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DEMOGRAPHIC PATTERNS OF HEALTH PROBLEMS AMONG SALON OPERATORS IN TERTIARY INSTITUTIONS IN RIVERS STATE

Onyekwere I. L[1], Okpako J. E. F[2]
University of Port Harcourt, Nigeria
fxintegritypublishing@gmail.com[1], okpakojef@gmail.com[2]

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demographic patterns, health problems, salon operators.

ABSTRACT
The salon environment is a zone where the workers are exposed to numerous hazardous chemicals, physical and ergonomic challenges. Salon operators have been reported to exhibit a lot of respiratory, allergic and systemic symptoms. The study was done to determine the demographic patterns of the health problems using a descriptive cross sectional study. 1,200 salon operators in ten tertiary institutions in Rivers State were selected for the study. Data was collected using a self- structured questionnaire, and analyzed with descriptive and inferential statistical on the statistical package for social science (SPSS). Alpha level was set at 0.05. The study revealed that health problems were reported among the salon operators with respiratory symptoms of sore throat (grand mean of 3.25) and Chest Pains (3.22) been the most prominent followed by skin conditions (3.13). Age, years of work experience and levels of education have a significant bearing on the health problems. The study concluded that salon operators in tertiary institutions in Rivers State go through a lot of health problems by reason of their profession which have a correlation with age years of work experience and education level. It was therefore recommended that salon operators should be enlightened on the use of personal protective equipment in the workplace.

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Corresponding Author: Onyekwere I. L
Email: fxintegritypublishing@gmail.com

INTRODUCTION

The setting up of salons in the beauty industry is not a capital intensive project, giving rise to a lot of salons dotted around the city. The salon environment is filled with myriad of chemicals which are released from hair sprays, dyes and so forth. These chemicals are associated with health problems like asthma, dermatitis, neurological symptoms and even cancer. Salon operators absorb these chemicals through their skins and breathe them in, as fumes build up in the salon. Comparative studies show that salon workers are two or three times more likely to suffer from skin conditions than people in other occupations (Onyekwere, 2023). Observed that over 60% of salon workers reported skin conditions like dermatitis, eczema and rashes (Archibong et al., 2018). Salon work involves considerable exposure of the hands to numerous irritating and sensitizing chemicals. In addition, the hands are usually wet for a long period of time while in contact with other chemicals. Long period exposure to moisture reduces the skin natural barrier and makes it more permeable thereby increasing the chances of absorbing more chemicals which can have hazardous effect on the worker.

Cosmetics are the main contributory factor in Allergic Contact Dermatitis (ACD). This is an inflammatory skin disorder which is characterized by swelling of the vesicles and erythema in the early stages if exposure is sustained; it then develops to a chronic condition (Celeiro et al., 2014). Chemicals in fragrance can penetrate the skin, mucous membrane and subsequently find their way to the blood stream and other organs. Contact allergy to fragrance usually occurs following exposure to them in

sufficient doses that can produce an allergy. This contact allergy is a lifelong situation of altered reactivity in the immune system. The frequency of ACD in the general population in Europe is estimated between 1 and 3%.

Exposure to excess estrogen, including hormonal imbalance of progesterone and estrogen have been proven to be precursors of uterine cancer (Liang & Shang, 2013); (Rodriguez, 2020). Endocrine disrupting chemicals (EDCs) such as synthetic estrogenic compounds have been hypothetically assumed to contribute to uterine cancer risk because of their ability to alter hormonal pathway (Helm et al., 2019). The pathway used by hair products is a predominant exposure pathway to several endocrine disrupting chemicals that has been associated with hormone sensitive cancers, including breast and ovarian cancer. Formaldehyde and formaldehyde releasing chemicals which are constituents of hair dyes have been associated with carcinogenesis which supports the theory of an association between hair products usage and cancer formation (White et al., 2021); (Zhang et al., 2020).

Cosmetics often contain low concentrations of heavy metals as impurities. While these concentrations may seem harmless, these metals can accumulate over time and become toxic to the body due to their long half-life. Even at low concentrations, some of these metals can cause damage to internal organs. Lead (Pb) and Cadmium (Cd) are considered the most severe contaminants known to humans. Inhalation of large amounts of chromium can lead to stomach, kidney, and hair problems.

