

**Hmong College Student Perceptions and Experiences with Mercury Containing Skin
Lightening Products in St. Paul Minnesota**

By

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Abstract

This study examines the behaviors, experiences, and attitudes towards skin lightening products of Hmong college students in Saint Paul, Minnesota during Fall of 2017. The role of colorism/racism is well-known to result in the use of skin lightening products globally. The Minnesota Department of Health and Minnesota Pollution Control Agency recently identified the use of mercury based products in the Hmong community as a significant health concern. Current outreach surrounding the presence of mercury in these products is minimal and knowledge of the products containing mercury and/or the consequences of mercury are unknown to the community. Four focus groups were conducted at three local colleges with members of college Hmong Student Associations. Our findings reveal familial and community relationships, generational differences, and American and contemporary Korean (K-pop) culture influence Hmong American beauty ideals. This research contributes significant knowledge to our understandings of how and why skin lightening products are used in the Hmong American community and is vital for developing educational outreach within the Hmong community.

Key Words: Hmong, Mercury, Skin Lightening, Colorism

Introduction:

The use of skin lightening creams and products is a worldwide phenomenon. A recent World Health Organization assessment finds nearly 40% of women surveyed in five Asian countries and up to 77% of women from sub-Saharan African report regularly using skin-lightening products (WHO, 2011). Skin lightening is a ten-billion-dollar industry (Lopaciuk and Loboda, 2013) and is forecasted to become a twenty-three-billion-dollar industry by 2020 (Global Industry Analysts, 2009). People of color worldwide are negatively impacted by racism and colorism. Colorism is defined as discrimination that privileges light-skinned people over people with darker skin (Hunter 2005, 2007). The shade of a person's skin affects people in the following areas: jobs and earning potential, education opportunities, social status, perception of beauty, and marriage potential (Hunter, 2007; Hochschild and Weaver, 2007; Li et al, 2008).

According to the 2017 American Community Survey there are 310,000 Hmong living in the U.S. and Minnesota with 85,263 Hmong has the largest urban Hmong population in the U.S. (Census Bureau, 2017; Minnesota Historical Society, 2017; Vue and Rodriguez, 2018). Mercury is an ingredient found in products used by the Hmong community in St. Paul, MN (MPCA, 2017; Norfleet, 2014). Globally, mercury is considered one of the top ten chemicals of public health concern (World Health Organization, 2018) and is commonly found in imported skin-lightening products (Copan et al., 2015; McKelvey et al., 2011; CDC, 2012; Adawe and Oberg, 2013). Mercury can cause headaches, irritability, hypertension, and neurological and renal damage, to name a few (Copan et al., 2015; CDC, 2012). The FDA considers cosmetics products adulterated if they contain at least 1 part per million (ppm) mercury (Requirements for specific cosmetic products, 2017). Minnesota also prohibits the sale of cosmetics containing mercury (Mercury emissions reduction, 2016). Skin lightening products are sometimes used multiple

times per day, and are also used by women throughout pregnancy and breastfeeding (Copan et al., 2015; CDC, 2012; Adawe and Oberg, 2013). They can cause elevated mercury levels even in household members who do not use the products (Copan et al., 2015; CDC, 2012). Skin lightening products are used to reduce melanin pigment in one's face or skin. Although these products can help with scars, blemishes, and acne, they do have negative effects on the body. Some of these products may contain mercury. The World Health Organization (WHO) International Programme on Chemical Safety considers Mercury one of the ten most dangerous chemicals for public health concern (World Health Organization, 2010).

This article will report on focus group research and the development of public health educational outreach materials created to target Hmong Americans in St. Paul, MN as part of an undergraduate Public Health Sciences Senior Seminar Capstone course. Twenty students participated in this research project, directed by the professor and advised by key members of the Mercury in Skin Cream Workgroup. Meetings with our local state Department of Health revealed a new and under-resourced inter-agency initiative, the Mercury in Skin Cream Workgroup, to address the use of illegally obtained and toxic skin lightening products in the Twin Cities. The Workgroup was formed with multiple agencies (Minnesota Department of Health, Minnesota Pollution Control Agency, local public health and environmental agencies), and community partners, but no dedicated staff or resources for addressing mercury in skin lightening products (Minnesota Pollution Control Agency, 2017). Therefore, progress was slow. The Work Group's stated purpose is: "To reduce exposures to mercury-containing skin-lightening products through community education and the development of outreach materials." The Hmong community was of particular interest to MDH and MPCA because of previous actions taken at the HmongTown Market in St. Paul, MN to collect mercury based products

(Minnesota Pollution Control Agency, 2017) and the MNFeet project preliminary results identified Hmong women as having elevated mercury levels as a result of skin lightening products.(Norfleet, 2014; MDH 2016; Minnesota Family Environmental Exposure Tracking, 2017). Additionally, MDH already had work in the Somali community underway (Adawe and Oberg, 2013). Initial discussions indicated a need for targeted search to serve as a foundation for a public health educational outreach campaign.

