Original Research Article

Skin 'bleaching' practicesand associated adverse health effects in Zimbabwe: A canonical correlational study of Harare.

ABSTRACT

The study aimed to identify the ingredients, processes and practitioners involved in the skin lightening practices in Zimbabwe and to identify the associated, adverse health effects as well as to establish the user demographics. A technical field survey was carried out in Harare, Zimbabwe from October 2022 to March 2023. Out of a total of 450 potential participants,382 individuals in 3 broad groups were successfully interviewed; these included 150 skin lightening practitioners and traders, 118 skin lightening products users and 114 individuals who have never practiced skin bleaching. A semi structured technical questionnaire was used for each group of participants and the collected data were analysed qualitatively and quantitatively. The study observed that both sexes are involved in skin lightening in Zimbabwe, the majority (52%) being women aged between 31-45 years. The established industry, is divers, including registered healthcare providers, commercial trade, informal markets and others. The majority of practitioners (65%) have less than 5 practising years. There are over 30 different skin lightening products available either as prescription medications, OTC treatments, commercial products, network marketing products as well as illegal bootleg concoctions. The products extends from creams, lotions and serums, to oral and injectable dosage forms. The most prevalent products being corticosteroid creams. 75% of users reported both reversible and non-reversible adverse health side effects and outcomes including skin irritations, inflammation, rashes, erythema, oedemas, ochronosis, dermal atrophy, photophobia, insomnia and unexplained weight gain. The most prevalent side effect being pruritus and irritations. It was observed that there is no formal registration, regulation or legislation covering the products, processes and practice of skin lightening in Zimbabwe.

Key words: skin bleaching, skin lightening, corticosteroids, ochronosis.

1 INTRODUCTION

1.1 Skin colour and body modifications

The modern humans are a polymorphic species with a wide range of phenotypes that arose due to their different habitats and domains of origin. Complexions for different ethnic groups vary from the palest whites to the darkest brown-black tints[1]. The use of eco-phenotypic variation as the basis of social strata and regard has not only been inherent in the species for eons but has of late been promoted by social media adverts and popular culture[2]. This phenomenon is not only limited to dark skinned people of African ethnicity but various texts originating from as far back as the Victorian erato modern times allude to the fact that among all the three major races: Caucasians, Orientals and Africans,atthe subconscious level in contemporary societies there has always existed an old 'myth' that lighter complexions are equivalent to beauty, assets and success[3, 4].Snow white, the 18th century Grimm Brothers fairy talechronicles the tragedy of a Caucasian queen who was obsessed with skin "whiteness"[5]. It is also widely reported in other texts that white Elizabethan courtiers powdered their faces ivory white with fatal consequences using lead and ascernic[6]. Queen Elizabeth I was known to take arsenic complexion wafers, powders and paint to achieve the "Elizabethan ideal of beauty'[7, 8]. Currently, the largest bleaching populations are found in Asia, especially Japan, China and India. This therefore registers that sections of populations from all three major racial groups covering the entire broad spectrum of men and women regardless of social class or ethnic group are deeply obsessed with skin fairness[9].

Body modifications which include the deliberate altering of one's natural physical appearance, done for aesthetics, sexual enhancement, religious rites of passage and self-expression is as old as mankind[10]. These practices include both socially acceptable decoration (including common ear piercing and circumcision) as well as socially controversial procedures like body piercing, implants, 'skin bleaching', tattooing and genital mutilation. Even though most body modifications are consensual, they are the subject of much social controversy due to the high risks involved, procedures can go wrong and they often do with disastrous consequences.

1.2 Skin bleaching

Skin bleaching is the use of various materials, mixtures, or physical treatments to 'bleach' the natural skin colour. Technically looking at most of the practices, the correct terms should be either skin fairness, skin lightening, skin brightening, skin depigmentation or skin whitening. The adoption of this cosmetic procedure bywomen from all racial groups in Europe, the United States of America, and Asian countries indicate the lack of bias of skin bleaching toward the African race only[9]. This practice which was traditionally mostly limited to women has however in recent years seen an upsurge of males adopting the practice as seen from many notable pop stars, past and present. In some parts of Asia, a recent study showed that up to 80% of the men had experimented withsome form of skin-lightening product and this trend was seen to be growing amongst males over the past few years[11,12]. The modern massive commercialisation of this practice into an 8 billion dollarindustry by 2020is by no means a new fad but a growing trend that began more than 50 years ago[13]. The products now represent a wide array of sophisticated ingredients that are no longer limited to the typical simple minerals used in the Victorian era.

