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Evaluation of work-related health and safety risks associated with hairdressers in Nairobi County, Kenya City

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Abstract

Hairdressers are exposed to awkward posture, prolonged standing, long working hours and chemical hazards capable of causing adverse health effects. The present study aimed to evaluate hairdressers' safety and health risks. The study adopted a descriptive cross-sectional and analytical design. Systematic random sampling was used to select salons and hairdressers. Closed and open-ended questionnaires were distributed to 286 hairdressers who consented to participate in the study. An observation checklist, WISHA caution checklist, thermometer, light meter and noise level meter were used to collect data in the sampled salon. Data were analyzed descriptively and with regression analysis. It was found that the average space for salons was 8.79 m^2, and 68.5% of hairdressers work for long hours (11-12 hours). It was established that 5.48% of salons have an adequate amount of light and that 8.22% of salons have high temperatures. Aprons were the most used personal protective equipment by hairdressers. Manual handling of salon equipment and awkward posture cause musculoskeletal disorders among hairdressers. Their odd ratios impacting the health and safety of hairdressers were 2.706 and 2.728, respectively. The study reveals that hairdressing salon designs, space, lighting, and temperatures affect the health and safety of hairdressers. The hours off work and minimal or no breaks also have negative impacts on the health and safety of hairdressers

1. INTRODUCTION

Hairdressing is an occupation in the hair and beauty industry that deals with cutting, dyeing, bleaching, perming, blow-drying or styling hair in order to change or maintain a person's image. It is a predominantly feminine occupation, with over 80% female workers (Senthong and Wittayasilp, 2021). Women and girls spend a lot of time experimenting with their hair; therefore, perceived to be naturally inclined to the profession. The sector is characterized by a young workforce with an average age of 26 (Mishra, 2021; Khalaf, 2021). Small establishments dominate the hairdressing trade; therefore, salons have an average of two workers, run by self-employed hairdressers who often work independently without dependent employees.

Hairdressers are exposed to various hazards in the workplace, such as awkward posture, prolonged standing, heat stress, noise, muscle load, long working hours, and physical and chemical agents. These are capable of causing adverse health effects, particularly

musculoskeletal disorders, respiratory problems and other stress-related psychological disorders (Tolera, 2019; Kozak, 2019).

Work-related injuries and diseases have been a worldwide issue with substantial economic burden in terms of direct medical costs, loss of work productivity, work disability, increased time off work, early retirement and absenteeism. The International Labour Organization (ILO) estimates that, globally, about 2.3 million people die every year from occupational injury and illness (Bureau of Labor Statistics, 2022) with their cost estimated at 2-14% of the Gross National Product (GNP) and 4% of the Gross Domestic Product (GDP) of the various countries (EU-OSHA, 2022, US. It has been reported that 75% of hairstylists suffer from musculoskeletal disorders (MSD) affecting hands, fingers, wrists, shoulders, necks, backs and legs (Martolia, 2020). MSDs have been found to cause 21% of all years lived with disability (Tolera, 2019). Occupational heat exposure threatens hairdressers' health when heat illness occurs and their performance and work capacity are impaired (Fasiha et al., 2022).

Workplace organizational and physical designs affect the well-being and comfort of a hairdresser. A study to identify the determinant factors for MSDs in female hairdressers in Ethiopia shows that the MSD prevalence is 76.5 % (Tolera, 2019 and Daka, 2019). An investigation into the causes of work-related health problems among hairdressers shows that 86% result from poor working conditions (Tsegay, 2021). In developing countries, the hairdressing industry has been given minimal consideration and neglected by key players in the labour ministry; to most people, it seems unprofessional and is just a supplementary source of income (Tolera, 2019; Khalaf, 2021).

This study evaluated the work-related health and safety risks associated with the hairdressers in Roysambu Sub-County, Nairobi County, Kenya.

2. METHODOLOGY

This study used a descriptive and analytical cross-sectional design. The studied population consisted of hairdressers working in various salons in Roysambu Sub-County in Nairobi County, Kenya.

The number of hairdressers in the study area is estimated at 900**.** Mugenda and Mugenda's (2008) formula was applied to establish the sample size. The number of participants was established as 270. A 10% interval was added to cover for non-response, and the number was rounded off to 300.

The study involved all the male and female hairdressers who were working in a hair salon and had at least one year of experience working as full-time or part-time workers engaged in hairdressing activity.

