

# Occupational health and safety issues for employees: a case study on textile industry

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ARTICLE INFO	ABSTRACT
Article history	The textile sector has companies with less expertise in organizing effective productivity, a less
Received: 27 October 2024 Accepted: 04 December 2024	secure labor force, and inadequate government workplace laws. This project is about identifying the working conditions of the sector and reducing the possibility of injuries and losses as a consequence of work-related incidents. Observation, questionnaire, surveys and individual interviews were used to collected data from the employees. Among the respondents
Keywords	majority (61.43%) workers were female. There is inadequate lighting and noise pollution,
Health and safety, Occupational health and safety, Textile industry and risk assessment	which causes headaches. Most of the (76%) of respondents think that mechanical sound is the main cause of noise pollution. In the industry, female workers do more extra work than male workers. For the long working hours, the worker suffers more back pain than joint and chest pain. About 54% of respondents suffer from eye strain problems due to inadequate lighting
Corresponding Author	systems. Maximum (65.12%) employees regard that window and electric light both can improve lighting system in the industries. Textile industries have adequate sanitation system
Bipul Roy bipulest@gmail.com	for workers but female workers are not satisfied with the sanitation system. Bangladesh's industrial sectors lack focus on health and safety, leading to dangerous and unsafe work environments. Employers and employees must take action to reduce risks and hazards at work place to prevent accidents and fatalities.

## INTRODUCTION

Industrialization is an essential prerequisite for rapid economic growth of a developing country like Bangladesh. The economic development is largely dependent on the industrial advancement of a country. Industrializations have a great contribution to minimize the unemployment problem in this country (Whade, 2018). The textile industry is labor-intensive and low-skilled, leading to global brands outsourcing production to lowincome developing countries in Asia, Africa, and South America (Matthess and Kunkel, 2020). The "textile sector," is a worldwide network for producing clothes, and the goods those create in Bangladesh eventually wind up in "fast fashion" retailers, which are mostly found in Europe and North America (Peters et al., 2021). Unfortunately, the sector in these nations has flaws related to a

lack of managerial and worker expertise as well as poor infrastructure. The textile sector has companies with less expertise in organizing effective productivity, a less secure labor force, and inadequate government workplace laws. Due to these circumstances, occupational health and safety (OHS) is a problem in emerging nations (Hamja et al., 2022).

Bangladesh is estimated to have 4,000 to 5,000 textile and apparel manufacturers, ranging from huge first-tier supply chain partners to small factories that primarily benefit as subcontractors to big clients (Islam et al., 2022). Bangladesh's GDP is derived from the textile industry to the tune of about 13%. The textile industry and items connected to it account for more than 84% of export revenue. The core textile industry received almost USD 15 billion in investments from the

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nation. For knit RMG and 35–40% for woven RMG, the Primary Textile Sector (PTS) supplies around 85–90% of the yarn required (Mordor Intelligence, 2023). According to ILO, more than 2.78 million people die each year as a consequence of workplace-related injuries or illnesses worldwide, equating to one fatal injury every fifteen seconds. An additional 374 million non-fatal people get injured each year. Furthermore, the ILO determined that the total charges of those accidental deaths and illness percentage to nearly 4% of global GDP (ILO, 2021).

Employees throughout the textile industries suffer from a number of diseases which lead to inefficiency. Spinal disorders, joint and muscle pain, decreased lung function, undernourishment, as well as other problems afflict sewing machine operators (Bayzid, 2016). Actual assault, misuse, hourly wage human labour, charge unequal treatment, unofficial recruiting, as well as abuse seem to be common throughout Bangladeshi textile industries, as well as the majority of employees encounter psychological persecution (ILO, 2020). Many work-related casualties as well as cuts and bruises have been broadly acknowledged. Every year, nearly 11,000 workers pass away through fatal accidents throughout Bangladesh, but another 24,500 pass away from work-related ailments throughout all companies (Azed et al., 2022). Almost 466 million individuals are thought to have severe hearing problems, making it the fourth most common cause of disability throughout the world. Globally, workplace noise is responsible for 16% of individuals' debilitating deafness. In developing nations, men are much more affected by industrial noise exposure than women (Zaw et al., 2020). Laundry laborers face a range of work-related issues, including increased stress levels and impact the musculoskeletal due to long working hours and an uncomfortable working environment (Das et al., 2023; Santiana and Yusuf, 2020).