Despite the fact that an individual's skin colour is influenced by four broad factors, that include, oxygenated and de-oxygenated haemoglobin,carotenoids, melanin and the condition of the stratum corneum. The most significant and easiest factor to alter is melanin. Melanin is a biopolymer of tyrosine,produced homeostaticaly through melanogenesis, under tyrosinase direction in melanocytic cells, it is packed in melanosome pockets which are then transferred to keratinocytes via melafilament structures[14]. Variations of skin colour among individuals are mostly because of the discrepancies in the content, the polymer configuration and the type of melanin in the skin. Three types of melanin are synthesised by the body through the 'The Raper–Mason pathway'[15, 16]: Pheomelanin; an oblong melanin molecule giving yellowish-orange tones, Eumelanin; a spherical melanin molecule giving black-brown skin tonesand Neuromelanin; found in the pituitary part of the brain and of no known significance to skin colour[14]. The ratio of the two different types of melanin found in skin, eumelanin and pheomelanin and their polymer configurations is therefore the biggest determinant of individual skin colour.

'Skin bleaching' is essentially about controlling, minimising or eliminating the production of the melanin pigment and its subsequent transference to keratinocytes. It is mostly achieved through one of the following six mechanisms[17].

i. Inhibition of the activation of tyrosinase

ii. Inhibition of the activity and catalytic function of tyrosinase
iii. Scavenging of the intermediate products of melanin synthesis
iv. Preventing the transfer of melanosomes to keratinocytes
v. Directly destroying existing melanin
vi. Destroying the individual's melanocytes

The major source of controversy is that the practice is achieved through a cosmopolitan range of bleaching ingredients and procedures, some of which are regarded as proprietary and therefore undisclosed and therefore subsequently uncontrolled[18]. The commercial products range include:

i. Legal dermatologist's prescriptions and pharmacy compounding's.
ii. Legal OTC creams based on approved ingredients.
iii. Unregulated, deliberately misbranded, poorly labelled and mislabelled commercial products.
iv. Illegal, unknown ingredients, bootleg concoctions mixed in the back streets sold in defiance of official bans of specific ingredients or constraints.

1.3 Skin bleaching in Zimbabwe

From general observations in Zimbabwe, the long suspected and observed practice is the use of cosmetic formulations that contain corticosteroids, retinoids, and natural extracts like arbutin, kojic acid, licorice, lactic acid, vitamins and even harmful and banned or controlled chemicals like mercury or hydroquinone[19]. These arewidely available in the formal and informal markets either as prescription drugs, misbranded, bootleg creams, or injectables. Most of these dosage forms have known ingredients which have traditionally been used to treat localised hyperpigmentation and melanin disorders, such as melasma, chloasma, age spots and acne scarring[20, 21, 22].

Within the personal careindustry, it is therefore apparent that trained professionals including dermatologists, general medical practitioners, beauty therapists, cosmetologists and pharmacists areobviously or obliviously involved in the practice of skin bleaching despite the fact that there is no health or therapeutic benefit to skin bleaching, the results and outcomes are not guaranteed and there is growing scientific evidence to prove that skin 'bleaching' can result in serious side effects and complications on health and skincare[23].

Some of the reported side-effects include carcinogenic and teratogenic outcomes,ochronosis, emaciation, arterial hypertension, hyperhidrosis and intense pruritus[24]. Chronic use of potent corticosteroids leads to severe consequences such as cutaneous atrophy, with clinical manifestations of skin thinning and fragility[25.]

In Zimbabwe, just like in most African countries,skin-lightening creams are mostly sold on the informal market, not authorized or controlled by licensing and regulatory authoritiesor any board which may test products for banned substances[26, 31]. This therefore, has made it difficultto understand the full extent of the industry, the complete range of products and their ingredients as well as prevalent dosage forms which may help in developing a commercial framework to reign in the rampant and increasing trade in skin bleaching products[27].Most of the products available in Zimbabwe are of apparent foreignorigin but unknown or undisclosed sources, they are suspected to be compounded and dispensed at doses that are not evidence-based since the skin bleaching industry is a proprietary industry with no standard guidelines for their use[19].

In Zimbabwe there has been a lot of reports on the adverse effects of these products[28]supposedly because most of them are found on the 'streets' unregulated and therefore being sold and compounded by untrained personnel who offer inadequate counselling on the dosing frequency and side effects. These cosmetic "vendors" have no guidelines on when and where to refer their clients for aftercare treatment, overdose or adverse effects management. These untrained cosmeceutical practitioners approach skincare management on a disease-based approach instead of a patient-based approach which focuses on skin type and sensitivity. This increasing public health threat posed by the growth of the skin bleaching Industry in Zimbabwe therefore necessitated this study, to understand the practice and have a compendium of the available products, the bleaching processes options as well as the practitioners and traders which may align theskin care industry with clear benchmarked standards that safeguard public health.

