

Original Research Article

Young people's Knowledge of the Consequences of Using Toxic Cosmetics

ABSTRACT

Introduction: A study on the knowledge of young people on the consequences of the use of toxic cosmetic products was carried out at the Institut Supérieur des Techniques Médicales of Kisangani with the objectives of evaluating the level of knowledge of young people on the use of toxic cosmetic products, determining the consequences of abusive use of these products and evaluating the treatment in case of irritation or intoxication.

Method: This is a descriptive cross-sectional study based on face-to-face interviews, conducted among students from January 1st to October 15, 2021. On the basis of an occasional sample. Thus, 60 young people were recruited from a population of 1,865 students.

Results: It was shown that the majority of young people (81.7%) were not aware of the chemical agents contained in toxic cosmetics, skin cancer was the consequence of the abusive use of toxic cosmetic products (50.0%), changing products considered toxic was the management observed in case of allergies or skin irritations (53.3%). Young people's lack of knowledge about the chemical agents in toxic cosmetic products is a real public health problem. The need and importance of raising awareness among young people about not using toxic cosmetic products that can cause harmful and damaging consequences on the skin is essential. This is where the role of the authorities in charge of controlling and regulating the conformity of products released for consumption comes in.

Key words: Knowledge, Young people, Cosmetics, Toxic

1. Introduction

A cosmetic product is any substance or preparation intended to be placed in contact with the various superficial parts of the human body, in particular the epidermis, the hair and capillary systems, the nails, the lips and the external genital organs or with the teeth and the oral mucous membranes with a view, exclusively or mainly, to cleaning, perfuming, modifying the appearance of, protecting, maintaining in good condition or correcting body odours [1].

The emergence of endocrine disruptors is a major issue of the 21st century. Indeed, these components are omnipresent in our living environment, particularly in cosmetic products.

The search for beauty is often a female preoccupation, and each woman operates according to the desired result. With globalisation, traditional methods of making oneself beautiful have been improved or even erased in favour of so-called modern methods [2].

In 1994, an American study investigated the rate of miscarriage among North American women aged 22-36 who had worked in cosmetics, hairdressing or nail care during their pregnancy. The study included 96 women who had spontaneous abortions and 547 who had viable babies and who worked full-time in cosmetology or other jobs during the first trimester of their pregnancy, and showed a statistically significant association between spontaneous abortion and the number of hours worked per day in cosmetology [3].

In 2008, 193 cases of adverse reactions were recorded in Mali, where skin burns, convulsions, irritations, liver problems, etc. were the main consequences attributable to the use of toxic elements in cosmetics. In the absence of a law requiring a marketing authorisation from the producers of beauty products, every consumer has the right to question the level of danger of the items he/she buys [4].

Some cosmetic products sometimes cause direct or secondary reactions in people who are allergic or have become sensitised to one of the product's ingredients, although this cannot be anticipated from the safety data available due to the small number of people concerned by the initial studies [5]. For this reason, the regulations repeatedly oblige manufacturers to indicate on the packaging or label of their products, in addition to their name and address, the complete list of ingredients, including the presence of certain natural substances known to be allergenic [6].

Counterfeiters in Europe and Asia or Africa manufacture cortisone drugs that they export to countries where consumers will use these drugs as skin-lightening cosmetics, while others produce dangerous cosmetics that do not comply with marketing requirements, which more or less organised manufacturers smuggle into these countries where they are banned [7].

Some toothpastes, "from Oral B, Sanogyl, Sensodyne, Signal, Vademecum or Zendium", contain traces of heavy metals, such as zinc and tin, which are "toxic", explains the magazine [8]. Titanium dioxide, which may contain nanoparticles and is suspected of being carcinogenic, is also reported. Overall, the magazine calls on consumers to look for ingredients to avoid as much as possible, such as iodopropynyl butylcarbamate, which is allergenic, or EDTA (Ethylene Diamine Tetra Acetic Acid), which is irritating and "above all, very polluting for the environment" [9].