Studies have shown that cosmetology is a female dominated profession most of whom are in their reproductive age group. In the cosmetic industry there are group of chemicals known as the "Toxic Trio" it comprised Dibutyl Phthalate (DBP), Toluene and Formaldehyde. They are so named because of their links to cancer, birth defects, asthma and other chronic conditions (Breskey, 2013). The clients and salon operators may readily inhale this into their lungs and respiratory tract. The vapour can also come in contact with the mucous membrane in the eyes and nose. Formaldehyde can also be absorbed through the skin on contact. Health challenges attributed to formaldehyde exposure include nose bleeding, burning eyes and throat, skin irritation, asthmatic attacks, cough, chest pains, loss of sense of smell, headaches and fatigue (Henrotin et al., 2015)

The presence of this toxic trio in the work environment contributes to reproductive hazards faced by cosmetologists. Studies have shown a significant increase in preterm births and increased risk of pregnancy disorders with hairdressers, when compared to a group of teachers and sales clerks where the only occupational difference is exposure to toxic trio (Henrotin et al., 2015). Association has been established between pregnant women who inhaled the toxic trio and adverse reproductive outcomes such as intrauterine growth retardation and premature delivery. It is based on this premise that the study examined the demographic patterns of health problems among salon operators in tertiary institutions in Rivers State.

Statement of the Problem

Cosmetics used in the country are monitored through post market surveillance, which simply means that regulatory authorities do not conduct clinical trials before cosmetics are used in the country but when injury or harm is recorded by the use of the cosmetics, only then do the authorities swing into action. This practice exposes the salon operators majorly and their clients to a lot of health problems and this study examined demographic patterns of health problems among salon operators in tertiary institutions in Rivers State.

This study was aimed at investigating demographic pattern of unhealthy application of cosmetic by female salon operators in tertiary institutions in Rivers State. Specifically, the objectives were to:

1. find out the health problems among salon operators in tertiary institution in Rivers State.
2. determine the relationships between demographic variables of age, years of experience, education level and health problems experienced by salon operators in tertiary institution in Rivers State.

The research on the demographic patterns of health problems among salon operators in tertiary institutions in Rivers State provides valuable insights into the health issues faced by these operators and their clients. By examining the demographic variables such as age, years of experience, and education level, the study aims to understand the relationship between these factors and the health problems experienced by salon operators. The research benefits include:

Identifying health problems: The study helps in identifying the specific health problems faced by salon operators in tertiary institutions in Rivers State. This information can be used to raise awareness about these issues and develop appropriate interventions and preventive measures.

Understanding demographic patterns: By analyzing the demographic variables, the research provides insights into how age, years of experience, and education level may influence the health problems experienced by salon operators. This understanding can inform targeted interventions and policies to address the unique needs of different groups.

Informing regulatory actions: The research highlights the need for better regulation and monitoring of cosmetics used in the country. By revealing the practice of post-market surveillance, where regulatory authorities only take action after harm is recorded, the study emphasizes the importance of conducting clinical trials before cosmetics are used. This information can support advocacy efforts for stricter regulations to protect salon operators and their clients.

Promoting occupational health and safety: The findings of the study can contribute to improving occupational health and safety practices in the salon industry. By identifying the health problems faced by salon operators, it becomes possible to develop training programs, guidelines, and resources to promote safe practices and reduce the risk of health issues.

Overall, this research provides valuable insights into the demographic patterns of health problems among salon operators in tertiary institutions in Rivers State, helping to inform interventions, policies, and advocacy efforts aimed at improving the health and well-being of salon operators and their clients.

METHOD

The study employed a cross-sectional survey design. This research design is commonly used to collect data from a large sample drawn from a given population and describe certain features of the sample that are of interest to the researcher. In this case, the study aimed to investigate the demographic pattern of health problems among female salon operators in tertiary institutions in Rivers State. Cross-sectional designs are particularly useful when the researcher wants to gather information about a specific point in time and gather data from a representative sample. The design allows for the collection of data from different individuals or groups at a single point in time, providing a snapshot of the population being studied.

Population and Sample Size: The population for the study comprised 1200 female salon operators in tertiary institutions in Rivers State. The study used a representative sample size of 1200 female salon operators, which represents the total number of salon operators in the population. Ten tertiary institutions in the State were selected for the study.

Data Collection Instrument: The instrument used for data collection was a validated self-structured questionnaire titled "Questionnaire on Demographic Pattern of Health Problems among Salon Operators (QDPASO)". This questionnaire was specifically designed to gather information about the demographic characteristics and health problems of salon operators. It is important to note that the questionnaire had a reliability coefficient of 0.92, indicating a high level of internal consistency.

Data Analysis: The collected data was analyzed using descriptive statistical tools and inferential statistics. Descriptive statistics, such as percentages, mean, and standard deviation, were used to describe the demographic characteristics and health problems of salon operators. Inferential statistics,

specifically one-way ANOVA, was employed to test for significant differences between different groups or variables. The significance level for the statistical tests was set at .05, meaning that a p-value less than .05 would be considered statistically significant.

