ASSESSMENT OF RATIONAL USE AND EFFECTS OF TOPICAL STEROID CREAMS AMONG FEMALE MEMBERS OF AN URBAN HIGHER INSTITUTION IN NIGERIA.

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ABSTRACT

The knowledge, pattern of use and effect of topical steroid preparation being used as cosmetic creams among female members of University of Lagos community were assessed.

Three hundred healthy educated female students and members of staff were randomly recruited. They were requested to respond to a structured questionnaire assessing their knowledge of active ingredients of the cream they were using, the motive, the prescriber, the area of the body to which applied and any observed toning effect. Physical examination for side effects of the topical cream, mean arterial pressure and body mass index were also determined.

Result showed that 44% were on topical steroid creams of varying potencies while 64% were aware of the active components of their cream but did not know the full pharmacological effects on their body. Among those using steroids, 68.8% applied it on the head, neck, hand and leg region, while 19% applied it on Head and neck region only, 12.1% on the whole body. Motive for using topical steroids were toning effects (40.9%), moisturizing effect (31.8%), skins smoothing (23.5%) and protection against ultra violet light (3.8%). Majority of the respondent sourced their steroid creams were from friends (59.8%). Skin side effects observed were multiple striae (63.6%), Acne (5.3%), Tinea (1.5%) and Cushingnoid features (1.5 %). The mean arterial pressure of those on topical steroids was 91.2 (±7.8) mmHg while those without topical steroids was 87. 6 (±9.4) mmHg (p=0.0004). The Body Mass Index (BMI) of those on topical steroids was 27.8 (±3.4) kg/m^2, while those without topical steroids was 25.6 (±2.2) kg/m^2 (p=0.0001).

There is need for the public to have access to accurate, clear and concise information about the potential benefits and adverse effects of steroids and other potent topical creams. Furthermore, regulations governing their importation, distribution and sales should be enforced.

INTRODUCTION

The skin is the largest organ of the body. One of the main functions of the skin is protection from external factors such as extremes of temperature, bacteria and chemicals. The skin contains secretions that can kill bacteria and the pigment melanin provides protection against ultraviolet radiation that can damage skin cells. Most people usually pay attention to their skin by using cosmetics to improve their physical and esthetic appearance. These Cosmetic preparations when applied to the skin are intended to cleanse, beautify or promote attractiveness and in some instances prevent diseases. These preparations usually are in the form of viscous emulsions of either oil-in- water or water-in-oil type. Most cosmetics are used as emollient (skin softeners) moisturizing, protective agents.

Presently in Nigeria there are a deluge of cosmetic creams and pharmaceutical topical creams in the open market. Most of them contain steroids but some may contain hydroxyquinone or mercury creams being sold as cosmetic creams. Pharmaceutical creams are pharmacologically active drugs in a bio-chemically inert base (vehicle) in form of emulsions, ointments, and shampoos. Topical pharmaceutical creams may contain anti-inflammatory agents, antibacterial, anti-fungal, anti-viral and anti-inflammatory agents mostly steroids. Unfortunately there are misconception and misuse of some topical pharmaceutical creams which are drugs and hormones being used as skin lightening and toning cosmetic cream to smoothen, improve appearance and elevate social status as advertised. The promotion of these topical drugs as lightening and toning cosmetic cream is not without undesirable results. Presently there is no effective educational communication to general populace on the difference between cosmetics and topical pharmaceuticals that can only be prescribe or dispense by trained health professionals. In addition there is no adequate enforcement of existing legislation and regulations as regards cosmetics import, distribution, advertisement, marketing and who is legally qualified to prescribe and dispense topical pharmaceuticals as documented in the National Drug Policy[1-2]. The lack of enforcement of these regulations would continue to have serious and widespread consequences in term of morbidity to productive elites in the society. The misuse of topical pharmaceuticals and steroids as skin lightening creams which destroy the skin, its protective secretions and pigments with cutaneous adverse consequences had been documented among South African elitist black women[3]. The use of hydroquinone and high potent topical steroids as a bleaching agent to suppress melanin synthesis with its consequence of reactive hyper pigmentation and hypermelanosis manifesting clinically as a dirty brown and darkening of the skin (exogenous ochronosis) had been reported West African coast[4].

There are instances and unpublished reports where there are misused of these pharmaceutical creams among

knowledgeable higher institution academic elite. This study focused mainly on the use of steroid creams among female elites in an urban Nigerian University.