Although the growth of the textile business has benefited developing nations' economies and helped to create a significant number of lowskilled jobs, the sector has frequently come under fire for poor wages and lengthy hours worked, as well as unsanitary and hazardous workplace circumstances. There are occurred major accidents

in developing country likes the Rana Plaza accident in Bangladesh in 2013 (Hamja et al., 2019). The majority of employees in such textile factories are nearly uneducated, with little understanding of human rights, conditions of employment, and worker's rights. Each employment has potential hazards; therefore, it is the duties of every company to make sure their staff can do their jobs as safely as possible (Khan et al., 2019). A decent workplace, bring equality and serve for a human well-being by implementing features that make people's work life happy and prosperous (Ahmad, 2018). The Occupational Health Care Act mandates that almost all workers receive basic safe and healthy working conditions for the avoidance of work-related illness as well as the maintenance of working ability (Mattila-Wiro et al., 2020). The Alliance for Fire and Building Safety and the Alliance for Bangladesh Worker Safety are two nonprofit participatory activities that have been put into action. These MSIs are intended to solve security challenges in the Bangladesh clothing sector as well as enhance employee health and safety (Alamgir and Alakavuklar, 2020).

Different studies have investigated OHS has a direct impact on organizational outcomes, such as efficiency, accidents, fire, building closures, and mental health (Karanikas and Hasan, 2022; Shole and Raihan, 2020; Subash and Das, 2019; Spurgeon et al. 1997). Through all this, OHS becomes more of a concern day by day. So, the study conducts to provide better working conditions for employees and devise strategies to lower the high incidence of occupational diseases and injuries. The purpose of this research therefore are to (i) identify the working condition of the textile industry and (ii) reduce the possibility of injuries and losses as a consequence of work-related incidents.

# MATERIALS AND METHOD

#### Data collection, processing and analysis

The textile industry in Bangladesh has grown significantly but must overcome obstacles such as infrastructure, compliance, supplier performance, the availability of workers, raw resources, and political stability (Maalouf at al., 2021). Data were

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gathered from different textile industry at Gazipur district.

#### **Data collection**

Data collection is a way of gathering precise data from numerous sources and evaluating it to identify patterns, possibilities, and solutions to research issues, as well as to assess potential consequences (Simpli learn, 2023). This study is about to investigate occupational health and safety in the textile industry. It is based on primary and secondary data sources. The primary data was collected through an interview with a structured questionnaires among the workers. The surveys divided into three sections: general are information, physical safety measures, and occupational health. Data were collected through key informant interviews (KII) in different sectors of the industry. There were seventy employees in the industry who were randomly selected for interview among the workers. The information used in this research was gathered from the relevant literature, official international websites for occupational safety and health, official websites of both local and international governments, and official government publications as a secondary source of data. Aims and objectives were controlled through the management of an extensive literature review.

Then accumulating the questionnaires, the data were analyzed through Excel software 2019. The project is both qualitative and quantitative. When the data is collected, it is quantitative. When the data is analysis and form a conclusion than it is qualitative.

#### **RESULTS AND DISCUSSION**

The textile industry has also been subject to criticism over issues such as poor working conditions, low wages, and inadequate safety standards. In order to complete this research project, information was gathered from two textile industries in Gazipur and Narayanganj. In this study, seventy respondents' insightful opinions were gathered.

#### **Demographic information**

Statistics that characterize populations and their traits are known as demographics. The study of a population based on characteristics like age, race, and sex is known as demographic analysis. Economic information that is stated statistically, such as jobs, education, revenue, marriage rates, mortality and birth rate rates, and more, is referred to as demographic data (Investopedia, 2022).

