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Assessing the Knowledge and Use of Safety Clothing Among Road Cleaners: Occupational Health and Human Development

Chioma Veronica Opara[1*]; Myriam Rudaz[2]; Chinyere A. Igbo[3]

[1]Department of Human Development and Family Science, Florida State University
[2]Department of Human Development and Family Science, Florida State University
[3]University of Nigeria Nsukka

[1](https://orcid.org/0000-0002-1571-7878)

Correspondence Author: Chioma Veronica Opara[1*]

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Abstract: Attaining an optimum level of safety against exposure to environmental hazards is one of the most urgent human needs and a wellness approach to life. Lack of knowledge and inadequate use of safety clothing by road cleaners exposes them to environmental hazards. This study therefore examined the level of knowledge and use of safety clothing among road cleaners. A cross-sectional survey design was employed. A sample size of 381, was selected from a total population of 8143 road cleaners. Gender-based differences in knowledge and use of safety clothing were analyzed using a T-test. Road cleaners had low knowledge of safety clothing and perceived it as less important for protection. More than half of road cleaners disagreed that employers supervised the use of safety clothing, ensured the provision of safety clothing, and provided training and programs. Respondents also complained that safety clothing restricted their movements. There were significant differences in the mean responses of male and female road cleaners on both the knowledge and extent of using safety clothing at work, with the male respondents showing a higher mean level of understanding and use of safety clothing. The results indicated a general lack of knowledge about the importance of wearing safety clothing among road cleaners and their dissatisfaction over the employers' oversight. These findings necessitate improvements in safety measures for road cleaners. The study findings will encourage road cleaners to understand the need to wear safety clothing while working and urge the government and employers to organize programs and periodical training for road cleaners to enlighten them on the importance of wearing safety clothing for their health and well-being and supervise its use at work.

Keywords: *Clothing; Hazards; Knowledge; Road Cleaners; Safety.*

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I. INTRODUCTION

Attaining an optimum level of safety against exposure to environmental hazards is one of the most urgent human needs and a wellness approach to life. International Labor Organization (ILO) (1998) refers to safety as a strategy for process control, incorporating a hierarchy of monitoring-controlling-process and protective action to be taken by an individual or group of individuals to prevent harm, injury, or hazards. Safety is needed in every human activity for security and protection. Maslow (1980) in his hierarchy of needs theories identified safety as the second in man's order of need satisfaction. He opined that once physiological needs (food and water) are met, the need for safety dominates human behavior. In every human endeavor, safety is the goal as it eliminates exposure to hazards. Safety is needed in the workplace to protect workers from workplace hazards. Amongst the most vulnerable individuals as regards workplace hazards, are road cleaners.

A road cleaner clears off litter, waste, and filth on roads and streets disposed of by individuals, families, and industries including those produced during manufacturing processes (especially radioactive material from the nuclear reaction) which are hazardous to human health and well-being (Lipsett, 2001). According to Chang, Chou, Su, and Tseng (2004), a

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road cleaner is a person whose regular occupation involves cleaning the roads to remove dirt and keep down the dust to promote a healthy, safe, and attractive environment for every individual in society. The activities carried out in road cleaning include sweeping, removal of debris, removal of bulky wastes, litter picking, clearing of bins, and de-silting of drains (National Environmental Agency, 2012). The workload of road cleaners is high, mostly because of work intensification and the high pace of work deriving from the demands for increased flexibility and productivity from employers (European Agency for Safety and Health at Work, 2009). With the pressing and precarious nature of road cleaning work organization and psychosocial factors, road cleaners are exposed to different kinds of hazards.

Road cleaners are exposed to chemical, biological, and physical hazards. They are exposed to chemical substances present in the dirt, dust, soot particles, and poisonous gas. Zock, et a (2002) explained that road cleaners generally are exposed to diseases such as asthma, cancer, and skin diseases from dust content and through inhalation of toxic substances or by direct contact with the skin. Road cleaners are also exposed to different types of biological hazards through microorganisms (bacteria, viruses, and molds), their products, and their secretions. Biological hazards encountered by road cleaners include allergic diseases, nose, eye, and throat irritations, infections, and sick-building syndrome (Messing, 2000). They may also be exposed to blood-borne pathogens when they encounter contaminated needles and sharp objects while cleaning. Road Cleaning is physically demanding and strenuous for the musculoskeletal and cardiorespiratory systems. Berry (2006) noted that physical hazards posed to road cleaners include musculoskeletal disorders (MSDs), road accidents, heat stress, noise, thermal injuries (such as contact burns and heat urticaria), and other injuries like cuts, abrasions, punctures, and insect bites. Road cleaners, due to the nature of their job, come in direct contact with hazards hence and therefore need to be protected from chemical, biological, and physical hazards. One of the ways of providing direct protection to road cleaners is by using safety clothing.

