The Industrial Health Hazard among Workers of Apparel Sector in Bangladesh

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ABSTRACT

Introduction: The Bangladesh's Ready-Made Garment (RMG) sector is now the world's 3rd largest exporter. RMG provides a steady flow of employment for approximately 4,000,000 workers, the majority of whom are women. This remarkable progress, however, has been hampered by a lack of factory safety and industrial mishaps, which characterize health risks. **Methods:** With a population of 200 employees, this was a quantitative study. Interviews with informants were conducted using an interview guideline, and observations were carried out around the workplace using a checklist instrument. The information gathered was used to create a detailed picture of the scenario. This research aims to investigate health hazards of the garment industrial workers and their effects on workers' health. **Results:** The majority of garment workers were between the ages of 15 – 20 years old. 93.6% of respondents worked for 8 - 9 hours each day on average, and 79.2% put in an extra 2-4 hours of work. 66% had no accident in the previous year, while 24.7 % experienced a small cut, abrasion, or injury. Moreover, most respondents were unconcerned about physical or environmental pollution, while 68% were concerned about noise pollution. Due to the direct link to health risks, employees suffered from headaches, general weakness, and eyestrain. **Conclusion:** Workers' headaches and eyestrain were caused by an insufficient lighting and ventilation system and noise pollution. Backaches, joint pain, and chest pain were caused by long working hours and a dirty workplace. Industrial health hazards should be minimized by the proper implementation of labor laws by the government.

Keywords: hazard, illness, ready-made garment, ready-made garment worker, safety

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INTRODUCTION

Bangladesh's ready-made garment (RMG) industry is the country's most significant exporting manufacturing sector. Bangladesh currently has the third-largest proportion of the global clothing market. In European and American high streets, superstores, and supply chains, the average price of ready-made clothing has fallen by at least 15% (Export Promotion Bureau, 2017). Currently, the RMG sector in Bangladesh exports about 34.13 billion USD per year. This accounts for about 82 % of the country's total export revenues (BGMEA, 2019). Bangladesh is estimated to contain between 4,000 and 5,000 garment manufacturers, ranging from large first-tier suppliers to tiny industrial units that mainly serve as subcontractors to large customers (Hasan and Mahmud, 2017). Following the Rana Plaza tragedy, the President of the United States of America suspended Bangladesh from the Global System of Preferences (GSP) on June 27, 2013, affecting Bangladesh RMG's entire supply chain. Bangladesh was also left off the new GSP facilitated country list, published in a new law on June 29, 2015 (Barua and Ansary, 2016). In addition, western media has increasingly highlighted the working conditions in RMG factories, characterized by poor pay, exposure to violence, and a heavy workload (Sultana and Joarder, 2020).

The workplace environment creates working hazards, and their risk varies by industry. The presence of occupational hazards should be minimized since they can cause pain to individuals. To ensure risk management, it is essential to quantify the risks to prioritize the urgent removal of the dangerous hazards (Elles, Villabona, and Martelo, 2018). Various workplace-related variables are present, combined with workers' exposure to

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risks to arrive at a quantitative risk assessment. Hazard assessment and risk quantification have been linked in industrialized nations such as the United Kingdom, the United States, and Europe for various reasons. Risk assessment has been made a statutory duty in Japan (Sultana and Joarder, 2020). To discuss other studies, psychosocial factors in the workplace, workplace safety concerns, workplace climate, disease prevention, workplace politics, workplace spirituality, epileptic medication in the workplace, safe management, chemical exposure, and risk perception are the most researched areas in the field of occupational health and safety (Sembe and Ayuo, 2017).

Few studies in the Bangladeshi and worldwide textile industries examined garment workers' health, health and safety compliances, and self-reported health outcomes to explain clothing industries' occupational health and safety (Ali, Qun and Hossain, 2019). Chowdhury and Tanim (2016) mentioned that in Bangladesh, there are only a few studies on occupational health and safety. Although developing nations house 80% of the global workforce, there is still a shortage of health and safety guarantees in these countries. Occupational hazard identification and risk assessment, therefore, must be used as a preventative strategy to ensure health and safety in a developing nation like Bangladesh.

Most Bangladeshi manufacturing companies lack a hazard detection and assessment mechanism for the whole labor production process. However, the International Labour Organization (ILO) stated that hazard evaluation and risk assessment systems should be used as a preventative strategy to ensure health and safety (Sultana and Joarder, 2020). These days, an occupational hazard is a worrying issue.

Employees suffer when they work in a hazardous and unsatisfactory setting in the workplace. Workers' motivation is harmed when they work in a hazardous atmosphere, and they tend to put in less effort, reducing their performance (Tebyetekerwa, Akankwasa, and Marriam, 2017). Kaya (2015) mentioned that workplace planning, design of all production equipment and gadgets, and physical and psychological environmental variables influence workers' happiness, affecting productivity. By lowering the output-input ratio, workplace hazards and related risks reduce individual single-factor productivity and overall productivity. Several previous studies recognized and investigated a wide variety of occupational risks to conduct a literature evaluation on the risk of occupational hazards. Occupational hazards and risk levels in five kinds of small and medium industrial businesses in Estonia (mechanical, printing, wood, plastic, textile industries) were investigated (Reinhold, 2016).

