



2nd AISPI International Biennial Conference on Harnessing Science, Technology and Innovation
for Inclusive Development in an Uncertain Future, 2021

Assessment of Occupational Health Hazards among Textile Workers

Titilola Ruth Olaseha¹, Idowu Jamiu Diyaolu^{1*}, and Margaret Olusolape Jegede²

¹Department of Family Nutrition and Consumer Science, Obafemi Awolowo University, Ile-Ife, Nigeria

²African Institute for Science Policy and Innovation (AISPI), Obafemi Awolowo University, Ile-Ife, Nigeria

*Corresponding author's email address: diyaolu@oauife.edu.ng

Abstract

The study assessed the occupational health hazards among textile workers in Nigeria with a view to proffering strategies to enhancing sustainable livelihood and production in the industry. It identified various health hazards in the textile industry, examined the safety measures available and the effect of various health hazards on textile workers. The study was conducted in Lagos State, Nigeria, where most of the textile firms are located. Five textile mills were purposively selected. A total of one hundred and five (105) textile workers were selected randomly from the industry. Data was collected using questionnaire and an interview schedule. Descriptive and inferential statistics were used in the analysis. Results showed that majority (80%) of the textile firms were engaged in weaving and printing activities. Regarding health hazards, the study revealed that 96.2% of the workers experienced hearing defects through high noise levels in the factories), 11.4% had dermatitis, and 14.3% developed eye problems. About 96% of staff mentioned that firms had a policy for occupational health and safety. Also, majority (70.5%) of the firms enforce the use of Personal Protective Equipment (PPE), and 21.0% have unprotected and/or unintentional start-up machines. These observed hazards have led to the reduction in production capacity of 41.0% of the workers. This can impact on their sustainable livelihood. It is therefore recommended that periodic medical examination should be carried out among all the workers in textile factories. There should also be inspection of the working environment by industrial hygienists through the regular measure and alleviation of noise levels in the factories. In addition, proper and effective monitoring should be in place for using PPE such as helmets.

Keywords: Sustainability, Occupational health hazard, Textile, Production

1.0. Background of the study

The textile industry is one of the most labour intensive and highly mechanized industries worldwide. It is a fundamental sector that meets the clothing and textiles needs of individuals, families and other manufacturing industries. The industry employs a high level of technology in transforming raw materials such as fibres, dyestuff and other chemicals into finished products. It consists of different sections such as weaving, dyeing and finishing, which all involve the use of machines. According to International Labor Organization (2009), over 60 million people are employed in the textile and clothing industry worldwide. There are several safety and health issues associated with the textile industry. Major health issues include exposure to cotton dust, noise, chemicals and ergonomic issues. The cotton ginning industry, for example, has many hazards such as exposure to cotton dusts leading to respiratory disorders and byssinosis. Cystic fibrosis Syndrome (CFS), a disease that affects the lungs is common among weavers.

Safety can be defined as the control of hazards to achieve an acceptable level of risk. Hence, in this study safety means freedom from danger, harm, and injury to the person involved in industrial activities. According to WHO (2010) the work place can have a positive impact on the health and well-being of workers, their family, communities and society at large. Safe work and safe workplaces are necessary for increased production and higher productivity. Therefore, the promotion and protection of safe work and safe workplaces is a complementary aspect of industrial development (Upadhyaya, 2002). Industrial development helps the country increase foreign exchange reserves by making huge contributions to exports. It provides employment and creates backward and forward linkages and ultimately, leads to higher standards of living.

The World Health Organization (WHO) defined health as “a state of complete physical, social, and mental well-being and not merely the absence of infirmity or disease” (WHO, 2010). Occupational health is concerned with the health and safety at work as the health of workers is related with the occupation in which they are engaged. It is an integral component of the general concepts of health, which is also a part of social economic development. The hazards exposure in workplace settings can adversely affect human health. ILO estimates that 2.3 million workers die as a result of occupational accidents and work-related diseases and about 337 million occupational accidents and 160 million occupational diseases occur each year globally. Conservative estimates show that occupational risk factors are responsible for approximately 312,000 fatal unintentional occupational injuries globally and 8.8% of the global burden of mortality (ILO, 2021).

The World Health Organization Report (2010) indicated that about 78% of women in the private textile industry are suffering from back pain and discomfort in the limbs and lower abdomen as well as respiration disorders. These hazards can also be increased by the environmental condition in the work place. Assessing the risk of substances in textiles is considered important but has proven to be difficult (Kemi, 2013). Chemicals used in textile production may create health hazards as many factories use hypochlorite solution for bleaching. Others use gaseous chlorine or bleaching powder which releases chlorine when it is discharged. In either case, workers may be exposed to dangerous levels of chlorine, which is a skin and eye irritant and a dangerous pulmonary tissue irritant which can cause lung edema.

