, over time, causes developmental and neurological health problems and skin
cancer.

Limitations

There is not one entity that regulates all importation around the world; each country has
its laws and regulations regarding importation, and the solution must be implemented in each
country's situation.

A limitation of solution 2 for recommendation 2 is that if patients with signs and
symptoms do not seek aid from dermatology, it will not be effective; patients will prolong
poisoning and continue to damage their health, and thus the solution is not utilized efficiently.
However, other entities, like emergency rooms, will be the first contact for patients that reach for
help, as presented in the cases in the literature review, suggesting that patients are tested and
diagnosed for mercury poisoning in that encounter. Emergency staff and dermatologists should
collaborate to identify cases of mercury poisoning caused by using SLP. The next step is to
include educating primary care providers and emergency personnel such as EMTs, nurses, and
doctors to identify the signs of mercury poisoning due to SLP use, thus, understand the
connection to referring to a dermatologist for treatment.
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A third limitation is that this thesis only focuses on mercury based SLP. Illegal SLP contains beyond the safe amount of hydroquinone and certain steroids (Saling, 2011). As stated in the background, these SLP are prohibited to sell and use in the U.S. and other countries.

**Future Recommendations**

Although there are several cases of mercury poisoning from skin-lightening products in current literature and government websites from the U.S. and countries around the world, there is a lack of specific data on the mortality and morbidity of mercury poisoning due to SLP among federal and government entities, such as the Centers for Disease Control and Prevention (CDC), which could be due to a lack of clinical diagnosis. In support of the two recommendations above, it is essential to strive to enforce SLP proactively and for government agencies to consider regulations urgently. Thus, the solution is to promote establishing a clinical diagnosis practice for identifying mercury poisoning due to SLP use. As well as to support social media campaigns, non-profit campaigns, and celebrities to support the fight against colorism by promoting medical education for dermatology to include harm reduction of SLP in their practice and find practical tools to diagnose patients of mercury poisoning due to the products (Pollock et al., 2021). The importance of implementing both recommendations to strengthen regulation and enforcement and promote health education to embrace natural beauty and become more intelligent cosmetic consumers indicate positive changes to this global public health issue. Establishing consistent and up-to-date data on morbidity and mortality of mercury poisoning due to SLP use will allow this public health issue to bring more awareness and increase knowledge of the problem in communities, allowing for funding and government attention and, specifically, opening doors for policies worldwide to keep POC communities safe from harmful business/manufacturer practices and products.
Conclusion

Skin-lightening products are a global health issue that affects women of color. There are several cases in the U.S. and other countries where women and children have had adverse health effects due to mercury poisoning caused by SLP, like skin creams. Likewise, federal and government entities have curated lists of SLP containing an illegal amount of mercury unsafe for cosmetics and beauty products. Countries worldwide, including the U.S., lack vigorous enforcement and regulation of SLP due to international importation and manufacturers.

Unfortunately, SLP has high demand among people of color worldwide due to historical discrimination of colorism and want for lighter skin. A comprehensive literature review suggests strengthening enforcement and regulation that includes online selling platforms that need to provide stricter regulations among their sights. The literature review also emphasizes the benefit of utilizing social media, non-profit campaigns, and dermatologists to empower people of color to embrace their natural beauty and remove the need to lighten their skin.

Although individuals and organizations take a stand against the use of skin-lightening products, there is still a need to change the narrative of beauty around the world. As new generations become leaders in society, systematic laws that fight against colorism are steps forward to changing the experience of darker-skinned people in this world, especially women of color who are risking their health to live by unrealistic beauty standards.
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https://support.google.com/ads/policy/answer/11933633?hl=en

https://support.google.com/faqs/answer/2987537?hl=en


https://www.britannica.com/topic/Amazoncom


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https://www.fda.gov/consumers/health-fraud-scams/skin-products-containing-mercury-andor-hydroquinone


https://www.who.int/news-room/fact-sheets/detail/mercury-and-health


Appendix

Figure 1

*International Comparison between Skin Pigmentary Disorder versus Lighten Skin*

(Source From Pollock et al., 2021)
Inventory of Competencies in Capstone Paper and Health Professions Day Presentation

This table is to be completed at the end of the capstone course. Please describe how select foundational and concentration competencies were synthesized through the capstone paper and Health Professions Day presentation. All students will be synthesizing Foundational Competency #19: Communicate audience-appropriate public health content, both in writing and through oral presentation. In addition, choose a minimum of 4 more competencies (at least one of which from the concentration list and describe below how they were synthesized through the activities that contributed to the completion of your paper and presentation. Include this completed inventory as an Appendix to your Capstone paper.