Chemical safety in Bangladeshi garment manufacturers was also investigated from the corporate social responsibility and supply chain standpoints. Chemical hazards are a significant concern in the garment business since 13 million workers globally are exposed to chemical solvents during spot removal procedures (Lindholm, Egels-Zanden and Ruden, 2016).

Workers in the garment industry are afflicted with a variety of illnesses that reduce productivity. Musculoskeletal diseases, joint discomfort, respiratory difficulties, hunger, and other issues plague sewing machine workers (Ahmed, 2014). Operators must sit in a particular chair for an extended period with little movement of their bodies (Sharif, Islam and Kabir, 2015). Diseases are the results of many dangers, which are mostly the causes. Because physical violence, abuse, overtime labor, pay discrimination, informal recruiting, and harassment are prevalent at RMG companies in Bangladesh, most employees face psychological oppression (International Labour Organization, 2021b). Building collapses, factory fires and child labor are the there significant types of workplace accidents in the garment industry, according to New York Times articles from 1910 to 2015. The number of workplace risks also rose from 1995 to 2015 (Peterson, 2016).

Occupational safety and health is not only the duty of the management and stakeholders to ensure quality, but it is also the obligation of individual workers to be concerned and informed. Because textile workers spend nearly all of their time in a regional setting, the routine task design affects their labor productivity (Koopmans *et al*., 2014). A hazardous working environment causes illnesses, accidents, injuries, and deaths. This leads to increased absenteeism, job discontent, and lower labor productivity (Shobe, 2018).

This research covers the present scenario of the health hazards of Bangladesh RMG sector workers and examines the effects of the hazards on workers' lives. Therefore, RMG industry planners can use the results of this research to develop tools and techniques to minimize health hazards in the RMG industrial sector for creating healthy workplace. This research also helps RMG owners discover

the hazards and efforts to solve this problem. This research can provide a clear image of health hazards of Bangladesh RMG industrial sector and the effects of these hazards, which can help the authority to take proper initiatives to solve this problem.

Existing Regulations in Bangladesh to Solve Occupational Safety and Health Hazards in the RMG Sector

Each year in Bangladesh, almost 11,000 employees die in fatal accidents and another 24,500 die from working illnesses across all industries. Additionally, it is projected that another 8 million employees have workplace injuries, many of whom end in lifelong disability. Although only a few studies have been conducted in Bangladesh, it is widely accepted that most occupational fatalities and injuries are avoidable and preventable if employers and employees take essential steps to minimize workplace hazards and risks (International Labour Organization, 2021a). Despite all of these data, it is believed that the incidence of work-related injuries and illnesses in Bangladesh is greater than recorded. Employers in Bangladesh do not safeguard employees. In labor, a person must agree to risk their life without pay (Alam and Masum, 2016).

To foster a preventative safety and health culture, the ILO is working with the Ministry of Labour and Employment, the Bangladesh Employers' Federation (BEF), National Coordination Committee for Workers Education (NCCWE), Industrial Bangladesh Council (IBC), and social partners such as the Occupational Safety and Health and Environment (OSHE) Foundation, and Bangladesh Institute of Labour Studies (BILS) (International Labour Organization, 2021a). The constitution of Bangladesh guarantees equitable wages, social protection, and freedom from forced labor (Articles 7, 14, and 20). In light of the recent (2006, with 2013 revisions) consolidation of the prior laws into a single act BLA 2006, Article 7 and its generally recognized comprehensive character; broad elements of worker rights, labor, and industrial relations, the BLA oversees labor regulations, including unions. The National Wage Board, the Labour Court, and the National Council for Industrial Health and Safety were established under the law. Occupational safety and health standards, freedom of association, and collective bargaining do not apply to workers in the Export Processing Zones. Moreover, OSH Obligations are included in the Bangladesh National Building Code 2006 and Bangladesh Labour Welfare Foundation Act 2006. In 2009, Bangladesh established a tripartite National Council for Industrial Health and Safety. Since 2013, the Council has been working to implement the National OHS Policy across all industries. In addition, the National Child Labour Elimination Policy, Industrial Policy, and Children Policy include OSH concepts (Alam, 2016). This research aims to determine the health hazards of garment industry workers and their effects on workers' health.

METHODS

This research is a quantitative structured question-based research. This research was conducted in the central industrial zones (Dhaka, Gazipur, Savar, and Narayanganj) in Bangladesh from June to December 2019. Systematic random sampling was used in this research. Workers in garment industries were the target demographic. Factory employees were included, as were workers of both sexes who were willing to participate in the research freely and cooperatively. For data gathering, a purposeful sampling method was used. The total number of people in the sample was 200. Data were gathered via face-to-face interviews with respondents using a structured interview. There were two sections to the survey, namely questions related tooccupational socioeconomic factors and work-related injuries.

