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# Knowledge, attitude, and practices of Nigerians relating to the use of triple action creams: Results of a study among patrons of Community Pharmacies in Oshodi/Isolo Local Government, Lagos State, Nigeria

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ABSTRACT

**Background:** Triple action creams are employed for the treatment of a variety of skin or topical conditions. Over-the-counter availability of all strengths in Nigeria has raised concerns regarding its use for non-labelled indications. This study aims to assess the Knowledge, Attitude and Practices of Nigerians relating to the use of triple action creams.

**Methods:** The study was a cross sectional descriptive survey carried out among Nigerian patrons of Community Pharmacies located in three wards of Oshodi/Isolo Local Government, Lagos State, Nigeria. A multistage sampling was done to recruit participants used for the study. A 12-item self-administered questionnaire was used to elicit information from the respondents who consented to participate in the study.

**Results:** A total of 384 respondents recruited completed the survey of which more than half (70.1%) of the study respondents are not aware of the long-term complications associated with misuse and abuse of triple action creams. Faster result (60.9%), brighter fair skin (58.6%) and lack of knowledge about the complications (64.3%) are the major reasons behind the misuse. **Conclusion:** There is a low level of awareness of the Nigerian populace relating to the long-term complications of use triple action creams. There is therefore a dire need to adequately equip the populace with drug information as well as educate the public on the limits and acceptable attitudes and practices relating to the use of Topical Corticosteroids.

## 1. Introduction

Skin diseases represent the greatest public health care problem and are a major cause of morbidity in developing countries. They also represent a considerable financial burden in these resource poor countries[1]. However, they have not been regarded as a significant problem that could benefit from public health measures. This attitude is due to the assumption that skin diseases are a benign, not life-threatening minor nuisance, and that they do not worth measures that may appear out of proportion to their low priority[2].

In a population-based study of the prevalence of skin disease in five European countries, the most common skin

disease was warts (41·3%), followed by acne (19·2%) and contact dermatitis (15·0%). In general, women were more often affected by skin diseases compared with men; only skin cancer had a slightly higher prevalence in men. The prevalence of skin diseases in northern countries (Germany, the Netherlands and Sweden) was generally higher than in the southern countries (Italy and Portugal). In the Netherlands the treatment of skin diseases was less often performed by a dermatologist compared with the other countries[3].

An observational study of the global skin disease morbidity and mortality update from the global burden of disease study 2013 revealed that skin diseases contributed 1.79% to the global burden of disease measured in Disability-Adjusted Life Years (DALYs). Skin diseases arranged in order of decreasing global DALYs are as follows: dermatitis (atopic, contact, seborrheic), acne vulgaris, urticaria, psoriasis, viral skin diseases, fungal skin diseases, scabies, melanoma, pyoderma, cellulitis, keratinocyte carcinoma, decubitus ulcer, and alopecia areata.[4].

Topical corticosteroids (TC) have been available for more than six decades during which they have completely changed the face of therapy of dermatological disorders. Despite being the most useful drug for such treatment they are known to produce serious local, systemic, and psychological side-effects when overused or misused[5]. TCs have four main mechanisms of action (i.e. anti-inflammatory, anti-proliferative, immunosuppressive and vasoconstrictive) that make them very effective in the treatment of various inflammatory cutaneous disorders. However, this has led to their indiscriminate prescription, especially by non-dermatologists, for sundry skin disorders.

Shortly after the introduction of TCs, adverse effects due to a high incidence of abuse and misuse were observed [6,7]. The use of TCs were then regarded as a double-edged sword: TCs are an effective drug for treating most inflammatory skin diseases on one side, and the cause of many disorders on the other, including but not limited to acne, rosacea, perioral dermatitis, hypopigmentation, striae, telangiectasia, atrophy, hypertrichosis, cataracts, hyperglycemia and hypothalamic–pituitary–adrenal (HPA) suppression[8]. Essentially, potential for misuse occurs at various levels, namely marketing, prescription, sales and end-use by patients and the lay public.

The misuse of topical steroids, i.e., the usage of these products for skin lightening, is a widespread phenomenon among African men and women. Studies have reported prevalence rates of 18.5% to 70% among participants. Though women constitute most users, people of various age groups, socioeconomic status, employment, and marital status practice skin lightening. The most misused Topical Steroid containing medication which is increasingly being witnessed by dermatologists all over Nigeria are triple action creams. These medications are always marketed as a 3-in-1 treatment for a wide range of skin problems. Triple action creams contain potent steroids such as betamethasone and Clobetasol and ideally should be sold as a Prescription only Medicine based on diagnosis, but this is not the case in Nigeria.