2 EXPERIMENTALSECTION

2.1 Study ethics and Ethical considerations

The investigation protocol and the human subjects 'informed consent forms' were approved by the institutional review board of the Joint University of Zimbabwe and Parirenyatwa research ethics

committee (JREC) and the study was conducted according to the Declaration of Helsinki[28] and the International Conference on Harmonization of Technical requirements for Registration of Pharmaceutics for Human Use Guidance for good clinical practice. Written consent was also obtained from the Dermatological Medical Chambers administration before commencing the study. Each participant was kept anonymous, and all information was used with respect of the confidentiality clause.

2.2 Study location and population

The study was conducted in Harare, Zimbabwe from October 2022 to March 2023. The estimated metro area population of Harare in 2022 was over 3 million inhabitants. Harare is a metropolitan province with over 50 different residential suburbs, categorised into low, high and medium population density areas. It is generally observed that residential affluence is inversely related to population density of the area. The Harare metro province also incorporates the high population density municipalities of Chitungwiza and Epworth[29].The population of Harare consists of people of different ethnicities including Caucasians, Africans, Asians and mixed races. For this study,450 people voluntarily participated.The study population comprised of both males and females over the age of 16. The participants were categorised into 3 groups: Group 1 included 150 individuals, mostly medical, pharmaceutical and informal skin care practitioners involved in the procedures and trade of skin 'bleaching' products; Group 2 comprised 150 selected individuals who at some point had used or were still using some form of 'skin bleaching' product or procedure; Group 3 comprised 150 random individuals who had never used any 'skin bleaching' products but were aware of the practice. The participants were briefed on the technical study objectives and a signed written informed consent was obtained from all participants prior to conducting the interviews and filling in the questionnaires.

2.2.1 Inclusion and exclusion criteria

Participants were enrolled in this study based on the following criteria:

i. Adult males and females (above 14 years old and younger than 65 years old) residing in Harare.
ii. Willingness to participate and to fill in a signed consent form and questionnaires.
iii. Participants for group 1 had to be practitioners in the personal care industry either as dermatologists, pharmacists, nurses, dispensary assistants, beauty therapists, commercial traders and cosmetic products vendors.
iv. Participants for group 2 had to be current and previous users of skin 'bleaching' products.
v. Participants for group 3 had to be individuals who had never used 'skin bleachingproducts'.

Group 2 participants had extra exclusion criterion, individuals were excluded from being part of group 2 if:

i. They had previously received oral antibiotics, benzoyl peroxide, TRT and oral retinoids for other existing health conditions within the past 14 days.
ii. Individuals who were currently using oral contraceptives, or implantable contraceptives.
iii. Individuals who were using any systemic medications such as oral phenytoin, finasteride, spironolactone, flutamide, testosterone, or dietary body-building protein powders.
iv. Patients who were periodically using topical, systemic, inhaled, or intraocular corticosteroids for other medical conditions.
v. Subjects with other active skin diseases and immunosuppressed subjects.

2.3 Survey and sampling techniques and sample sizes

With regards to participant's selection, purposive or judgemental sampling techniques were utilised for the first 2 groups. For the respondents using skin lightening treatments the participants were selected based on the researcher's assessment of basic phenotypic assessments and negotiating with potential participants who suited the inclusion criterion. For the practitioners and retailers, prior knowledge of business operations was instrumental in selecting the participants, this guaranteed the prospect of obtaining useful research data and answers with reduced margins of error. For both groups Snowball or chain-referral sampling was also applied due to the clandestine nature in which some of the retailers operate and the obvious consumer apprehension to perceived hostile public opinion about the practice in Zimbabwe. The identified practitioners and consumers of skin lightening