In many African and Asian countries and in some African immigrant communities, many women and sometimes men use products containing active agents such as mercury, hydroquinone and clobetasol propionate to lighten their skin [10]. These main agents are toxic and their presence in cosmetics is regulated or even prohibited in several countries [11].

In the Democratic Republic of Congo, a study conducted by the NGO "Femme et Famille" estimates that about 90% of women in urban areas use cosmetic products without regard for the danger to their health [12].

This situation led us to investigate the knowledge of young people about the consequences of abusing toxic cosmetics.

In view of the above, our problematic turned around the following questions: What is the level of knowledge of young people about the use of toxic cosmetics? What are the consequences of abusive use of these products? How is care taken in the event of skin irritation?

Thus, the general aim of this study is to demonstrate the problems associated with the use of toxic cosmetics to achieve a clear, more even, radiant complexion and the ignorance of the irritating effects by young people.

From this motivation, the following objectives are derived: To assess the level of knowledge of young people about toxic cosmetic products, to determine the consequences of misuse of these products and to evaluate the management of skin irritation.

2. Methods

2.1 Description of the research field

The study took place at the Institut Supérieur des Techniques Médicales de Kisangani, a public higher education and university establishment located in the Plateau Médical district of Kisangani, the capital of the Tshopo Province in the Democratic Republic of Congo.

The Institut Supérieur des Techniques Médicales de Kisangani shares its boundaries with the Centrale d'achat des médicaments essentiels de Kisangani to the east, the Simisimi military airport to the west, the Cemetery of the 6-day war to the north and the Inspection Provinciale de la Santé to the south.

2.2 Study population

As the study was conducted in a higher education institution, the study population was naturally young male and female students. Indeed, this population comprised 1,865 students regularly enrolled in the academic year 2020-2021.

2.3 Study sample

The study was conducted on the basis of a **casual sample** of 60 young students from the Institut Supérieur des Techniques Médicales de Kisangani, selected on the basis of 12 students per class of first degree students, i.e. five classes.

Inclusion criteria

The selection of subjects was based on the following criteria: being a student of the Institut Supérieur des Techniques Médicales of Kisangani, having used the cosmetic products considered toxic, and having agreed to participate in the survey.

2.4 Type of study

This is obviously a descriptive cross-sectional study that covered the period from 1 January to 15 October 2021.

2.5 Data collection

In the data collection process, we used direct face-to-face interview, based on a pre-established survey protocol including the variables age, gender, occupation, marital status, use of cosmetics, reason for use of cosmetics, risk of toxic cosmetics, knowledge of chemical agents, consequence of misuse of cosmetics.

2.6 Data analysis and processing plan

The collected data were grouped into frequency tables and then transformed into percentages. Thus, we calculated the percentage, the absolute frequency and the total number of observations.

2.7 Ethical aspects

The participation of the respondents in this study was voluntary. Consent was free, informed but only verbal. The respondents were told that if they agreed to participate in the study, a questionnaire would be administered to them. The respondent who freely agreed to be recruited could withdraw from the survey at any time without any prejudice.

3. Results

We present the results based on the identification elements on the one hand, and on the answers to the questions on the use of toxic cosmetics by the students of the Institut Supérieur des Techniques Médicales of Kisangani on the other.

3.1 Age

Table 1: Distribution of participants by age group

Age (years)	Effective	Percentage
18 – 23	20	33.3
24 – 29	30	50.0

30 – 35	10	16.7
Total	60	100.0

This table shows that 50.0% of the respondents were between 24 and 29 years of age, followed by those between 18 and 23 years of age (33.3%) and those between 30 and 35 years of age (16.7%).

3.2 Sex of the subjects

Table 2: Distribution of participants by Sex of the subjects

Sex	Effective	Percentage
Male	8	13.3
Female	52	86.7
Total	60	100.0

Analysis of this table shows that 86.7% of the study subjects were female and 13.3% were male.