About 300 questionnaires were administered after obtaining participants' consent. Two Focus Group Discussions were held in Zimmerman and Githurai wards to gather information regarding ergonomic risks among hairdressers. WISHA (Washington State Deartment of Labour and Industries, 2002) Caution checklist, an ergonomic screening tool,which establishes if a job task has ergonomic stressor present for sufficient duration, was used to establish the possible ergonomic risks among the hairdressers. A tape measure was used to determine the space of a salon. Noise level measurements were performed in each sampled salon using a Digital Sound Level Meter (model Auto-ranging NM102) measuring 30dBA to 130dBA. A Digital Lux meter (model MrC Lx-103) measuring range of 0 to 100000Lux was used to take the illumination measurements for the sampled salons. A thermometer (model ThermoPro TP49 Digital Indoor Hygrometer Thermometer) measuring range of -20˚C to 50˚C was used to measure temperatures in the sampled salons.

The soft copy questionnaires, observational checklists, and WISHA checklists were securely stored on electronic devices. Both raw and analysed data were stored in hard disks and electronic files.

All the quantitative data collected were checked, cleaned, coded and tabulated in Excel sheets. Data were transferred to SPSS version 18.0 for analysis. Descriptive statistics, Chi-squares and logistic regression analysis were carried out. Results were presented in tables, charts and graphs. Qualitative data were gathered, reviewed and explored. The data was coded and put into themes and thematically analysed.

Ethical approval was sought from the Kenyatta University Ethics and Review Committee. Approval for the proposal was obtained from the Kenyatta University Graduate School. A research permit was obtained from NACOSTI. The participants were informed of the confidentiality of the information they were giving. Consent was sought from them.

3. RESULTS

Among the 286 respondents were 242 (84.6%) females and 44 (15.4%) males, Table 1. In this study, most salons had between 2 (n = 121, 44.8%) and 3 (n = 110, 40.7%) hairdressers. Twenty-one salons had 8(0.4%) hairdressers, 17 had four hairdressers, and 8 had five hairdressers (Table 1). Most hairdressers belonged to the 24-28-year age group (n = 133, 46.5 %). The second largest group consisted of workers in the 29-33-year age group (25.9%), followed by those in the 19-23-year age group (17.1%). Thirty (n = 30, 10.5%) hairdressers were more than 33 years of age. The mean age of the sample population was 27 years.

In this study, 141 (49.3%) participants had attended secondary school, 125 (43.7%) had participated in tertiary institutions, and 20 (7.0%) hairdressers had a primary level of education. No hairdresser was found to have not gone to school.

One hundred and fifteen (40.2%) hairdressers in Roysambu Sub-County had worked for less than five years, 102 (35.7%) had 5-9-year experience range, 42(14.7%) had a 10-14 years' experience range while 27 (9.4%) hairdressers had worked for between 15-19 years.

Table 1. Respondents' demographic characterization

Demographic features	Frequency	%
Number of hairdressers		
1	21	7.3
2	123	43.0
3	115	40.2
4	19	6.6
5	8	2.8
Age		
19-23 years	49	17.1
24-28 years	133	46.5
29-33 years	74	25.9
>33 years	30	10.5
Educational level		
Primary	20	7.0
Secondary	141	49.3
Tertiary	125	43.7
Work experience		
<5 years	133	46.5
5-9 years	102	35.7
10-14 years	42	14.7
15-19 years	9	3.1

The study showed that the average space in hairdressing salons is 8.79 m^2 (Table 2), which is lower than the recommended size; hence limited space.

Table 2. Salon sizes

	N	Range (m^2)	Minimum (m^2)	Maximum (m^2)	Mean (m^2)
Size Valid N	73	21.33	3.78	25.11	8.79

From the results in Figure 1, 4 (5.5%) salons had a range of between 401-500Lux, 15 (20.5%) salons had illumination of 1-100 Lux, 15 (20.5%) salons had between 101-200 Lux illumination, 19(26.0%) salons had illumination of 201-300Lux while20(27.4%) salons had illumination range of 301- 400 Lux.

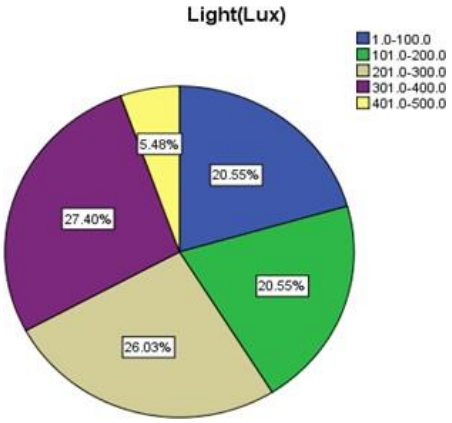

Figure 1. Light in the salons

The results from Figure 2 showed that 2 (2.7%) salons had temperature range of 28-29 °C, 6(8.2%) had temperatures between 22-23 °C, 38(52.1%) had temperatures between 24-25 °C while 27(37.0%) salons had temperatures ranging from 26-27 °C.

