
DEMOGRAPHIC PATTERN OF UNHEALTHY APPLICATION OF COSMETICS BY FEMALE SALON OPERATORS IN TERTIARY INSTITUTIONS IN RIVERS STATE

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ABSTRACT

This study investigated demographic pattern of harmful cosmetic application among female salon workers in tertiary institutions in Rivers State. Using a detailed descriptive cross-sectional design, the study surveyed 1200 salon operators across ten institutions with a rigorously validated questionnaire. The main goal was to understand the complex relationship between demographic factors such as age, experience, and education level, and the prevalence of unhealthy cosmetic practices. Through careful analysis of both descriptive and inferential statistics, the study found that unhealthy cosmetic practices were alarmingly common among salon operators. Dibutylphthalate was identified as the most frequently used toxic chemical. The study further revealed that younger operators aged 16-19, those with 4-7 years of experience, and those without formal education were more likely to engage in these harmful practices. These findings highlight the potential health risks associated with the use of unregulated cosmetics, especially among younger, less-educated operators. The study emphasizes the urgent need for education and awareness about the potential hazards of certain chemicals in cosmetics. In response to these findings, the study concludes with a strong recommendation for university authorities to take proactive steps to educate salon operators about these risks. It stresses the importance of adhering to safe cosmetic practices. By doing so, we can promote a safer and healthier salon industry for both operators and customers.

Keywords: demographic pattern, unhealthy application, cosmetic, salon operators.

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INTRODUCTION

The prevalence of cosmetic usage for skin, hair, and nails has significantly increased across different backgrounds, ages, and genders. People are increasingly seeking ways to enhance their beauty, often disregarding the potential negative effects of these actions (Durosaro et al., 2012). There exists a misconception among the population that the cosmetics used in salons are relatively harmless. However, a study conducted by Sustainable Research and Action for Environmental Development (SRA Dev Nigeria) under the auspices of US-based Developing World Outreach initiatives (DWO) reveals that toxic chemicals are widely used in beauty salons nationwide, posing significant health risks. The beauty care market in Nigeria is experiencing remarkable growth, providing lucrative opportunities in the beauty industry. The cosmetic retail rate has increased by an average of 14.5% in 2021 (Voora et al., 2019). Salons serve as workstations offering various cosmetological services such as manicures, pedicures, braiding, hairstyling, and weaving. The cosmetic products used in these salons may contain Volatile Organic Compounds (VOCs), which are chemical compounds with high vapor pressure and low water solubility. These VOCs are found in a

wide range of salon cosmetic products, including methacrylate, phthalate, ozone, and carbon monoxide (Hadei et al., 2018).

Chemicals are commonly added to cosmetics as preservatives and fragrances to extend their shelf life and enhance their appeal to customers. While many European countries have banned the use of toxic compounds like Toluene, Formaldehyde, and dibutyl phthalate, these substances still find their way into salons. The salon environment is filled with a myriad of chemicals released from sprays, permanent waves, acrylic nail applications, and other sources. These chemicals are associated with numerous health problems, including asthma, dermatitis, neurological symptoms, and even cancer. They accumulate as fumes in the salon and can be absorbed through the skin or inhaled by both salon operators and clients (Adepoju-Bello et al., 2012), (Oyedeji et al., 2011). Despite legislation aimed at reducing the use of these harmful compounds, they continue to be present in cosmetics. They are components of primary raw materials used in cosmetic production or intentionally included by unscrupulous manufacturers (Adepoju-Bello et al., 2012), (Oyedeji et al., 2011).