3.3 Marital status

Table 3: Distribution of participants by marital status

Marital status	Effective	Percentage
Single	50	83.3
Married	10	16.7
Total	60	100.0

This table shows that the majority of the respondents were single (83.3%), while 16.7% were married.

3.4 Reason for using toxic cosmetics

Table 4: Distribution of respondents according to the reason for using toxic cosmetics

Reason	Effective	Percentage
Make the skin smooth and radiant	36	60.0
Increase skin tone	14	23.3
Fight against pimples on the skin	10	16.7
Total	60	100.0

The data in Table 4 show that the majority of the study respondents used cosmetic products for the purpose of making the skin glow and smooth at 60.0%, while 23.3% used these products to increase skin tone.

3.5 Consequences of using toxic cosmetics

Table 5: Distribution of the respondents according to the consequences of using toxic cosmetics

Consequence	Effective	Percentage
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Skin cancer	30	50.0
Acne	15	25.0
Depigmentation	9	15.0
Stretch marks	4	6.7
No consequences	2	6.3
Total	60	100.0

The table shows that the consequences of using toxic cosmetics vary, including skin cancer (50.0%), acne (25.0%), depigmentation (15.0%) and stretch marks (6.7%). In addition, 6.3% of the surveyed subjects were not aware of the consequences of using toxic cosmetics.

3.6 Knowledge of chemical agents contained in toxic cosmetic products

Table 6: Distribution of respondents according to knowledge of chemical agents contained in toxic cosmetic products

Chemical agent knowledge	Effective	Percentage
Oui	11	18.3
Non	49	81.7
Total	60	100.0

From this table, it can be seen that 81.7% of the respondents were not aware of the chemical agents present in toxic cosmetic products.

3.7 Chemical agents present in toxic cosmetic products

Table 7: Distribution of the respondents according to the types of chemical agents present in toxic cosmetic products

Chemical agents	Effective	Percentage
Propylene Glycol	6	54.5
Mercury	3	27.3
Hydroquinone	2	18.2
Total	11	100.0

From this table, we can see that 54.5% of the surveyed subjects who were aware of chemical agents present in toxic cosmetic products had mentioned Propylene Glycol (54.5%), mercury (27.3%) and hydroquinone (18.2%).

3.8 Management of allergy

Table 8: Distribution of respondents according to allergy treatment

Allergy treatment	Effective	Percentage
Change of product	32	53.3
Change of instructions for use	16	26.7
Application of cream	12	20.0
Total	60	100.0

From this table, it can be seen that changing the product containing toxic chemicals was the main treatment at 53.3%, followed by changing the instructions for use (26.7%) and applying ointment (20.0%).

3.9 Reading the instructions on the toxic cosmetic product

Table 9: Distribution of the participants in the study according to the notices reading for use of the toxic cosmetic product

Lecture de la notice	Effective	Percentage
Yes	52	86.7
No	8	13.3
Total	60	100.0

The table shows that 86.7% of the respondents read the instructions on the toxic cosmetic product and 13.3% did not.

3.10 Daily frequency of use of toxic cosmetic products

Table 10: Distribution of the participants according to the daily frequency of use of toxic cosmetic products

Daily frequency	Effective	Percentage
One time	4	6.7
Twice	46	76.7
Three times	10	16.6
Total	60	100.0

The table shows that 76.7% of the respondents applied the toxic cosmetic twice a day, while 16.6% used it three times a day.

3.11 Moment of using the toxic cosmetic products

Table 11: Distribution of the participants according to the time of using of toxic cosmetics

Moment of using the toxic cosmetic products	Effective	Percentage
Morning and evening	38	63.3
Morning, noon and evening	16	26.7
At each bath	6	10.0
Total	60	100.0

Analysis of this table shows that 63.3% of the respondents applied the toxic cosmetic every morning and evening, while 26.7% used it every morning, noon and evening and 10.0% used it every time they took a bath.

