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## Skincare Product Usage: Implications on Health and Wellbeing of Africans

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**Abstract:** The knowledge of chemical composition of skincare products will go a long way in reducing the hazardous effects often associated with their use. This study sought to determine the association between educational levels and knowledge of the chemical composition of skincare products and also their impact on the health and general wellbeing of users in sub-Saharan Africa. In addition, it was intended to stimulate interest on development of products suitable for the African skin. Questionnaires were randomly administered and summary tables created for the pre-processed data to which descriptive statistics was applied. The strength of associations was evaluated using Karl Pearson's correlation coefficient. Results indicated a weak positive correlation between the level of education and knowledge of the chemical composition of skincare products. It also revealed an over-reliance of respondents on foreign skincare products for beauty enhancement. Respondents previously harmed by specific products or who are uncomfortable with some of their effects opted for a change of brand and were willing to participate in a new product survey. The end-users generally desired products with germicidal effects and ability to impact smooth, healthy skin devoid of skin reactions. The study also showed that referral by other users, as opposed to radio, TV or internet advertorials, is the fastest way to introduce a brand to a new user. The findings emphasize the need for enlightenment at all levels and for manufacturers to produce quality skincare products with desirable health attributes.

**Key words:** Cosmetics, dermatitis, skincare, wellbeing, chemical composition, cream, health, dermatology, healthcare promotion

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### INTRODUCTION

Skincare or cosmetics products are mixtures of natural or synthetic chemical compounds used to improve the appearance or smell of the human body (Schneider *et al.*, 2001). They include a range of products such as creams, lotions, powders, perfumes, lipsticks, fingernail and toenail polish, eye and facial make-ups, permanent waves, hair colours, hair sprays and gels and deodorants. Cosmetics are believed to enhance the best features and cover the blemishes on the person wearing them. They have been in use since ages and constitute an important part of modern day's life. The use of cosmetics by Nigerian women is an age-long tradition. Women, young and old, apply and adorn themselves with

cosmetics of different texture and colours, particularly during festive periods. Skincare products are important cosmetics applied by women in Nigeria. Some formulated lotions of various sizes and cosmetics of different aesthetic shapes target varying ranges of skin types to perform specific functions. In addition, the damaging effects of UV radiation may be protected by sunscreen. However, treatment products such as skin lighteners and tanning oils may help to brown the skin to hide or remove wrinkles, acnes and other skin imperfections. Sunscreen comes in lotions and creams. A sunscreen with the Sun Protection Factor (SPF) of 15 can block most of the sun's UV radiation before it can damage the skin and protect the skin for 15 h.

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Advertisement, peer pressure and social acceptance shape the choice of skin-care products applied by most women. A study conducted by Cash *et al.* (1989) showed that male peers are harsher judges of a female's physical attractiveness than female peers; the study also revealed that females may overestimate their physical attractiveness when they are wearing makeup cosmetics. There is a generally belief that one can easily achieve smooth features and thus, feel more confident in every sphere of life with the application of cosmetics. Studies on the use of cosmetics amongst British women suggest that anxious, insecure females are motivated to apply cosmetics more, than females who are emotionally secure, socially confident and perceive themselves as physically attractive (Robertson *et al.*, 2008). Physical appearance has tremendous effect on the psychology of women, particularly the blacks.

The chemistry of cosmetics has always been shrouded in secrecy; many users of cosmetics know nothing about the constituents. Cosmetic products and their ingredients are not subject to regulation prior to their release into the market with the exception of colour additives. Several skincare products are regulated arising from the fact that they contain harmful chemical products capable of attacking the skin. This becomes important because the skin is the largest organ in the body saddled with the responsibility of body protection against caustic materials, UV and radioactive radiation either on temporary or long term repeated exposure.

It is the level of exposure that determines if damage will occur (Goldsmith, 1996). Skin types are categorized into normal skin, dry skin, oily skin, combination skin and sensitive skin; each skin type has the correct types of products that must be used to maintain healthy and attractive skin. Many skin problems in blacks are related to cosmetics designed for use on black skin and to fashion trends amongst the blacks. Some allergies seem to show up more frequently in black people as well. The most common cause of allergic reactions in black women is an ingredient (paraphenylenediamine) used in hair dyes and this underscores the need for compulsory declaration of ingredients on cosmetic product labels as corroborated by Schwanitz *et al.* (2003).

In the present studies, a survey was conducted on the use of skin-care products by Nigerian women. The study highlights the perceived benefits and inadequacies of skincare products usage with particular emphasis to health condition and general wellbeing of the people.