In Nigeria, the National Agency for Food, Drug Administration and Control (NAFDAC) does not conduct clinical trials or laboratory tests before allowing cosmetics into the market. Instead, NAFDAC relies on post-market surveillance and requires a comprehensive certificate of analysis. The guidelines also prohibit the use of mercury, corticosteroids, and other prohibited substances in cosmetic products. However, these substances often find their way into the market (Nduka et al., 2016). Empirical studies have shown that the salon environment is filled with harmful chemical substances released from cosmetics, with concentrations exceeding safety limits (Asare-Donkor et al., 2020); (Tran & Kannan, 2015). Salons have been identified as potential breeding grounds for infections. A study conducted around Kogi State University, Anyigba, revealed heavy bacterial and fungal growth on combs, brushes, hair stretchers, rollers, and hairpins. These findings indicate that salons contribute to the spread of infections, particularly when equipment is reused on different clients without adequate sterilization procedures (Enemuor et al., 2013). Similar scenarios were observed at the University of Port Harcourt, where combs, brushes, and other tools showed significant bacterial and fungal growth. Additionally, many salons lacked proper ventilation, and workers often did not have access to or were reluctant to use personal protective equipment such as nose masks (Stanley et al., 2019). Against this background, this study aims to investigate the demographic patterns of unhealthy cosmetic application among female salon operators in tertiary institutions in Rivers State.

Statement of the Problem

There is an erroneous belief that cosmetics used in salons are relatively safe and do not contain hazardous chemicals. This is contrary to what is observed in reality, as many salon operators use cosmetics with hazardous chemicals.

Aim and Objectives of the Study

This study aimed to investigate demographic patterns of unhealthy application of cosmetics by female salon operators in tertiary institutions in Rivers State. Specifically, the objectives were to:

1. Ascertain the unhealthy cosmetics applications among salon operators in tertiary institutions in Rivers State.

2. Determine the relationships between demographic variables of age, years of experience, education level and unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State.

METHOD

The study employed a cross-sectional survey design. This design was chosen because it permits one to collect data from a large sample drawn from a given population and describes specific features of the sample that interest the researcher—the population for the study comprised 1200 female salon operators in tertiary institutions in Rivers state. A representative sample size of 1200 female salon operators was used for the study, which represents the total number of salon operators. Ten tertiary institutions in Rivers State were used for the study.

The instrument for data collection was a self-structured questionnaire titled "Questionnaire on Demographic Pattern of Unhealthy Cosmetics Application (QDPUCA)". It was presented to 3 research experts in the Department of Human Kinetics and Health Education to determine its validity. The instrument's reliability was determined using the test-retest method, and a coefficient value of 0.92 was obtained. Data collected were analysed using descriptive statistic tools of percentage, mean, standard deviation, and Inferential statistics of one-way ANOVA at a .05 significance level.

RESULTS AND DISCUSSION

Research Question 1: What are the unhealthy applications of cosmetics among salon operators in tertiary institutions in Rivers State?

Table 1: Unhealthy Application of Cosmetics

Items	Mean	SD
Apply cosmetic products with dibutyl phthalate (nail polish)	3.05	0.89
Apply cosmetic products with formaldehyde (nail hardener)	2.81	1.00
Apply cosmetic products with lead	2.91	0.99
Apply cosmetic products with toluene (nail glue, hair dye)	3.01	0.97
Check the active ingredients and expiry date before buying the products	2.14	1.14
Apply the same cosmetic tools on several clients	2.34	1.11
Apply cosmetic products without protective equipment (e.g. nose mask, gloves)	2.62	1.01
Grand mean	2.69	1.01

Table 1 indicated that there was unhealthy application of cosmetics by the salon operators with a grand mean of 2.69 ± 1.01 . The toxic trio was predominant; dibutyl phthalate (3.05 ± 1.00). Other unhealthy cosmetic applications observed were the application of cosmetic products with lead (2.91 ± 0.99) and the application of cosmetics without personal protective equipment.

Research Question 2: What are the relationships between demographic variables of age, years of experience, education level and unhealthy application of cosmetics?

Table 2: Age and Unhealthy Application of Cosmetics

Items	16-19 yrs		20-23 yrs		Age 24-27 yrs		28 yrs>		Grand Mean
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Salon operators between the ages (16-19) years apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.94	0.91	2.87	0.85	3.55	0.77	3.18	0.70	3.14
Salon operators between the ages (of 20-23) years apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.98	0.95	2.88	0.84	2.60	1.29	3.10	0.75	2.89
Salon operators between the ages (of 24-27) years apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.95	1.08	2.60	0.96	3.32	0.94	2.58	0.73	2.86
Salon operators between ages (28years and above) apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	3.07	1.02	2.58	0.97	3.60	0.78	2.47	0.74	2.93

Table 2 revealed that salon operators in the age bracket of 16-19 years are more predisposed to the unhealthy application of cosmetics, with a grand means of 3.14, closely followed by those 28 years and above (2.93). The unhealthy application also includes those between the ages of 20-23 (2.89) and those in the 24-27 age range (2.86).