Safety clothing includes articles worn by employees to protect or shield them from their workplace hazards, especially those that have a direct impact on the individual at work (Brody, Leon, and Herbert, 2014). It is defined by the Occupational Safety & Health Administration (OSHA) (2010) as equipment designed to minimize or eliminate exposure to serious workplace injuries and illnesses that may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Safety clothing includes a hard hat or cap, safety goggles, ear plugs or earmuffs, respirator, safety gloves or gauntlet, coverall, reflective jacket, and safety shoes. Each of these clothing items has a specific function and gears toward protecting road cleaners. Road cleaners are therefore expected to have a general understanding of safety clothing, including its components, characteristics, importance, care, maintenance, and use. In other words, the safety of road cleaners will be impeded if there is little or no compliance with the use of safety clothing.

The use of safety clothing in this study entails the extent to which road cleaners put on the complete set at work as an instrument for protection. According to Sweidmann (2013), safety clothing cannot provide safety if worn haphazardly but will give all-around protection when worn in a complete set. He added that road workers do not put on safety clothing for its protective purposes because, they lack the knowledge of its usefulness and as a result, they scarcely put on the complete set. Hence, road cleaners need to have holistic knowledge about its use to encourage full compliance. Aristotle (384-322BC) in his epistemology theory of knowledge explained that knowledge can mean learning and remembering something; being able to recognize and identify and being intimate with something. This implies that road cleaners will only comply with the use of safety clothing if they remember it, recognize the importance, and then develop an interest in wearing the complete set at work. Several studies have been carried out by researchers to examine the knowledge and practices concerning the safety of workers and the use of protective equipment.

Magoro (2012) in his study on the knowledge and practices regarding personal protective equipment found that employees demonstrated inadequate knowledge about protective devices and their compliance with its use was not satisfactory. A study on the quality of eye protective devices used in Hong Kong conducted by the Occupational Safety and Health Council (OSHC) in 1994 revealed that a substantial percentage of the local working population purchased substandard eye devices in the quest for cheap items from small and hardware stores located in residential areas. Paramasivam, Narayani, and Anind (2007) studied knowledge and practices related to occupational health problems among garment workers in Tamil Nadu, India. This study aimed to assess the level of awareness of health problems among garment workers and their attitudes and practices to prevent the same. The workers are employed in three sections (cutting, stitching, and finishing). Workers employed in the three sectionals had high knowledge of the health problems, but the knowledge of personal protective equipment differed by section. More than one-half of the workers in all the sections were aware of the benefits of personal protective equipment, but only a few workers in the cutting section were using it. There was a wide gap between their knowledge level and practice with protective devices. A knowledge and practice survey by Kishore, Hira, Lisa, Abhishek, Shashi, and Rao (2008) on the effectiveness of educational programs in promoting safety among pesticide handlers in South India revealed that educational intervention among pesticide handlers improved the knowledge and practice score for safe pesticide handling. Akintayo (2013) researched knowledge, attitude, and practice on the use of personal protective equipment by traditional resist fabrics workers. The results indicate that the prevalence of good knowledge and appropriate attitude about the use of protective equipment was low. The researcher indicated that although all the workers knew occupational hazards, the unavailability of protective equipment, hindered them from practicing safety. Gupta and Singh (2009) examined the use of personal protective equipment and measures during the application of pesticides by agricultural workers in a rural

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area of Ahmednagar district, India. From the interview with the workers, they discovered that most of the workers/applicators did not use personal protection measures. In contrast, a few used them defectively, and 77% of the respondents did not bother about pesticide exposure's safety and health risks.

The present study aimed to examine the level of knowledge and use of safety clothing among road cleaners. Specifically, the study examined road cleaners' level of knowledge about safety clothing, the perceived importance of safety clothing among road cleaners, the extent to which safety clothing is used by road cleaners, roles played by road cleaning employers in the provision and utilization of safety clothing for road cleaners, and constraints to the use of safety clothing by road cleaners. This study closes a gap in the literature with its hypotheses, which examine gender disparities in road cleaners' awareness and use of safety clothing. This research purposefully examined potential differences between male and female road cleaners regarding their knowledge levels and usage of safety clothing. Previous studies have ignored or generalized gender-specific differences in safety practices among road workers. This emphasis on gender-related differences in safety practices aimed to offer a more thorough understanding of occupational safety, particularly within the context of road cleaning.