3.12 Cosmetic products considered toxic

Table 12: Distribution of the respondents according to the cosmetic products considered toxic

Cosmetic products found to be toxic	Effective	Percentage
Lait de beauté	40	66.7
Produits de toilette	12	20.0
Dentifrice	8	13.3
Total	60	100.0

The observation of this table indicates that among the toxic cosmetic products used, beauty milk was the most used (66.7%), followed by toiletries (20.0%) and toothpaste (13.3%).

4. Discussion

4.1 Age

We found that subjects aged 24 to 29 years use more toxic cosmetic products, i.e. 50%. We note that this population is essentially young, hence age is a valid factor associated with the use of cosmetics.

The result of the study conducted in 2012 by Mwamba [4] indicates the predominance of women with 57% against 43% of men and in his study conducted in 2006 in Yaounde, Cameroon, Akouemo [13] found 17% of subjects aged between 25 and 35 years.

This difference in terms of gender and age has an influence on the way ideas about the use of cosmetics are conceived and implemented, as men react differently than women to any situation as in the case of this study. This is due to the fact that most young people, especially girls, want to look beautiful and attractive during this age group. This leads them to use cosmetic products regularly and constantly, without taking into account their degree of toxicity, which is considered harmful to health.

4.2 Gender

The results of this study show that women predominate in the use of toxic cosmetics, at 86.7%. This result corroborates that found by Mwamba in 2012 in his study where 57% of the subjects were female [4].

In Senegal, the study conducted in 2014 by Mahé, Ly Fatimata, Gounongbé Ari, revealed that among people who resort to voluntary depigmentation of their skin, 70% are women and 30% are men [14].

The studies that exist on the subject indicate that the practice affects both men and women, the young and old, the educated and illiterate. While in most countries, women are much more affected by the phenomenon than men, this is not the case in the Democratic Republic of Congo and Congo-Brazzaville, where there is equality, or even competition, between the two sexes in the use of this phenomenon [10]. According to Mayoughouo, Wamba [2], voluntary skin depigmentation is a real social

phenomenon. Indeed, although the harmful effects of voluntary depigmentation practices are known, women, even though they are sometimes well informed and aware of them, continue to resort to them. The basic problem is therefore how to get young girls to change their ideas and behaviour with regard to practices that are considered risky for their health.

For his part, Chongwang [12], the use of lightening products has been a real social phenomenon for many years. It began in the 1960s in the United States with the accidental discovery of the depigmenting power of hydroquinone by black rubber workers, and quickly spread to black Africa. This devastating situation affects almost every race and continent in the world. It also exists in other countries such as Zimbabwe, Nigeria, Ivory Coast, Gambia, Malawi, Kenya, Tanzania, etc. In addition, it seems that some Asian countries are also concerned, such as Vietnam and Malaysia. Moreover, in DR Congo, a study conducted by an NGO "Women and Family" estimates that about 90% of women in urban areas use cosmetic products without regard for the danger to their health, the source said.

We believe that women's adornment often pushes them to resort to cosmetics, however toxic they may be, in order to always look beautiful, elegant and attractive in society. Furthermore, the predominance of women in this study would be justified by the fact that nursing, since its inception, was an emanation of women serving the sick.

4.3 Marital status

It was found in this study that the majority of the respondents were single, i.e. 83.3%. The same finding was made in 2017 by Kabamba [10] in Kinshasa, where 60% of the singles were the most known and identified users and in Lubumbashi, Mwamba found in 2012 a high rate of singles, i.e. 76% are singles applying toxic cosmetic products [4].

As our population is predominantly young, composed mainly of higher education and university students, it is quite normal that singles participate massively in the study. This would be justified by the fact that these young people, being students, have made higher and university education their priority, before entering into marriage.

