

# Effects of whitening cream: A Cross-sectional study in tertiary care setting

## ABSTRACT

**Aim:** To determine the side effects of skin whitening creams in a tertiary care facility.

**Methodology:** The current cross-sectional study was conducted at the department of dermatology, Peoples University of Medical & Health Science for Women Nawabshah (PUMHSW), Sindh, Pakistan from January 2019 to July 2019. A total of 140 consecutive patients were included in the study matching the inclusion criteria. All the demographic clinical variables and follow-up data were recorded on a proforma designed for the study, the data collected were statistically analyzed and the results were tabulated.

**Results:** In this study we observed various side effects in patients who used whitening creams. Redness showed in 81 patients (57.85%), flushing in 86 patients (61.42%), sensitivity in 99 patients (7.14%), acne in 52 patients (37.14%), thinning of skin in 77 patients (55%), pigmentation in 67 patients (47.85%), telangiectasia in 43 patients (30.71%), wrinkles in 33 patients (23.57%), and hirsutism in 44 patients (31.43%).

**Conclusion:** We concluded that whitening creams used in our facility are strongly associated with several cutaneous side effects.

*Keywords:* whitening cream, acne, pigmentation, wrinkles

## 1. INTRODUCTION

Skin whitening creams act by inhibiting tyrosinase and thus decrease melanin formation. The active ingredients include niacinamide, glycolic acid, magnesium ascorbyl phosphate, and licorice extract. Along with these, some harmful chemicals are also used to enhance the effect of these creams such as potent to superpotent corticosteroids, mercury, and hydroquinone<sup>1,2</sup>. The government regulatory authorities have banned the use of these chemicals in any cosmetics. Mostly these products are not showing their active ingredients, expiry date, or manufacturing place. As these products are used for an indefinite period of time and often in hot and sunny climates which further increases the risk of side effects<sup>3,4</sup>. Recent literature reviewing the side effect of whitening cream showed that the nature of additives and method of application made the complications more serious and complex<sup>5</sup>. Bleaching is a common custom in black Africans<sup>4</sup>.

The use of skin whitening creams is very common nowadays throughout the world. A study in Lagos, Nigeria showed that 49.7% women and 27.6% men use whitening cream<sup>6</sup>. Another study showed 53.3% of men and 71.9% of women use whitening cream in a tertiary institution in Enugu, Nigeria<sup>7</sup>. Similar studies reported of prevalence of 26% in Senegal and 60.7% in Jordan<sup>8</sup>.

In Asian culture fairer skin is associated with beauty, power, and racial superiority. Further promoted by media, linking fair skin to sentiment, magnificence, and career success.<sup>9</sup> Use of these creams is more common in tropical areas like Pakistan. People are using it for various reasons like fairness, melasma, & even in acne

having no background knowledge about their composition and side effects. Skin problems are important because around 40% of Asian women have problems with facial skin spots and use facial whitening creams<sup>10</sup> Skin whitening creams available in market containing a harmful combination of chemicals i.e **steroids**, hydroquinone and mercury. **The** side effects seen include both cutaneous and systemic. Corticosteroids use can lead to cutaneous side effects like hirsutism, acne, rosacea, skin atrophy, hypo and hyperpigmentation, infections, contact dermatitis and even systemic side effects like Cushing's syndrome, hypertension, HPA suppression<sup>2</sup>. Mercury in these products can produce serious side effects like neuronal damage, renal damage and anxiety/depression and decrease skin resistance to bacteria and fungi.<sup>4</sup> Hydroquinone can cause blue black pigmentation (ochronosis), liver damage and skin cancers<sup>11</sup>. This is first ever study on this issue highlighting the **side effects** of use of skin whitening creams in our area/community. To create awareness in community about use of these harmful chemicals caring a huge potential of **side effects** and putting people into further problematic skin.

## 2. MATERIAL AND METHODS

The current tertiary care study was conducted at the Department of **Dermatology, Peoples University of Medical & Health Science for Women Nawabshah (PUMHSW), Sindh, Pakistan from** January 2019 to July 2019. A total of 140 consecutive patients of both gender, aged 15 to 40 years and those using whitening creams for at least six months were included in this study while those patients who did not give consent, have natural history of acne, rosacea, PCOS, Cushing's syndrome, **pregnancy and currently on systemic steroid therapy were excluded** from the study. All the demographic clinical variables and follow-up data **were recorded** on a **proforma** designed for the study. Statistical analysis was performed using IBM SPSS Statistics 21.0 (SPSS Inc., Chicago, IL, USA).