➢ *Hypotheses*

The following hypotheses were tested at a 0.05 level of significance by this study:

- H1: There is a difference in the mean responses of male and female road cleaners on their level of knowledge about the use of safety clothing.
- H2: The extent to which safety clothing is used by road cleaners will differ between the mean responses of male and female road cleaners.

II. METHOD

The study adopted a descriptive cross-sectional survey design involving road cleaners in the urban areas of Imo State, Nigeria. The population for the study was made up of 8,143 road cleaners (4,703 females and 3,440 males). 3,120 road cleaners were from Owerri Municipal Local Government Areas (1,900 females and 1,220 males), 2533 road cleaners were from Orlu Local Government Areas (1432 females and 1101 males), and 2490 road cleaners from Okigwe Local Government Areas (1,379 females and 1,119 males; Environmental Transformation Commission, 2016).

A sample size of 381 road cleaners was selected for the study (173 males and 208 females). This sample size was allocated to the three urban areas of Owerri municipal, Orlu, and Okigwe according to their specified population ratio, 1.30: 1.02: 1.00 respectively. Thus, 149 road cleaners were selected from Owerri LGA, 117 from Orlu LGA, and 115 from Okigwe LGA. A structured questionnaire titled, "Level of Knowledge and Use of Safety Clothing Questionnaire", was used for data collection. The instrument was divided into two parts. Part one was to elicit information on the personal data of the respondents. Part two consisted of five sections focusing on the level of knowledge of the road cleaners, the perceived importance of safety clothing among road cleaners, the extent of utilization of safety clothing by road cleaners, the role of the employers in ensuring compliance with the use of safety clothing, constraints in the use of safety clothing by road cleaners. Four sections have a 4-point response scale, while one has yes and no responses. Copies of the questionnaire were administered to the road cleaners in person.

➢ *Validation and Reliability of the Instrument*

Draft copies of the questionnaire with the purpose and hypotheses of the study were sent to three experts who examined and agreed that the content covered the study's objectives. The face validation was determined through the judgment of these three experts which included a lecturer from the Department of Home Economics and Hospitality Management Education, a lecturer from the Department of Agricultural Education, both in the Faculty of Vocational and Technical Education, and the other from the Department of Human Kinetics and Health Education in Faculty of Education, all in the University of Nigeria, Nsukka. The suggestions made by these experts were used to design the final copy of the questionnaire.

To determine the reliability of the instrument, the questionnaire was administered to 20 road cleaners at the University of Nigeria Nsukka in Enugu State who were not participants of the study but fulfilled the study participant's characteristics. The instrument's internal consistency was determined by analyzing the data obtained from the pilot study using Cronbach's Alpha Coefficient and 0.79 was obtained.

➢ *Method of Data Analysis*

Data collected were analyzed using descriptive and inferential statistics. Specifically, research questions were analyzed using mean and standard deviation except for research question five where percentages were used. A real limit of numbers was used to make decisions in the questions except for questions with "yes" or "no" responses.

➢ *Real Limits:*

- 3.50 & above = Very high knowledge/Strongly Agree/Very Often/Very Important
- 2.50-3.49 = High knowledge/Agree/Often/Important
- 1.50-2.49 = Low knowledge/Disagree/Sometimes/ important
- 1.00-1.49 = Very Low knowledge/Strongly Disagree/ Rarely/Not important

The level of knowledge about the use of safety clothing and the extent of utilization by road cleaners was analyzed using a t-test to determine if there were significant differences between the mean responses of male and female road cleaners.

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III. RESULTS

- *Knowledge of Safety Clothing*

Table 1 shows the mean scores of cleaners' knowledge of safety clothing. The result revealed that road cleaners have low knowledge of safety clothing. Their mean responses showed low knowledge of seven out of the ten safety items/measures, including the functional essence of clothing, foot safety clothing, ear safety clothing, hand safety clothing, head safety clothing, eye safety clothing, and face protective shields. However, they showed a high knowledge of skin safety clothing, clothing for visibility, and respiratory safety clothing with higher mean scores.

- *Use of Safety Clothing*

Table 2 shows the mean response on the extent of utilization of safety clothing. It's so tell me score indicates road cleaners used safety clothing sometimes. From their responses, the mean values revealed that hard hats, respirators, reflective jackets, coveralls, safety gloves, and safety shoes were used sometimes. However, earmuffs, safety goggles, and face shields have lower mean scores indicating that they were rarely used.