The misuse is further compounded by its availability as Over the Counter medication at an affordable prize and dubious marketing by pharmaceutical companies. Triple action creams are misused as daily cream for cosmetic purpose as a depigmenting agent[9]. Young children and babies are equally exposed to this medication without consultation of a dermatologist in skin conditions.

Misuse of triple action creams tend to mask the diagnosis of dermatologists in sundry skin disorders. Furthermore, the irrational use of Topical Steroids causes complications in the patient's health since Topical Steroids are associated with a number of side effects, both superficial and systemic. Misuse of Topical Steroids have been associated with unmasking of latent Type 2 diabetes, Cushing syndrome, cataracts and glaucoma [10,11]

A rise in chronic disease conditions due to misuse of triple action creams in Nigeria can result in significant economic burden to the healthcare system and hence the need to assess the knowledge, attitude and practices of Nigerians regarding the use of this medication. Also addressing the OTC use of this class of drugs will give an insight for policy makers to what magnitude these drugs are being abused so that an intervention program could be designed.

## 2. Methods

### 2.1 Study Design

The study is a cross-sectional descriptive survey design conducted in Lagos State, Nigeria. Ten Community Pharmacies located in three wards of Oshodi-Isolo local government area namely Okota, Isolo, Ejigbo/okeafa were used. The pharmacies were identified through a list provided by the Pharmacists Council of Nigeria. Participants were recruited through a multistage sampling procedure. Only people between the ages of 15 to 60 years, who could read and write and gave their consent to participate in the study, were enrolled. Three local government wards were randomly selected from the eleven

wards of Oshodi-Isolo local government area in the first stage. A random sampling was employed to select Community Pharmacies from the three wards. A minimum of thirty participants were sampled from each community pharmacy to give a total of hundred 384 participants used for the study.

### 2.2 Sampling Size and Sample

The desired sample size for the study was determined using the single proportion formula:

$$n = \frac{z^2\ pq}{d^2}$$

Where

n = the minimum sample size when the population is more than 10,000

z = standard normal deviate usually set at 1.96 which corresponds to 95% confidence level

p = maximum variability in responses = 50%

q = precision (1 – p or 0.5)

d = margin of error (0.05)

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384$$

### 2.3 Study Instrument

A self-designed questionnaire containing mainly closed ended questions was developed and pre-tested. Based on the findings from the pre- test, the questionnaire was revised and adopted. Some questionnaire items were adapted from other survey instruments. The 12-1tem questionnaire obtained data on sociodemographic details such as age, gender, educational status. Some questions related to the products used, duration of use, sources of prescription, and reason for product use. Participants were also asked to indicate the side effects of products they were using. Informed consent was obtained from participants before including them in the study. Approval was sought from the Zonal Coordinator, Association of Community Pharmacists of Nigeria, Lagos State branch( Isolo Zone).

### 2.4 Data Analysis

Data analysis involved descriptive statistical analysis (means, frequencies, standard deviation), chi square's Test of Association and ranking of responses. Factor Analysis was also employed to identify the factors that best explains the causes of misuse of the cream under study. Data analyses were performed using SPSS version 23.

## 3. Results

### 3.1 Demographic distribution

A greater proportion of the study respondents were between 31-40 years old 140 (36.46%) and were basically tertiary 360 (93.75%)and secondary school holders 24 (6.25%). The age and gender distribution of the respondents are shown in Table (1).

Table 1: Socio-demographic information of study respondents

| Variable | Frequency (n = 384) | Percentage (%) | Mean(±sd) |
|---|---|---|---|
| **Sex** | | | |
| Male | 171.00 | 44.53 | 1.55±0.5 |
| Female | 213.00 | 55.47 | |
| **Age (yrs.)** | | | |
| <20 | 60.00 | 15.63 | 2.7±1.06 |
| 21-30 | 98.00 | 25.52 | |
| 31-40 | 140.00 | 36.46 | |
| 41-50 | 71.00 | 18.49 | |
| 51-60 | 15.00 | 3.91 | |
| **Education** | | | |
| Secondary | 24.00 | 6.25 | 3.93±0.24 |
| Tertiary | 360.00 | 93.75 | |

### 3.2 Awareness of Triple Action creams and perceptions of usage

Most of the respondents are aware of triple action creams (93.5%) and their indications. Fungal infection is the major reason given for using triple action creams while freckles was the least reason for using triple action cream. But it appears that most of the respondents are not aware of the long-term adverse effect of such creams as 70.1% indicates their lack of knowledge in that regard. The responses to the research questions are summarized in Table 2 and 3