## MATERIALS AND METHODS

**Study design:** The study was done between Nov-Dec, 2011 at Ota, a semi urban community in Ogun State, Nigeria, through the administration of questionnaires to recruited subjects after obtaining approval and permission from relevant government agencies and Institutional Ethics Committee. In the study, 90 individuals aged between 20-70 years old were randomly selected from the community.

**Data analysis:** The data was obtained, cleaned, pre-processed while observed occurrences were tabulated and analyzed. From the questionnaire, a response of "YES/TRUE" is taken as same, while "NO/FALSE" is also same. The "Others" attribute connote "Not sure/ No response" and its negative value is used to denote a shortfall from the total number of 90 subjects. The percentage value in Table 1a is based on 90 which is the total number of subjects in the study due to choice of peculiar attributes in that category. However, the percentage values based on the total number of clear responses observed were computed, thereby minimizing the effect of unclear responses such as "Not sure/ No response" since this will help to obtain the realistic percentage of the responses on ground and improve accuracy. It is important to note that result summaries and entries into the tables in most cases may not add up to 90 responses in agreement with the total number of subjects as this is accounted with the negative value under the "Others" attribute. This is a strategy to account and allow record for multiple response entries in excess of 90 and "no response" entries in cases where total responses are less than 90.

Karl Pearson's correlation coefficient was computed to determine the strength of relationship between level of education and knowledge of the chemical composition of the cream used in the community by the subjects. Descriptive statistics were used to describe the data as categorized into 5 major headings which include: Basis for making choice, Preference of use, Willingness to try a new product, Sources of knowledge of brand and Places for product purchase.

A major categorized data includes the "Basis for making choice of a skincare product" and this is to reflect the purpose or perceived function of specific skincare product as shown in Table 1a. This entails eight attributes such as beauty enhancement, fragrance, soft and flexible skin, colour, anti-aging effects of products, desire to have or sustain light complexion skin, product price issues and acceptance due to knowledge of the contents of the cream. The factors for selecting a skincare product given

by Larson *et al.* (2006) is similar to the one used in this study and also contain measures such as fragrance, colour and product cost.

**RESULTS AND DISCUSSION**

In order to visualize the contents of Table 1a and give informed result interpretation, a view of 3-D transformed bar chart shown in Fig. 1a was created. This permitted the visualization of the entire data from “Basis for choice” through Mean YES/TRUE response to NO/FALSE response to be represented in 3-D which is more elucidative and comparable to the real world.

In Table 1b, the “Proposed preference of product usage” is presented and it entails analysis to determine characteristics such as foreign skincare product versus local skin products. This is intended to help assess the preference level for imported foreign products, lack of skin reaction, use of known skincare as the best product, killing germs, healthy and strong skin. This is intended to determine reason for continuous use of a skincare product.

In Table 1c, the willingness of consumers to try a new product as a result of effects of previously used skincare products was assessed. The considered attributes applied were to determine if the users have been affected by product usage in categories such as “Harmed previously”, “Causing Sweat”, “Desire to change the brand”, “Willingness to participate in new product”.

In Table 2a, the source of knowledge of product brand by users of the skincare products are expected to come from the following categories: Friends, Family relations, Radio/TV adverts, Window shopping, Internet and Others. This will enlighten manufacturers on the appropriate channel to pass their product information like advert to their customers.

In Table 2b, places of interest were evaluated to see the most prominent places where users of skincare products get their supplies. These places are listed as: Shopping mall, Superstores, Beauty saloons, Local stores, Open market, Others.

The computed Karl Pearson’s correlation coefficient  $r = 0.106068$  indicate a weak positive correlation between level of education and knowledge of the chemical composition of the cream used in the community by the subjects. This is contrary to general expectation as it may appear convincing that the subjects with high educational background has more access and are better informed and oportuned to know the chemical composition of their skincare products as it has great health implication. The indication may probably be that most uneducated subjects use local products which they