RESULT AND DISCUSSION

Table 1. Socio-demographic Data of Respondents

Variables	Frequency (n=1170)	Percentages
Age		
16-19 years	264	22.6
20-23 years	362	30.9
24-27 years	276	23.6
28 years and above	268	22.9
Work experience (in years)		
1-3	700	59.8
4-7	250	21.4
8-11	177	15.1
12 and above	43	3.7
Educational level		
No formal education	232	19.8
Primary education	230	19.7
Secondary education	405	34.6
Tertiary institution	303	25.9

Table 1 showed the socio-demographic data of the respondents with 264 (22.6%) respondents aged between 16-19years, while 362 (30.9%) were aged between 20-23 years. Also, 276 respondents representing 23.6% of the studied population were aged between 24-27 years, while 268 (22.9%) respondents were 28 years and above.

On working experience 59.8% of the respondents (700) indicated that they have worked for between 1-3 years, 21.4% of them (250) have worked for between 4-7 years, 15.1% of them (177) have worked for between 8-11years while 3.7% of them (41) have worked for 12 years and above. With respect to educational level 19.8% of them (232) had no formal education, 19.7% of them (230) had primary education, 34.6% of them (405) had secondary education while 25.9% of them (303) had tertiary education.

Research Question 1: What are the health problems among salon operators in tertiary institution in Rivers State?

Table 2: Health Problems associated with Unhealthy Application of Cosmetics

Items	Mean	Standard Deviation
Appearance of redness on the skin	2.03	0.97
Appearance of rashes on the skin	2.64	0.96
Emergence of dermatitis or eczema	2.71	0.88
Discoloration of the skin	3.13	0.87
Shortness of breath	2.87	0.78
Nasal irritation	2.94	0.93
Dizziness	2.92	0.83
Nausea	2.89	0.80
Sore throats condition	3.27	0.68
Nose bleeding	3.08	0.84
Chest pains	3.22	0.85
Headaches	3.13	0.78
Cluster mean	**2.90**	**0.84**

Table 2 showed the health problems experienced by the salon operators. The most prominent health problem experienced by the salon operators was sore throat condition with a mean value of 3.27. Other health problems experienced include skin rashes (2.64), dermatitis or enzyme (2.71), skin discoloration (3.13), shortness of breath (2.89) nasal irritation (2.94), dizziness (2.92), Nausea (2.89), nose bleeding (3.08) chest pain (3.22) and headaches (3.13).

Research Question 2: What are the relationships between demographic variables of age, years of work experience, educational level and health problems experienced by the operators?

Table 4: Age of Work Experience and Health Problems

Age	Health Problems		No Health Problems	
	Frequency	Percentages (%)	Frequency	Percentages (%)
16-19 years	201	76.1	63	23.9
20-23 years	271	74.9	91	25.1
24-27 years	254	92.0	22	8.0
28 years and above	156	58.2	112	41.8

Table 3 showed the relationship between health problems and age of the salon operators. The age group with the highest frequency of health problems was the 24-27 years age bracket (92%) while the least age group was 58.2% among those 28 years and above.

Table 4: Years of Work Experience and Health Problems

Year(s) of Work Experience	Health Problems		No Health Problems	
	Frequency	Percentages (%)	Frequency	Percentages (%)
1-3 years	533	76.1	167	23.9
4-7 years	186	74.4	64	25.6
8-11 years	134	75.7	43	24.3
12yrs and above	29	67.4	14	32.6

Table 4 showed the relationship between years of work experience and health problems. The highest frequency of health problem was among those with 1-3 years of working experience (76.1%) while the least was among those with work experience of 12 years and above (67.4%)

Table 5: Education levels and Health Problems

Educational Level	Health Problems		No Health Problems	
	Frequency	Percentages (%)	Frequency	Percentages (%)
No Formal	201	86.6	31	13.4
Primary Education	190	82.6	40	17.4
Secondary Education	299	73.8	106	26.2
Tertiary Education	183	60.4	120	39.6

Table 5 shows the relationship between educational level of study and health problem. The highest frequency of health problems was noticed among those with no formal education 86.6% while the least frequency was among those with tertiary education (60.4%)

Hypothesis 1: Age has no significant difference on demographic pattern of health problems among salon operators in tertiary institutions in Rivers State.