Hmong Community

Despite increasing numbers the Hmong remain among the most understudied racial/ethnic groups in the United States today (Perez and Thao, 2010). Over 200,000 Hmong individuals immigrated to the U.S. from South China, Laos, and Thailand after the 1970's following the Vietnam War (Hmong in Minnesota, 2012). During the Vietnam war, the Hmong were targeted by communist powers for aiding Americans. After pulling out of Vietnam, the U.S. left the Hmong to fend for themselves, subsequently leading to the brutal persecution of the Hmong people (Vang and Flores, 1999). Since that time, there have been several waves of Hmong refugees who have resettled in the U.S., often accompanied by media and public policy hostility based in part on the assumed profound divide between Hmong culture and U.S. mainstream society (DePouw, 2012). Understanding the reasons for the diaspora of Hmong refugees is crucial for understanding the socio-cultural dynamics of the Hmong population today. Hmong American families are not well understood in the public and academic spheres. As with many refugee populations, the Hmong were not prepared for migration to the United States. "They experienced tremendous acculturative shock upon resettlement in the late 1970s and 1980s and have continued to face multiple social, cultural, educational, economic, and

institutional barriers and challenges” (Lee et al., 2009, p. 550). Vue and Rodriguez (2018) argue: “As in most states, educators, youth workers, and policy makers know little about the unique characteristics and well-being of Hmong youth. This lack of information is due to schools, the state, and the U.S. Department of Education classifying Hmong students as Asian, combining them with students from all Asian origins” (p.2). As of 2000, approximately 52.7 percent of Hmong residents in Minnesota completed no education (Vang, 2008). Xiong’s (2012) in-depth analysis of the 1990 to 2010 U.S. Census demonstrates Hmong Americans attained significant improvements in English language ability, attendance at higher levels of education, and higher education completion. “Specifically, the proportion of Hmong Americans aged 3 or older who reported attending college or above increased from 13.2 percent to 26.7 percent” (Xiong 2012, p.9). Further, “this three-fold increase within the span of 20 years is remarkable considering that, throughout the 1970s, 1980s and 1990s, the vast majority of Hmong refugees arrived in the U.S. with less than a high school education (Xiong 2012, p.10). Despite these improvements today Hmong Americans continue to face challenges accessing education. Hmong families desire to see their children succeed in America (Vang, 2008) and like other immigrants to the U.S. want to balance assimilation and close connections to their culture of origin (Berry, 1997). As a result, there is evident loss of language and culture among the younger generations who attend school and integrate into American popular culture (Franzen-Castle and Smith, 2012).

Franzen-Castle and Smith’s (2012) research with the Minnesota Hmong community examines younger and older generations and their interactions with medical frameworks and demonstrates the complex situation that envelopes Hmong people’s lives. Hmong immigrants are well-known for practicing medical pluralism, however medical practices and tendencies differ across demographics within the Hmong community (Capps, 1994; Johnson, 2002). “Younger

participants distrusted treatments available from medicine women because of unknown ingredients, quantities, and education level. Younger adults preferred Western over traditional medicines because there is a supposed reference point and standardization” (Franzen-Castle and Smith, 2012, p. 6). Patricia Nuttall and Filomena C. Flores focus on medical practices within the Hmong community and find these communities tend to “not subscribe to preventative health care practices or health maintenance as it is known in the United States” (Nuttall and Flores, 1997, p. 248). Reasons for this within the Hmong community may be due to the institutional barriers previously mentioned, especially when accessing healthcare. Other “literature suggests that recent immigrants are more likely to encounter language barriers in accessing the U.S. healthcare system” (Perez and Thao, 2010, p. 2) and therefore “are less likely to have health insurance” (Perez and Thao, 2010, p. 2). Hmong may be more likely to rely on non-traditional healing methods because of such barriers (Perez and Thao, 2010).

Additionally, family, community, and social hierarchies within Hmong culture play influential roles on behavior, health, and organization. Research on Hmong immigrants demonstrates individuals and families depend on and highly value the family and clan system (Moua, 2003; Tatman, 2004). The value of family and sense of community is defined as the most important dynamic of Hmong culture (Tatman, 2004; Nishio et al., 1987; Lee, 1996). “The individual is seen as a product of all the generations of the family, and the welfare of the family and community has priority over individual wants or needs” (Tatman, 2004, p. 224). This approach of privileging family needs over individual wants has consequences for many areas of Hmong life including how to problem solve and make decisions (Tatman, 2004).