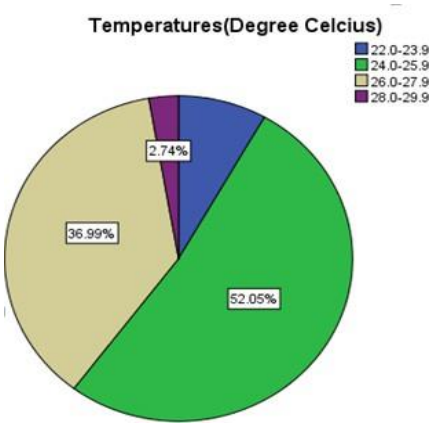

Figure 2. Temperature in salons

Figure 3 results showed that 3(4.1%) salons had noise level of 31.0-40.9dBA, 8(11.0%) salons had 41.0-50.9 dBA noise levels, 9 (12.3%) salons had 71.0-80.9dBA noise levels, 13(17.8%) salons had 51.0-60.9dB level while 24 salons had 61.0-70.9dBA range of noise level.

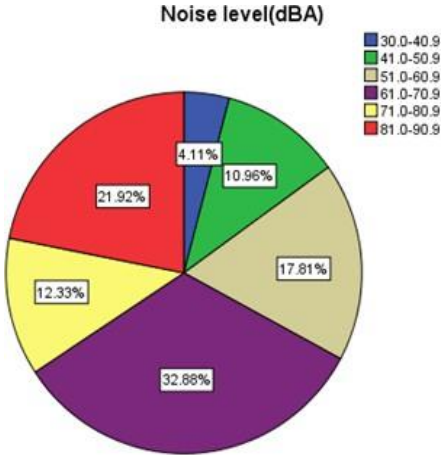

Figure 3. Noise level in salons

From the results of Table 3, most of the hairdressers (n = 196, 68.5%) worked for 11 to 12 hours a day, 52 (18.2%) worked for 8 to 10 hours a day, while 38 (13.3%) worked for more than 12 hours a day (Table 3). Two hundred and thirty (80.4%) hairdressers worked six days a week, while 56 (20.0%) worked seven days a week. One hundred and fifty-one (52.8%) hairdressers had breaks, while 135(47.2%) did not have breaks. Seventy-three (25.5%) hairdressers had a break length of 21-30 minutes, 61 (21.3%) had a break length of 10-20 minutes, and 17 (5.9%) participants had a break length of more than 30 minutes.

Table 3. Organizational design of salons

Variable	Frequency	%
Hours of work		
8-10 hours	52	18.2
11-12 hours	196	68.5
>12 hours	38	13.3
Break length		
0 minutes	135	47.2
10-20 minutes	61	21.3
21-30 minutes	73	25.5
>30 minutes	17	5.9
Days of work per week		
6	230	80.4
7	56	19.6
Pay per week (kshs)		
<2100	59	20.6
2100-3000	93	37.8
3100-4000	65	22.7
4100-5000	51	17.8
5100-6000	18	1

The study showed that 93 (32.5%) hairdressers earned between 2100-3000 Kenya shillings a week (kshs), 65(22.7%) earned between 3100-4000 Kenya shillings a week, 59 (20.6%) earned less than 2100 Kenya shillings a week, 51 (17.8%) participants earned between 4100-5000 Kenya shillings a week while 18 (6.3%) hairdressers earned between 5100-6000 Kenya shillings a week.

In this study, participants used particular personal protective equipment (PPE) depending on their task. All the participants (100%) reported that they used PPE at their workplaces. Among them, 140 (49.0%) used aprons, 108(37.8%) used gloves, 104(36.4%) used face masks, and 45 (15.7%) used flat-closed shoes (Figure 4).