In addition, limited financial resources and lack of adequate data has hampered the efforts to combat the problem of industrial and occupational accidents in developing countries. Accordingly, if people are not safety conscious, then no number of gadgets, safe devices and back up alarms can ensure their safety. Sometimes, due to illiteracy among workers, the safety issue is not even taken seriously (ILO, 2007).

2.0 Statement of the problem

There is a decline in the production of textiles in Nigeria today and the impact of the COVID-19 pandemic has worsened the situation. The decline in production may be due to various hazards experienced by workers in the industry or inadequate safety measures. The safety of workers in any establishment is

paramount to the success of that establishment. Since textile manufacturing is automated, involving the use of machines, lifting objects, and weaving, and spinning machines among others, there is the probability of hazardous effects of these activities on workers in the industry. Hence, it is important to raise the awareness of potentially harmful production processes. This study will be significant in creating awareness of health hazards and safety measures available in textile firms in Nigeria. It will also help to reveal the role that these hazards play in the achievement of goals and objectives in the industry. The knowledge of safety which is crucial to organizational achievement can also benefit current and intending workers in the industry. The study therefore seeks to identify health hazards in textile industry, examine safety measures available in the industry and examine the effect of various health hazards on textile workers.

The study was carried out in Lagos State, where majority of textile firms are located in Nigeria (NTMA, 2016). The Nigeria Textile Manufacturers Association lists Lagos as the State in Nigeria (past and present) where the highest number of textile firms are located. The population of the study is made up of all textile firms in Nigeria. The study aimed at capturing all the textile firms in Lagos. Only 5 were accessible during the period of the study. Random sampling techniques were used to select 105 staff from the firms who have information on health hazards in the textile industry. The textile firms include Nichemtex (26), Woolen and Synthetic (24), Haffar Industry (22), Sunflag Nig. Ltd. (13) and Lucky Fiber Ltd. (20). Primary data was collected using a set of questionnaire. Descriptive statistics were used, including frequencies, percentages and means.

3.0 Results and Discussions

Table 1 reveals that most firms (60%) were established less than fifty years ago. However, 20% were established between 61-70 years ago showing that textile firms have been established in Nigeria since independence. This also implies that new firms have not been created in recent times. Most (60%) of the firms have a staff strength of 500 and above and all were private limited liability companies. Majority (80%) of the firms engage in weaving and printing. Majority (80%) educate staff on safety precautions while all the firms compensate workers in case of accident and provide medical care. Safety precautions include the use of personal protective equipment (PPE). According to Akintayo (2013), the use of personal protective equipment (PPE) is one of the important measures to safeguard workers from exposure to occupational hazards especially in developing countries where conventional occupational safety control principles remain a challenge to implement.

Table 2 reveals that there were health hazards experienced in all the firms in the study area. Most prevalent among these is noise (96.2%), vibration (45.7%), chemical exposure (59.0%), dust related diseases (58.1%), radiation (50.5%) and heat stress (84.8%). Noise (96.2%) is the highest occupational health problem experienced in the industry. Dube *et al.*, (2011) reported that the noise level in weaving sections in the Indian textile industry was 91dB leading to hearing loss in 93% of the textile workers.

Table 3 shows the availability of health personnel in the textile industry. Majority (96.2%) provided occupational health and safety policy in the industry. Such policies state the dimension and approach to possible risks at work. About 98% provide occupational health physicians, 93.3% make available trained occupational physicians and 86.7% provide qualified industrial hygienists for their workers. About 66.7% reduce hazardous operations. This reveals that most of the firms provide healthcare personnel to take care of the workers in case of accidents. The respondents are provided proper health care facilities and this will certainly minimize health problems among the workers.

Table 4 showed that sometimes, there were machines with unprotected moving parts ($\bar{x}=1.61$) and unintentional start up in the industry ($\bar{x}=1.54$) which could be detrimental. Sometimes, workers use helmet while working ($\bar{x}=1.95$) and also there were medical centers for workers ($\bar{x}=2.01$). In addition, work areas with risk of explosion were available in the industry.