products were therefore requested to refer the researchers to their colleagues, clients andother potential participants whobelonged to the same targeted populations. Consequent to the limited advertising and referral nature of the business in Zimbabwe, this was perhaps the most convenient way to identify practitioners and consumers. Due the high populations of potential participants willing to join the third group of non-skin lighteners, the researchers used convenience sampling techniquesand engaged participants who were conveniently available to the researcher who met the criterion outlined above.After verbal discussions on the purpose of the survey and initial agreement, the participants were given informed consent forms and questionnaires in a language of their choice with options limited to English, Shona and Ndebele. The main languages spoken in Zimbabwe.
A targeted quota sample of 150 individuals were identified for inclusion under group 1 participants (personal care industry practitioners). The individuals in group 1 includedpracticingregistered dermatologists and pharmacists, licenced beauty therapists and beauty spa operators. The group also included a number of unregistered but reputable skin bleaching 'experts' and bleaching products traders identified by the bleaching clients and the public. After initial interviews a total of 150 suitable individuals were identified for inclusion under Group 2 participants (current and previous users of skin bleaching treatments and procedures). The group 2 participants included individual clients mostly referred to the study by the practitioners selected under group 1. It also included individuals physically observed buying bleaching products through the various channels as well as individuals who sought treatment after adverse side effects as well as individuals known to be promoters and users of these products by their own admission and their peers. Another total of 150 participants were identified for inclusion under group 3 (non-users of bleaching products) this group was identified after initial discussion and interviews. This was the group with the widest demographic spectrum of participants and therefore needed more stringent screening.The group included anti 'skin bleaching' activists and ordinary members from the public who had never used any form of skin bleaching treatment or procedure. Participants were not required to give their names either within the informed consent forms or the questionnaire and all the data obtained was treated with confidentiality. In case the participants felt uncomfortable during the course of the interviews, they were allowed to withdraw from the study.

2.3.1 Data collection and analysis

Data was collected utilizing study specific technically structured questionnaires for each group. Data were collected from all three participating groups on their demographics, knowledge, attitude and perceptions towards permanent body modifications in general and 'skin bleaching' in particular. Questionnaires for group 1 and group 2 participants further probed interviewees on the preferred bleaching options, products used, spending patterns, procedures and products directions of use as well as the reasons for the individuals using skin lightening products. The questions also looked for adverse reactions and their correction if any. The questionnaire was designed to standardise answers which would assist in quantifying and analysing the data collected. Thequestionnaires had both fixed and open ended questions technically designed to assess consistency and sincerity of answers from participants.
Data were collected and verified, variables were coded and entered to Statistical Package for Social Sciences (SPSS) software version 20, developed by IBM Corporation, and analysed by a qualified biostatistician. Descriptive statistics, e.g., number, proportions, cumulative proportions, percentages, were displayedaccordingly. Analytic, parametric and nonparametric techniques were used as required[30].

3 RESULTS AND DISCUSSION

3.1 Socio-demographic characteristic distribution of respondents

A total of 150 Group 1 participants (100%), 118 Group 2 (79%) and114Group 3 (76%)participantssuccessfully completed the questionnaires and interviews. Therefore, 382questionnaires and contact interviews weresuccessfully carried out for the technical survey. All participants involved met the inclusion criteria for their respective study group, and hence all their collected data was used in the analysis.

3.1.1 Demographic characteristics of group 1 (personal care practitioners) participants.

All the150 participantsin group 1were of African ethnicity, 59.3% of the practitioners were female and the remaining were males. Approximately 65.3% of the participants had 0-4 years of experience in their field, 18% had 5-9 years of experience, 10% had 10-14 years of experience and 6.7% had more than 15 years of experience in their trade and profession (Table 1). Of the respondents 6% were dermatologists, 5% were General medical Practitioners, 25% were pharmacists, 15% were beauty therapists, 44% were retailers and informal traders and 5% were manufacturers and other professionals (Table 1, and Table 2). This confirmed the wide diversity of various professional fields in the practice of skin bleaching in Zimbabwe from the health practitioners, cosmetologists, entrepreneurs as well as manufacturers.

Table 1 Professions involved in bleaching that participated in the survey

Profession	Participants	Percentage
Retailers	66	44
Pharmacists	37.5	25
Beauty therapists	22.5	15
Dermatologists	9	6
Manufacturers and others	7.5	5
General medical practitioners	7.5	5
Total	**150**	**100**