## 3. RESULTS

Out of the 140 patients studied, all were **female. Patients** taken for the study were from 16 to 40 years of **age. Sixty-five** percent of patients (n=91) use whitening cream once a day while 35% of patients (n=49) use it twice a day. Most of the patients that use whitening cream (34.3%) was between the age of 26 and 30 years. The use of whitening cream in different age groups is shown in table 1.

Table 1: Application frequency of whitening cream

Application frequency		Age group (Years)					Total
		16-20	21-25	26-30	30-35	36-40	
Once a day	N	20	17	30	20	4	91
	% age	14.28	12.14	21.43	14.28	2.86	65
Twice a day	N	11	13	18	4	3	49
	% age	7.86	9.28	12.86	2.86	2.14	35
Total	N	31	30	48	24	7	140

	% age	22.14	21.43	34.28	17.14	5	100
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In this study, we observe various side effects after using whitening creams. Redness showed in 81 patients (57.85%), flushing in 86 patients (61.42%), sensitivity 99 (7.14%), acne 52 (37.14%), thinning of skin 67 (47.86%), pigmentation 77 (55%). Detail of side effects after using whitening cream in different age groups are shown in table 2.

Table 2: Side effects of using whitening cream

Side effects		Age group (Years)					Total
		16-20	21-25	26-30	30-35	36-40	
Redness	N	16	20	27	16	2	81
	% age	11.43	14.28	19.28	11.43	1.43	57.85
Flushing	N	19	18	29	17	3	86
	% age	13.57	12.86	20.71	12.14	2.14	61.43
Sensitivity	N	23	22	34	17	3	99
	%	16.43	15.71	24.29	12.14	2.14	70.71
Dryness	N	11	7	17	5	1	41
	% age	26.8	17.1	12.14	3.57	0.71	29.28
Acne	N	15	13	16	6	2	52
	% age	10.75	9.28	11.43	4.28	1.43	37.14
Hirustism	N	14	12	11	6	1	44
	% age	10	8.57	7.86	4.28	0.74	31.43
Thinning of skin	N	15	14	31	13	4	77
	% age	10.75	10	22.14	9.28	2.86	55
Wrinkles	N	13	4	11	4	1	33
	% age	9.28	2.86	7.86	2.86	0.74	23.57
Telangectasia	N	11	12	13	5	2	43
	% age	7.86	8.57	9.28	3.57	1.43	30.71
Pigmentation	N	16	14	25	9	3	67
	% age	11.42	10	17.85	6.43	2.14	47.86

#### 4. DISCUSSION

The use of whitening cream for different cosmetic purposes is very common but often associated with potential side effects. The rapid symptomatic relief in many dermatoses makes them easy for the community to misuse, resulting in arrange of adverse effects. Therefore these adverse effects are being faced by dermatologists in Pakistan as well as in many other countries. As shown inTable 2, the adverse effects in patients using WCs included acne (52%), pigmentation (67%),telangiectasia (43%), wrinkles (33%), Thinning of skin in

77, Hirsutism in 44, flushing in 86 patients. Comparable results were seen with little variation in other studies too.<sup>4,9,11</sup>

Skin whitening products are making 61% of the Indian cosmetic market and these products are containing toxic chemicals. WHO included Pakistan in those countries where mercury-containing creams are being manufactured for fairness purposes. Mercury results in many cutaneous complications like acne, dyschromia, striae, hypertrichosis, infections i.e fungal bacterial, scabies and contact dermatitis<sup>12</sup>.

An Indian study concluded that 60% of cosmetics marketed for instant fairness and glow contain steroids which produce its side effects when used in judiciously<sup>4</sup>. A study at Saudi Arabia also reported presence of steroids, mercury and hydroquinone in samples they analyzed.<sup>13</sup> A Mexican study conducted showed positive association between mercury poisoning and utilization of fairness creams containing mercury<sup>13</sup>. In USA they found increase excretion of mercury in urine in dark skin people who were using fairness creams and therefore endorsed these whitening creams as illegal and dangerous<sup>14</sup>.

## 5. CONCLUSION

The results of this study concluded that whitening creams used in our setup are strongly associated with several cutaneous side effects.

## ETHICAL APPROVAL

The study was approved by the ethical review committee PUMHSW Nawabshah Pakistan.

## CONSENT

All authors declare that written informed consent was obtained from the patient.

## COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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