Demographic information	Categories	Respondent number	Percentage%
Gender	female	43	61.43
	male	27	38.57
Age	15-20	6	8.57
	21-30	46	65.71
	above 30	18	25.71
Education	below SSC	12	17.14
	SSC	41	58.57
	HSC	9	12.86
	graduate	8	11.43
Job position	permanent	70	100.00
Working experience	less than 5	23	32.86
	5-10	35	50.00
	11-15	1	1.43
	above 15	11	15.71

**Table1:** Demographic information on respondents

Most of the employees are female; among the respondents, about 61.43% were female and 38.57% were male. It is also related to Samaddar, (2016) that 83% of the respondents were female, compared to 17% of the respondents being male (Table 1). It is happening because the female labor wages are lower than the male.

The data showed that 65.71% of the respondents were between 21 and 30 years of age, 8.57% were between 15 and 20 years, and 25.71% were above 30 years. According to the study by Jahan (2017), two-thirds of the workforce was between the ages of 15 and 22, which is aligned with the investigation outcomes about the majority of workers' age and average work age. It alike to Yuan et al. (2022) that the 22-29 age group had the highest percentage of respondents. According to Samaddar (2016), being between the ages of 18 and 30, the bulk of the workers involved in the study are quite young. This study also discovered that minors under the age of 16 are not permitted to work in industries under the "Employment of Minors Act."1938. Also, they lack skills and are vulnerable to violence (International Labour Organization, 2021). Most of the respondents passed SSC and above. The number in accurate is 58.57% completed SSC, 12.86% HSC, 11.43% graduates and 17.14% who were below SSC. According to Zaw et al. (2020) that 17.3% of people had graduate degrees or above, while 57.1% had just completed high school. As government take step to ensure compulsory elementary school. All the respondents had permanent job position. Half of the respondents had 10-15 years, 15.71% had above 15 years, 1.43% had 5-10 years and 32.86% had less than 5 years of experience.

#### Different sectors in textile based on gender

Female employees were predominantly employed in the sewing section (Figure 1), while male employees were more commonly found in the Quality Control, HR, and Compliance sections. This trend may be influenced by traditional gender roles and perceptions of skill. Although women may have less formal training compared to men, they are often considered naturally adept at sewing due to cultural familiarity with the task. The textile industry has historically been characterized as a low-skill, low-wage sector that depends on an abundant supply of inexpensive labor. Women, in particular, have been perceived as a source of cheap labor, often accepting lower wages than their male counterparts.



Figure 1: Gender relation to different sector in textile industry

Haque et al. (2020) also found that although female workers perform the same tasks as their male counterparts, they often face injustice in terms of job placement, timely salary payments, and promotions based on skills and competencies. This inequality has contributed to the widespread employment of women in the textile industry, particularly in developing countries where labor regulations are often less stringent. Furthermore, Khan et al. (2015) reported that the majority of respondents (52.4%) were employed as machine operators, compared to 28.3% who held other roles.

#### Gender wise education status

The data presented in figure 2 indicate that the education level among female workers in the textile industry is generally lower than that of their male counterparts. The majority of female workers have completed only Secondary School Certificate (SSC), with a few below SSC level and very few having completed Higher Secondary Certificate (HSC) education. Due to this lower level of education, female workers tend to receive lower wages and are more likely to be employed in low-skilled positions. They are predominantly engaged

in sewing, followed by tasks such as assembly, washing, and other manual roles. Furthermore, Khan et al. (2015) reported that only 25% of respondents (36 individuals) were deemed capable, whereas 75% (109 respondents) were considered incompetent, underscoring the gap in skill levels.



Figure 2: Education status based on gender

Table 2	: Physical	safety	measure
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#### Physical safety in the textile industry

Physical safety refers to the protection of an individual's physical well-being from harm, injury, or danger. It includes measures and practices designed to prevent accidents and injuries, ensuring that individuals remain safe in their environment, workplace, or during various activities (Wang et al., 2021).

The results presented in Table 2 highlight the employees' perceptions of the physical environment within the textile industry, with safety measures assessed based on the percentage of respondents who accepted specific conditions. According to the findings, 81.43% of respondents reported that their workplaces had adequate windows and ventilation systems. In comparison, Azad et al. (2022) found that 67% of respondents believed the lighting conditions in the industry were adequate.