4.4 Reasons for using cosmetics

According to the respondents, several reasons seem to justify the use of cosmetic products considered toxic, a practice aimed at deliberately depigmenting the skin, the best known of which are, among others: imitation out of conformity or following. In this series, making the skin glow and smooth was the main reason for using toxic cosmetics, i.e. 54.4%, and in Lubumbashi, Mwamba found 27% of the subjects who spoke of skin arrangement as a reason for using toxic cosmetics. A study in Senegal showed that women practise voluntary depigmentation for personal reasons (6%) to

eliminate facial acne, hence self-medication (16%), for a family or religious holiday (8%), and because of the influence of relatives (5%) [4].

For Mayoughouo, Wamba [2], imitation consists of resorting to this practice to be like their relatives or other people around them with light skin in the sense that, after seeing the light colour of some people, they want to look like them. For some, it is done because they want to imitate white people. On the other hand, some girls depigment their skin just because they want to. Thus, to depigment the skin is to voluntarily change the skin, to clean the skin by making it clear by the stripping products. The practices of voluntary skin depigmentation are linked, in some cases, to these surrounding beliefs. Thus, it appears that they are encouraged by the idea of the attraction of the fair woman to men.

According to Nadjma Abdou [15], these include, at a minimum, skin irritation in the form of itching or burning, and at a maximum, cancerous lesions: the appearance of black lesions on the skin and the appearance of skin thickening. Also mentioned were premature ageing of the skin and other diseases that can go as far as affecting the mind, for example neurosis. There are two underlying reasons why people misuse skin lightening products, namely media advertisements and gossip among people who use these products.

Many African women use cosmetic products with lightening effects. Today, many men also use them. Abraham Lincoln said: "It is not the colour of the skin that determines a man's fate, etc.".

Observers note that this practice of depigmentation is becoming fashionable because of its beauty. Today in Kinshasa as in Lubumbashi, this practice spares no one and no longer takes age or sex into account. It is also observed among children under 15 and adults.

The WHO states that hydroquinone is present in all categories of skin lightening cosmetic products and is in first place for the result of skin whitening. Consumers can legitimately be deceived, especially in view of the very similarity of certain copies, erroneous claims on the packaging, most often the true composition is not written on the illegal products, as well as the sales pitch used by most sellers. However, the risks of buying cosmetic products that do not comply with the cosmetics directive are real, as these products are supposedly exempt from any safety control [16]. Advertising through fair-skinned, enticing women presents depigmenting cosmetic products and pushes women to buy these products to have a clear and bright complexion. In addition, young women identify with the stars of fashion magazines, the models of cosmetic products [17].

We believe that radio and television advertisements for cosmetic products have a strong influence on young people's purchase and use of these products. It is important to note that the commercials never mention the consequences of toxic

cosmetics on the health of the users. This is why the authorities responsible for regulating and controlling products released for consumption must implement a systematic control mechanism for these products in order to protect consumers.

4.5 Consequences of toxic cosmetics

Skin cancer is the consequence of the use of toxic cosmetic products that is most widely known by the subjects surveyed, i.e. 50.0%. The literature shows that the use of hydroquinone, corticosteroids and mercury-based cosmetics causes several risks that can end in destabilisation [18]. For Raynaud, Cellier, Perret [19], the use of these products presents serious risks for the health and safety of the consumer; among these risks are burns, acne outbreaks, diabetes and hypertension, as no dermatological tests are carried out and the information on the packaging may be false. The physical consequences include skin weakening, the appearance of stretch marks and the development of skin cancer [20].

According to Magdelaine, Bontemps [6], the main risks associated with cosmetics are cutaneous: more or less strong irritation, allergy, photosensitisation. But there is worse, the multiplication of chemical ingredients in many products applied daily favours the "cocktail effect" and their persistent accumulation in our body (urine, blood, umbilical cord, maternal milk, etc.).

The harmful effects of voluntary skin depigmentation have led the authorities in some countries to take preventive action through legislation against voluntary skin depigmentation. In 2003, Del Guidice et al [21] reported that in several West African countries, the public authorities have put in place certain measures to eradicate this phenomenon, such as in Senegal.