Colorism/Racism in Global/Local Context

Globally, ideas about skin color are connected to status and privilege, with light-skinned individuals experiencing benefits and dark-skinned individuals experiencing negative consequences. This is referred to as colorism and, in the U.S., is connected to ideologies of race and racism (Dixon and Telles, 2017; Hunter, 2011). Research, such as Hunter's (2005, 2007, 2011), connect the global use of skin lightening products to ... "The quest for white beauty" (Hunter, 2011, p. 145) and consider it a "form of 'racial capital' gaining its status from existing racial hierarchies" (Hunter, 2011, p. 145). Colorism research in the U.S. tends to focus on African Americans (Dixon and Telles, 2017), but "a growing literature suggests that lighter skin is often, though not uniformly, associated with better life chances for other nonwhite groups in the United States" (Dixon and Telles, 2017, p. 408). Further, in the U.S., immigrants with darker skin from areas outside the U.S. are worse off in terms of wealth (Painter et al. 2015) and income (Dixon and Telles, 2017; Hersch, 2011; Keith and Monroe, 2015; Livingston and Hall, 2011).

The success of the global skin-lightening and bleaching industry is considered evidence of a globalized preference for lighter skin (Dixon and Telles, 2017). This multi-billion-dollar industry capitalizes off of colorism and racism by advertising directly to people's desire for lighter skin and a better life. Public health discourse regularly portrays the skin-lightening practices of people around the globe as evidence of a lack of knowledge and understanding about the consequences of these harmful products, or as evidence of people's personal negative attitudes towards their body, women in particular. This discourse fails to engage with the very real discrimination, racism and colorism people of color experience (Dixon and Telles, 2017; Hunter 2011). Hunter (2007), describes skin-lightening products "as a rational response to the perceived (and often real) association between whiteness/lightness and better life outcomes that

is promoted by multinational corporations and the mass media” (Dixon and Telles, 2017, p. 411). Others go further in this thinking, seeing the behavior as pathological (Dixon and Telles, 2017), Hall in his edited volume, *Melanin Millennium* (2013) presents “bleaching syndrome” as the “conscious and systematic process of self-denigration and aspiring to assimilation on the basis of alien ideals, resulting from colonial domination,” (p. 2) which situates the practice of skin-lightening and the desire to appear lighter within a global and historical context of racism (Westerhof, 1997).

Many people of color around the world are compelled to use skin-lightening products to attain societal privileges. “The desire for white and fair skin is a global phenomenon especially in non-white cultures and is not limited to Asian contexts. African, South American and Middle-Eastern cultures also have their own traditions of skin whitening and lightening” (Li et al., 2008, p. 6). For example, in India the terms associated with white are; beauty, purity, cleanliness, and happiness while the terms associated with black are; dark, dirty, wrong, and Hell (Li et al., 2008). Currently 40% of women in Asia report using skin lightening products and in India 61% of the dermatological market consists of skin lightening products (World Health Organization, 2011). Social status is intertwined with skin color and “... dark skin has an inferior social meaning. Although not related to the caste system, the scale of the social groups from high to low parallels the skin color from light to dark” (Westerhof, 1997, p. 574).

Advertisements for skin lightening products exist globally in an attempt to shame people with darker skin, increase the consumer’s anxiety about their skin tone in relation to their social status, and ultimately show how much better a person's life could be if they had a lighter skin tone (Nadeem, 2014). Recently advertisers in India also target men to use skin lightening products. For example, an advertisement for the skin lightening product *Fair & Handsome*

shows a man using a women's skin lightening product only to be taunted that it is not strong enough for his "rough and tough" skin (Nadeem, 2014, pg. 227). He then receives a skin lightening product made for men, his skin immediately lightens, and a young light-skinned woman falls into his arms (Nadeem, 2014). The message is clear, men will benefit from lighter skin.

Skin tone contributes to a social divide in the U.S. as well. Latinos, the largest ethnic group in the U.S., are categorized into two different groups based on their skin tone, black Latino and white Latino (U.S. Census, 2011). The term "Black Latino/a/x" refers to a Latin American or Caribbean person of African ancestry who is brown or dark skinned, or is perceived by others racially, as Black (Cuevas et al., 2016). "White Latino/a/x" refers to a Latin American or Caribbean person of European ancestry or white skinned who is perceived by others racially as white. Black Latinos experience different advantages and disadvantages than White Latinos in the U.S. race-conscious society (Cuevas et al., 2016). For example, former baseball star Sammy Sosa, who many categorize as a black Latino, attracted international media attention when he appeared at the 2009 Latin Grammy Awards with notably lighter skin than during his baseball career (Mitchell, 2009). Sosa also expressed interest in negotiating an endorsement deal with the cosmetic company that manufactured his skin lightening product (Mitchell, 2009).

Many immigrants coming to the United States wish to maintain their traditional ideas of beauty. Minnesota is home to one of the largest Somali communities in the United States with approximately 32,000 people (U.S. Census, 2011). In Minnesota, women in the Somali community, "believe lighter skin is more beautiful than darker skin. They see having light skin as more socially acceptable and believe it will increase their chances of finding a husband." (Adawe and Oberg, 2013, p. 48). Somali women use skin lightening products during pregnancy

and after to “get rid of dark spots” in order to appeal to men (Adawe and Oberg, 2013, p. 48).