Physical safety measure	Yes %	No %
Adequate windows and ventilation	18.57	81.43
Healthy air conditioning	72.86	27.14
Proper risk sign	58.57	41.43
Adequate firefighting equipment	87.14	12.86
Is work place messy	45	55
Separate toilets for male and female	100	0
Save drinking water	100	0
Work place over crowded	44.25	55.75
Require emergency lighting	55.71	44.29
Close down check	55.71	44.29
Safe distribution and properly mark	37.14	62.86
Personal protection equipment	95.7	4.29
Available first aid	90	10
Fire risk sing	98.57	1.43

About 72.86% had healthy air conditioning, 58.57% had proper risk sign, 87.14% had adequate firefighting equipment, 10% had messy work place, 100% of them had availability of safe drinking water, first aid kit and separate toilets for

male and female, 27.14% had overcrowded workplace, 55.71% required emergency lighting, 55.71% had close down check, 37.14% had safe distribution properly marked, 95.7% had personal protection equipment and 98.57% had fire risk sign.

#### **Facilities of toilets**

All workers reported that they have access to separate toilet facilities; however, their opinions regarding the quality of those facilities varied (Figure 3). Approximately 54.29% of respondents stated that they have access only to clean handdrying facilities, 32.86% reported access only to toilet paper, and just 12.86% indicated that they have access to both clean hand-drying and toilet paper facilities. These findings align with Ahmed et al. (2019), who noted that while the Bangladesh Labor Law of 2006 mandates basic health and safety standards in the workplace, female workers are particularly disadvantaged due to inadequate sanitation facilities and unhygienic washrooms. This situation negatively affects the overall work environment, as many toilets lack basic supplies such as soap and towels.



Figure 3: Separate toilets facilities

# Gender-based sanitation disparities in the textile Industry

Figure 4 illustrates that, although separate toilet facilities are available, the quality and adequacy of sanitation vary by gender. A significant portion of female workers approximately 61.43% - expressed dissatisfaction with the sanitation system. This dissatisfaction is primarily due to the lack of specific facilities to accommodate menstrual hygiene needs. In contrast, 38.57% of male workers reported being satisfied with the toilet facilities, which included access to toilet paper,

clean hand-drying amenities, and occasionally both.



Figure 4: Satisfaction with sanitation system

These findings partially align with Ahmed et al. (2020), who reported that 65% of respondents were satisfied with health and hygiene provisions, while 20% remained neutral. Additionally, 69% of respondents were satisfied with workplace safety measures, and 15% were neutral. Regarding other health, hygiene, and safety aspects, 60% of respondents expressed satisfaction.

### Lighting system improvement ways



Figure 5: Improvement of lighting system

Above the figure 5 revels the ways lighting system improve. About 9.30% employees think that the factory lighting system can improve through window, 25.58% think that that the factory lighting system can improve through electric lighting and 65.12% employees think that the factory lighting system can improve both window and electric lighting system. According to Azad et al. (2022), 67% of respondents complained about noise pollution and insufficient lighting, respectively.

# Different types of personal protection equipment use



#### Figure 6: Personal protection equipment

Different type of personal protection equipment use suggest in figure 6 that 95.7% of respondents

agree they use personal protection equipment; only 4.29% disagree. There were various types of equipment. Among the respondents, 37.14% use a mask, 30% use an apron, 31.43% use other equipment as personal protection equipment, and 1.43% use a hat, which is the least used of the items compared to the others. Mask was used more than others, as Musk's equipment is less expensive than other equipment. The finding is that the industry does not use all the equipment together. It can increase accident probabilities. According to the findings of Talapatra and Mohsin, (2020) the interviews, it was discovered that 30.5% of respondents suggested regular maintenance, and 21.7% of workers suggested wearing PPE to ensure a safety culture. The percentage of participants who thought safety training and campaigns may assist was about 15.3% and 12.5%, respectively. 16% of respondents proposed enhancing the workplace, while the remaining 5% offered various methods.



