

# Prevalence of Skin Bleaching Cosmetics Use in Senegal: Trends and Action Prospects

Issa Wone<sup>1,\*</sup>, Ndeye Beye Ngom<sup>2</sup>, Mame Ngone Leye<sup>2</sup>, Fatou Fall<sup>2</sup>, Bafode Timera<sup>2</sup>, Fatimata Ly<sup>2</sup>

<sup>1</sup>Health Sciences Research and Training Unit, University Assane Seck (UASZ), Ziguinchor, Senegal

<sup>2</sup>Department of Dermatology, University Cheikh Anta Diop (UCAD), Dakar, Senegal

## Email address:

issawone@yahoo.fr (Issa Wone), issa.wone@univ-zig.sn (Issa Wone)

\*Corresponding author

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**Abstract:** There is more and more evidence in Africa about the medical, sanitary, health, social, and economic consequences of Skin Bleaching Cosmetics (SBC) use. This is a practice that mainly affects women and which seems to be on the rise. Our work, carried out in Senegal, had the following objectives: 1) measure the prevalence and factors associated with SBC use in 4 cities in Senegal, 2) Describe the evolution of VCD practice in Africa, 3) propose innovative perspectives for the control of SBC use in Africa, after a critical analysis of the actions undertaken. The study was carried out on a representative sample of 2,689 women distributed in 4 cosmopolitan cities of Senegal. It shows an overall prevalence of 59.20% of the practice of SBC use, with significant disparities between cities. The factors associated with SBC use were: study site, age, income level, source of information on the dangers of SBC, initial skin color, existence of own income, housing status, diabetes, high blood pressure, overweight or obesity. In spite of awareness of the dangers and control actions primarily based on the cognitive model, we find persistence, even perpetuation, of SBC use. In light of the complexity of the phenomenon in Africa and the poor results observed, a holistic analysis should be used to facilitate efficient, innovative, and integrated actions.

**Keywords:** Skin Bleaching Cosmetics, Prevalence, Senegal, Africa, Control, Innovation

## 1. Introduction

Skin Bleaching Cosmetics (SBC) use on black skin is an already old phenomenon in Africa [1, 2]. Its medical and health, social and economic consequences are widely and increasingly well documented [3].

Its medical and health, social and economic consequences are widely and increasingly well documented [3, 4]. It is currently a multibillion dollar industry, with large consumer bases in Asian and African continents [5].

Despite the existence of coercive laws and regulations, and numerous information and awareness-raising actions, advertising for the use of depigmenting cosmetic products is experiencing an explosion in Africa, particularly in Senegal [6]. In West Africa, the practice mainly affects women, although the practice is also common among men in some countries [7, 8]. In the United States, it is demonstrated that it

is most popular in states with diverse populations, including a high percentage of black and Asian Americans [9].

Also, hospital observations as well as the latest work carried out suggest a trend towards the development of the practice.

This work had the following objectives:

1. measure the prevalence and factors associated with SBC use in 4 cities in Senegal,
2. discuss the evolution of SBC practice in Senegal,
3. following a critical analysis of the actions taken, propose innovative perspectives for controlling SBC in Africa.

## 2. Method

### 2.1. Type of Study

We conducted a descriptive cross-sectional study on

representative samples of the population of women of childbearing age in four cities in Senegal: Kaffrine, Pikine, Parcelles Assainies, and Guédiawaye.

## 2.2. Study Population

The study was carried out in 4 cities in Senegal, 3 of which are located in the Dakar region (Parcelles Assainies, Pikine and Guédiawaye) and one in a semi-rural environment, located 250 km from Dakar, the capital. The demographic characteristics of the enrolled sites are specified in the table below:

**Table 1.** Demographic characteristics of study sites.

Communes	Total population	Number of women	
Kaffrin	83.728	43.538	(52%)
Parcelles Assainies	159.498	78.708	(49.34%)
Pikine	1,279,829	632.884	(49.46%)
Guediawaye	402.986	203.240	(50.43%)
Total	1,926,041	958.370	(49.75%)

## 2.3. Collection of Data

Data collection was spread over 2 years, from 2018 to 2019. The observation unit was represented by:

1. Any woman aged 18 or over at the time of the survey.
2. Reside in the study sites.

The size of the sample was estimated according to the formula used in descriptive studies, when the cluster effect is attenuated:

$$n = (\epsilon^2 \cdot P \cdot Q / e^2) \cdot 2$$

Where:

n = sample size

$\epsilon$  = reduced deviation corresponding to a confidence interval of 95% = 1.96.

P = expected prevalence of the phenomenon to be studied; the prevalence of 67.2% found in Dakar was used for the calculation [1].

Q = complementary probability = 1-P

e = accuracy desired by the researcher = 5%

2 = cluster effect

The size thus calculated is 680 subjects per site, or 2,720 in total.

The data was collected on a standardized survey form, investigating:

1. demographic aspects: age, income level, marital status, number of children;

2. aspects: initial color of the skin, nature and types of products used, age of SBC practice, SBC processes.
3. health aspects: existence of diabetes, high blood pressure or overweight/obesity.