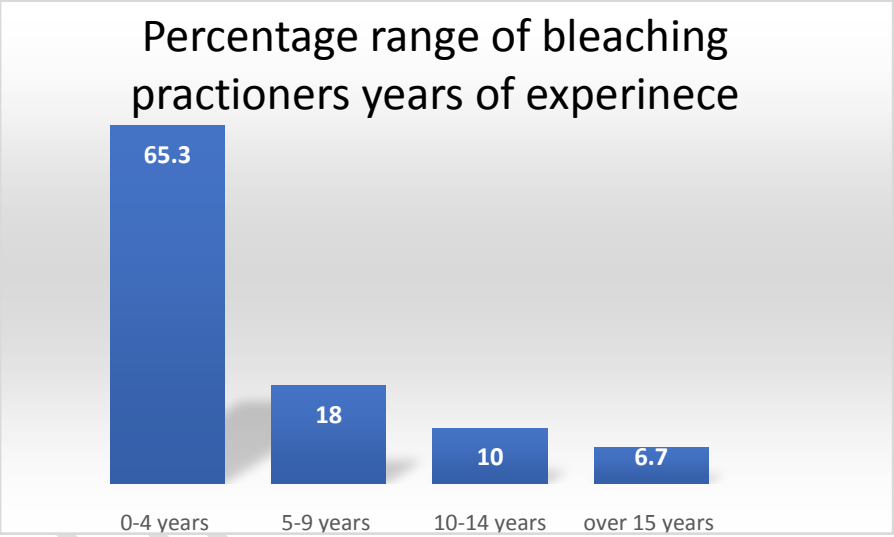

Figure 1: Years of Professional experience

3.1.2 Demographic characteristics of Group 2 (current and past 'skin bleaching' product users) respondents

Out of the 118'skin bleaching' products user participants who successfully responded to the questionnairesin the study, 92% were females and 8% were males. 93% of the participants were of African ethnicity, 5% were of mixed ethnicity and 2% were of Indian origin.In terms of age,4.2% of the participants were below the age of 16, 27.1% in the age range 16-30 years, 53% were in the age range 31-45 years, 15.3% were in the age range 46-60 years and only 1 participant (0.8%) was above the age of 60. This confirms that in Zimbabwe the practice of skin bleaching is mostly spread from early youth into late adulthood and is practised by both males and females.

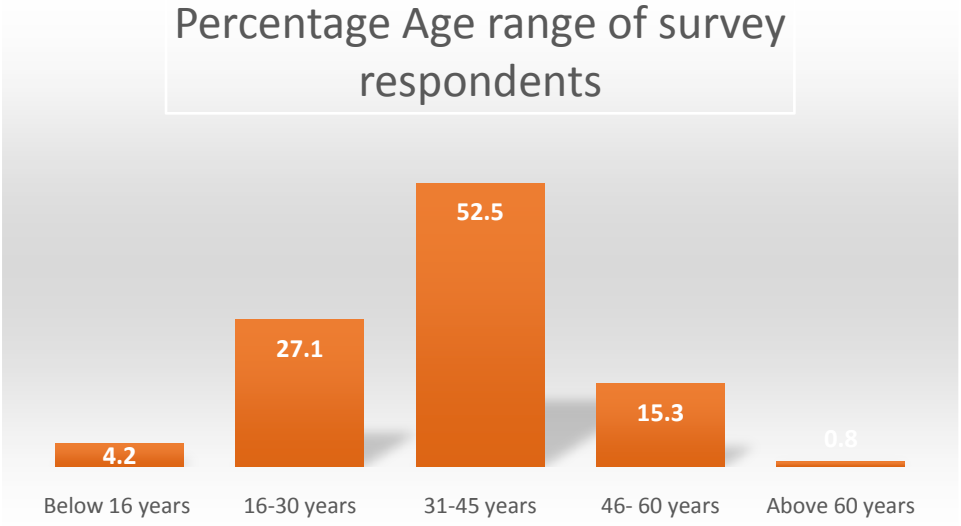

Figure 2: Percentage age range of survey respondents

3.2 Skin 'bleaching' products and ingredients prevalent in Zimbabwe

Most of the respondents who used skin lighteners had used more than 1 form of skin lightening products. From the 118 respondents the recorded frequency of product use was 182. The most prevalently used skin bleaching products are creams used by approximately 60% of users followed by soaps/gels and serums at approximately 26% and oral pills at just under 10% and injections at almost 3%. Most of the available products either prescription, bootlegor illegal come in cream or ointment form, this explains the high use of creams over other forms of products. All the "bleachers" who had used injectable had also used pills at some point andall the respondents who used pills had also used creams at some point. The reasons given for the limited use of injectables and pills was their high prices and general unavailability within the market. Participantshowever revealed that if they were available at affordable prices they would rather prefer these pills and injections over topical products, due to their 'purported' long lasting efficacy and better bleaching outcomes over the entire body and their systemic effects as opposed to the localised bleaching outcomes from creams and other topical formulations.

Table 2; Skin bleaching' product forms frequently used in Zimbabwe.