Figure 7: Fire escape route (a) and Proper risk sign with fire escape route (b)

#### **Emergency exist route**

In textile factories, fire escape routes are typically marked with signs and arrows indicating the direction of the escape route. These signs are usually placed at regular intervals along the route to ensure that workers can easily find their way out of the building in the event of a fire. As the study based on 2 textile factories, they have different fire escape route. 69% of the respondents said that they were 1 route used as fire escape. In the figure 7 among the respondents 75.76% admit that their industry did not use proper risk sign to indicating the escape route. and 31% respondents said that they were used 2 routes as fire escape routes among the respondents 89.19% admit that their industry use proper risk sign to indicating the escape route. In textile factories, fire escape routes are typically marked with signs and arrows indicating the direction of the escape route. These signs are usually placed at regular intervals along the route to ensure that workers can easily find their way out of the building in the event of a fire. Similar to Azad et al. (2022), of all responders, 72.2% were ready with the best escape route in case of an emergency. In addition to 55.2% of respondents who had been trained in first aid and wellbeing, 65.7% of respondents said they had prepared for suffocating flames.

#### The way noise pollution occurs



Figure 8: Causes of noise pollution

Figure 8 represent that 76% respondent think that machinery sound was the main causes for noise pollution, 21% think that noise pollution can occur through over crowed and 3% respondents said that they think noise pollution can occur both machinery and over crowed. According to Ejigu, 2019 indicated that the textile industry must tolerate the costs resulting from the exposure to dangerously high noise levels of its employees due to the high production speeds.

#### **Health Problems**

A health problem is any condition that affects an individual's physical or mental well-being and impairs their ability to function normally. Health problems can range from mild to severe and can affect people of all ages and backgrounds. The result of the table 3 indicates that 55.71% respondents had healthy environment, none of them suffered from chronic diseases. About 40.43% suffered from health-related work problem, 65.71% didn't had headache problem, 80% received training facilities, 58.57% had instruments to protect health.

**Table 3:** Health problems of employees

Health problems	Yes%	No%
Healthy environment	55.71	44. 29
Suffer any chronic diseases	0.00	100.00
Suffer work related health problems	40.43	59.57
Suffer headache problem	34.29	65.71
Receive training facilities	80.00	20.00
Sufficient instruments to protect health	58.57	41.43
Recommended to improve OHS	28.57	71.43

Most of (71.43%) employees cannot suggest to improve OHS in terms of positivity because they afraid for losing job. About 44.29% didn't had healthy occupation, 31.43% suffered health related work problem, 34.29% suffered headache problem, 20% didn't had training facilities, 41.43% didn't had sufficient instrument to protect health and 28.57% recommended improved OHS as creating awareness among the employees and employers.

#### Work related problems



Figure 9: working hours related pain

The respondents who work 8 hours daily could face more back pain than joint pain or chest pain. In the figure 9, about 10 respondents not suffering any problem. The respondents who work 10 hours had mostly joint pain compared to other types of pain. In a similar way Das and Shanmugaraja, 2023 getting while ironing clothing items in numerous body positions, both male and female laundry laborers face a wide range of work-related issues. Lower back pain (50%, 61.5%, 42.5%), knee joint pain (30%, 15.3%, 27.5%), wrist pain

(20%, 23%, 20%), shoulder pain (40%, 46.15%, 27.5%), and neck pain (40%, 23%, 32.5%) are among the most frequent site of pain in sewing, packing, and ironing, respectively, and calf pain (52.5%) is the most common site of pain in ironing. Further Santiana and Yusuf, 2020 that the employees in the clothing ironing sector often work nine hours every day, including lunchtime. Musculoskeletal difficulties are one of the major issues in the clothing industry, particularly in ironing. Muscular tiredness and pain are caused by the group's musculoskeletal problems, which are primarily the result of poor working conditions.

#### **Employees personal bad habits**





Most of the employees did not have any bad habits (73%), some of the male respondents smoked, and only a few respondents could drink extra tea and coffee illustrates in figure 10. According to Azad et al. (2022), the interviewees' personal habits included smoking cigarettes or biri at a rate of 11%, eating betel leaves and jarda at a rate of 17%, sipping additional tea or coffee at a rate of 9.7%, drinking alcohol or tari at a rate of 0.9%, and not having any of the aforementioned habits at all at a rate of up to 61.4%.

#### Working hours related to gender

The relationship between working hours and gender in figure 11. In the textile industry, both male and female workers work at the same time for deadline work. But the female workers do more extra work than the male workers, which is 69%. In the textile industry, female workers need to paid lower wages than male workers for extra work.