- *Perception of Safety Clothing*

Table 3 shows the mean response of the road cleaners on the perceived importance of safety clothing, with the total mean score showing that road cleaners perceived safety clothing as fairly important. From the table, Items representing injuries (such as cuts, punctures, scrapes, bruises, and abrasions) and Infections and diseases have mean responses that were considered important. The Item with exposure to sludge splash was perceived to be very important while the other remaining items (which included insect bites; road accidents; risks that cannot be eliminated or adequately controlled; ultra-violet radiation and intense heat; impacts and penetration; and effect of flying objects, molten metal, acids or vapors, glare, and air contaminants) have mean scores that indicated that respondents perceived them to be fairly important.

- *Perceived Constraints in Using Safety Clothing*

Table 4 shows the constraints in using safety clothing among road cleaners. The total mean it's called of the responses provided by the participants revealed that all the road cleaners agreed to the items which specified that safety clothing items do not provide comfort to road cleaners, restrict movements at work, are heavy, are not durable, are worn out, and do not serve the function well.

- *Employers' Involvement in Using Safety Clothing*

Table 5 shows the roles of road cleaning employers in providing and utilizing safety clothing for road cleaners. The table revealed that most employees disagreed with various aspects of employers' responsibilities related to safety clothing as shown by the higher percentages of "No" responses. This suggests a prevalent dissatisfaction regarding the employers' failure in their role to ensure adequate provision of safety clothing and supervise its use.

- *Hypothesis One*

The t-test analysis of the difference in the level of knowledge of the road cleaners on safety clothing based on gender was significant Table 6. There was a significant difference in the level of knowledge of safety clothing between male and female road cleaners with male road cleaners showing a higher mean level of understanding about the use of safety clothing than the female road cleaners.

- *Hypothesis Two*

The t-test analysis of the difference in the extent of usage of safety clothing based on gender revealed a significant difference in the use of safety clothing between male and female road cleaners with the male road cleaners showing a higher mean value than the female road cleaners. This implies that the use of safety clothing at work was practiced more among males than female road cleaners. Table 7.

IV. DISCUSSION

Waste materials are generated during daily human activities. These waste materials, if not well managed, can result in health hazards to humans. Hence, there is a need for waste managers who are saddled with the responsibility of cleaning and disposing of waste materials generated or littered in the environment. To ensure that the environment is clean, the government employed a group of persons known as road cleaners to carry out day-to-day cleaning work on the road and street. The processes involved in this road cleaning make the road cleaners vulnerable to physical, chemical, and biological hazards present in their work environment. To prevent the effect of these hazards on road cleaners, they are expected and encouraged to put on safety clothing while working. Hence this study examined road cleaners' knowledge and use of safety clothing. To achieve this main purpose, the study specifically determined the: cleaners' level of knowledge about safety clothing; the perceived importance; and characteristics of safety clothing for road cleaners; the extent to which road cleaners use safety clothing; roles of road cleaning employers in the provision and utilization of safety clothing for road cleaners; constraints to the use of safety clothing by road cleaners; and ways of improving the use of safety clothing among road cleaners.

The study revealed that road cleaners have low knowledge of the functional essence of clothing; foot safety clothing; hands safety clothing; head safety clothing; eye safety clothing and face protective shields. However, they have a high knowledge of skin safety clothing, visibility, and respiratory clothing. This finding is in line with the finding of Magoro (2012) who studied the knowledge about, and practices of protective equipment by employees of Stevens Lumber Mills (SLM) in the Capricorn District of Limpopo Province, South Africa. The findings revealed that employees working in the production area and exposed to possible occupational injuries demonstrated inadequate knowledge about protective devices; hence, compliance while using them was not satisfactory. The findings of this study conform with the report of Sweidmann (2013) that road workers do not

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wear safety clothing for its protective purposes because they lack knowledge of its usefulness.

Regarding the extent to which safety clothing is used, the findings of this study showed that hard hats, respirators, reflective jackets, coveralls, safety gloves, and safety shoes were used sometimes. In contrast, earmuffs, safety goggles, and face shields were rarely used. The finding further affirms the theory propounded by Fisher and Fisher (1992) that individuals are likely to engage in activities they perceive to be valuable. The lack of usage of safety by road cleaners is due to their poor perception of the value of this safety clothing in ensuring their healthy living. Road cleaners are likely to comply with the use of safety clothing more often at work if they perceive that they are exposed to hazards without the use of this safety clothing. In support of this finding, Gupta and Singh (2009) in their work on the pattern of using personal protective equipment and measures during the application of pesticides by agricultural workers obtained that the majority of the workers used no personal protection measures while few used it defectively. Most workers do not bother about the safety and health risks involved in their job. According to Sweidmann (2013), road workers do not put on safety clothing for its protective purposes but because they lack knowledge of its usefulness.