The skin lightening products the Somali community use are illegally imported from Asia or the Middle East and sold at local markets. The Minnesota Department of Health (MDH 2016) recently analyzed twenty seven skin lightening products from local markets and discovered eleven contained mercury levels higher than the legal level of 1 ppm (FDA 2017). In the U.S. this is not isolated to Minnesota, skin lightening products containing mercury have been found in Chicago, California, and New York (Adawe and Oberg, 2013).

Consequences of Mercury in Skin Cream

Inorganic mercury is a common ingredient in skin lightening products and toxic to humans as well as the environment. Products containing over 1 part per million of mercury are banned by in the United States by the FDA (FDA 2017). The European Union and multiple African nations have a ban on mercury in any cosmetic product (World Health Organization, 2011). Mercury containing skin lightening products are illegally imported into the United States and commonly do not have labels listing the ingredients present. If there is a label, mercury can go by many names which contributes to the uncertainty and lack of awareness. Some additional names mercury might go by are: mercurous chloride, calomel, mercuric, and mercurio (FDA 2017). Labels may also be in a different language creating a challenge for consumers and vendors to know what is in the skin lightening product. The combination of products having no label, mercury being listed by different names, and the labels being listed in a foreign language make it difficult for consumers to know if the skin lightening product they are using is safe.

Mercury can enter the body through inhalation of vapors, ingestion of mercury containing products, or most commonly by absorption through the skin. The rate of absorption of mercury into the skin varies based on the concentration of mercury in the product (Chan, 2011). Ingestion

of mercury can occur after the application of products that contain mercury are used around the mouth and from hand-to-mouth interaction. This is a particular concern for infants and mothers who are breastfeeding, pregnant women, and other family members who are in close contact with the product user (Fisher and World Health Organization, 2003; MDH, 2011). Side effects of mercury poisoning include: skin rashes, skin discoloration, anxiety, depression, and kidney damage (World Health Organizations 2011). For those with the signs and symptoms of mercury poisoning, chelation therapy is a suggested method of treatment (Fisher and World Health Organization, 2003).

Methods:

As part of a Senior Seminar Capstone course at Hamline University, this project consisted of 20 Public Health Sciences Major student researchers, a professor of Public Health Sciences, and three professional advisors from MDH and MPCA. We also consulted with and received presentations from MDH, MPCA, a local practicing dermatologist, and the Hmong American Partnership.

To recruit Hmong college students, our targeted demographic, we contacted three local University Hmong Student Organizations (HSO), all of which responded favorably to our request to conduct focus groups. Each HSO invited us to their normal meeting time to ensure participation by as many members as possible. Eligibility requirements for participation in the focus groups included ethnically identifying as Hmong and being a college student.

In total, we conducted four focus groups (with 8-13 participants each), lead by two facilitators each. Focus groups consisted of 60 minute sessions. At the beginning of each session the study procedures were explained, participants were assured of anonymity and informed consent was obtained. All participants completed a short de-identified demographic survey

(results in Appendix 1). To comply with focus group best practices, we offered our participants food, refreshment, and an incentive (Target gift cards). Funding for food, refreshment and gift cards were provided by Hamline University, the Minnesota Pollution Control Agency and the Minnesota Department of Health. During the focus group, questions were displayed on large screens using google slides – background research demonstrates Millennials prefer an interactive and digital/visible display (Angelfish Fieldwork Blog, 2017). Focus group sessions were recorded with iPad/iPhone and two note takers took notes of participant responses using laptops. At the end of each focus group the students were provided with an informative pamphlet on the harmful effects of Mercury (FDA, 2012). Overall, focus groups participants were eager, enthusiastic and interested in the subject. One group specifically desired to know our findings and receive more directed education on the impacts of mercury by asking that we return with our findings and educational materials.

Focus group transcripts were coded for the presence of themes. Coding was based on deductive themes linked to the study's aims and research questions and inductive themes arising from repeated transcript readings. Coded text was examined for these major themes and representative quotes to illustrate these themes. Coded transcripts were reviewed by investigators for agreement in assignment and analysis.

Results:

A simple analysis of the collected demographic data reveal two-thirds of the participants of the focus groups are women, and one-third are men. Significantly, two-thirds of the participants are first generation. In this context first generation signifies they are a child of an immigrant. Shamanism is the dominant religion represented by focus group participants and the majority of the participants come from a household of five or more people.

Seven main themes emerged from the data collected from the four focus groups conducted with three area college Hmong Student Organizations. The findings demonstrate generational differences create distinct beauty ideals, the younger generation is influenced by both American and Korean beauty ideals, familial and community relationships influence the perception of beauty and the use of specific beauty products, education surrounding ingredients (such as mercury) in skin lightening products is minimal, skin lightening products are used across all generations but is primarily used by Hmong elders, and finally in order for outreach to be effective it must be consistent and through multiple forms of media.

Generational differences contribute different beauty ideals.