# Figure 11: Relationship of working hours to gender

So, the female workers get forced by the management to do extra work. When the female workers do the extra work, they can face some unwanted consequences at night. The finding of Haque et al. 2020 alike the research that male managers frequently force their female employees to work overtime till late night, that can be detrimental for their family life and, particularly, the emotional and physical well-being of their kids. Their psychological and physical wellness may suffer from long work hours as well. According to Min at al. 2019 if the workers work shift work at least 3 in a month continuously more than 20 years, it will increase the breast cancer risk as 1.36 to 1.79 %. Shift work has been linked to an cardiovascular increased risk of and cerebrovascular disorders.

#### **Employees health problems**



Figure 12: Employee's health problem

The results of the figure 12 also suggest that the employees' health problems in the textile industry. Most of the workers have eye strain problems due to the lack of adequate light. 54% of workers face eye strain problems, 21% face gastroenteritis, 23% do not face any health-related problems, and only 2% face jaundice. Similarly, Yuhan et al. (2022) headaches, weakness, eye problems, and bodily discomfort accounted for the majority of illnesses that knit clothing was used to treat. The two main illnesses that affect weavers are pox (11.8%) and jaundice (7.3%).

## Employees hereditary condition with age



Figure 13: Hereditary condition related to age

Figure 13 presents that hereditary condition among the workers' ages. Most of the respondents do not suffer from hereditary conditions, so they didn't respond. Those who suffer from hereditary conditions mainly suffer from diabetes, high blood pressure, and thalassemia. Most of the respondents above age 30 suffer from high blood pressure, with fewer suffering from diabetes. Only one in thalassemia whose age group is 21–30. Ages between 15 and 20 didn't suffer from any hereditary conditions.

## Headache causes of employees

Around 50 percent of respondents face headache problems in the industries. At 40.7%, most of the respondents agreed that inadequate lighting was their biggest headache cause; 37.5% of the respondents felt that noise pollution causes them headaches; and only 15.3% of the respondents felt that overcrowding causes them headaches

(Figure 14). Azad et al. (2022) mentioned that of all respondents, 60.29% of employees reported having headaches as a result of noise pollution. Up to 72.39% of people had headaches as a result of poor lighting. A large percentage of respondents (72.17%)reported having headaches as a result of poor ventilation. Additionally, 60.71 percent of respondents reported having headaches as a result of crowding. Additionally, headaches were reported by respondents (51.72%)in Setyaningsih et al. (2016). Equivalent findings were discovered in a study by Khan et al. (2015). A large proportion of participants in their study 74 participants, or 51% reported having headaches.





# CONCLUSION

The textile sector requires a large workforce, so effective health and safety rules and regulations are essential for ensuring employee safety and Organizations must well-being. manage employee health and safety to remain competitive in a complex market. Female workers in Bangladeshi textile factories face health risks due to poor working conditions, little pay, and ignorance of specific risks. They are vulnerable to these risks due to their age, gender, and lack of awareness. Unfortunately, the majority of Bangladesh's industrial sectors, particularly the textile industry, do not properly focus on health and safety, which makes for a dangerous and unsafe work environment for

employees. Employees are more productive and happier when they work in a pleasant atmosphere, which has a positive psychological impact on the business. Additionally, it is widely acknowledged that the majority of occupational accidents and fatalities could be completely avoided if both employers and employees took quick action to lower risks and hazards at work. Employers have a duty under the law to give their workers a healthy and safe workplace. Because of this, it is determined that a solution must be developed to the issue of the implementation of health and safety for employees. The government and the employers should take some steps to maintain the related health and safety.

### RECOMMENDATION

The study's findings will be helpful in controlling employee's occupational health and safety. Additionally, this study will help establish functional safety and health policies at work that will control how employers view safety. As a result of the study's evident positive findings on the relationships among the variables, managers in this industry must understand the need to implement safety and health programs to maintain employee commitment to the company and their jobs. The results of this study also show that production managers in textile sectors may persuade the highest levels of management to provide more funding for initiatives that promote the health and safety of workers and can create a safe and healthy working environment for their employees in the factories. The employees should train to handle any uncertain occurrence. Although the study's conclusion is excellent, it does have shortcomings.

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