The study also found that road cleaners perceived safety clothing to be less important. The finding is in line with Launiala, (2009) who found that road workers lack understanding about the importance of safety clothing and they often think that safety clothing slows down their work. The finding also corroborates the theory of reasoned action propounded by Fisher and Fisher (1992) that individuals are likely to adopt behavior like the use of safety clothing if they perceive such behavior to be of value. Road cleaners are likely to comply with the use of safety clothing more often at work if they perceive that they are exposed to hazards. Schoeman and Schroder (2002) opined that workers' main issue is knowing the usefulness of safety clothing and which one to use for a particular work.

The study showed that the constraints in using safety clothing at work are that it does not provide comfort to road cleaners, restricts movements at work, and is heavy for road cleaners. This finding agrees with Hopsu, et al. (2005), who found that personal protective equipment imposes a barrier between the user and the working environment if not properly made. They further noted that safety clothing creates or adds strain on the wearer, impairs their ability to carry out their work, and is often associated with a significant level of discomfort. If these challenges are not addressed, can discourage wearers from using safety clothing, therefore, placing them at risk of injury, ill-health, or under extreme circumstances. Furthermore, good ergonomic design can help to minimize these barriers and can therefore help to ensure safe and healthy working conditions hence, correct use of safety clothing.

The study also revealed that more than 50% of road cleaners did not agree that employers supervise the use of safety clothing, ensure the provision of safety clothing, provide periodic training on the use of safety clothing, ensure that quality and comfortable safety clothing are provided, and carry out periodic program review. This finding conforms to the findings of Ganson (2014) which revealed that lack of management, poor commitment to the use of protective clothing, and lack of training were the major factors hindering the use of protective clothing by workers. Personal Protective Equipment Regulations (2002) stipulated that employers are responsible for the provision of safety clothing that fits the wearer considering his size, fit, and weight. Furthermore, the employer should ensure that safety clothing is well-looked after and properly stored.

Regarding the mean responses of male and female road cleaners on their level of knowledge about safety clothing, the t-test analysis revealed a significant difference. There was a substantial difference in the mean knowledge scores between the male and female road cleaners. Similarly, the mean responses from male and female road cleaners regarding the extent to which safety clothing was worn at work, the t-test analysis also revealed a significant difference. This suggests that there was a statistically significant difference in the use of safety apparel between male and female road cleaners, according to the study's findings. Overall, the male road cleaners exhibited a higher level of knowledge and use of safety clothing than the female road cleaners.

V. IMPLICATIONS

The findings explain the need for safety clothing that is suitable for the type of work done and the hazards involved, it should be based on the area of the body that requires protection and should be durable. This is in line with the Occupational Safety and Health Council's (OSHC, 2009) assertion that the selection of suitable protective clothing should begin with the type of work involved; thorough risk assessment (hazards in the workplace); area of protection; and thus, should vary in materials used, design, fitness, durability, and comfortability. The study further affirms the position of Wood, Tyrrell, Marszalek, Lacherez, Carberry, Chu, and King (2010) who found that visibility to road users should be considered when designing safety clothing for highway managers.

The findings explain the need to improve the use of safety clothing. These measures include providing comfortable and heat resistance safety clothing; considering flexibility and free movement while selecting safety clothing for road cleaners; selecting safety clothing that is warm, soft, and durable; using quality and durable fabrics and materials for sewing safety clothing for road cleaners; replacing old and worn-out safety clothing; providing adequate training and information about the need for safety clothing, its use, and maintenance. The measures proposed by the respondents are in line with the findings of Kishore, Hira, Lisa, Abhishek, Shashi, and Rao (2008) on the effectiveness of an educational program to promote safety among pesticide handlers in South India. Kishore et al (2008) carried out three-point assessments at baseline, immediately after training, and after 1 month of training. Using the Kruskal-Wallis and Friedmann test to compare scores at different time points and between groups,