**Table 2:** ***Patterns of awareness of Triple Action creams***

| Variable | Frequency | Percentage (%) |
|---|---|---|
| **Do you know what Triple Action creams are?** (n=384) | | |
| No | 14 | 6.5 |
| Yes | 203 | 93.5 |
| **Are you aware of the long-term complications of Triple Action creams?** (n=384) | | |
| No | 269 | 70.1 |
| Yes | 115 | 29.9 |

**Table 3:** ***Perceptions of use of Triple Action creams***

| Variable (n-394) | Responses Percent | Percent of Cases |
|---|---|---|
| Moisturizing Cream | 5.30 | 20.80 |
| Skin Softening Daily Cream | 5.10 | 20.10 |
| Acne and its Pigmentation | 13.00 | 50.80 |
| Freckles | 4.30 | 16.90 |
| Fungal Infection | 18.30 | 71.90 |
| To remove dark spot on the skin | 13.60 | 53.10 |
| Rashes | 15.30 | 59.90 |
| Fairness Cream | 11.00 | 43.00 |
| Eczema | 14.20 | 55.50 |

**Table 4:** ***Reasons for using triple action creams***

| Variable | Frequency | Percentage (%) |
|---|---|---|
| **Have you ever used Triple Action creams?** (n=384) | | |
| No | 101 | 26.3 |
| Yes | 283 | 73.7 |
| **Why did you use Triple Action cream?** (n=384) | | |
| To remove acne and spots | 67 | 17.4 |
| To brighten my complexion | 41 | 10.7 |
| To remove rashes on my skin | 74 | 19.3 |
| To treat a fungal infection | 102 | 26.6 |
| To clear skin infection | 1 | .3 |
| To remove dandruff on my hair | 4 | 1.0 |
| Never used it | 95 | 24.7 |

Above table indicates that 73.75% of the respondents have used triple action creams at one point in time and their reason for using the cream was mostly to treat a fungal infection.
Skineal® (56.9%) and FunbactA® (63.8%) are the mostly used triple action creams as indicated by the respondents that have used triple action creams with mean duration of use of 1-2years (34.9%) and 1 month (30.2%) respectively.

**Table 5: Association between demographics and awareness**

| | **Do you know what Triple Action creams are?** | | | | |
|---|---|---|---|---|---|
| | **Yes** Freq. (%) | **No** Freq. (%) | **Total** Freq. | **Chi- Square** | **P-value** |
| **Sex** | | | | | |
| Male | 160(93.6) | 11(6.4) | **171** | **.283** | **.595** |
| Female | 202(94.8) | 11(5.2) | **213** | | |
| **Age** | | | | | |
| <20 | 60(100.0) | 0(0.0) | **60** | **24.16** | **0.000*** |
| 21-30 | 95(96.9) | 3(3.1) | **98** | | |
| 31-40 | 135(96.4) | 5(3.6) | **140** | | |
| 41-50 | 59(83.1) | 12(16.9) | **71** | | |
| 51-60 | 13(86.7) | 2(13.3) | **15** | | |
| **Education** | | | | | |
| Secondary | 24(100.0) | 0(0.0) | **24** | **1.556** | **0.212** |
| Tertiary | 338(93.9) | 22(6.1) | **360** | | |

***= Statistically Significant**

The table above is a significance test of association between gender, age, education as explanatory variables and awareness of triple action creams as dependent variable. The test was conducted at a confidence interval of 95%. Only age appear to be statistically significant. This implies that age influences the awareness of triple action cream of the respondents.

**Table 6: Association between demographics and usage**

| | **Have you ever used Triple Action creams?** | | | | |
|---|---|---|---|---|---|
| | **Yes** | **No** | **Total** | | |
| | Freq. (%) | Freq. (%) | Freq. | **Chi- Square** | **P-value** |
| **Sex** | | | | | |
| Male | 121(70.8) | 50(29.2) | **171** | **1.372** | **.241** |
| Female | 162(76.1) | 51(23.9) | **213** | | |
| **Age** | | | | | |
| <20 | 50(83.3) | 10(16.7) | **60** | **20.485** | **0.000*** |
| 21-30 | 82(83.7) | 16(16.3) | **98** | | |
| 31-40 | 102(72.9) | 38(27.1) | **140** | | |
| 41-50 | 41(57.7) | 30(42.3) | **71** | | |
| 51-60 | 8(53.3) | 7(46.7) | **15** | | |
| **Education** | | | | | |
| Secondary | 22(91.7) | 2(08.3) | **24** | **4.264** | **0.039*** |
| Tertiary | 261(72.5) | 99(27.5) | **360** | | |

***= Statistically Significant**

The table above is a significance test of association between gender, age, education as explanatory variables and usage of triple action creams as dependent variable. The test was conducted at a confidence interval of 95%. Age and education both appear to be statistically significant. This implies that age and education influences the usage of triple action cream of the respondents.