The older generation's traditional beauty ideals are largely viewed by the students as influenced by their place of origin, usually Laos or Thailand, with ideal women having fair, unblemished and light skin, and long black hair. In the Hmong community, as one generation evolves from another and as assimilation/acculturation occurs more strongly with the younger generations, different ideals of beauty are found between generations. We found students separate their beauty ideals from their parents and grandparents by using words like "traditional" or "back in the old days." The students identify their parent's ideal image of beauty as: dark black hair and smooth light skin.

5.2.2 Yeah it's usually long black straight silky hair, umm white soft skin, and yeah that's really what they think is beauty in the Hmong culture.

3.4.11 So, for example, my grandma she's traditional. She doesn't like blonde hair, bleached hair, or brown hair. She's like you have to have black hair especially for girls. Black hairs like the standard [color to be a] beautiful Hmong women or girl.

Students do not share these views and instead are more open to a wider range of possibilities.

Their perspectives on beauty can be separated into two distinct categories, both of which differ from their parent's "traditional" way of considering beauty: Westernized and Korean Beauty.

Western/Americanized beauty ideal for the younger generation.

The younger Hmong generation is more open and interested in American or Eurocentric beauty standards. Specifically using products to darken, tan, or bronze the skin, a clear departure from the light and fair preferences of their parents and grandparents. They view the elders as frowning upon body alterations and hair color changes that detracts from an "authentic" Hmong look.

2.3.4 I think our parents, their generation, they think to their eyes what looks more beautiful is when a girl has like lighter skin or pale, fair skin, um, but then like when I look at our generation now, some girls are like "oh, I wanna get a tan" or like "we put bronzer on to like define our facial features more or to like give us a tan" . . . and I've experienced something like that. Also, I just feel like, um, they expected kids here in America to be lighter or paler compared to kids back home in Thailand and Laos so there are generational differences.

10.3.4 We use bronzers too, like to define your cheekbones and stuff. And we go like tanning. [But] Not me, but other people [do]. [Americans believe] having tan skin is beauty. Every country has its own beauty standard.

The students report they are influenced by mass media when it comes to beauty ideals and standards, particularly by social media platforms. Hmong students also take advice and watch makeup and beauty tutorials of local, national and international bloggers of Asian descent. These bloggers offer diverse perspectives on beauty which diverge from the "traditional" preferences of their parents and the older generations. The younger generation are open to change, such as different hair colors, piercings and even tattoos. The older generation does not participate in these types of body alterations, and does not approve of them in the younger generation.

Korean beauty ideals influence the younger generation.

The participants explained the younger generation's beauty ideals are not only influenced by their parent's and grandparent's traditional views as well as living in the United States, but also by Korean cultural ideals because of the strong connection to the South Korean Entertainment Industry, specifically K-pop (a specific genre of music originating in South Korea). Beauty, as demonstrated by the Korean entertainment industry, emphasizes hair highlights, light skin, big eyes, and a thin body. The younger Hmong generation aspire to look like their idols.

4.2.2 Korean celebrities [Laughter in the room among participants]. It's true, cause most of the Hmong kids these days . . . don't really care about Hmong culture I feel like they like Korean culture a lot so I feel like it influences what our idea of beauty is in our community

The students reference specific stars in the industry that influence them to adopt Korean and K-pop beauty ideals. Several of the focus groups participants even described a specific complex Korean facial beauty regime that is widely used among the younger generation.

6.3.6 Especially with Asian women. You wash, cleanse, moisturize. They follow the Korean beauty steps where there are 7 to 10 steps.

The students conveyed their perception that Korean individuals are typically lighter or more fair skinned than Hmong Americans, which influences Hmong community members to use skin lightening products to achieve this lighter and "softer" Korean look.

10.3.4. I feel like a lot of Hmong people see beauty as pale skin. Like I know in Korea, they like pale skin. Everyone wants to have pale skin. A lot of Hmong want to look like Koreans [too].

The participants also pointed out they regularly see Korean skin lightening products directly advertised to the Hmong community.

10.16.4 I feel a lot of [the] Hmong community now a day is influenced by the Korean culture [especially] the Hmong girls, but I don't know [for sure]. I guess, it's what people

look at now. Some girls like American beauty [ideals], but some girls like Asian beauty [ideals]. So, I feel like it varies... but I feel it's [mostly] the Korean beauty standard.

These products are widely endorsed and used by Korean pop stars and celebrities and are therefore considered desirable, good, and safe products. Young Hmong women believe the products will help them to achieve the same fair skin as Korean celebrities.

Relationships and community influence beauty and use of beauty products.

In all four focus groups participants discussed how important siblings, peers, and friends are at shaping their ideas on beauty and influencing the products they buy and use. Further, they explained the role of social media influencers from platforms such as YouTube, Instagram, and Facebook -- especially young Hmong American and Asian American women with a focus on beauty and beauty tips.