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it was found that educational intervention among pesticide handlers improved the knowledge and practice score for safe pesticide handling. It is, therefore, recommended that continuous education and training programs for agricultural workers would promote awareness and minimize the hazards of occupational pesticide exposure. This finding is also on track with Gupta and Singh (2009) who conducted research on the pattern of use of personal protective equipment and measures during the application of pesticides by agricultural workers in a rural area of Ahmednagar district, India. They found out that there is a clear need to develop specific training and prevention programs for these workers since they do not bother about the safety and health risks of pesticides. The responses also conform to the Occupational Safety and Health Administration (OSHA, 2010). This administration outlined that where safety protective clothing is provided: employees must also be provided with suitable information, instruction, training, and retraining to enable them to make proper and effective use of it; managers and supervisors should be aware of the reasons for providing safety clothing thus engaging in thorough supervision of its use. In addition, Lakeland Industries Blog (2014) identified six tips on improving workplace safety with proper safety equipment or clothing; thus, understanding the role of safety clothing and devices; knowing the situation when safety clothing should be used; designing a safety clothing program; understanding the necessary steps in selecting appropriate safety clothing for work environment; obtaining program support and promoting internally; and performing regular maintenance inspections.

Overall, the study emphasizes the significance of safety clothing for all road workers because of the hazardous nature of their jobs. It highlights that better education and training about the usage of safety clothing will improve road cleaners' awareness and compliance while also improving their well-being and output. To lower workplace injuries and related expenses, employers will be urged to provide and maintain appropriate safety equipment. The report also highlights the wider consequences for homemakers, other workers, and the government, arguing in favor of funding safety measures and educational initiatives. The results will also provide important information for the next studies on occupational dangers, encouraging a safer workplace in a variety of industries.

VI. LIMITATIONS

Despite that, the study findings would encourage road cleaners to understand the need to wear safety clothing while working and urge the government and employers to organize programs and periodical training for road cleaners to enlighten them on the importance of wearing safety clothing for their health and well-being and supervise its use at work, it should be highlighted that the study has certain limitations. Firstly, the coverage was limited, potentially underrepresenting the variety of settings and practices across many regions. Furthermore, the research failed to account for participant age variations, which may have impacted participants' awareness of and usage of safety clothing. The results may have been biased and the findings' capacity to be applied to different genders may have been limited due to the differential sample sizes for males and females. Due to these limitations, more study is likely required to fill in these information gaps and give a more complete picture of road cleaners' safety clothing usage and expertise.

VII. RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Several recommendations can be made to improve road cleaners' safety and well-being based on the study's findings. The first is to broaden the scope of future research to encompass larger geographic regions. By doing this, the results will be guaranteed to be representative of many situations and methods. To better understand how various age groups view and utilize safety apparel, age concerns should also be incorporated into research designs. Afterward, training curricula that are specifically designed to meet the requirements of different age groups can be created, increasing the overall efficacy of safety measures. To prevent gender bias and make sure that safety recommendations are inclusive and applicable to workers, it is also important to ensure equal representation of both genders in future research.

Furthermore, proactive measures should be taken by employers and government organizations to guarantee the availability of suitable safety clothing and to offer thorough safety training. To keep road cleaners informed about job dangers and the value of protective equipment, regular seminars, and workshops need to be held. To ensure adherence to safety regulations, employers must also set up rigorous supervision procedures. Given the significance of safeguarding the lives and health of employees, the government needs to provide funding for these programs. Road cleaners' working conditions can be made safer, workplace accidents can be decreased, and general productivity and well-being can be enhanced by putting these suggestions into practice.

VIII. CONCLUSIONS

The study was driven by the road cleaners' exposure to a range of working dangers and sought to improve the safety of employees. The results showed that road cleaners' awareness and actual usage of protective clothes were poor, including high gaps in their knowledge of essential safety clothing. Such a gap highlights the necessity for comprehensive training and education programs, backed by private sector and government initiatives, to promote the proper and routine use of protective clothing. By recommending that a combination of institutional support and education is necessary to create a safer working environment and a healthier workforce, addressing these issues is in line with the study's primary goal of improving the health and safety of road cleaners.

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REFERENCES

[1]. Akintayo, W.L. (2013). Knowledge, attitude, and practice on the use of personal protective equipment by traditional resist fabrics workers in Abeokuta, Ogun State. Kuwait Chapter of Arabian. *Journal of Business and Management Review, 2(7).* https://doi.org/10.12816/0001215

[2]. Aristotle, A. (384-322BC). *Epistemology theory of knowledge*. Athens. LYCEUM.

[3]. Berry, M. A. (2006). *Effective cleaning and health issues.* Central Avenue Albang. CIRI-Cleaning Industry Research Institute.

[4]. Brody, P., Herbert, J., & Leon, T. (2014). *Highway safety and driver education*. Cliff N.J. Eagle Wood. Prentice Inc.