## 4. Discussion

The misuse of Topical corticosteroids (TCs) is increasingly being witnessed by dermatologists all over Nigeria but there are only few studies determining the extent of this misuse. To commence the campaign against TC misuse, there is a need for objective information. This study will serve as the basis for interventions which will curb the menace of its misuse.

The respondents generally are aware of triple action creams which are referred to as topical fixed dose triple combination agents consisting of a very potent steroid, antifungal and antibiotic. They equally have a fair knowledge of the side effects as majority of them had a minimum of tertiary level of education which puts them in a position to understand the risk and side effects of the drugs but most of the respondents are not aware of the long-term complications which indicates their lack of knowledge in that regard. Despite this many still misused this medication despite knowledge of the side effects. This is however consistent with findings from a similar study carried out in South Africa[12]. Faster result, brighter fair skin, and lack of knowledge about the complications are the reasons indicated by the respondents for misuse of triple action creams.

The findings of this study confirm that female Nigerians still constitute the majority of those who practice skin lightening with triple action creams. This finding concurs with the view that topical steroid products are misused for cosmetic purposes, the motive of which is to look beautiful, attractive, and have a fair skin without blemishes. This quest for beauty proves to be a challenge not only for women themselves, but also for their therapists.

The use of topical corticosteroids as a toning agent due to the inflammatory component is not uncommon in Nigeria where TCs are having an easy ride into a different use by vast sections of the population with growing interest in unimaginable facial beautification. In fact, it has reached a point of epidemic significance as latest study ranked Nigeria as the leading users of toning creams in Africa with more than 75% of our women accounting for such high rate[13]. This is a bad signal at a time we are combating infectious diseases and non-communicable diseases. All these could be attributed to the increasing prevalence of Eurocentric beauty standards, unrelenting craze for skin beautification, rapidly expanding over the counter sales of Topical Steroids and increasing number of mothers with aversion for afrocentric beauty.

Most of the respondents indicated that they have used Triple Action Creams at one point in time and their reason for using the cream was mostly to treat a fungal infection. Their sources of prescription being mainly from the Chemist or Drug store, Acquaintances / relatives / self and Advertisement. The prevalence of use of Triple Action Creams for skin lightening in this study is 10.7%. Regarding socio-demographic distribution, the misuse of triple action creams was widespread across all sections of the Nigerian population, irrespective of age, gender, and educational level. Although gender has been frequently cited as a factor affecting misuse of Topical Corticosteroids, there was no significant association between both genders in the practice of use of Triple Action Creams in this study.

The respondents equally revealed that they bought their products from pharmacies. This has both positive and negative implications. Positive in that it offers a guarantee that the products used are not counterfeits or of inferior quality, or of dubious composition. It is also negative because the majority of participants were not aware of the long-term complications of usage. Since they bought these Over-the-Counter medicines from pharmacies, one would have expected the pharmacists to have informed them of the adverse effects. Although participants cited some of them, the fact that they continued to use the products suggests that they were either not taking them seriously or that their determination to look beautiful obscured their perceptions.

The brands of Triple Action Creams of highest rate of misuse in this study are Skineal® and Funbact A®. These creams which contain very potent steroids are used for as long as 1-2yrs as indicated by the respondents. There is a correlation between the duration of use of this products and the experienced side effects as indicated by the respondents. It is important to note that the TCs in all brands of triple-combination preparations are Class I and Class II (i.e. very potent and potent) TCs. Thus, their wide-spread availability in Community Pharmacies and other drug outlets increases the tendency towards the indiscriminate purchase and use of potent and highly potent TCs by the lay public. Although the Nigerian National Agency for Food and Drug Administration and Control (NAFDAC) considers TCs to be prescription drugs, their availability in drug shops as OTC medications increases the risk for both local and systemic adverse effects.