4.3.6 I think, especially for a woman, we are influenced by the people we are in contact with, whether that be family, friends, or strangers. I think, regardless of who we are and how we view beauty, we are encountered with [these challenges]. Without thinking, I judge her or myself if I see someone with good skin. Not just famous people. That is always something I encounter with women, especially with teenagers right now, they are going through a phase in life to [look] their best.

Many participants talked specifically about their siblings influencing the types of products they use.

2.7.4 My sister's influence me as well, we buy products and use them together and we've gotten to the point where we know what we like and who likes what.

6:4:1 I get influences from my family. I started liking makeup after a while. My sister puts makeup on me and then I got used to it.

In the focus groups, participants also reported family and close friends as the ones they consult regarding beauty issues. Mothers, sisters and aunts are especially influential. They tend to be older and have more knowledge about the issues they face and are therefore trusted. One participant notes:

8.4.10 When I was a teenager, I started to break out. My parents have clear skin. They gave different products to try. One product had alcohol in it and it wasn't good for my skin. So I started breaking out. It got kind of bad but I think we went to go see a doctor and they prescribed medicine that had to do with hormones and also a product.

While respondents from all four focus groups listed influences from a variety of sources, family was a constant. Many talked about consulting with family members, specifically female family members, about beauty products and routines, and when speaking of Hmong culture, many spoke of the influence of the older generation.

8.1.5 I talk to my [female] cousins. I am uneducated [on beauty products] because I am a guy, so I ask girls.

Family involvement in beauty decisions was consistent among all participants. Many discussed how family also offered unsolicited advice and feedback:

8.2.2 If somebody sees you with something they will just come up and be like, "oh you have that, just try this and this" and you didn't really ask them for it...

10.3.4 I dyed it a lighter color of brown and he constantly, every day was like, "dye your hair back to black, dye back to black."

Many participants also discussed how multi-level marketing sales affect their choice of beauty products, because friends and family members participate in multi-level marketing and try to sell products to the community.

2.7.2: Um... like if she sees [something], on facebook right now ... the Hmong woman like[s] to go live and do 'biddings' [the focus group said, 'oh yeah' in unison to this] and sell makeup products. So, my mom will watch those and then she will see ... a product she likes and then she will just buy it and buy and buy it.

The students note their mothers are particularly susceptible to these schemes and this is a major way they use Facebook Live. They trust these multi-level marketing sales from Hmong influencers.

Participants easily listed how Hmong culture and families influence perceptions of beauty, and how this can be interpreted as personality characteristics. For example, looking

beautiful or adhering to Hmong beauty standards can mean you are a nice person who is clean.

Alternatively, not looking good can mean you are lazy -- a label specifically for males.

2.5.2 - Yeah it's usually long black straight silky hair, umm white soft skin, and yeah that's really what they think is beauty in the Hmong culture.

We have found that familial and generational pressures play a substantial role in the usage of skin lightening products. Older generations tend to hold traditional values and beliefs with high esteem. Pressures to conserve these traditional values strongly influence the decision in using skin lightening creams amongst younger family members.

2.8.1 ...my mom tried to make me use it. [This] Asian product. It was meant for when you get marks on your skin and she used the to get rid of freckles. I applied it a couple times. She uses some over the counter too.

7.8.1 My dad doesn't like the mole on my face. And they really dislike it and [tried] to get rid of my beauty mark...

2.3.4 I think our parents, their generation, they think to their eyes what looks more beautiful is when a girl has like lighter skin or pale, fair skin

Finally, participants acknowledge the larger community and context they live in. One participant discussed the impact of growing up in a white community with white beauty standards.

7.16.4 But if you hang out with other people, like white people, you might want to be pale. I guess it depends who your friends are and the community.

Education/Knowledge of mercury in skin-lightening products is minimal.

Participants were surprised to hear about the dangers of these products and were clear they, their family members, and their community are uninformed about the ingredients in skin lightening products. This lack of knowledge stems from skin lightening products commonly not having labels with the ingredients listed, or the ingredients are listed in a language that the vendors and consumers may not understand. Participants acknowledged that they often do not

research the items they use, and base what they use off of recommendations of people they know and trust, such as their mother or sister(s). Since they trust the people they are asking for recommendations they also trust the product(s) they are using.

10.3.3 Most products, if they are not in English you don't get any descriptions at all

Most participants did not know about the dangers of mercury specifically, or that mercury is a commonly used ingredient in skin lightening products.

10.3.3 What are the chances that a 50 year old Hmong grandma knows about Mercury?

When asked to describe any symptoms associated with mercury poisoning in the community, the responses were mixed. Most had not seen any of the described side-effects in their community because they were unaware of the issue of mercury in skin lightening products to begin with. A few participants noted symptoms of exposure to mercury, such as: skin rashes, breakouts, dizziness, headaches, and bleaching of the pillowcase. The people that experienced these symptoms were also known to be using skin lightening products. Many of the students were genuinely concerned for family members and were appreciative of the FDA Mercury handouts we provided.

Skin-lightening products are believed to be more widely used by elders.