Table 1: Characteristics of the Firm

| Variable | Frequency (105) | Percentage (%) |
|--|----------------------------|---------------------------|
| Age of Industry | | |
| Less than 50 | 3 | 60 |
| 51-60 | 1 | 20 |
| 61-70 | 1 | 20 |
| Number of Employee | | |
| 200-350 | 1 | 20 |
| 350-500 | 1 | 20 |
| 500- Above | 3 | 60 |
| Form of ownership | | |
| Private Ltd Company | 5 | 100 |
| Practice of staff welfare | | |
| Educating of staff on safety precaution | 4 | 80 |
| Provision of adequate care while working | 5 | 100 |
| Compensation in case of factory accident | 5 | 100 |
| Medical care provision | 5 | 100 |
| Others | 1 | 20 |
| Production Techniques | | |
| Weaving | 4 | 80 |
| Knitting | 2 | 20 |
| Spinning | 3 | 60 |
| Dyeing | 3 | 60 |
| Printing | 4 | 80 |

Table 2: Health Hazards among Textile Workers

| Health Hazards | Yes | No |
|--------------------------|------------|------------|
| Noise | 101(96.2) | 4(3.8) |
| Eye Sight | 15(14.3) | 90(85.7) |
| Skin Problems | 8(7.6) | 97(92.4) |
| Respiratory Problem | 5(4.8) | 100(95.2) |
| Weight Reduction | 5(4.8) | 100(95.2) |
| Asthma | 2(1.9) | 103(98.1) |
| Hair Loss | 3(2.9) | 102(97.1) |
| Obstructive Lung Disease | 2(1.9) | 103(98.1) |
| Renal Problems | 1(1.0) | 104(99.0) |
| Vibration | 48(45.7) | 57(54.3) |
| Chemical Exposure | 62(59.0) | 43(41.0) |
| Dust Related Problems | 61(58.1) | 44(41.9) |
| Radiation | 53(50.5) | 52(49.5) |
| Dermatitis | 12(11.4) | 93(88.6) |
| Hematological Problems | 1(1.0) | 104(99.0) |
| Liver Problems | 1(1.0) | 104(99.0) |
| Occupational Cancer | - | 105(100.0) |
| Heat Stress | 89(84.8) | 16(15.2) |

Table 3: Availability of Health Personnel

| Variables | Yes (%) | No (%) |
|---------------------------------------|-----------|----------|
| Occupational Health and Safety Policy | 101(96.2) | 4 (3.8) |
| Hazardous Operation | 70(66.7) | 35(33.3) |
| Occupational Health Physician | 103(98.1) | 2(1.9) |
| Trained Occupational Physician | 98(93.3) | 7(6.7) |
| Qualified Industrial Hygienist | 91(86.7) | 14(13.4) |

Table 4: Assessment of Safety Measures in the Industry

| Activities | Always N (%) | Sometimes N (%) | Never N (%) | Mean |
|---|-----------------|--------------------|----------------|------|
| There are machines with unprotected moving parts. | 19(18.1) | 26(24.8) | 60(57.1) | 1.61 |
| There are unprotected or unintentional start-up machines. | 22(21.0) | 13(12.4) | 70(66.7) | 1.54 |
| No noise screens between source of noise and work areas. | 35(33.3) | 27(25.7) | 43(41.0) | 1.92 |
| Using of helmet while working is compulsory for workers. | 26(24.8) | 48(45.7) | 31(29.5) | 1.95 |
| Medical centers are available for workers. | 22(21.0) | 65(61.9) | 18(17.1) | 2.01 |
| There are always fires in explosive areas. | 15(14.3) | 23(21.9) | 67(63.8) | 1.50 |
| There are areas where there is risk of explosion. | 36(34.3) | 12(11.4) | 57(54.3) | 1.80 |

Always=3; Sometimes=2; Never=1

Table 5 indicates the effect of various health hazards in textile industry. There was always reduction in production and development in the industry due to health hazard (\bar{x} =2.98). The experience of high rate of asthma (\bar{x} =1.32) and death through the use of chemicals (\bar{x} =1.29) were not common among the workers.

Table 5: Effect of Various Health Hazard in Textile Industry

| Activities | Always N (%) | Sometimes N (%) | Never N (%) | Mean |
|---|-----------------|--------------------|----------------|------|
| Workers usually have high rate of asthma in the industry. | 16(15.2) | 10(9.5) | 79(75.2) | 1.32 |
| There is low production rate due to hazards. | 57(54.3) | 4(3.8) | 44(41.9) | 2.12 |
| Use of chemical in the industry often lead to death. | 13(12.4) | 5(4.8) | 87(82.9) | 1.29 |
| There is poor production in the industry. | 21(20.0) | 10(9.5) | 74(70.5) | 2.08 |
| There is reduction in production and development. | 43(41.0) | 12(11.4) | 50(47.6) | 2.98 |

Always=3; Sometimes=2; Never=1

Table 6 shows the assessment of managing health hazards. Majority (\bar{x} =4.72) strongly agreed that they usually check up to ensure proper working of machines, and agreed that servicing of machine is scheduled at the appropriate time (\bar{x} =4.74). Dust collection is usually done (\bar{x} =4.57), fire precautions are always in place in the industry (\bar{x} =4.46), workers use ear protectors (\bar{x} =4.46) and it is not often necessary for employees to work over time. According to Joshi *et al.* (2011), the major cause of occupational hazards was due to long working hours, unsafe working conditions, lack of supervision and training, use of old machines and equipment, use of chemicals in industries and dusty work sites.