According to the World Health Organisation (WHO), the consequences on health are unfortunately not trivial, as shown by the worrying increase in hormonal cancers, chronic diseases, allergies, etc. At the same time, fertility is falling dramatically, neurobehavioural disorders (autism, hyperactivity) are exploding and new diseases are emerging (chemical hypersensitivity, fibromyalgia, etc.). A veritable "global epidemic" that causes 63% of deaths worldwide (88% in Europe). Not to mention widespread environmental pollution [16].

Researchers suggest that one eighth of the 82,000 ingredients in personal care products are industrial chemicals, including carcinogens, pesticides, reproductive toxins, plasticisers and degreasers. It is therefore advisable to look carefully at the list of ingredients on your shampoo bottle or hand cream tube [22].

According to the World Health Organisation (WHO), 7-20% of cancers are also attributable to environmental factors, such as diet, indoor and outdoor air quality, and cosmetics. There are many routes of poisoning: ingestion, inhalation, skin contact [16, 23].

Epidemiological studies have highlighted a change in the frequency of infertility and pathologies affecting the reproductive organs, both in animals and humans. Researchers question a possible relationship with endocrine disruptors [9, 16]. Phenoxyethanol is limited in adult products to 1%. However, in high doses, it is toxic to the liver and blood. The problem is that it is present in many cosmetic products, and there is a real risk of accumulating several of them and exceeding the recommended doses [19].

This category includes adverse effects on libido, sexual behaviour, the different stages of spermatogenesis or ovogenesis, hormonal activity or physiological response that would interfere with the ability to fertilise, fertilisation itself or the development of the oocyte to implantation [8]. Adverse effects on fertility are usually studied in terms of involuntary infertility, with a duration of time, meaning not having had a child in the absence of a contraceptive method, and not resulting from a voluntary choice [18, 24].

The attributable share of their effects in the increase of certain pathologies is currently the subject of scientific controversy. It is in this sense that the WHO recognises EPs as a "global threat" to health. The problem of the emergence of substances that disrupt the endocrine system is therefore a major issue of the 21st century [7, 23].

The consequences of cosmetic products are not only physical, they can be environmental and social. Indeed, the numerous packaging wastes of these consumable products also represent a major pollution factor for our environment. Is it safe to be beautiful? Recent controversies cast doubt on this. There are allegedly irritating preservatives, even endocrine disruptors, and toxic active ingredients.

4.6 Knowledge of the chemical agents contained in toxic cosmetic products.

It appears from this study that the majority of the subjects in the study (81.7%) were not aware of the chemical agents, contrary to the study by Desmots, Brulez, Lemazurier carried out in 2005, which revealed that 63.7% of subjects were aware of the chemical agents present in toxic cosmetic products [25].

With regard to the social consequences of this practice, the respondents were aware of the unflattering names of the practitioners because sometimes in the street or with relatives, the non-uniformity of the skin colour is observed, which is unattractive. Sometimes these women are forced to camouflage themselves in clothes that cover their entire body so as not to attract people's attention, yet this does not prevent them from resorting to voluntary skin depigmentation practices. Knowledge and awareness campaigns alone are not enough to bring about a change in girls' behaviour towards voluntary skin depigmentation [24].

We believe that the lack of knowledge of the chemical agents present in toxic cosmetic products is justified by the fact that the majority of the study subjects do not

spend enough time reading the instructions on the products to identify the chemical agents that may constitute a health hazard for users.

4.7 Type of chemical agents present in cosmetic products

Propylene glycol was the most cited chemical agent present in cosmetic products in this study (54.5%). According to Lebreux, et al [1], the paraben family includes Butylparaben, Propylparaben or Sodium Butylparaben, Potassium Butylparaben, Sodium Propylparaben and Potassium Propylparaben. These substances are suspected of being carcinogenic, allergenic and endocrine disrupting. Yet they are still found in toothpastes, wipes and creams even when these are intended for children.