All four focus groups perceived the majority of mercury based skin lightening products users to be either their parents age or older Hmong adults.

10.3.6 A lot of elder Hmong women in their 40s, 50s and 60s all grew up in Thailand and Laos. That is what they're used to and it works for them. They've tried American products...it doesn't work for their skin type.

2.7.2: The other day I went home for the weekend and I saw that she [mother] was using skin whitening creams and I was kind of [upset] cause I heard there is a problem going on

with that. So I was kind of angry at her and I yelled at her and I told her not to use that. So hopefully she's not using it anymore, but she she would like switch on and off between makeup products and ... she will always get bad skin and she never never figures out why she's getting the bad skin, but I'm like, 'because you are using too many products!' So yeah.

Students mentioned feelings of frustration towards older family members who use these products, not just without knowing what is in the product, but in succession and many types at once. The younger generation has a clear sense about what is appropriate behavior around product use -- not using too many products in combination, or the need to vet products through online user reviews, or the need to buy from a reputable source.

A few students acknowledged some users are of the younger generation, but few admitted to currently using these products themselves. The older generation often rely on word of mouth reviews from people they trust, and they also believe products imported from Asia are made for Asian skin, unlike American products which are perceived to be made for white American skin. The students declared themselves much more open to using American products and reading reviews online before purchasing beauty products. They described feeling a trust for products made or regulated in the U.S., and lacking trust for products which are imported and unregulated.

Outreach must be consistent and multi-pronged.

Participants expressed the desire for continued education surrounding the topic within the Hmong community. Many agreed outreach on social media is the most efficient means for reaching the younger generation, themselves included. Specifically, beauty tutorials and Hmong beauty vloggers on YouTube and Instagram. Convincing these types of social media influencers, according to the students, would be an ideal way to target younger members of the community. Participants also expressed the need for educational outreach to target local Hmong radio, Hmong news, and Hmong TV stations. For the older generation, it was specifically

recommended that outside of local media (radio, news, TV) Facebook Live is a commonly used social media outlet. They expressed that this might be surprising and unknown by people outside the community.

10.15.3 I think in the Hmong community there's certain demographics. There's the elders, our parents, and then there's us. I feel like for us, we are all on phone so social media and everything. I feel like the Hmong elders or our parents have the Hmong radio, Hmong TV., Hmong conference, Hmong YouTube, Facebook Live and stuff. So, I feel like these would be better for like our parents and older generation. For us, like social media, YouTube, Facebook.

The students also emphasized the important role Hmong community-based organizations play in the community, and that specific leaders and vendors have a lot of influence and recruiting their support would make a big difference to how this message is received. Across all four focus groups students highlighted that to reach the older generation a multifaceted and consistent approach would be best to create individual behavior change.

3.16.3 It'll take a long time. Be consistent and keep educating them.

Finally, students were eager to learn more themselves so they could educate the older members of the community. One Hmong Student Organization requested a presentation of our findings at their next meeting and in fact we did return to share our findings. As community is a core value in the Hmong culture, the younger generation affirmed they feel a significant responsibility for the health of their elder community members. An education campaign to reach young Hmong community members is likely to have a dual impact of educating the youth directly, and reaching elders by the youth educating the elders by word-of-mouth. The students agreed this is likely to be the most effective mode of reaching the older population over time.

Discussion:

As with all studies, ours had some limitations, the most prominent being we only engaged Hmong college students, not all age groups, education level, and backgrounds. The Minnesota Department of Health, Minnesota Pollution Control Agency, and the MNFeet project recently found elevated levels of mercury in Hmong infants and their young mothers, which indicates that at least some young generation Hmong are using products which contain mercury (Minnesota Family Environmental Exposure Tracking, 2017; Minnesota Pollution Control Agency, 2017; Norfleet, 2014; MDH 2016). Our findings demonstrate that current Hmong college students are not using mercury based skin products. We propose focus group outreach with Hmong participants who are of similar age, but who are not attending college, would reveal additional needed information regarding Hmong attitudes and behaviors around skin lightening products. We are also aware that this study would be stronger had we been able to access older generation Hmong adults. For future research, we recommend further engagement with these two groups.

Our focus group interviews with college-aged Hmong students reveals they believe their elders in this community are most likely to use these skin lightening products because of the deeply embedded cultural standards and desires for fair skin. The younger generation only acknowledge using skin lightening products when their mothers, aunts, cousins, or sisters suggested, or insisted, they use a particular product. The younger generation also has more complex beauty ideals, specifically around skin. Beauty is important, but they have more diverse ideas of what is beautiful, and are influenced by numerous sources regarding beauty ideals. It is clear that many believe fair skin is preferable, but not all. The Hmong college students found their beauty views and general values aligned with their American upbringing, and while they are still interested in lighter skin, they would avoid products they understand to be toxic and

dangerous to themselves. As with any community, we caution against a monolithic or singular conceptualization of a particular community with regard to their ideas, preferences and opinions, and the Hmong are no exception (Capps 2004).