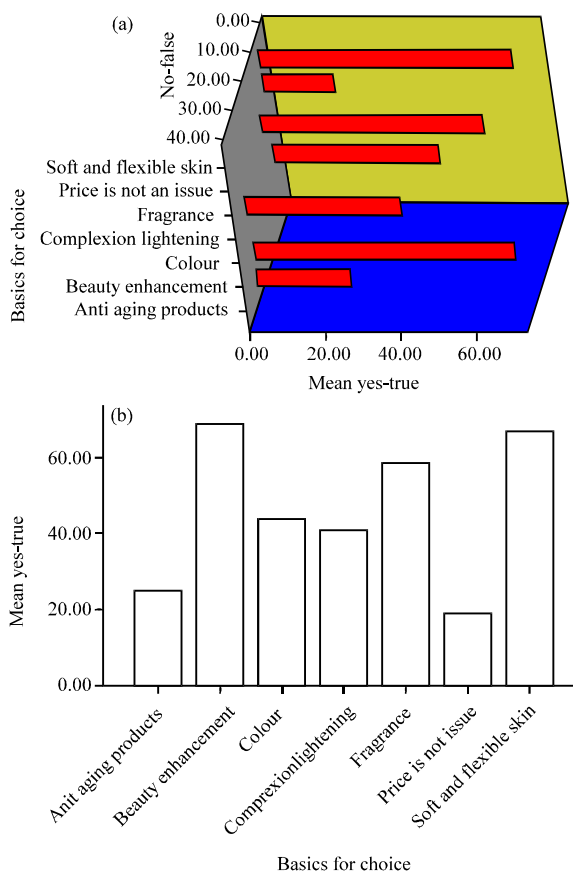


Fig. 1(a-b): (a) 3-D Transformed Barchart of occurrences from basis for making choice of skincare product. This barchart illustrates the 3-Dimensional view of the data as it relates to the average number of Yes responses and average number of No responses in accordance with the various basis for making a choice of cosmetic product. (b) 2-D Untransformed barchart on basis for making choice of skincare product. This chart shows the level of “Yes” responses over the various basis for making choice of a skincare product

source and have knowledge of its reactive constituents, unlike the educated subjects in the community who use novel modern products whose chemistry of action is not completely explained. From Table 1a, a 3-D graphics was created as depicted in Figure 1a and was zoomed upon, to further create a simple 2-D untransformed bar chart as show in Fig. 1b.

This clearly shows that “beauty enhancement” indicating 77% “Yes” responses is the most motivating factor for choice of skincare products. It was also discovered that the quest for beauty enhancement is closely followed by 74% for desire to have a “Soft and

Table 1(a-c): (a) The basis for making choice of a skincare product. This table shows the numeric data categorized as users motivated interest for selecting a cosmetic or skincare product generally. (b) The Preference of use. It consists of data categorized with inherent characteristics of the skincare products that appeals for its preference of use. (c) Willingness to try a new product. This lists the obtained data that categorize several people's interest to try a new product due to the unsatisfactory effects of their current skincare product

(a)		Observed occurrences				
Coded labels	Basis of making choice /Purpose of skincare	YES/ TRUE	NO/ FALSE	Others	Yes+ No	%Yes/ True
1	Beauty Enhancement	69	21	0	90	77
2	Fragrance	59	11	-20	70	66
3	Soft and flexible skin	67	5	-18	72	74
4	Colour	44	5	-41	49	49
5	Anti aging products	25	31	-34	56	28
6	Complexion lightening	41	31	-18	72	46
7	Price is not an issue	19	5	-66	24	21
8	Content of cream knowledge	17	5	-68	22	19

(b)		Observed occurrences				
Preference of use		YES/ TRUE	NO/ FALSE	Others	Yes+ No	%Yes
Use foreign than local skin products		33	39	-18	72	45.83
No skin reaction		16	49	-25	65	24.62
Use of known skin care as the best product		55	15	-20	70	78.57
Kill germs		31	38	-21	69	44.93
Healthy and strong skin		47	4	-39	51	92.16

(c)		Observed occurrences					
Willingness to try anew product		YES/ TRUE	NO/ FALSE	Others	Yes+ No	%Yes	%No
Harmed previously		16	55	-19	71	22.54	77.46
Causing Sweat		32	37	-21	69	46.38	53.62
Desire to change the brand		16	28	-46	44	36.36	63.64
Willingness to participate in new product		32	29	-29	61	52.46	47.54

flexible skin,” while “Fragrance” with 66% occupy the third most popular desire to why people go for specific skincare and cosmetic products. It further indicates that the colour of the skincare product (49%), complexion lightening (46%), anti-aging effects (25%) and product prices (21%) seem to exhibit a downward influence in that order for ranking choice of a skincare product. However, it is interesting to know that only 19% of the responses know the content of the product while a large number of the subjects did not know the chemical content of the products, hence products were used at individuals peril and to the detriment of their health.