According to a 2015 study, Nakamura, et al [20], Propylene Glycol is a compound that irritates the skin. A cosmetic form of mineral oil used in brakes and hydraulic fluids as well as industrial antifreeze. This powerful skin irritant can eventually cause liver damage and kidney damage. Epidemiological studies show a link between male infertility and occupational exposure to glycol ethers [18]. A decrease in fertility has also been reported in women working in sectors exposed to glycol ethers: changes in the duration or regularity of menstrual cycles, difficulties in conceiving a child, congenital malformations, etc.

Gue [5] states that alkylphenols are present in detergents, cosmetics, cleaning products and a wide range of industrial products. In addition to their very serious effects on the aquatic environment, the European Union recognises a potential risk to fertility and the foetus. Nonylphenol is an active ingredient in some spermicides. Moreover, alkylphenols are endocrine disruptors that alter hormones, reproductive organs and stimulate breast cancer cells.

In addition, corticosteroids can induce numerous adverse skin effects that can cause skin fragility ("trophic" disorders) including stretch marks, bruising, dry skin and difficulties in healing and depigmenting the skin.

4.8 Management of allergy

The diagnosis of allergy to a cosmetic product or ingredient is often difficult due to the multiplicity of sensitisation pathways, the diversity of clinical manifestations, the ever-increasing number of allergens, and the difficulties of allergy testing and interpretation. Finally, these manifestations are sometimes difficult to distinguish from irritant dermatitis.

The results of this research show that the practice of voluntary skin depigmentation has harmful effects on health, since the degradation of melanin, which plays an important role in protecting the skin against external aggression, is a danger to the body. According to our analysis, the change of products was the treatment cited by the subjects surveyed in case of allergy, i.e. 53.3%. For his part, Mwamba found in

his study conducted in 2012, 51% of respondents who had considered stopping the use of toxic cosmetic products as a means of management [4].

According to Petit's 2016 study, several approaches are possible to alleviate manifestations related to cosmetic allergy: application of a corticosteroid-based cream to the affected areas; oral administration of anti-histamine or corticosteroid drugs. Allergic manifestations can be mitigated by medication (usually antihistamines). However, the most important measure in case of food allergy is to avoid ingesting the allergenic food concerned, the so-called avoidance diet [26].

In our opinion, we believe that the abandonment of application and consultation of a dermatologist is an effective means of medical management in case of skin irritation when using cosmetic products considered toxic.

4.9 Reading the instruction leaflet on the toxic cosmetic product

In this study, we observed that 86.7% of the study subjects read the instructions on the toxic cosmetic product.

Since the majority of respondents were young girls who seek to look beautiful and attractive by using toxic cosmetics in ignorance, we believe that reading the instruction leaflet on the product is a factor of preference for using the product in question. They believe that the presence of hydroquinone among the ingredients, for example, would be essential for a clear and radiant complexion.

4.10 Daily frequency of use of toxic cosmetic products

The result of this series indicates that 76.7% of the study subjects applied the toxic cosmetic twice daily. The studies by Kabamba in 2017 in Kinshasa, Democratic Republic of Congo (65.3%) and Douzima in Dakar, Senegal (72.5%) in 2009 revealed respectively that the majority of cosmetic users often apply the cosmetic products twice a day. These results effectively corroborate with our own [10, 27].

We believe that the daily application of cosmetic products is a consequence of the instructions given by the manufacturer. Also, the concern to have a glowing and smooth skin in a much shorter period of time could encourage young girls to apply the instructions for use of these products, i.e. to apply it morning and evening, in view of the rapid pigmentation of the skin.

4.11 Timing of use of toxic cosmetics

The time of use of toxic cosmetics varies, depending on when the users apply them. In this study, it was found that 63.3% of the study subjects applied the toxic cosmetic every morning and evening. The same observation was made by Mayoughouo, Wamba [2], who found in Yaounde in 2017 that cosmetic products are often used daily and especially in the morning and evening in a proportion of 74.1%.