4.0 Conclusion and Recommendation

The study identified the hazards and risk involved in textile industries. The study has also concluded that the main hazards that most textile industries often experience were noise, dust related disease, radiation, chemical exposure and heat stress. It was also concluded that it is possible to reduce one of the most hazards they experience in the industry which is noise by using ear protectors and mufflers.

Table 6: Assessment of Managing Hazards in Textile Industry

| Statement | Strongly Agree N (%) | Agree N (%) | Undecided N (%) | Disagree N (%) | Strongly Disagree N (%) | Mean |
|--|----------------------|-------------|-----------------|----------------|-------------------------|------|
| The industry does checkup to ensure proper working machines. | 79(75.2) | 24(22.9) | 1(1.0) | 1(1.0) | - | 4.72 |
| Servicing of machines is scheduled at the appropriate time. | 79(75.2) | 25(23.8) | 1(1.0) | - | - | 4.74 |
| Dust collection is usually done. | 62(59.0) | 41(39.0) | 2(1.9) | - | - | 4.57 |
| Environments are controlled when there is need to do that. | 54(51.4) | 47(44.8) | 4(3.8) | - | - | 4.47 |
| Working hours are minimized in the noise sections. | 43(41.0) | 31(29.5) | 12(11.4) | 16(15.2) | 3(2.9) | 3.90 |
| Pregnant women use vibrating tools or sewing machines. | 3(2.9) | 3(2.9) | 2(1.9) | 23(21.9) | 74(70.5) | 1.46 |
| Fire precautions are always in place. | 58(55.2) | 39(37.1) | 7(6.7) | - | 1(1.0) | 4.46 |
| There are emergency stops on the work equipment. | 50(47.6) | 30(28.6) | 8(7.6) | 16(15.2) | 1(1.0) | 4.06 |
| Workers use ear protectors. | 58(58) | 36(34.3) | 7(6.7) | 3(2.9) | 1(1.0) | 4.46 |
| It is often necessary that employees work over time. | 10(10) | 24(22.9) | 12(11.4) | 42(40.0) | 17(16.2) | 2.69 |

Strongly Agree=5; Agree=4; Undecided=3; Disagree=2; Strongly Disagree=1

The following recommendations are made based on the study:

- i. First aid and protective measures such as ear plugs, disposable masks, worker clothes, and fire protection should be made available. Measures should also be put in place to ensure that these protective and healthcare procedures are put in place
- ii. Periodic inspection of working environment by industrial hygienists through regular measurements of noise levels, illumination, humidity, ventilation and cotton dust concentration.
- iii. Training and health education programs should be provided to all workers from the start of work and regularly carried out to assist the worker adjust to the working environment.
- iv. Emphasizing the correct use of personal protective measures.
- v. Machines with unprotected moving parts and unintentional start up in the industry should be replaced. If possible, the factory should look into the possibility of replacing the old machines with new ones.

5.0 References

- Dube, K.J., Ingale, L.T., & Ingale, S.T. (2011). Hearing impairments among workers exposed to Excessive levels of noise in ginning industries. *Noise Health* 13:348
- International Labour Organization. (2009a). Sectorial coverage of the global economic crisis: Implication of the global financial and economic crisis on the textile and clothing sector. Forstater M, pp. 1-26.
- International Labour Organization (2009b). Occupational Health and Safety: Synergies between security and productivity, Geneva Committee on employment and social policy.
- International Labour Organization (2007). Resolution concerning statistics of economical active population, unemployment and underemployment adopted by the thirteenth international conference of labour tacticians. Retrieved from <http://www.ilo.org/public/english/bureau/stat/download/res/ecacop.pdf>.

- International Labour Organization (2021). World Statistic, The enormous burden of poor working conditions. https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm
- Joshi, S.K., Shrestha, S., & Vaidya, S. (2011). Occupational safety and health studies in Nepal. *International Journal of Occupational Study Health*, 1,19-26
- Kemi, K.B. (2009). *Chemical in Textile-Practical advice for Companies*. Swedish Textile Sector.
- NTMA (2016). List and address of textile workers in Nigeria
- Upadhyaya, U. (2002). Occupation Health, Safety and Environment in the Construction Sector in Issue of the World of Work in Nepal. A report organized and presented by OSHE Institute. 289-295
- World Health Organization (2010). *The Health promoting workplace*. Retrieved from https://www.who.int/occupational_health/publications/healthy_workplaces_model_action.pdf