The University of Lagos community is an elitist society where majority of the females both staff and students pay particular attention to their looks andmake - up. The aim of this study is to assess the knowledge, pattern of use and effects of topical steroids that are used as cosmetic creams among the female University elites.

SAMPLING AND METHODS

Three hundred healthy female volunteers mainly students and educated staff (with N.C.E as minimum qualification) of the University of Lagos community were randomly recruited into the study. They were requested to bring the cosmetic creams they had been using in the last six months. The active ingredients of these creams were documented. They were made to fill a structured questionnaire assessing their knowledge of the active ingredients, the prescriber of the cosmetic cream, which area of the body the cream was applied to, and whether any toning effect was observed? They were examined for topical side effects of steroids. Blood pressure measurements, sitting, were measured in a relaxed state using a stethoscope and a standardized Accoson Sphygmomanometer. The mean arterial pressure (MAP) sitting was calculated using the formula MAP= 1/3 pulse pressure + Diastolic Blood Pressure (N.B) Pulse Pressure= Systolic Blood Pressure - Diastolic Blood Pressure.

The weight and height were measured by means of anthropometrics plane with the subjects not wearing shoes. The body mass index (BM) was then calculated using the formula BMI= Weight in (kg) Height in $(m)^2$

The data were summarized with the use of descriptive statistics of SPSS.

RESULTS

The result showed that 65% (195) of the volunteers were dark skinned and 35% (105) were light skinned. 44% (132) of the subjects were on Steroid creams (Table 1). 64% of them were aware of the active components of their creams but did not know the potential adverse effects of these active ingredients on their skin. Other volunteers used creams containing Aloe Vera - 26% (78), Collagen 12% (36), Honey - 11% (33) and Sunscreen agent - 7% (21). Forty one percent of subjects had the primary motive for using steroids creams as skin toning and lightening. None of the participants had topical steroids recommended by the authorized trained prescribers. Majority of the users of steroid creams were introduced to it by their friends - 59.5% (79). Others were Relatives 19.7% (26), advertisements in the Media - 12.1% (16) and Cosmetics dealers 8.3% (11). Among those on steroids creams, 72% (95) of them were on potent steriods while 28% (37) were on very potent steroids. All the 132 participants on steroids creams had applied either potent or very steroid on the face for six months. About sixty nine percent applied the creams on their head, neck, hands and legs; those that applied it on head and neck only - 19% (25) and whole body - 12.1%(16). 71.9% (95) of those on steroids developed topical side effects. Local topical side effects observed include - Multiple Striae - 63.6% (84), Acne-5.3% (7), Tinea - 1.5% (2), Cushingnoid features-1.5% (2). None of these topical effects were observed in those using non-steroid creams.

The Mean Arterial Pressure of those on the steroids though within normal range was higher 91.2 ±7.8 mmHg when compared with those on ordinary cosmetics 87.6 ±9.4 mmHg (p=0.0004) (Table 2). Also there was statistical significant difference in the Body Mass Index of those on steroids - 27.8(3.4) Kg/m^2 when compared with those not using steroid creams-25.6 (2.2) Kg/m^2 (p>0.0001).

TABLE 1: SHOWING PARTICIPANTS ON STEROID CREAMS

STEROIDS	N = 132	%
COMPLEXION		
Light Skin	82	18.1
Dark Skin	50	27.3
STRENGHT		
Potent Steroids	95	72
Very Potent Steroids	37	28
APPLICATION		
Head and Neck	25	18.9
Head, Neck, Hand and Leg	91	68.9
Whole Body	16	12.1
MOTIVES		
Toning	54	40.9
Smoothes Skin	42	31.8
Protection against	31	23.7
	5	3.8
SOURCE OF STERIODS		
Friends	79	59.8
Relatives	26	19.6
Self	16	12.1
Cosmetic dealers	11	8.3
TOPICAL SIDE EFFECTS		
Multiple Striae	84	63.6
Acne Tinea	7	5.3
(Cushingnoid)	2	1.5
	2	1.5

TABLE 2 - COMPARISON OF MEAN ARTERIAL PRESSURE AND BODY MASS INDEX IN THOSE USING STERIODS AND OTHER TOPICAL COSMETICS

	STERIODS CREAMS n = 132	OTHER NON STEROIDAL COSMETICS n = 178	P
MEAN PRESSURE (Mmhg)	91.2 ± 7.8	87.6±9.4	0.0004
BODY MASS INDEX Kg/M	27.8 ± 3.4	25.6 ± 2.7	0.0001