<table>
<thead>
<tr>
<th>MPH Foundational Competencies</th>
<th>Description of how used for Capstone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evidence-based Approaches to Public Health</strong></td>
<td></td>
</tr>
<tr>
<td>1. Apply epidemiological methods to the breadth of settings and situations in public health practice</td>
<td>Analyzed and synthesized case studies data across multiple studies and developed charts of key components of the health problem.</td>
</tr>
<tr>
<td>2. Select quantitative and qualitative data collection methods appropriate for a given public health context</td>
<td>Quantitative and qualitative data was used to illustrate the health problem</td>
</tr>
<tr>
<td><strong>Public Health &amp; Health Care Systems</strong></td>
<td></td>
</tr>
<tr>
<td>5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings</td>
<td>Analyzed systems across national and international settings affecting the public health issue in the paper, and established a socioecological model, and made recommendations based on gaps after a comprehensive review of the literature.</td>
</tr>
<tr>
<td>6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges</td>
<td>Mercury in skin-lightening products is a social stigma, in which colorism was identified as a social inequity that dictates</td>
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<td>“AM I LIGHT ENOUGH?”</td>
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<tr>
<td>to achieving health equity at organizational, community and societal levels</td>
<td>health outcomes for women of color. Implemented a culturally competent solution for the public health issue.</td>
</tr>
<tr>
<td><strong>Planning &amp; Management to Promote Health</strong></td>
<td></td>
</tr>
<tr>
<td>8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs</td>
<td>Analyzed solutions that engage in culturally competent values to promote public health.</td>
</tr>
<tr>
<td>11. Select methods to evaluate public health programs</td>
<td>Utilized the process of a Logic Model to analyze implementation of solutions.</td>
</tr>
<tr>
<td><strong>Policy in Public Health</strong></td>
<td></td>
</tr>
<tr>
<td>14. Advocate for political, social and economic policies and programs that will improve health in diverse populations</td>
<td>Advocate for enforcing and regulating skin-lightening products in the U.S. and worldwide throughout the paper.</td>
</tr>
<tr>
<td>15. Evaluate policies for their impact on public health and health equity</td>
<td>Evaluated current cosmetic policies in the U.S. and worldwide, as well as online platform policies that impact public health and health equity for women of color.</td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
<td></td>
</tr>
<tr>
<td>16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making</td>
<td>Empowering public health leadership by advocating for women of color to shift health behaviors and be better consumers; gain knowledge of poorly regulated cosmetic products.</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>19. Communicate audience-appropriate public health content, both in writing and through oral presentation</td>
<td>Outlined, drafted, and finalized Capstone paper including a literature review, recommendations, and implications on a current public health problem. Created a slide deck based on the Capstone paper and delivered an oral presentation at Health Professions Day in front of an interprofessional audience.</td>
</tr>
<tr>
<td>20. Describe the importance of cultural competence in communicating public health content</td>
<td>Solution is a culturally competent approach that emphasizes the need for</td>
</tr>
<tr>
<td>Competency</td>
<td>Anticipated FW Activity</td>
</tr>
<tr>
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<td><strong>Systems Thinking</strong></td>
<td><strong>Health Policy Leadership Concentration Competencies</strong></td>
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<td>22. Apply systems thinking tools to a public health issue</td>
<td><strong>AM I LIGHT ENOUGH?</strong></td>
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<td>better health outcomes for vulnerable communities, and ways to advocate for their health.</td>
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<td>Apply Proposition 65 as an existing initiative to a solution for online selling platforms demonstrates leveraging of what works in the field of public health.</td>
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<td>3. Formulate efficient health policy change recommendations through the analysis of proposed health policy initiatives that could affect health outcomes of vulnerable populations</td>
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<td>4. Develop recommendations to improve organizational strategies and capacity to implement health policy</td>
<td>Reviewed the literature and identify gaps in existing strategies for cosmetic policy. Made recommendations for the federal level in the U.S., through a Logic Model of steps for implementation.</td>
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<td>5. Analyze policy options to address environmental health needs at the local, state, and federal levels</td>
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