In addition to our seven thematic findings we also learned members of this community identify six recommended modes of communicating the message of the harmful effects of mercury in skin lightening products to members of the Hmong community, young and old. Focus group participants reported the older generation consumes their information from Facebook Live segments where beauty gurus and sales people share beauty information and sell their products. The older generation also tune into Hmong radio stations where there are large conference calls. Listeners can call in, listen, and ask questions to a radio host about specific topics. Both of these modes of media communication are ways to effectively reach the older generation. Social media was mentioned as the most efficient means for reaching the younger generation. Specifically, Hmong beauty vloggers and beauty tutorials on YouTube and Instagram. Convincing these types of social media influencers, according to the participants, would be an ideal way to target younger members of the community.

Consistent with the literature on Hmong communities in the U.S., (Lee, 1996; Nishio et al.,1987; Moua, 2003; Tatman, 2004) strong familial ties play a role in the Hmong community, specifically with regard to beauty and health decisions. One of the strongest relationships is between a mother and her daughter. Many of the participants in our focus groups described a close relationship to their mother. Others explained it was their mothers that first introduced them to skin lightening products and told them to use it. This standard of beauty is passed from one generation to the next.

Similar to the findings of Franzen-Castle and Smith (2012), where young adults are suspicious of products with unknown ingredients and quantities and prefer Western over traditional medicines because there is a sense of a reference point and standardization, the students in our focus groups also prefer to use products that are vetted by people they trust, have online reviews, and are regulated by U.S. FDA policies and regulations. With regard to skin lightening products in particular, the students did not articulate a clear and consistent preference for lighter skin, but rather had differing opinions, referencing K-pop and U.S. celebrities as inspirations for their own beauty style.

The implications of mercury-containing skin-lightening products is not just a local issue, but it exists on an international scale. The role of colorism and racism are well-known pressures in the use of skin lightening products globally (Dixon and Telles, 2017; Hunter, 2011). The findings discussed demonstrate the complexities surrounding the issue at hand. Ethnicity, race, and culture play dynamic roles in the usage of skin lightening products within the Hmong community. Our focus group research demonstrates that skin-lightening is a widespread issue in the Hmong community and that there is a lack of awareness about the harmful effects of mercury containing products. Participants suggested more education is urgently needed to help spread the knowledge that these products are often unsafe, as many of the students are understandably concerned for the health of their relatives.

We know mercury can go by many names and this contributes to the uncertainty and lack of awareness around skin lightening products (FDA 2017). This, along with the products having no label, makes it more difficult for consumers to understand there are risks they may face when using these products. In the focus groups, participants described possible side-effects due to the exposure of mercury which included: skin rashes, breakouts, dizziness, headaches, and bleaching

of the pillowcase. Mercury poisoning can be difficult to diagnose since it can be disguised or interpreted as another illness (Lite, 2008). Symptoms of mercury are nebulous and are challenging to identify and pinpoint the cause. This was seen in the focus group when a majority of the participants described they had not seen the symptoms in their community because they were unaware of the issue of mercury in skin lightening products to begin with.

The information gained from college-aged students is not only insightful, but useful for development of public health outreach materials. Seven overarching themes were found from the focus group analysis. These findings allow for a more efficiently and culturally contextualized targeted public health outreach campaign. Our findings reveal generational, familial, community, and international influences. Moving forward with this information, public health campaigns using multifaceted approaches should be employed in order to educate the Hmong community about the issue of mercury in skin lightening products. It is imperative that insights from the Hmong community are accounted for when planning how to conduct community outreach and education with regard to the use of mercury containing products within this community.

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**Appendix 1:
Demographic data**

Table 1 Demographics of Focus Group Participants		(n = 32*)
		Number (%)
Gender		
Male	10	(32.3)
Female	21	(67.7)
Marital Status		
Married	1	(3.2)
Single	27	(87.1)
Attached	3	(9.7)
Religion		
Christian	3	(9.7)
Animism	1	(3.2)
Shamanism	20	(64.5)
Shamanism/Animism	3	(9.7)
Shamanism/Christianity	1	(3.2)
None	2	(6.5)
Other	1	(3.2)
Household Size		
1 Persons	3	(9.7)
2 Persons	0	(0.0)
3 Persons	1	(3.2)
4 Persons	2	(6.5)
5+	25	(80.6)
Immigration		
Immigrant	2	(6.5)
1st Generation	21	(67.7)
2nd Generation	7	(22.6)
3rd Generation	0	(0.0)
4th Generation	1	(3.2)
Income		
<\$10,000	7	(22.6)
\$10,000-\$15,000	0	(0.0)
\$15,000-\$20,000	4	(12.9)
\$20,000-\$30,000	2	(6.5)

\$30,000-\$50,000	9	(29.0)
>\$50,000	7	(22.6)
N/A	2	(6.5)
Median Age	19.52	±1.93
*One Participant's Data Not Provided		

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