Predictors of topical steroid misuse among patrons of pharmacies in Pretoria

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Keywords: Topical steroid, misuse, abuse, skin lightening, peer pressure, black female African

Abstract

Background:
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 the majority of users, people of various age groups, socioeconomic status, employment and marital status practise skin lightening. Besides topical steroid products, other commonly used products include preparations containing hydroquinone or mercury derivatives.

The misuse of these products is associated with skin problems such as cellulitis, contact eczema, bacterial and fungal infections, Cushing's syndrome, acne, skin atrophy and pigmentation disorders. Although these effects are well documented, it seems that there is little awareness of them among the general public. Other less commonly reported problems include delaying the diagnosis of leprosy, and erythrodermic psoriasis.

Data on the misuse and side effects of topical steroids have been gathered primarily from prescriptions, despite the fact that these products could be obtained over the counter, shared between relatives or friends, or come from other informal sources. Moreover, we found no community-based study that investigated the prevalence of the misuse of topical steroid products in South Africa.

This survey was therefore conducted to examine the misuse of topical steroid products for skin lightening, among patrons of pharmacies in Pretoria and to determine the potential predictors of misuse.

Methods:
The aim of this study was to examine the misuse of topical steroid products for skin lightening by patrons of pharmacies in Pretoria and to determine the potential predictors of misuse. Exit interviews were conducted at 21 randomly selected pharmacies by trained interviewers using a structured questionnaire. A total of 1 228 patrons were approached, of which 225 gave verbal consent to be interviewed.

Results:
Of the 225 participants, 83% were female, 50.7% were 20-40 years old, 56% were employed, and 53.3% were married. The majority of participants (75.1%) were black Africans. About half of them (50.2%) had high school education. The prevalence of topical steroid misuse for skin lightening was 35.5%. A logistic regression analysis revealed that being a black female African and initially being advised to use the products by a friend were the only parameters that significantly correlated with topical steroid misuse.

Conclusion:
In conclusion, the prevalence of the misuse of topical steroid products among the respondents was 35.5%. The following predictors were associated with topical steroid misuse: being a black female African, not being aware of the side effects of these products, and initially being advised to use the products by a friend. In a logistic regression model, the last two predictors were the only parameters that significantly correlated with topical steroid misuse.

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Introduction

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.[1,2] Though women constitute the majority of users, people of various age groups, socioeconomic status, employment and marital status practise skin lightening. Besides topical steroid products, other commonly used products include preparations containing hydroquinone or mercury derivatives.[3]

The misuse of these products is associated with skin problems such as cellulitis, contact eczema, bacterial and fungal infections, Cushing's syndrome, acne, skin atrophy and pigmentation disorders.[2,4] Although these effects are well documented, it seems that there is little awareness of them among the general public. Other less commonly reported problems include delaying the diagnosis of leprosy, and erythrodermic psoriasis.[2,5,6,7,8]

Data on the misuse and side effects of topical steroids have been gathered primarily from prescriptions, despite the fact that these products could be obtained over the counter, shared between relatives or friends, or come from other informal sources. Moreover, we found no community-based study that investigated the prevalence of the misuse of topical steroid products in South Africa.

This survey was therefore conducted to examine the misuse of topical steroid products for skin lightening, among patrons of pharmacies in Pretoria and to determine the potential predictors of misuse.

Methods

Study design and sample

Ethical approval for this study was granted by the Research, Ethics and Publications Committee of the Faculty of Medicine, MEDUNSA (now University of Limpopo). A cross-sectional survey design was used because of the advantages it offers.[9] The pharmacies, which were all located in Pretoria, were identified through a list provided by the South African Pharmacy Council. Of the 63 pharmacies listed, 21 were selected by systematic random sampling. During a period of one week, exit interviews were conducted at different times of the day. A convenience sample of 225 patrons gave verbal consent to be interviewed at the scheduled times.

Study instrument

A 33-item questionnaire was developed and pre-tested. Some questionnaire items were adapted from other survey instruments, such as the one suggested by the World Health Organization (WHO).[10] The questionnaire obtained data on socio-demographic details such as age, gender, employment and marital status. Some questions related to the products used, the frequency and duration of use, outlets where the products were bought, reason(s) for product use, and who had initially recommended the product. Participants were also asked to indicate the side effects of products they were using.