Bleaching products currently used	**Frequency**(n=182)	**Percentage %**
Pills	18	9.9
Injections	6	3.2
Creams	110	60
Soaps/gel/serums	48	26

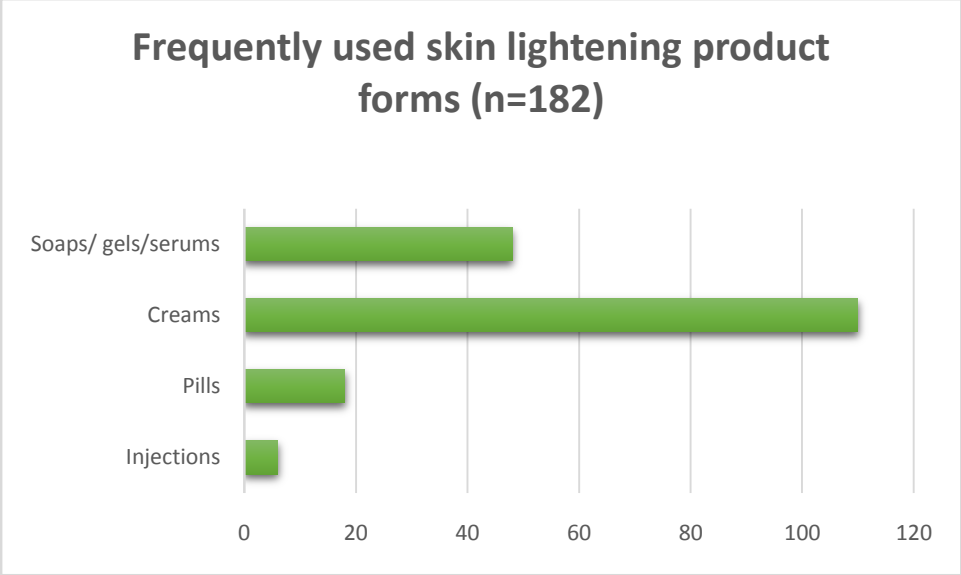

Figure 3: Frequently used skin lightening product categories in Harare, Zimbabwe.

3.3 Skin lightening products used in Zimbabwe and their technical active ingredients

Table 3: Compendium of the hyperpigmentation, treatments prescribed by medical practitioners in Zimbabwe and used by patients for 'skin bleaching'.

Registered prescriptiondrug name	Active Ingredients
Epiderm cream	Betamethasone Dipropionate USP 0.643mg
Clobetasol cream	Clobetasol propionate BP 0.05% w/w
Betasone cream Betasone ointment Betamethasone cream	Betamethasone valerate 0.1% w/w Betamethasone 17-valerate (micronized) 0.1 w/w
Micort cream	Miconazole nitrate Hydrocortisone
Dexamethasone	0.25% contains 2.5 mg of desoximetasone
Triamcinolone acetonide	10mg of triamcinolone acetonide in each ml
Adapalene	Adapalene BP 0.1 %
Hydroquinone	Hydroquinone 2 % Hydroquinone 4 %

Table 4: Compendium of the 'skin bleaching' products most available from the formal and informal trade, network marketing and flea markets in Zimbabwe.

Product name	Active Ingredients
Carolite	Hydroquinone 2%
Light-up	Glutathione Carotene oil
Gold-skin	Kojic Acid ,Tocopherol acetate, AHA
Pure skin	Kojic acid ,Collagen, Tocopherol acetate
Bio Claire	Clobetasol propionate
Diva	Retinyl Palmitate
Perfect White	Kojic acid, AHA
The snail cream	Snail Secretion Filtrate, Sodium hyaluronate
Even and Lovely	Niacinamide
Ambi	2% hydroquinone 2% Octinoxate Tocopherol acetate
Doctor Clear	Vita-Resorcinol

	L- glutathione
Carotone	Carrot oil,2% hydroquinone
Glutadoc Cream Glutathione injection Glutathione pills	Glutathione

Table 5: Compendium of other skin bleaching products based on natural extracts mostly available in high end formal retail shops and pharmacies under different brand names and sometimes unbranded in beauty spas in Zimbabwe

Product Brand	Active Ingredients
Vitamin C extracts	Ascorbic acid
Vitamin E extracts	Tocopherol acetate
Acetobacter, Aspergillus, and Penicilliumextracts	Kojic acid
Cranberry, mulberry extracts	Arbutin
Rye, wheat and barley extracts	Azelaic acid
Papaya AHA extracts	Alpha hydroxyl acid
Glycyrrhiza Glabra Root Extract	Licorice