Larson *et al.* (2006) review on skin reactions related to hand hygiene products listed some ways to minimize adverse effects of hand hygiene to include selecting less irritating products, using skin moisturizers, unnecessary washing/making contact with skincare products. The attribute boundary for selecting or making a choice of skincare product is an improvement over Larson *et al.*(2006). This is probably because the health

Table 2(a-b): (a) Sources of knowledge of brand. This data table categorizes the frequency of skincare product users' source of information on where to purchase products. (b) Places for product purchase. This categorizes the frequencies of places where users can constantly get the skincare products

(a)		
Sources of knowledge of brand		
Sources	Frequency	%Frequency
Friends	32	29.91
Family relations	35	32.71
Radio/TV	17	15.89
Window shopping	17	15.89
Internet	5	4.67
Others(specify)	1	0.93

(b)		
Places for product purchase		
Places	Frequency	%Frequency
Shopping Mall	28	37.33
Superstores	17	22.67
Beauty Saloons	13	17.33
Local Stores	5	6.67
Open Market	10	13.33
Others (specify)	2	2.67

and wellbeing of the entire skin was considered for the product user while Larson *et al.* (2006) considered only the hand of a typical health worker. This is without prejudice to the fact that both studies considered product's characteristics such as fragrance, colour and cost. In addition, contrary to the aforementioned characteristics, the study further considered several other attributes which may be seen as effective current trends in desired attribute skincare compendium for users. In addition, this study falls under the category of one of the foremost works done on black skinned people resident in Africa with expectation to elicit a skincare product of African origin by Africans.

The preference for a particular line of skincare product is revealed in Table 1b where “Healthy and strong skin” is adjudged to be the most sought attribute to spur preference for use of a product with the highest percentage response of 92.16%. Similarly, “Use of known skincare product as the best product” followed with a 78.57% of the responses in agreement while preferences for “foreign products more than the local products” and “killing of germs” are 45.83% and 44.93%. The implications show people's desire and quest for good health through the skincare product that they use.

From Table 1c, it is evident that 22.54% of obtained responses showed that they were harmed previously by the skincare products they used, while 46.38% responses showed that the product being used causes sweat. De Groot (1987) observed a similar trend in his study on allergy resulting from contact dermatitis as a result of skin care products such as moisturizing and cleansing cream/lotion/milk which affected the face predominantly. It is therefore imperative to agree that these dissatisfactions were responsible for the obtained 36.36%

interest specified by the “desire to change the brand” and 52.46% interest in “willingness to participate in new product survey”. Products inherent characteristics to cause skin irritation and dryness is a major factor that influences acceptance and ultimate usage as it affect healthy living (Larson *et al.*, 2006; Larson and Killien, 1982; Zimakoff *et al.*, 1992; Funk and Maibach, 1994; Ayliffe *et al.*, 1988; Boyce *et al.*, 2009; Ojajarvi, 1981; Taylor, 1978).

Other results summary as shown in Table 2a revealed that the most influential “source of knowledge of brand” is provided by family relations (32.71%) followed by friends (29.91%) while advert on Radio/TV and Window shopping are 17% each. However, Internet medium (4.67%) is least source of knowledge provision for skincare products brand. This may be confirmed by the low internet penetration in the study area. It further presume that the source of knowledge of brand rely on family and friends referrals. This was further corroborated by earlier result in Table 1b where subject’s preference for product relied heavily on their previous knowledge of the products brand, probably from family or friend’s referrals. An evaluation shown in Table 2b indicates that the most preferred place for product purchase is “Shopping Mall (37.33%)”, close followed by “Super stores (22.67%)”. This also indicates that Beauty saloons (17.33%), Open Market (13.33%) and Local Stores (6.67%) are currently less patronized in terms of meeting user’s needs.

Skin care is as old as antiquity, going back to the ancient days of the Pharaohs. The Egyptians regarded hygiene, including skin care, with high importance. Indeed, many of the present-day beauty rituals such as exfoliation, depilation and hair colouration find their roots in ancient Egyptian culture (Patkar, 2008). Deeper understanding of the skin has led to the development of more and more products. Today, consumers have endless choices that range from whitening, age-defying, to body firming. Skin care trend is all about the latest developments in skin care. It is about new products, techniques and tips for healthy and youthful skin. The process of basic skin care, which include cleanse, tone and moisturize is simple. Cleansing removes dirt, pollutants and excess oil. This process is important; otherwise, pores will get clogged and will be prone to breakouts. A gentle cleanser does not strip the skin of its natural moisture barrier. Toning removes remaining dirt or cleanser from the skin. It controls surface oils and hydrates the skin. It naturally closes the pores to prevent dirt from accumulating.