Data collection

The survey was administered on a one-to-one basis. Participants could respond in English, Afrikaans, Zulu or Tswana. All data collectors were fluent in these languages. Age was

recorded in four categories: <20 years, 20-40 years, 41-60 years, and > 60 years; and race in three categories: black African, Caucasian and Asian. The level of education was categorised as primary, high school and tertiary. The following variables were dichotomised: gender as female or male, marital status as married or unmarried, employment status as employed or unemployed, awareness of side effects as aware or not aware, and reasons for use as for treatment or for skin lightening. Frequency and duration of use were also dichotomised as twice or fewer times per day versus three or more times per day, and six months or less versus more than six months respectively.

Data analysis

Epi-Info 2002 software was used for the analysis of the data. Descriptive statistics were used to summarise the data. Stratified analysis was conducted to assess confounding factors and to calculate relative risk. Logistic regression analysis was subsequently performed to identify potential predictors of misuse of topical steroid products. Independent variables included in the model were age group, gender, educational level, employment and marital status, awareness of side effects, initially being advised by a medical doctor or physician, nurse, pharmacist, or a friend. The outcome variable was a binary: misused or not misused.

Results

Sample characteristics

The distribution of the sample of the 225 participants is reflected in Table I. The majority of participants were black female Africans, currently employed, 20-40 years old, and unmarried. A total of 50.2% had a high school level of education. One hundred and forty-five (64.5%) participants used the topical steroids for therapeutic reasons, while 80 (35.5%) used them as skin lighteners.

Table I: Sample characteristics by study variables (n=225)

	Percentage
Gender	
Female	83.0
Male	17.0
Age group	
<20y	13.3
20-40y	50.7
41-60y	33.3
>60y	2.7
Marital status	
Married	46.7
Unmarried	53.3
Race	
Black African	75.1
Caucasian	16.4
Asian	8.5
Education level	
Primary school	19.6
High school	50.2
Tertiary	30.2
Employment status	
Employed	55.1
Unemployed	44.9
Reasons for use	
Treatment	64.5
Skin lightening	35.5
Initially advised by	
Pharmacist	35.7
Nurse	9.7
Medical doctor	34.2
Friend	20.4
Awareness of side effects	
Aware	19.1
Not aware	80.9
Frequency of application	
Twice or fewer times per day	81.3
Thrice or more times per day	18.7
Duration of usage	
Six months or less	60.0
More than six months	40.0
Sources of supply	
Pharmacies	96.9
Supermarkets	1.8
Flea/street markets	1.3

The majority of participants (69.9%) were advised to use topical steroid products by their doctors and pharmacists, while the others were advised by friends (20.4%) and nurses (9.7%).

Six different products containing hydrocortisone were found to be used by the participants. These products are available over the counter in retail pharmacies. The vast majority of participants (96.9%) bought these products from pharmacies, 1.3% from flea markets and 1.8% from supermarkets.

In terms of duration of use, 40% of the participants had used topical steroid products for more than six months. The majority of participants applied the product once or twice a day, but 18.7% applied it three times or more a day. In terms of awareness

Table II: Study variables by misuse status (N=80)

	Percentage
Gender	
Female	90.0
Male	10.0
Age group	
<20y	20.0
20-40y	40.0
41-60y	37.5
>60y	2.5
Marital status	
Married	46.3
Unmarried	53.7
Race	
Black African	87.5
Caucasian	8.7
Asian	3.8
Education level	
Primary school	20.0
High school	51.3
Tertiary	28.7
Employment status	
Employed	47.5
Unemployed	52.5
Initially advised by	
Pharmacist	22.5
Nurse	11.2
Medical doctor	18.8
Friend	47.5
Awareness of side effects	
Aware	25.0
Not aware	75.0
Frequency of application	
Twice or fewer times per day	70.0
Thrice or more times per day	30.0
Duration of usage	
Six months or less	36.2
More than six months	63.8

Table III: Stratified analysis by study variables (n=225)

	Odds Ratios (95% CI)	P value
Gender (female vs. male)	1.83 (0.96, 3.47)	0.040[a]
Age group (20-40 vs. other age groups)	0.97 (0.73, 1.36)	0.927
Marital status (married vs. unmarried)	0.98 (0.69, 1.40)	0.920
Race (Black vs. Caucasian & Asian)	2.33 (1.30, 4.15)	0.001[a]
Education level (high school vs. other levels)	1.04 (0.76, 1.41)	0.901
Employment (employed vs. unemployed)	0.74 (0.53, 1.05)	0.080
Advised by (friend vs. others)	3.52 (2.52, 4.31)	0.000[a]
Awareness of side effects (aware vs. not aware)	1.41 (0.96, 2.07)	0.090

[a] Statistically significant

of side effects, only 19.1% of the participants was aware of these side effects. Participants mentioned the following side effects: acne, moon face, and changes in skin pigmentation.