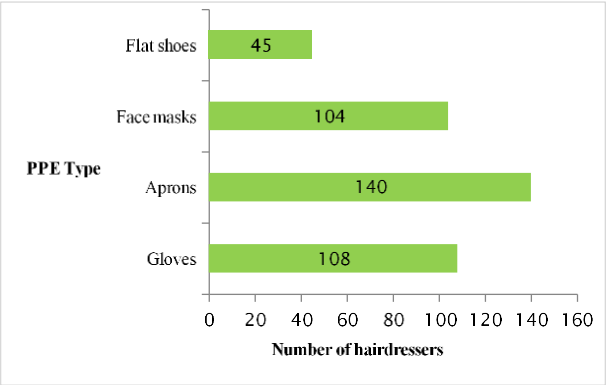

Figure 4. PPE used by hairdressers

From the results of Table 4, it can be seen that 68 (23.8%) hairdressers reported that they had had severe back pains in the last six months, 180 (62.9%) said that they had moderate back pains, while 38(13.3%) had mild back pains over the previous six months. Twenty-eight (9.8%) have had severe neck pains, 168(58.7%) had moderate neck pains, and 48 (16.8%) had mild neck pains in the last six months. Among the respondents, 150(52.4%) reported that they had had moderate pains in their hands, 57 (19.9%) had mild hand pains, and 79 (27.6%) did not have pain in the last six months. One hundred and forty-three hairdressers (50.0%) had felt pain in the ankles of their legs during the previous six months, 75(26.2%) had mild pain in their legs, while (24.8%) did not have pain in their legs in the last six months of their work.

Table 4. Severity of perceived musculoskeletal complaints

Complaint	None	Mild	Moderate	Severe
Back pains	0	13.3	62.9	2.8
Neck pains	14.7	16.8	58.7	9.8
Hand &Wrist pains	27.6	19.9	52.4	0
Sore feet/ Leg pains	23.8	26.2	50	0

The results showed that awkward postures and manual handling were significant to the model, awkward postures (OR=2.728, 95% CI: 1.276 to 5.834) and manual handling (OR=2.706, 95% CI: 1.145 to 6.395), Table 5.

Table 5. Ergonomic risk factors in regression model

	B	S.E.	Wald	df	Sig.	Exp (B)	95% Exp (B)	C.I.for
							Lower	Upper
Standing in awkward postures (1)	1.004	.388	6.697	1	0.010	2.728	1.276	5.834
Manual handling (1)	0.996	.439	5.148	1	0.023	2.706	1.145	6.395
Using vibrating objects (1)	0.098	.311	0.098	1	0.754	1.102	0.599	2.030
Repeating actions (1)	-0.866	.560	2.390	1	0.122	0.421	0.140	1.261
Frequent lifting (1)	-0.295	.304	0.937	1	0.333	0.745	0.410	1.353
Constant	0.495	0.547	0.820	1	0.365	1.641		

In the present study, 174 (60.8%) hairdressers did shampooing, 69(24.1%) hairdressing did cutting, 109 (38.1%) did styling, 145(50.7%) did blow drying, 210 (73.7%) treatment and hair coloring, Figure 5.

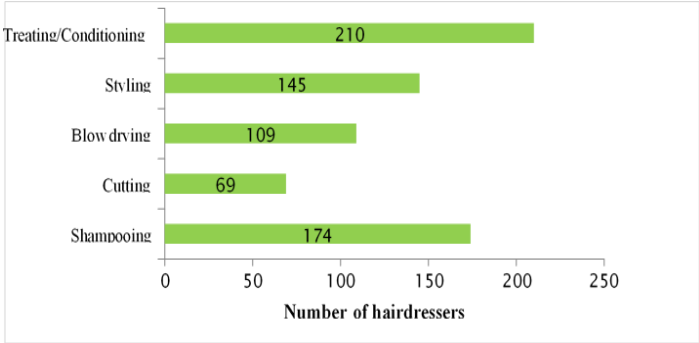

Figure 5. Hairdressing job tasks

4. DISCUSSION

The study established the health and safety risks among hairdressers in Roysambu Sub-County. From the findings, 84.6% of the participants were females. This agrees with the study done in Iran (Tolera, 2019). Most hairdressers were between 24 and 28 years old, with an average of 27 years; most of them have worked for less than five years, and the average is five years. This was favorably comparable to the studies done in Ethiopia (Tolera 2021) on self-reported work-related symptoms in hairdressing. Regarding education level, most hairdressers have attended secondary school, which is consistent with a study done in Ethiopia (Tsegay, 2021).

Regarding the physical design of salons, the study's results showed that the average space in most salons was 7.22 m^2, far lower than the recommended 120 square meters. This showed that salons in Kenya do not meet the threshold and, therefore, are likely to be straining to carry out their tasks.

The study's results revealed that 2.7% of salons had a higher temperature of 28-29°C while most of the salons had a temperature range of 24- 25°C. The results were not comparable to other studies on the physical environment's effects on hairdressers' health (Khalaf et al., 2021). The discrepancy might be due to the weather conditions of the study areas. Sixteen (21.9%) salons had noise levels of between 81.0 and 90.9 dB, which is consistent with the studies in Iran (Khafagey et al., 2023). These salons were near busy streets, bars, welding places and shops with loud music. Forty-nine salons had illumination of 300 Lux and below.

