

Skin Care Products and Kidney Health: An Emerging Public Health Concern

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When skin care comes to mind, people think flawless skin with renewed confidence. To make it visually true, various company produces different types of cosmetics and toiletries products to serve their consumers. The modern cosmetic and skin care industries are growing rapidly over last few decades. Millions of individuals are now using moisturizing cream, Lotion, fairness cream, anti-aging products, lipstick etc. in their daily lives. As the beauty business is growing, some company produces low grade products with toxic chemicals to maximize profit. These products are generally considered safe but increasing research evidence revealed that some ingredients may cause toxic effect to human health. Excessive use, exposure period and cosmetics with wrong ingredients can harm vital human organs especially kidney.

Bangladesh is most densely populated country with a population of almost 176 million, where male to female ratio is 0.97 to 1.¹ Peoples especially women are very concern about their beauty and personal care. Today, cosmetics and toiletries products are widely available from city mall to remote village area shops. According to market insider's data, cosmetics and toiletries market in Bangladesh is approximately BDT. 25000 crore annually.² Human skin acts as protective layer to prevent any harmful substance or microorganisms enter into systemic circulation. Toxic ingredients such as mercury, lead, phthalates, cadmium etc. are found in some cosmetics products which are potential contributors to kidney disease.

The toxicity of mercury on human health is well-established. Mercury is sometimes illegally added to fairness cream, anti-aging cream due to its rapid skin

lightening effects. This inorganic mercury is absorbed into the systemic circulation with frequent use of such cream. The filtration unit of human body (kidney) is most vulnerable for mercury toxicity. Accumulation of mercury in renal tissue causes tubular toxicity which further leads to membranous nephropathy which can cause inflammation and finally kidney failure.³ Hydroquinone is an another ingredient which can also damage kidney and liver.⁴

Heavy metals such as arsenic, lead, cadmium, chromium, nickel are found in different cosmetic products (lipsticks, foundations, creams etc.). Long term exposure to these metals can cause oxidative stress, inflammation and chronic kidney disease (CKD). Studies revealed that excessive arsenic and cadmium exposure has been associated with proximal tubular dysfunction and CKD.⁵

"Chemical phenol peel" or "phenol peel" are mostly published product in social media mentioning their users for its ability to remove wrinkles, some forms of acne. The mechanism of this product is to remove layers of skin. The deep phenol peels removes all three layers of skin and pose a higher risk due to their key ingredients such as carbolic acid or phenol. Phenol is well known ingredient that cause badly impact on heart, liver and kidney.⁶

Now-a-days, hair straightening treatments are widely used especially for any special occasion to make the

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hair straighter. In the recent past, formaldehyde is used in hair straightening treatments. Due to severe toxicity, many countries banned it and replaced with glycolic acid derivatives, as glycolic acid derivatives may release formaldehyde in high temperatures and also lead to formation of oxalate, which can cause acute kidney injury (AKI).⁷

Dibutyl phthalates and toluene commonly used in cosmetic product such as nail polishes, lipsticks etc. Both particles may enter the body through dermal absorption and inhalation. Evidence demonstrated associations between phthalates exposure and abnormalities in urinary albumin-creatinine ratio and estimated glomerular filtration rate (eGFR).⁸

Another emerging issue arises due to use of unregulated skin lightening cosmetic products in market. Many consumers think that, these may be safe for their skin. However, some products may contain multiple nephrotoxic substance, e.g., steroids. Lack of proper monitoring and quality controls in low income countries, it further increases the risk of toxicity and kidney injury.⁹

Public awareness regarding safe cosmetic use remains inadequate in many developing countries. Although most commercially regulated products are relatively safe when use appropriately and under supervision of healthcare professionals. Regulatory surveillance of cosmetic manufacturing, labeling of product with true ingredients must be examined regularly. In 2022, Bangladesh Standards and Testing Institution (BSTI) banned 17 face creams with high level of mercury.¹⁰ More surveillance is necessary to prevent the circulation of hazardous products. Here Healthcare professionals, dermatologists and public health authorities must collaborate to create consciousness in public

regarding the potential risk associated with hazardous chemical use. Increasing evidence suggests that, chronic exposure to nephrotoxic ingredients in cosmetic products may contribute to kidney diseases ranging from mild renal dysfunction to nephrotic syndrome and CKD. Greater awareness, stricter regulation and monitoring, continuous research are essential to minimize cosmetic associated renal diseases and promote safer consumer practice.

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