Predictors of misuse

The characteristics of the 80 participants who misused topical steroid products are listed in Table II. The majority were black female Africans, 20 to 60 years old, unmarried, and unemployed. About half had high school education. They were initially advised to use topical steroid products mostly by friends (47.5%), but also by health care workers, particularly pharmacists, medical doctors and nurses. Most of these participants had used these products for more than six months. The majority of participants applied the products once or twice a day, while 30% applied them three times or more a day. Only a quarter was aware of the side effects of topical steroids.

The results of the stratified analysis are shown in Table III. The odds ratios of the following variables suggested a strong association with the misuse of topical steroid products: being black female African, as well as being advised by a friend, and unaware of the side effects.

The results of the logistic regression analysis are shown in Table IV. The following variables were significantly and positively associated with the misuse of topical steroid products: being black African and initially being advised by a friend. However, the variables being married and not being aware of side effects were positively but not significantly associated with topical steroid misuse.

Discussion

The prevalence of topical steroid misuse for skin lightening found in this study was 35.5%. This prevalence is similar to that reported by Del Guidice and Yves in Senegalese women.[11] With regard to socio-demographic distribution, the findings of this study are consistent with reports by Adebajo, who reported that the misuse of topical steroid products was widespread across all sections of the African population, irrespective of educational level, employment and marital status.[3]

The findings of our study also confirm that black female Africans still constitute the majority of those who practise skin lightening. This finding concurs with the view that

Table IV: Logistic regression: Predictors of topical steroid misuse (n=225)

Predictor	Correlation Coefficient	P value
Age group	-0.4384	0.123
Marital status	0.4374	0.302
Gender	-0.3707	0.446
Race	0.6407	0.020[a]
Employment status	-0.1748	0.636
Education level	-0.0595	0.837
Advised by pharmacist	-1.1051	0.104
Advised by nurse	-0.1610	0.842
Advised by medical doctor	-0.4961	0.496
Advised by friend	2.3305	0.000[a]
Awareness of side effects	0.7657	0.073

[a] Statistically significant

topical steroid products are misused for cosmetic purposes, the motive of which is to look beautiful, attractive, and have a fair skin without blemishes.[2,12] This quest for beauty proves to be a challenge not only for women themselves, but also for their therapists.[11]

An important finding of this study was that the majority of participants 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, as have been reported by other investigators.[2,13,14,15] It is also negative because the majority of participants were not aware of the side effects. Since they bought these over-the-counter medicines from pharmacies, one would have expected the pharmacists to have informed them of the side effects. Although participants cited some side effects, 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.

It is a matter of concern that some participants bought topical steroid products from flea markets and supermarkets, as these products should not be available by law at these outlets in terms of the Medicines and Related Substances Act No. 101 of 1965 (as amended in May 2003).[16] This suggests that the demand for topical steroid products is probably fuelling a black market.

Another interesting finding of this study is the influence of peer pressure, particularly from friends. It was shown both in the stratified and logistic analyses that initially being advised by a friend was associated significantly with misuse. This strong influence, coupled with a lack of awareness of the side effects, provides a foundation that sustains this type of practice.

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 topical steroid products.

These findings have several important implications. Firstly, interventions to scale down misuse and preventive efforts need to focus on the black female African and her peers. These interventions should be multi-dimensional, involving educational, legal and managerial approaches.

Media and public education on topical steroid misuse is warranted, 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.[17]

Secondly, legal approaches should include the enforcement of the existing legislation related to the control of medicines, so that scheduled medicines cannot be sold from unauthorised outlets. These legal approaches should include measures aimed at strengthening the ethical responsibilities of pharmacists in advising patients on the safety of medicines bought over the counter.

Thirdly, the below-mentioned managerial approaches could be implemented at the primary care level. During anamnesis, female patients presenting with symptoms likely to be linked to topical steroid misuse should be questioned about these symptoms by their general practitioners and other primary health care workers. Measures and systems should be instituted to identify, advise and rehabilitate those identified as having the side effects.

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 topical steroid products. It is not clear whether this was true or was a way to avoid being interviewed.

Since the convenience sampling technique was used and the interviews were conducted only at pharmacies, the sample drawn was not representative of those who misuse topical steroid products from other outlets, such as cosmetics

shops, flea markets, 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.

In conclusion, the prevalence of the misuse of topical steroid products among the respondents was 35.5%. The following predictors were associated with topical steroid misuse: being a black female African, not being aware of the side effects of these products, and initially being advised to use the products by a friend. In a logistic regression model, the last two predictors were the only parameters that significantly correlated with topical steroid misuse.

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