Table 6: Analysis of Variance (ANOVA) showing significant difference on health problems associated with the pattern of unhealthy application of cosmetics among salon operators based on age

Sources	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	15.577	3	5.192	30.042	.000

Sources	Sum of Squares	Df	Mean Square	F	Sig.
Within Groups	201.531	1166	.173		
Total	217.108	1169			

Table 6 indicates the ANOVA analysis showing that there is a significant difference in demographic pattern of health problems among salon operators based on age [$F_{(3, 1166)}$ =30.042; P< 0.05]. Therefore, the null hypothesis was rejected

Hypothesis 2: Years of work experience has no significant difference on demographic pattern of health problems among salon operators in tertiary institutions in Rivers State.

Table 7: ANOVA Analysis showing significant difference on health problems associated with the pattern of unhealthy application of cosmetics among salon operators based on years of work experience

Sources	Sum of Squares	Df	Mean Square		Sig.
Between Groups	.338	3	.113	.605	.612
Within Groups	216.770	1166	.186		
Total	217.108	1169			

Table 7 highlighted that years of work experience make no significant difference on demographic pattern of health problems among salon operators [$F_{(3, 1166)}$ = 0.605, P > 0.05]. Therefore, the null hypothesis was accepted.

Hypothesis3: Educational level has no significant difference on demographic pattern of health problems among salon operators in tertiary institutions in Rivers State.

Table 8: Analysis of Variance (ANOVA) showing significant difference on health problems associated with 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	10.963	3	3.654	20.670	.000
Within Groups	206.144	1166	.177		
Total	217.108	1169			

Table 8 revealed that educational level makes a significant difference on demographic pattern of health problems among salon operators [$F_{(3, 1166)}$ = 20.670; P < 0.05]. Therefore, the null hypothesis was rejected.

The study conducted in Rivers State's tertiary institutions revealed that female salon operators faced various health problems while performing their work. These findings align with previous studies conducted by (Tomar et al., 2020). Which also highlighted health issues such as nausea, skin irritation, dermatitis, and respiratory symptoms among female salon operators. Additionally, the findings support the research conducted found that salon operators are prone to respiratory challenges, enzema, and headaches (Bigambo & Saria, 2016); (Archibong et al., 2018). Specific health problems, including skin discoloration, headaches, and dizziness, faced by salon operators during cosmetics application (Mphaga, 2021); (Adewumi-Gunn et al., 2018). These studies collectively emphasize the numerous health challenges prevalent in the salon environment.

Several of the aforementioned research works suggest that standardized education and training for salon workers can help reduce these health issues. Asserting that regular training and retraining of staff can mitigate the health risks associated with salon work (Nassaji et al., 2015). They also discovered that hairdressers with college training effectively applied their knowledge to salon work, consequently decreasing the health risks within the work environment. The educational intervention programs,

focusing on handling dangerous chemicals, reading labels, and other relevant areas, could significantly decrease the occurrence and severity of health problems in salons (Nassaji et al., 2015).

In this study, the health problems were prevalent across all age groups, with higher frequencies observed among individuals aged 24-27 (90%) and lower frequencies among those aged 28 and above (58.0%). Research founded younger salon workers, specifically in the age group examined, experienced more frequent health problems, particularly respiratory issues (Lillienberg et al., 2013). Similarly, identified a higher frequency of health problems, including miscarriages, among younger salon workers. The lower frequency of health problems among older salon operators may be attributed to their reduced exposure to volatile organic substances and limited involvement in "wet work." It is possible that older operators, being salon owners, delegate such tasks to younger employees or junior staff. This finding aligns with the study by (Mphaga, 2021). Which reported that less experienced salon operators, particularly apprentices, encountered more health challenges, potentially due to work overload (Abdel Hamid Hawash et al., 2023).

Furthermore, the study revealed that salon operators with no formal education exhibited the highest frequency of health problems (86.6%), while those with tertiary education exhibited the lowest frequency (60.4%). This finding is consistent with the research conducted by (Nassaji et al., 2015). Additionally, it supports the statement made by Bigambo and Saria (2016) that education acts as a deterrent to unwholesome practices within salons, which could inadvertently lead to health problems.

CONCLUSION

Based on the study's findings, it can be concluded that salon operators in Rivers State's tertiary institutions experience various health issues. These include nausea, skin irritation, and respiratory symptoms. Notably, younger, less experienced, and less educated operators face these challenges more frequently. To effectively tackle these health risks, it is crucial to establish standardized education and training programs. The study highlights the significance of demographic factors like age, work experience, and education level in determining the severity and frequency of health problems. Therefore, targeted interventions should be implemented to enhance the health outcomes of this particular population

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