We believe that the frequency and timing of the use of toxic cosmetic products is the spearhead in the quest for a glowing and smooth skin, as this is the ultimate goal of the use of these products.

4.12 Cosmetic products considered toxic

In analysing the cosmetic products considered toxic, we noted that beauty milk was the most commonly used (66.7%), followed by toiletries (20.0%) and toothpaste (13.3%).

A cosmetic is a substance or preparation intended to be brought into contact with various superficial parts of the human body, including the epidermis, hair and capillary systems, external organs, teeth and mucous membranes, exclusively or mainly for the purpose of cleansing, protecting, perfuming, maintaining the good condition of the human body, modifying its appearance or correcting its odour. Cosmetics are products for hygiene and beautification [1]. According to Charlene, Dalvai [8], some shower products, such as Carrefour, Dop and Weleda, contain coumarin, "suspected of being carcinogenic-mutagenic-reprotoxic", or Lillal (butylphenyl methylpropional), present in Dove cream, "toxic for reproduction". Some toothpastes, "from Oral B, Sanogyl, Sensodyne, Signal, Vademecum or Zendium", contain traces of heavy metals, such as zinc and tin, which are "toxic", explains the magazine. Or titanium dioxide, which "may contain nanoparticles and is suspected of being carcinogenic".

Soaps rid our skin of body odour and the accumulated dirt of a whole day. In doing so, they remove excess sebum, a lipid layer secreted by the sebaceous glands, and thus free the skin pores. However, care must be taken with soaps, as some make the skin dry and completely remove the lipid layer that protects the skin.

The use of lightening beauty milks is fashionable in the Democratic Republic of Congo. These creams also include those containing hydroquinone. Yet these lightening creams are harmful to the health of the skin, according to dermatologists.

According to Kabamba [10], there is a trend towards the massive use of hydroquinone soaps and lotions in the large cities of sub-saharien Africa. Several cosmetics manufacturers have realised that hydroquinone can make a lot of money. Thus, from Bamako to Luanda, via Libreville, Brazzaville, Kinshasa, Bangui and other cities with predominantly black populations, the use of hydroquinone still has a bright future ahead of it. This is due to a totally cultural factor. The mentality of many people who think that having white skin or being white is a sign of beauty and civilisation.

This result follows multiple radio and television advertisements in the different media where different and varied ranges of cosmetic products were observed for the attention of consumers. Considering that advertising produces the taste and desire to consume in consumers, more young people use these products from the advertisements.

Conclusion

The study focused on young people's knowledge of the consequences of using toxic cosmetics. It aimed to assess the level of knowledge of young people about toxic cosmetic products, to determine the consequences of abusive use of these products and to evaluate the treatment in case of skin irritation.

The survey benefited from the participation of 60 students from the Institut Supérieur des Techniques Médicales de Kisangani, our research field. The students helped us to collect information on the use of cosmetic products. The following results are based on the objectives of the study: the majority of the young people (81.7%) were not aware of the chemical agents contained in toxic cosmetics, skin cancer was the consequence of the abusive use of toxic cosmetic products (50.0%). In case of allergies or skin irritations, 53.3% of students recommended changing the products considered toxic as a remedy.

Young people's lack of knowledge about the chemical agents present in toxic cosmetic products is a real social and health problem, and all efforts should be made to limit the consequences. Hence the need and urgency to make young people aware of the need to avoid using toxic cosmetic products that are harmful not only to the skin but also to the environment. This is where the role of the authorities in charge of controlling and regulating the conformity of products released for consumption comes in.

The use of skin-lightening cosmetics is a habit that is ingrained in the behaviour of many Congolese. Several decades have passed since these products, which are available to all, cause all sorts of skin diseases, but unfortunately they can also cause serious problems for reproductive health.

While some have learned their lessons and abandoned their use, many others continue to apply them, ignoring the potential damage.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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