Healthy skin is a result of having a healthy body. Changes in the skin will be seen as a result of stress,

improper nutrition and unhealthy lifestyle. Taking care of the body from the inside results to a healthy body as seen from the outside (Buchanan, 2012). Healthy skin also results from regular exercise. It improves blood flow to all parts of the body. The blood vessels underneath the skin provides the nutrition for skin health, therefore better blood flow is good for the skin. The skin becomes dry and brittle because of lack of water in the body (Buchanan, 2012). Drinking plenty of fluids everyday (around 8 to 10 glasses of water) helps prevent dry skin. A balanced diet provides the body with proper nutrition which is vital in the repair and development of cells (Fraser, 2006). Skin is also affected by unhealthy habits such as smoking. The skin of smokers is seen to wrinkle and age faster (Butler, 2006).

Stress has long been known to ruin even the best of days and people manifest it in different ways as well as handle it just the same. It seems the human body’s mechanisms still have a thing or two that defies understanding (Dean, 2011). However, researchers have found that an enzyme responsible for the breaking down of fat in the human body is vital for healthy skin and hair (Dean, 2011). Such enzyme is able to influence retinoid compounds responsible for the absence or presence of the many skin maladies. Heightened levels of retinoic acid have been found to cause massive hair loss and the development of acne or other skin infections that plagues humans (Farnesm and Setness, 1992). The retinoic acid is being seen as the main regulatory compound which controls the body’s ability to maintain healthy skin and hair (Farnesm and Setness, 1992). Efforts are still been made to better the understanding of the mechanisms of the body and their effects on overall health.

Antiaging, skin lightening, sun screen, anticancer and skin lightening are some of the recent incorporations into skin care products. Skin color comes from a natural pigment called melanin. Melanin pigment is synthesized in specialized cytoplasmic organelles called melanosomes. Within the melanosome, the enzymatic conversion of the amino acid tyrosine to melanin is catalyzed by the enzyme tyrosinase. The melanosomes in darker portions of the skin are more active than those found in normal areas of the body (Farnesm and Setness, 1992). The ingredients are targeted at countering this process in multiple ways by dealing with not only the melanosomes, but also the enzyme tyrosinase. Niacinamide (Vitamin B3), kojic acid and lactic acid are some of the active skin lightening ingredients (Smith and Thiboutot, 2008). Argireline, a peptide (two or more amino acids) that will assist the muscles to relax and release the wrinkles by interrupting the chemical signals, is also a useful ingredients been incorporated into skin care products (Smith and Thiboutot, 2008).

Skin care product manufacturers are not only using natural products but are also delving deep into nature's bounty in tapping the functionalities of exotic fruits, natural emollients and condiments (Rinaldi, 2008; Smith and Thiboutot, 2008). Recent research and product development are now directed at incorporating stem cells since enzymes and peptides extracted from stem cells may deliver some protection for skin cells (Nelson, 2009); and Alpha Hydroxy Acids (AHAs) that is necessary for smooth glowing skin (Nelson, 2009). Skincare companies are now not only more conscious about what is in their formulations but also how those ingredients are sourced. Many manufacturers are now boycotting palm oil, a common ingredient in skincare, to protect tropical forests and a growing number of companies are turning to fair trade and sustainable ingredients such as shea butter, rose extract and cane sugar (Rinaldi, 2008).

### CONCLUSION

From the study, there is no doubt that education and enlightenment at all levels on proper skincare management would be an effective way in controlling skin disorders originating from cosmetics usage. An important culture that should be incorporated among skincare products manufacturers' ethics is the need to always include warning and side effects of their products on their labels. It is also advisable to have detailed side effects enumerated in simple terms so that it can be appreciated by users. Since the subjects predominantly have higher educational background, it was discovered that this attribute did not confer great advantage as it was originally believed that they should be able to seek and obtain knowledge of the chemical composition of the cream they use as this has great health implication. The indication may probably be that most uneducated subjects use local products which they source and have total knowledge about unlike the educated subjects in the community.

The result underlined people's desire and quest for good health through the skincare products they use. Though, this quest has shown to be discouraging with the earlier discovery that many of the subjects lack the knowledge of chemical composition of products they use and this can be devastating to their health unknowingly. The study was able to show that the most influential "source of knowledge of brand" is provided by referrals amongst family members and friends rather than advert in radio, television or internet. This will be of great interest to manufacturers of the product so as to encourage them to produce quality products capable of conferring good hygiene and other healthy attributes as well as the desired

beauty enhancement attribute. Subjects previously harmed by skincare product and those whose products cause sweating desire to have a change in brand and are also willing to participate in new product survey. It is evident that no product may be totally free of potential risk after continuous usage overtime; hence it is usually necessary to have good knowledge of product's chemical composition and to observe any contra-indications in individuals with respect to sensitivity or reactions on the body.

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