DISCUSSION

The result showed that there were misuse and abuse of topical steroids in 44% (132) of cases. Sixty four percent of them were aware of the active components of the cream but did not know the effect on the body. Fifty four (41%) respondents had their primary motive for using steroids to be for toning and lightening of the skin and none of the participants had topical steroids recommended by the authorized trained prescribers. This underscores the need for an effective educational and regulatory intervention to reduce the risk of adverse drugs reactions in users and prospective users of steroidal creams as the existing legislation and regulations as regards cosmetics import, distribution, advertisement, marketing and who is legally qualified to prescribe and dispense Steroids in our National Drug Policy were not respected[1]. Also the legislation and regulations prohibiting the use of hydroquinone, corticosteroids, mercury and mercurial compound as bleaching agents are not being enforced in our society[2]. The lack of enforcement of these regulations would continue to have serious and widespread consequences in term of morbidity to productive elites in the society. This unwholesome practice and the misuse of skin lightening cream to destroy the skin and its protective secretions and pigments with cutaneous adverse consequences had been documented among South African elitist black women[3]. The use of hydroquinone and high potent topical steroids as a bleaching agent to suppress melanin synthesis with its consequence of reactive hyper pigmentation and hypermelanosis manifesting clinically as a dirty brown and darkening of the skin (exogenous ochronosis) had been reported in Nigeria[4], Senegal and other West African coast[5]. The systemic absorption of Inorganic Mercury Salts used as skin bleaching agents with sequalae damage to the nervous system and the kidney had been reported in Zimbabwe[6]. The use of skin lightening topical mercurial compound was observed to cause nephrotic syndrome in Kenya[7].

Seventy two percent (95) were on potent steroids while 28% (37) were on very potent steroids. Use of higher potency topical glucocorticoids is usually associated with increased local and system toxicity.

Seven-two percent (95) of those on steroid creams developed topical side effects like skin atrophy, striae, telangiectasias, acne, perioral dermatitis, overgrowth of the skin fungus and bacteria. 71.9% (95) developed topical side effects (Multiple Striae - 63.6% (84), Acne-5.3% (7), Tinea -1.5% (2), Cushingnoid features-1.5% (2). None of these topical effects were observed in those using non-steroid creams. Bleaching affects the microbiological protective flora of the skin. Individuals who indulge in bleaching and toning had a low level of microbiological protective flora count when compared to non-bleachers[8]. Furthermore bleachers on steroids had suppression of immune system and increase predisposition to skin infections and infestations[9-11].

Though it could be argued that delivering steroids in a topical base would markedly reduce systemic mineralocorticoid and glucocorticoid effects, some factors that increase systemic absorption include the amount of steroid applied, the extent of the area treated, the frequency of application, the length of treatment, potency of the drug and the use of occlusion[12]. Topical steroids were absorbed at different rates from different parts of the body with eyelids and genital absorption being 30% followed by the face 7% compared with other parts of the body [13]. All the 132 participants on topical steroids had applied either potent or very steroid on the face for six months or more for which absorption was sufficient enough to predispose to cataract, hypo pituitary-adrenal-suppression, mineralocorticoid and glucocorticoid side effects. 68.9% (91) applied it on the head, neck, hands and legs; others were head and neck only - 18.9% (25) and whole body -12.1% (16). Prolonged absorption of the most highly potent topical glucocorticoids through the skin had been shown to cause systemic toxicity including hypo-pituitary-adrenal-suppression[14].

The Mean Arterial Pressure of those on the steroids though within normal range were higher 91.2 (7.8) mmHg when compared wit those on ordinary cosmetics 87.6 (9.4) mmHg ($p<0.05$). Although family history of hypertension, salt intake and variable stress affect the mean arterial pressure. The study population was homogenous with the same exposure; therefore the difference in the mean arterial pressure could be a result of mineralocorticoid effects of the prolonged absorbed steroids. Also there was statistical significant difference in the Body Mass Index of those on steroids -27.8(3.4) Kg/m^2 when compared with those not using steroid creams-25.6 (2.2) Kg/m^2 ($p <.0.05$) This possibly suggests the anabolic and glucocorticoid effects of the absorbed steroids[14-15]

There is a need for implementation of public education campaign policy by the government to promote rational drug use. The aim will be to increase awareness of drug issues and improvements in the use of drugs by the public. The public needs access to accurate, clear and concise information about the potential benefits, risks of medicine.

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