Observation units were recruited at each site using the itinerary method, which included the following steps:

1. the interviewer placed himself at the sociological center of the selected cluster (market or public place).
2. using a sharp object that he turned, he drew a direction at random,
3. on the drawn direction he counted the number of houses, and drew a random number located between 1 and the number of houses located on the axis.
4. He began the investigation in the house located at the number drawn, on the right or the left.
5. He recruited in each household or compound all the eligible people, and then progressed step by step by entering the house whose door was closest.
6. It stopped when the planned sample size for the site was reached.

## 2.4. Data Analysis

The data collected was subjected to univariate and multivariate descriptive analysis.

The comparisons of proportions were made using the  $\chi^2_{test}$ , at the 5% significance level.

For the multivariate analysis we used the binary logistic regression method. All variables whose p value was  $\leq 0.25$  were retained to modelize the factors associated with SBC. ascending modeling was done. The adjusted ORs with their [95% CI] were determined for each variable retained in the final model. The quality of the model was assessed with the Hosmer and Lemeshow test to check its adequacy.

## 2.5. Ethical Aspects

The study protocol (including the data collection instruments) had been approved by the Ethics Committee of the School of Medicine, Pharmacy and Odontology of Cheikh Anta Diop University of Dakar (UCAD). Informed consent (submitting and signing a consent form), anonymity, and confidentiality were specifically addressed.

## 3. Results

The prevalence of SBC was as follows, in the different sites surveyed.

**Table 2.** Prevalence of SBC in study sites.

Recruitment website	Practice of SBC				Total	P-value
	Yes		Nope			
	NOT	%	NOT	%		
Pikine	485	71.32	195	28.68	680	<0.001*
Kaffrine	403	59.18	278	40.82	681	
Parcelles Assainies	374	54.84	308	45.16	682	
Guediawaye	330	51.08	316	48.92	646	
TOTAL	1.592	59.20	1.097		2.689	

The prevalence of SBC use ranged from 51% to 71.32% in the sites surveyed in Senegal. It was greatest in the town of Pikine, followed by Kaffrine, Parcelles Assainies and then Guédiawaye.

A significant disparity was observed between the sites. An overall prevalence of 59.20% was observed across all sites.

The table below indicates the main factors associated with the practice of SBC:

**Table 3.** Factors associated with SBC practice.

Factors associated with depigmentation	OR aj [95% Ic]	P-value
Department		<0.001
pikin	5.56 [3.55-8.72] *	
kaffrin	2.64 [1.98-3.51] *	
Dakar	2.53 [1.67-3.81] *	
Guediawaye	1	
Age		<0.001
< 18 years old	1	
18-34 years old	2.12 [1.32-3.40] *	
≥ 35 years old	1.26 [0.76-2.09]	
Revenue		0.004
Yes	1.33 [1.10-1.61] *	
Nope	1	
Housing status		0.012
Other statuses	11.27 [1.10-1.53] *	
Owners	1	
Skin color		<0.001
Intermediate	3.04 [2.43-3.80] *	
Clear	2.57 [1.93-3.42] *	
Black	1	
Sources of hazard information		<0.001
Friends	1.71 [1.29-2.26] *	
Other Sources	1	
History of dermatoses		<0.001
Yes	6.75 [2.76-16.50] *	
Nope	1	
Diabetes		0.011
Yes	1.45 [1.12-1.92] *	
Nope	1	
hypertension		0.038
Yes	1.30 [1.11-1.61] *	
Nope	1	
Overweight-Obesity		0.006
Yes	1.34 [1.09-1.70] *	
Nope	1	

At the end of the multivariate study, the factors associated with SBC use found were: study site, age, income level, source of information on the dangers of SBC, initial skin color, the existence of own income, housing status, diabetes, high blood pressure, overweight or obesity.

The main factors predisposing to the practice of SBC are the following:

1. Age: women aged 18 to 34 are most at risk.
2. The phototype.

Among the factors facilitating the practice of SBC, was the existence of an income for the exposed person.

Finally, among the consequences associated with the practice of SBC, suggested by the study, are arterial hypertension, diabetes, overweight and obesity, dermatoses.

## 4. Discussion

### 4.1. Evolution and Routinization of SBC Practice in Sub-Saharan Africa

In our study, the SBC has an overall frequency of 59.20% depending on the sites, with a significant difference between sites.

A previous study, carried out under similar conditions, already found a prevalence of 67.2%, twenty years ago in Senegal [1]. This prevalence is similar to those observed in the sociologically comparable city of Pikine ( $p=0.10$ ), but different in the other sites.

In general, the practice of SBC is a phenomenon that not only has become part of our habits (the practice would have started since the 1950s in Africa) [2], but is also very frequent, affecting between 30 and 77, 3% of the female population in Sub - Saharan Africa [5]. SBC use, is far from fading away despite numerous information and awareness campaigns. At the same time, an increase in the frequency of complications received in a hospital setting has been observed [10].