It was also observed in this study of wrong prescription practices of health professionals in Nigeria which include Dermatologists and Community Pharmacists. This implies suboptimal knowledge of Topical Corticosteroids and their various potencies as some of the respondents that indicated that they used triple action creams for more than one month

stated that the medication was prescribed by a Dermatologist without diagnosis.

Wrong prescription practices observed by Community Pharmacists are consistent with findings from a survey carried out in Lagos, Nigeria on the management of skin diseases among Community Pharmacists which revealed that 87.5% of the Community Pharmacists recommend Triple Action Creams as remedy for skin problem[14]. The study also revealed that 24% of the causes of skin problems encountered in pharmacies is due to allergic reactions and Triple Action Creams. There are limitations to the extent to which pharmacists were trained on specific disease states.

Another interesting finding of this study is the influence of peer pressure, particularly from friends. This strong influence, coupled with a lack of awareness of the adverse effects, provide a foundation that sustains this type of practice of Topical Steroid misuse.

The continued production of triple-combination TCs in the absence of a clear indication for its use constitutes manufacturing abuse. A thorough search of the literature found no scientific basis for the combination of antibacterial and antifungal topical medications with a potent TC.

Although the use of the combination of a low-potency TC + an antibiotic is advocated in the treatment of infected atopic dermatitis, emphasis is placed on its judicious use [15]. The use of TC + antifungal combinations has resulted in an increased incidence of tinea incognito, as well as persistent and recurrent tinea infections. Generally, studies have shown that the fixed-dose combination TCs do not offer better efficacy relative to monotherapy[16]. Unfortunately, most of the respondents in this study saw 'fixed-dose combinations' as being more effective, rapid-acting and patient-satisfying agents. This can be translated to mean that in the treatment of a disease condition with an unknown diagnosis, whether fungal, bacterial or inflammatory, fixed-dosed combination TCs will be used. This is not in accordance with best clinical practice.

A survey carried out in Federal Capital Territory, Nigeria revealed that Community Pharmacies stocked more brands of TCs than drug shops 73% been triple-combination creams[17].This would have been thought to be ideal, in view of the expectation of a more prudent dispensing practice by the former. However, the fact that most of the pharmacists possess less than satisfactory knowledge on the potency and formulations of topical corticosteroids attenuates any envisioned positive outcome. The low-level knowledge of TCs exhibited by pharmacists, as similarly reported by Lau and Donyai[18], predisposes patients to unregulated purchase and use of very potent TCs without requisite instructions and supervision (sales abuse).

The proliferation of fixed-dose triple-combination agents in our drug outlets provides patients with a vast array of triple-combination of topical corticosteroids to select from, for a wide range of mostly undiagnosed skin disorders. This is unethical and requires a strong response from health policy makers/regulators to check this trend. In this regard, continuing medical education targeted at manufacturers, pharmacists, and physicians as well as dermatology residents is mandatory.

Although cause and effect cannot be determined from the findings of this study, race and peer pressure on the one hand, and ignorance and gender on the other hand, seem to be related to the misuse of triple action creams. These findings have several important implications. Firstly, interventions to scale down misuse and preventive efforts need to focus on the black female Nigerians and her peers. These interventions should be multi-dimensional, involving educational, legal, and managerial approaches. Media and public education on topical steroid misuse is necessary and the involvement of general practitioners, nurses and pharmacists is needed, with specific messages directed at rooting out ignorance of the danger of this practice being circulated widely among the targeted subgroups.

**Limitations of this study**

Because of the cross-sectional design, cause and effect relationships could not be determined. Also, as with all self-reporting data, it was not possible to determine the veracity of responses; for instance, a large number of the pharmacy clients who were approached said that they did not use Triple Action Creams. It is not clear whether this was true or was a way to avoid completing the questionnaire. Since the random sampling technique was used and the questionnaires were distributed only at Community pharmacies, the sample drawn was not representative of those who misuse Triple Action Creams from other outlets, such as cosmetic shops etc. Therefore, further studies are needed, which could use cohort or interventional study designs involving households to improve the validity and reliability of the data collected.

## 5. Conclusion

There is a low level of awareness of the populace relating to the long term complications of use of fixed dose combination Topical Corticosteroids branded as Triple Action Creams in Nigeria.

There is therefore is a dire need to adequately equip the populace with drug information as well as educate the public on the limits and acceptable attitudes and practices relating to the use of topical corticosteroids even as the health authorities and pharmaceutical companies put in place more guided safety measures. Education of the general public through special media programmes and the introduction of a continuing medical education programme for medical and paramedical personnel are probably the most important steps that could be taken to reduce this problem.

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