[5]. Chang, Y., Chou, C., Su, K. & Tseng, C. (2004). *Effectiveness of street sweeping and washing for controlling ambient TSP atmospheric environment,* 39: 1891-1902. https://doi.org/10.1016/j.atmosenv. 2004.12.010

[6]. European Agency for Safety and Health at Work, (2009*). Policy and practice overview:*

[7]. *Occupational skin diseases and dermal exposure in the European Union* (EU-25): retrieved 6th February 2015. From *http://osha.europa.eu/en/publications/ reports/TE7007049ENC_skin_diseases.*

[8]. Fisher, R.A. & Fisher, R.P. (1992). A meta-analysis of the correlation of role conflict and ambiguity. *Journal of Applied Psychology,* 68, 320-333. https://doi.org/10.1037/0021-9010.68.2.320

[9]. Ganson, A.G. (2014). Effectiveness of health and safety practices in an organization, using AngloGold Ashanti Company, Obuasi Mine. An *MSc thesis submitted to Kwame Nkrumah University of Science and Technology, College of Art and Social Science, Department of Business administration.*

[10]. Gupta, M.D. & Singh, B. (2009). The pattern of use of personal protective equipment and measures during application of pesticides by agricultural workers in a rural area of Ahmednagar district. India. Department of Forensic Medicine and Toxicology, Medical College Ahmednagar, India. *Indian Journal of Occupational and Environmental Medicine, (13)3:* 127- 130. https://doi.org/10.4103/0019-5278.58915

[11]. Hopsu, L., Leppänen, A., Ranta, R.& Louhevaara, V. (2005). *Perceived work ability and individual characteristics as predictors for an early exit from working life in professional cleaners. International Congress Series* Vol. 1280, pp. 84–88. https://doi.org/10.1016/j.ics.2005.03.062

[12]. ILO (1998). *Occupational hazard elimination.* Geneva: International Labour Office.

[13]. Kishore, G.S., Hira, H.A., Lisa, P., Abhishek, P., Shashi, J.S., & Rao, P.G.M. (2008). Effectiveness of an educational program to promote safety among pesticide handlers of South India. *International Archives of Occupational and Environmental Health,* 8: 787-795.

[14]. Delhi. Oxford & IRH publications. https://doi.org/10.1007/s00420-007-0263-3

[15]. Lakeland Industries Blog (2014). Improve workplace safety and these six tips. Retrieved 17th September 2016 from*: myschoonover@lakeland.com*

[16]. Launiala, A. (2009). How much can a knowledge, attitude, and practice survey talk about people's knowledge, attitude and practice? Retrieved 17th January 2010 from: www.anthropologymatters.com/ index.php?journal=anth-matters.

[17]. Lipsett, M. (2001). *Clinical Environmental Health and Toxic Exposures*: Oxides of Nitrogen Sulphur. New York, Toronto. Elsevier Saunders Publishers.

[18]. Magoro, F.M. (2012). Knowledge, attitude, and practices regarding personal protective equipment amongst Steven's lumber mills employees in the Capricorn District of Limpopo Province, South Africa. *M.Sc. A thesis submitted to the Department of Health Science, University of Limpopo.*

[19]. Maslow, A.H. (1980). *Motivation and personality.* 4th Edition. New York, USA. Harper and Row Publishers.

[20]. Messing, K. (2000). Personal and community services: Indoor cleaning services. Encyclopedia of occupational health and safety. International Labour Organization, 1998. 4th edition, Vol. 3, pp. 100.1-100.19. Retrieved 6th August 2009 from: *http://www.ilo.org/safework_bookshelf/english?content&nd=857171212.*

[21]. OSHA (2010). Part 8 Personal Protective Clothing and Equipment. Retrieved 14th February 2015 from: *http://www.osha-slc/gov/SLTC/constructionppe/ index.html*

[22]. OSHC (2009). Safety at work: *Personal protective equipment*. A Publication of the United State Labour Department

[23]. Paramasivam, P., Narayani, K., & Anind, K.G. (2007). Knowledge, attitude, and practices related to occupational health problems among garment workers in Tamil Nadu, India. *Occupational Health,* 49: 528-534. https://doi.org/10.1539/joh.49.528

[24]. Personal Protective Equipment at Work Regulation (1992.). *Personal Protective Equipment – Healthy Working Li*. Retrieved 3rd February 2008 from *http*: www.opsi.gov.uk/SI/si1992-19922966_en_1.htm

[25]. Sweidmann, M. (2013). *Introduction to working conditions and environment.* Amsterdam: Elsevier Science.