3.4 Technical product and process knowledge base of group 1 participants ('skin bleaching' practitioners in Zimbabwe)

Of the 150 respondents,84% could differentiate between skin bleaching, lightening and brightening or toning, and up to 16% failed to differentiate at all, 93.3% of the personal care practitioners could easily appraise and recognise someone who is using 'skin bleaching' products, The remaining practitionersin the personal care industry in Zimbabwe cannot visually appraise a patient or client and recogniseindividuals that are current of former 'skinbleaching' products consumers. This observation confirms that some of the personal care practitioners may participate in the practice of skin bleaching without knowing it. Most of the skin bleaching ingredients have other legitimate medical uses like treating localised hyperpigmentation but patients deliberately abuse these products.Dermatologists treat severe dyschromia, melasma and most hyperpigmentation disorders conditionsusing products that can also randomly lighten the skin like hydroquinone, retinoids and a number of vitamins.Various, corticosteroids and other anti-inflammatory agents like clobetasolare also frequently and legally prescribed for dermatological conditions like acne vulgaris, dermatitis, skin lesions and keloids but they also can be used to deliberately bleach skin. Pharmacists compound anddispense prescription creams, ointments, tablets and injections for genuine medical concerns that can be abused or misused for their depigmentation effects. Beauty therapists are allowed by the various councils they are registered with in Zimbabwe to use natural extracts on their clients which may have depigmentation effects for various other skin conditions. Traders and hairdressers simply sell cosmeceutical product stock which may also have depigmentation effects to clients without any expert informed appraisal of the client's needs. Of the respondents from group 1, about 39% of thepractitioners have either deliberately prescribed, administered or sold skin bleaching products, 51% have never deliberately sold these products and 10% of the respondents found the practice of prescribing and administering skin bleaching products inapplicable to their practice. This 10% of respondents may also include pharmacists and some beauty therapists who are guided by legislations that do not allow them to practice skin bleaching but still stock products that have a capacity to bleach skin for other uses despite the fact that they cannot separate individuals involved in skin bleaching from non-bleachers. Only a few of the commercial informal traders are trained in Cosmeceuticals or administration of medical dosage forms, they have little to no expertise to administer the products especially intravenous injectionslike Glutathione. Since they are not part of the healthcare provider'snetwork they have no idea of where to refer their clients in the case of adverse treatment outcomes or appraise the clients of potential side effects and 'bleached skin'aftercare.

3.5 Potential impacts and implications on health of bleaching procedures

Of the 268 respondents (Group 1 and group 2 participants), 42% believed that products used in skin bleaching have a potential for adverse effects on skin even though they still administered them or traded in them, 34% believed that with the right aftercare skin bleaching products posed no adverse threat to health. 25% believed that the health risk and the safety of skin bleaching products was acceptable and the bad image was exaggerated by anti-bleaching activists. From the 268 respondents, 34.5% disagreedwith the prevalent belief in some parts of Africa that skin bleaching products could also be used to potentially lighten the skin of unborn babies, whereas12% believed that it was technically possible to 'bleach' the skin of unborn babies using current advanced bleaching technologies. From the 118group 2 participants, 54% of them admitted that practitioners had informedthem of potential side effects and advised them of potential health risks prior to purchase or administration of the products and prescriptions, 46% of them claim that they were never informedabout any supposed potential health risks or precautions to take. More than 75% of group 2 participants had experienced some form of side effects from bleaching products and procedures which include mild rashes, uneven tone, skin irritation, depigmentation, dermal atrophy, ochronosis, insomnia, photophobia and others.Pruritus accompanied with irritation from skin lighteners is the most frequently reported adverse health effect according for 20% of all reported incidences.

Table 6: Adverse health conditions associated with skin bleaching reported by group 1 and 2 respondents

'Skin bleaching' side effects experienced	Frequency (n=250)	Percentage of all side effects	Main Products used by patient
No side effects	35	14	All
Skin rashes and pimples	40	16	All
ochronosis	15	6	Hydroquinone based
Pruritus and irritation	50	20	All
Uneven skin tone	40	16	All
Uneven skin profile	30	12	Corticosteroids based
Erythema	10	4	All
Dermal atrophy	20	8	Corticosteroids based
Photophobia	8	3.2	Glutathione injection/pills
Unexplained weight gain	2	0.8	Glutathione injection/pills