The practice has become routine in the countries of sub-Saharan Africa, with names that have entered local lexicons: *xeesal* or *leeral* in Senegal, *tchatcho* in Mali, *akonti* in Togo, *dorot* in Niger and Burkina Faso and more prosaically "makeup" in Congo [10, 11].

At the community level, SBC indeed bears all the characteristics of an organized or even "institutionalized" practice, like a program that tends towards sustainability, having a financing system, an adaptation to the sociological context, symbols and rules [12].

People who practice SBC budget for it, which can occupy up to 19% of their income in Senegal, even in the poorest households [13]. These costs do not include the management of possible complications secondary to the practice. This practice therefore seems to be a priority for the women who practice it.

In practice, SBC uses drugs diverted from their initial use: hydroquinone, topical corticosteroids, mercury, glutathione [10].

From a sociological point of view, light skin is a canon of beauty in sub-Saharan Africa. The commercial names given to depigmenting products are made to attract, promising to confer a fast and radiant whiteness to users.

Even the baptism ceremony is marked and influenced by the SBC: the woman must appear clear, with a radiant complexion, on the day of the baptism!

To enhance the effectiveness of the products used, various techniques have become routine: product application, then occlusion of the skin using plastic bags, followed by stripping; mix of several products...

These practices, for some, become a rite on the eve of holidays (weddings, baptisms, religious events).

There is, in addition to the various terms mentioned above

to qualify the SBC, a whole technical vocabulary around the practice: thus, the *ñaral* is a practice of burn the skin with the aforementioned products to achieve maximum whiteness; on the same register, the *rocci* (removal of the skin) consists, after a more or less long maceration with the products, in stripping the epidermis [10].

The SBC therefore bears all the characteristics of a practice that tends to perpetuate, despite information and awareness-raising actions, and for some countries, the legislation in force which prohibits or limits this practice. It should also be noted that, despite all the actions undertaken, in most countries there is still no systematic policy for the control of SBC and its harmful effects.

SBC therefore appears as a persistent and complex phenomenon, the solution of which does not lie in the classic approaches to problem solving, based on the cognitive model. Innovative actions are needed.

#### 4.2. Prospects for Action

From a health promotion perspective, the PRECEDE-PROCEDE analysis and planning model provides a comprehensive and innovative approach to dealing with SBC use [14]:

1. Predisposing factors: they precede the behavior and act upstream. These are the beliefs, taboos, canons, which exist in all communities and which condition practices. Light skin is, without a doubt, a strong canon of female beauty in West Africa. To counteract this tendency which leads to SBC use, several initiatives tend, on the contrary, to promote black skin. An advertisement that praised fair skin in Senegal (*xees pecc* or dazzling whiteness) having caused a lot of excitement in the country, a counter-advertising campaign was organized by associations fighting against SBC used under the slogan *ñuul kuk* (ebony blackness). A poster war in the streets of Dakar could testify to this [15].
2. Enabling factors: these are the environmental factors that make it easier to perform a behavior. Regarding SBC use, the wide availability of cosmetic products in West African markets, the diversity of specialties, and their financial accessibility facilitates their use. The very timid application of laws and regulations concerning SBC use also contributes to the trivialization of behavior and the facilitation of the practice.
3. Reinforcing factors: the valorization of the behavior a posteriori by advertising, the admiring reactions of the entourage, and the encouragement by the spouse are all factors that reinforce the user in the SBC, and which lead her into a spiral with devastating effects.

Consequently, several targets and stakeholders appear in the SBC control strategy: users and their immediate entourage, sellers of cosmetic products, legislators, holders of police and judicial powers, spouses, youth associations, fashion specialists, artists, etc.

The PRECEDE-PROCEED model implies, in the case of SBC use, going beyond epidemiological and socio-anthropological diagnoses. The social and environmental

dimensions of SBC should also be studied in order to formulate the best political and administrative actions to be taken to control the problem.

Faced with the complexity of the SBC phenomenon, it seems appropriate to draw inspiration from the principles and methods of design thinking [16] in the planning and implementation of actions. The involvement of all stakeholders (including SBC users!), and consideration of their own interests is essential in the search for a lasting solution; team prototyping of efficient, realistic and viable solutions is an essential step. Still in a design thinking perspective, the permanent improvement of the actions undertaken by a continuous evaluation will lead to sustainable results.

## 5. Conclusion

SBC is a relatively old and persistent phenomenon in Africa. The health consequences are serious and increasingly well known. We found that, far to decrease, the phenomenon trends to be routinized, despite the sanitary consequences very well known. With an average prevalence of 59,20% in 4 urban and rural cities, the practice of SBC is influenced by several exposure factors: location, age, revenue, housing status, initial skin color, source of hazard information. SBC is associated with pathologies like hypertension, Diabetes, overweight/obesity. In the past, conventional approaches based on the cognitive model and coercion have failed to control the practice. Innovative approaches are therefore needed, which will involve a more systematic analysis of the causes of the phenomenon, and innovative resolution schemes.

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