[26]. Wood, J.M., Tyrrell, R.A., Marszalek, R., Lacherez, P., Carberry, T., Chu, B.S. & King, M.J. (2010). Cyclist visibility at night: Perceptions of visibility do not necessarily match reality. Brisbane, Australia. *Journal of Australasian College of Road Safety.*

[27]. Zock, J.P., Kogevinas, M., Sunyer, J., Torén, K. & Antó, J.M. (2002). *Asthma characteristics in cleaning workers, workers in other risk jobs, and office workers*. Eur Respir J (20): 679-685. https://doi.org/10.1183/09031936.02.00279702

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Table 1 Mean Scores of Cleaners' Knowledge of Safety Clothing

S/No	Questions	Mean	SD	Remark
1	The functional essence of clothing	1.57	0.23	Low Knowledge
2	Foot safety clothing	2.37	0.51	Low Knowledge
3	Ear safety clothing	2.10	0.13	Low Knowledge
4	Hand safety clothing	1.73	0.78	Low Knowledge
5	Head safety clothing	1.64	0.12	Low Knowledge
6	Skin safety clothing	2.78	0.20	High Knowledge
7	Eye safety clothing	1.77	0.18	Low Knowledge
8	Face protective shields	1.59	0.14	Low Knowledge
9	Clothing for visibility to road users	3.21	0.32	High Knowledge
10	Respiratory safety clothing	3.23	0.61	High Knowledge
	Total	2.20	0.32	Low Knowledge

Table 2 Mean Response on the Extent of Utilization of Safety Clothing

S/No	Safety Items	Mean	Std. Dev.	Remark
1	Hard hat	1.56	0.63	Sometimes
2	Earmuffs	1.20	0.40	Rarely
3	Respirator	1.80	0.53	Sometimes
4	Safety goggles	1.19	0.40	Rarely
5	Reflective jacket	1.69	0.64	Sometimes
6	Face shield	1.04	0.19	Rarely
7	Coverall	1.74	0.79	Sometimes
8	Safety gloves	2.03	0.56	Sometimes
9	Safety shoes	1.58	0.74	Sometimes
	TOTAL	**I.54**	**0.54**	**Sometimes**

Table 3 Mean Response of Perceived Importance of Safety Clothing

S/No	Safety clothing is important in protection against;	Mean	Std. Dev	Remark
1	Injuries such as cuts, puncture, scrapes, bruises, and abrasions,	3.29	0.46	Important
2	Insects' bites	2.27	0.52	Fairly Important
3	Infections and diseases	3.06	0.53	Important
4	Exposure to sludge splash	3.54	0.57	Very Important
5	Road accidents	2.01	0.55	Fairly Important
6	Risks that cannot be eliminated or adequately controlled.	1.95	0.68	Fairly Important
7	Ultra-violet radiation and intense heat	2.04	0.64	Fairly Important
8	Impacts and penetration	2.06	0.66	Fairly Important
9	Effect of flying objects, molten metal, acids or vapors, glare, and air contaminants.	2.12	0.58	Fairly Important
	Total	2.46	0.48	Fairly Important

Table 4 Mean Response of the Constraints in Using Safety Clothing Among Road Users

S/No	Safety clothing;	Mean	Std. Dev	Remark
1	Does not provide comfort	3.16	0.64	Agree
2	Restricts movements at work	2.92	0.60	Agree
3	Is heavy and cumbersome	3.01	0.52	Agree
4	Is not durable	3.23	0.55	Agree
5	Do not serve the function well	3.09	0.57	Agree
	TOTAL	3.08	0.58	Agree

Table 5 Percentage Response of the Roles Played by Employers in Providing and Utilizing Safety Clothing.

S/No	Employers of road cleaners:	Yes (%)	No (%)
1	Supervise the use of safety clothing at work	32	68
2	Ensure that safety clothing is provided for road cleaners	21	79
3	Provide periodic training on the use of safety clothing	34	66
4	Ensure that quality, soft, fitting, effective and comfortable safety articles are provided	32	68
5	Ensure that safety clothing items selected are in accordance with the recognized standard	24	76
6	Ensures that safety clothing is maintained and stored properly	28	72

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7	Carry out program review periodically.	32	68
	Total	**29**	**71**

Table 6 The Mean Difference in the Level of Knowledge of Safety Clothing Between Male and Female Road Cleaners

Gender	N	Mean	SD	DF	t
Male	173	1.79	.51	172	**7.23**
Female	208	1.33	.35	207	

Table 7 The Mean Differences in the Use of Safety Clothing Between Male and Female Road Cleaners

Gender	N	Mean	SD	DF	t
Male	173	2.37	.47	172	**12.23**
Female	208	1.86	.31	207	