Table 3: Years of work experience and unhealthy application of cosmetics

Items	Year of Work Experience								
	12 > years		8-11yrs		4-7yrs		1-3yrs		Grand Mean
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Salon operators with 1-3 years' work experience apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	3.08	0.88	3.12	0.69	1.42	0.50	2.08	0.88	2.45
Salon operators with 4-7years'work experience apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.78	1.02	3.30	0.51	2.85	1.01	2.78	1.02	2.93
Salon operators with 8-11 years of work experience apply expired and toxic cosmetics, use unsterilised	2.96	0.99	2.34	0.74	2.42	0.50	2.96	0.99	2.67

equipment and work without nose masks.										
Salon operators with 12 and above years of work experience apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	3.04	0.97	2.74	0.93	2.57	0.50	2.04	0.97	2.60	

Table 3 showed that salon operators with 4-7years of work experience were more prone to unhealthy application, with a mean value of 2.93, followed by those with 8-11years of work experience, with a grand mean value of 2.67, and salon operators with 12 years and above years of experience had a grand mean value of 2.60.

Table 4: Educational level and unhealthy application of cosmetics

Items	Educational level									
	No formal		Primary		Secondary		Tertiary		Grand mean	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Salon operators with no formal education apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.74	0.68	3.04	0.79	3.16	0.99	3.33	0.98	3.12	
Salon operators with only primary school education apply expired, toxic cosmetics, use unsterilised equipment and work without nose masks.	2.88	0.83	3.01	0.67	3.05	1.02	3.04	1.19	3.00	
Salon operators with secondary school education apply expired, toxic cosmetics, use unsterilised equipment and work without a nose mask.	2.39	0.98	2.53	0.86	3.20	0.93	3.57	0.76	2.92	
Salon operators with tertiary education apply expired, toxic cosmetics, use unsterilised equipment and work without a nose mask.	2.48	0.99	2.78	0.90	3.27	0.91	3.57	0.77	3.02	

Table 4 displays the unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State based on educational level. The result showed that educational level makes a difference in the unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State. Salon operators with no formal education are the group that majorly applies unhealthy cosmetics, with a grand mean value of 3.12, followed by those with tertiary level (3.02), primary level (3.00) and secondary level (2.92).

Hypothesis 1: Age has no significant difference in the demographic pattern of unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State.

Table 5: Analysis of Variance (ANOVA) showing significant difference in the pattern of unhealthy application of cosmetics among salon operators on tertiary institutions in Rivers State based on age.

Sources	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.738	3	2.246	10.667	.000
Within Groups	245.515	1166	.211	S	
Total	252.253	1169			

Table 5 indicated that in the findings of this study, age makes a significant difference [$F_{(3,1166)} = 10.667$; $P < 0.05$] in the pattern of unhealthy application of cosmetics. Therefore, the null hypothesis was rejected.

Hypothesis 2: Years of experience has no significant difference in the demographic pattern of unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State.

Table 6: Analysis of Variance (ANOVA) showing significant differences in the pattern of unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State based on years of work experience

Sources	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.972	3	.657	3.062	.027
Within Groups	250.281	1166	.215		
Total	252.253	1169			

Table 6 showed that work experience makes no significant difference [$F_{(3, 1166)} = 3.062$; $P > 0.05$] in the pattern of unhealthy application of cosmetics. Therefore, the null hypothesis was accepted.

Hypothesis 3: Educational level has no significant difference in the demographic pattern of unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State.

Table 7: Analysis of Variance (ANOVA) showing significant differences in the pattern of unhealthy application of cosmetics among salon operators in tertiary institutions in Rivers State based on educational level.