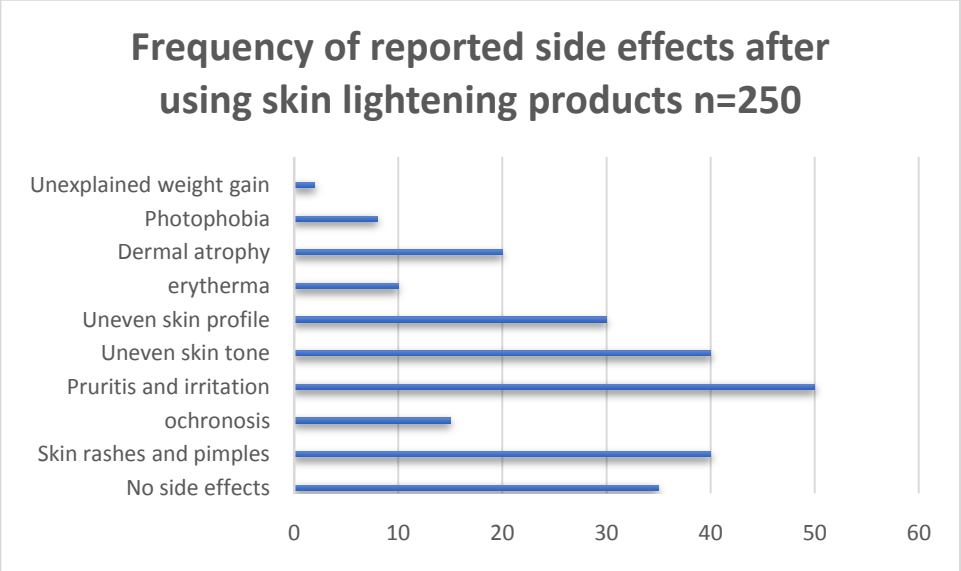

Figure 4: frequency or reported side effects of skin lightening products in Zimbabwe

4 Current regulation of 'skin bleaching' in Zimbabwe

There is no current official regulation of skin bleaching products in Zimbabwe.According to the Medicines Control Authority of Zimbabwe (MCAZ) website, under the FAQ section,cosmetic preparations containing vitamins and/or herbal substances do not fall under their mandate. In one communication on their official Twitter page, they are quoted saying[32]"*The MCAZ does not control*

*non-medicated cosmetic products. Members of the public are advised to use discretion when choosing cosmetics. We are aware that there are some products which are marketed as skin lightening creams which may contain controlled substances such as hydroquinone, corticosteroids or retinoids. Medicated creams are regulated as medicines and should be acquired from licensed premises under the advice of qualified professionals. The public is encouraged to desist from acquiring medicines from unlicensed sources."(*MCAZ website, 2024).

The Standard Association of Zimbabwe (SAZ) is not a regulatory authority, they are a voluntary standardisation body for accredited members and have no legislative authority to dictate or approve cosmeceutical ingredients. They have a technical committee currently working on cosmeceutical standardsbut its mandate is simply to develop standard tests for physical-chemical properties of various cosmeceutical products marketed to the public fortheir degradation and confirmation of exclusion of a list of banned ingredients in Cosmeceuticals to safe guard the community. These tests are however non consequential for'skin bleaching' productsbecause the ingredients are not at all illegal. Therefore, there is no formal legislation or regulation on the use, trade and sale of skin bleaching products in Zimbabwe.

5 CONCLUSION

The study revealed that the practice of skin bleaching is a vast industry in Zimbabwe with tentacles involving registered medical practitioners and formal healthcare providers as well as the formal organised retail trade and informal traders. There are over 30 skin lightening products available in Zimbabwe either as prescription drugs, over the counter pharmacy treatments and compounding's, imported cosmeceutical formulations in retail outlets, bootleg misbranded applications in the informal trade and flea markets as well as illegal concoctions peddled by unauthorized dealers. The products range from topical serums, creams, lotions, oral pills and other unknownconcoctions to injectable dosage forms. Cream and serum forms are the most prevalently used products. The diversity of the practitioners and the extremely wide product range represent a huge established multimillion dollar industry that has been around for decades. In Zimbabwe 'skin bleaching' is practiced by both males and females across most ages, however, the most prevalentgroup are femalesbetween 31-45 years. Dermatologists,general medical practitioners and pharmacists are involved in the prescribing and dispensing to the public, regulated hyperpigmentation dermatological treatments for genuine medical concerns which however are abused or deliberately misused for skin bleachingby patients and clients. Most pharmacies retail over the counter treatments with ingredients technically capable of bleaching skin to the public. Beauty therapists in registered upmarket spas are limited to using natural extracts with a capacity to reduce hyperpigmentation. The formal retail shops sell a number of treatments generally recognised as Cosmeceuticals to the public from reputable local and external suppliers. Informal traders in flea markets and various entrepreneurs are actively involved in importing into the local market a myriad of 'skin bleaching' products from undisclosed sources ranging from scientifically proven ingredients, to misbranded treatments with unknown, undisclosed ingredients as well as injectable and oral dosage forms. Most of the users are never informed of the potential adverse side effects of skin bleaching products by the practitioners and traders. Most of the users (75%) have reported various side effects and adverse outcomes, both reversible and permanent after bleachingincluding skin irritations, skin inflammation rashes, erythema, oedemas, ochronosis, dermal atrophy, uneven skin patches, photophobia, insomnia and unexplained weight gain. No aftercare skin routine was reported to be available or recommended for clients and patients who experience skin bleaching side effects. There is no formal legislation or regulation covering the practice, the product ingredients and the processes used in 'skin bleaching' in Zimbabwe.

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