These salons were located below tall and congested buildings. Hairdressers would strain to see during evening hours. This is a risk causing strain on the eyes, shoulder and back muscles. This factor significantly predicted the hairdressers' health and safety while at work. Regarding the organizational design of the hairdressing salons, the study showed that most hairdressers (68.5%) worked for 11 to 12 or more hours per day, with an average of 11 hours per day. This is different from other studies in the past (Khalaf et al.,2021), where the average working hours is 8.9. The difference could result from a lack of compliance with labour regulations and the fact that the hairdressing occupation is informal, making the workforce work longer hours. Most hairdressers work six days a week, consistent with studies done in Ethiopia (Tolera, 2019) and Iran (Tsegay,2021). In this study, most of the hairdressers did not have a break, comparable to studies done in Nigeria and Ethiopia (Sahran, 2023; Tolera, 2019). In this study, there was no significant difference in health and safety by the availability of break time, which may be due to

hairdressers having minimal breaks within a day that may not create a difference between those who didn't have a break within a day (Kozak, 2019).

All hairdressers agreed they used personal protective gear in their workplace, but the most used PPEs were aprons (49%) and gloves (37.3%). Even with their responses, most hairdressers were observed working without the required PPE. These were comparable with other studies done in Egypt (Titilayo, 2019).

Regarding the work-related musculoskeletal complaints by hairdressers, the results of this study show that participants were likely to develop back pains, neck pains, hand and wrist pains and sore feet or painful legs. This agrees with the studies conducted by different studies (Kozak, 2019).

Regarding the ergonomic risks among hairdressers, the results of the study revealed that awkward postures (85%), repetitive actions (88.1%) and manual handling (89.9%) of salon equipment were the major ergonomic risk factors. These results were comparable to studies done in Cameroon (Martolia, 2020; Kozak, 2019). Although the association is very positive after controlling for the variables, manual handling and awkward postures predicted the odds of hairdressing not being safe and healthy at their workplace. They contributed to the development of musculoskeletal disorders.

From the findings of this study, the respondents' tasks included plaiting, waving, treatments, conditioning, shampooing, drying and cutting. These activities required constant twisting of the back, static postures, prolonged standing periods, high hand force and manual handling of salon equipment. Repetition was also observed in all these client-related tasks. They also involve using chemicals whose contents are harmful, especially to the skin and respiratory system. The results were favorably comparable to other studies done in the past (Mishra, 2019, Tolera, 2019, Tsegay, 2021, Kozak, 2019). Due to the awkward positions and prolonged standing on hard floors, the respondents' hairdressing tasks were associated with the perceived musculoskeletal disorders among the participants.

5. CONCLUSIONS

Due to the alarming rates and prevalence of musculoskeletal disorders and dermatological and respiratory problems among hairdressers, especially in third-world countries, researchers are implementing new strategies to diagnose and contain the cases. In developing countries, such as Kenya, asthma, skin infection, and back pains are soaring. The workspace, physical environments, working hours, personal protection gear, hairdressing tasks, and ergonomic risk factors are all compounding factors that are causing the rise in cases.

All the tasks carried out by hairdressers are done in twisted positions with bent backs and necks, with repetitive movements of fingers and wrists for extended periods. These become the major ergonomic risk factors causing musculoskeletal complaints among the workforce.

Researchers are campaigning for safe and healthy working environments for hairdressers, but the sector is considered unprofessional; therefore, there needs to be more enforcement of occupational health and safety legislation for the hairdressing sector. There needs to be more knowledge of health and safety requirements and even hazards in the workforce. There is also a need for compliance with the hairdressing laws because the hairdressers need to gain knowledge and training. There is also a gap in adherence to control and prevention measures through the use of personal protective equipment by the workforce and the Ministry of Labor.

Authors' contributions: Koskei Winnie Chebet solely conceived the study, contributed to the design, implementation of the research, analysis of the results and to the writing of

the manuscript. Dr. Peterson Warutere and Dr. Bernard Awuonda provided critical feedback and helped shape the research and gave guidance on the analysis

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Institutional Review Board Statement: The committee has considered the research protocol in accordance with Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics and Review Guidelines and APPROVED that the research may proceed for a period of One year from 14th August 2021.

Informed Consent Statement: All participants gave their written informed consent.

Conflicts of Interest: No conflict of interest is declared.

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