Sources	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.686	3	3.895	18.881	.000
Within Groups	240.567	1166	.206		
Total	252.253	1169			

Table 7 shows that the educational level of the salon operators makes a significant difference [$F_{(3, 1166)} = 18.881$; $P < 0.05$] in the pattern of unhealthy application of cosmetics. Therefore, the null hypothesis was rejected.

This study's findings revealed an unhealthy application of cosmetics among female salon operators in tertiary institutions in Rivers State. This is also in line with the findings of (Muniz-Rodriguez et al., 2020) and (Kwok et al., 2014) who in their studies also reported the use of cosmetic products with these harmful chemicals by salon operators. The findings of this study also correspond with the study (Bigambo & Saria, 2016). (Lillienberg et al., 2013) Moreover, (Park & Zippin, 2014) also identified the use of harmful chemicals in cosmetic products used in salons, though with a higher

value than the present result. (Skoufi et al., 2013) They also corroborated the findings of this study. They implicate exposure to some of these harmful chemicals in salons to attendant health challenges. The preceding also confirms that there is rampant use of toxic chemicals in cosmetic products used in salons by the operators. These harmful chemicals in salons can be attributed to ineffective government policies regulating the importation and local production of these cosmetic products. Price is also a determining factor in cosmetics used in salons. The safer brands with quality assurance are usually more expensive than the alternatives, which generally contain these harmful chemicals and are usually cheap and readily available. However, other factors may contribute to the unhealthy application of cosmetics by salon operators, as reported (Bigambo & Saria, 2016). These factors may include poor knowledge of the ingredients used in the production of the cosmetics, education level and inadequate training. (Ebuara et al., 2020) Moreover, (Enemuor et al., 2013) isolated lots of disease-causing pathogens in tools used in most salons and reused them on different clients to spread infections; however, this form of unhealthy cosmetic application was minimal in this study.

The study's results demonstrated that age makes a difference in the unhealthy application of cosmetics. The salon operators in the age range 16-19 old were more prone to the unhealthy application of cosmetics. This is in agreement with the findings of (Doan et al., 2017). In their study, operators in the young age group (18-24) were more prone to unhealthy cosmetic applications. They inferred that youthful exuberance might be responsible for the observation. This finding is at variance with. These studies discovered that unhealthy cosmetic application was more prevalent among older salon operators; this is at variance with (Nassaji et al., 2015), which concluded that older salon operators are more careful with the handling of equipment and chemical components thereby, are less prone to the unhealthy application of cosmetics. Most older operators are married and tend to be more careful. The study's findings show that years of work experience makes a difference in unhealthy cosmetic application. Those between 4-7 years of work experience were more prone to unhealthy cosmetic applications. This finding was also in agreement with the studies of (Fourie & Singh, 2022), (S. et al., 2019) and (Doan et al., 2017).

The operators with no formal education were more prone to unhealthy application of cosmetics. This finding is in line with the findings of (Nassaji et al., 2015) whose study noted that poor educational levels or improper training can bring about challenges among salon operators which can result in unhygienic and unhealthy application of cosmetics. The findings of this study are also in line with (Held et al., 2002) (Bigambo & Saria, 2016) found that risks present in salons are mitigated through education. In other words, those with low levels of education are prone to unhealthy application of cosmetics. This view is also supported by, who discovered that college-trained hairdressers applied their knowledge to salon work, thereby reducing unhealthy applications. However, (B. et al. et al., 2016) found no significant relationship between educational level and unhealthy application of cosmetics which was contrary to the findings of this study. (Nassaji et al., 2015) Advocated that educational intervention programmes to increase the knowledge of salon operators, especially in the areas of dangerous chemicals, reading of labels etc., can go a long way in effectively checkmating the menace of unhealthy application of cosmetics and significantly decrease the risks posed by some salons as a reservoir for the spread of infection.

CONCLUSION

In conclusion, this study delves into the demographic trends of harmful cosmetic application among female salon workers in tertiary institutions in Rivers State. The results uncover a worrying frequency of unhealthy habits, underscoring the potential health hazards linked to unregulated cosmetics. The study urgently calls for university authorities to step forward and educate salon operators about these dangers, stressing the importance of following safe cosmetic practices. Through enhancing education and awareness, we can pave the way for a safer and healthier salon industry for both operators and customers.

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