The questions were analyzed using ANOVA for their reliability and validity test. The outputs of this research were practically observed by visiting several garments industries in Bangladesh. Thus, the outcomes of this study were accurate, and the statistical ANOVA single factor analysis p-value was significant, supporting the results of this research.

Data were input in codes into Microsoft Office Excel software, and the ANOVA single factor test was conducted. The data were characterized using a descriptive statistical analysis, including frequency, mean, and percentage of ages.

This research was completed using primary data collection. Thus, there is no doubt about the ethical issue of this research. The ethical clearance of this research was issued by Northern University Bangladesh. The ethical clearance number is 02.

RESULTS

There were 200 respondents' valuable comments collected in this research. Figure 1 presents that 42%

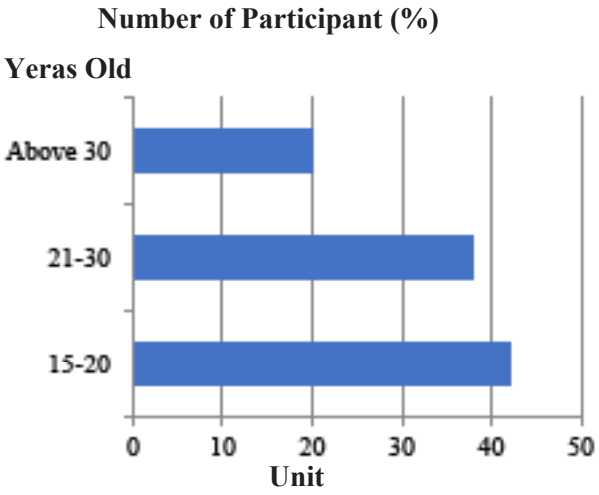


Figure 1. RMG Worker Categorized by their Age Group

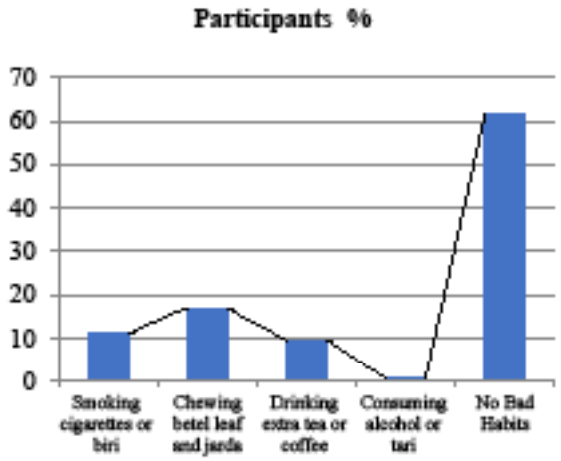


Figure 2. The Habits of the RMG Workers

of the respondent's age group was 15 – 20, 38% of the respondents' age group was 21 – 30, and 20% of the respondents' age group was above 30 years. Moreover, 86% of respondents' jobs were permanent, and 14% of respondents' jobs were contractually based.

The personal habits among the respondents were smoking cigarettes or biri of 11%, chewing betel leaf and jarda of 17%, drinking extra tea or coffee of 9.7%, consuming alcohol or tari of 0.9%, and a maximum of 61.4% not having one of the above personal habits. These bad habits of all the respondents are also health hazards for them.

Table 1 represents the interior physical environmental condition of ready-made garments as per workers' opinion. The maximum 78.5 % of respondents complained about the lack of separate toilets, 71.5% complained about a dirty workplace

Table 1. The Interior Physical Environmental Condition of Ready-Made Garments as per Workers Opinion from Dhaka, Gazipur, Savar, and Narayanganj in 2019

Interior Physical Environmental Condition	No of Respondents Agreed in (%)	No of Respondents Disagreed in (%)
Dirty	71.5	28.5
Inadequate light	67	33
Noise pollution	68	32
Inadequate ventilation	57.5	42.5
Overcrowding	56	44
Problem with safe drinking water	68.5	31.5
Separate toilet not present	78.5	21.5
No problem	31.5	68.5

Field Survey, 2019

Table 2. The Health Care Facilities Available in the Factory's Per Worker's Opinion

Health Care Facilities	No of Respondents agreed in (%)	No of Respondents disagreed in (%)
Pre-placement examination	50.5	49.5
Periodic health check-up	59	41
The constant presence of a doctor or nurse	56.5	43.5
Primary treatment and free medication	53.5	46.5
Health insurance	52	48
Maternity leave	48.5	51.5
Daycare centre	50.5	49.5
Compulsory use of PPE	54	46
Canteen facility	43	57
No facilities	5.5	94.5

Field Survey, 2019

issue, 68.5% complained about the lack of safe drinking water, 68%, and 67% complained about noise pollution and inadequate light respectively. This research found that the main health hazard of the garment's interior physical environmental condition was the dirty workplace, unavailable separate toilets, the lack of safe drinking water, noise pollution, and inadequate light problem, all of which are the causes of serious health hazards. After

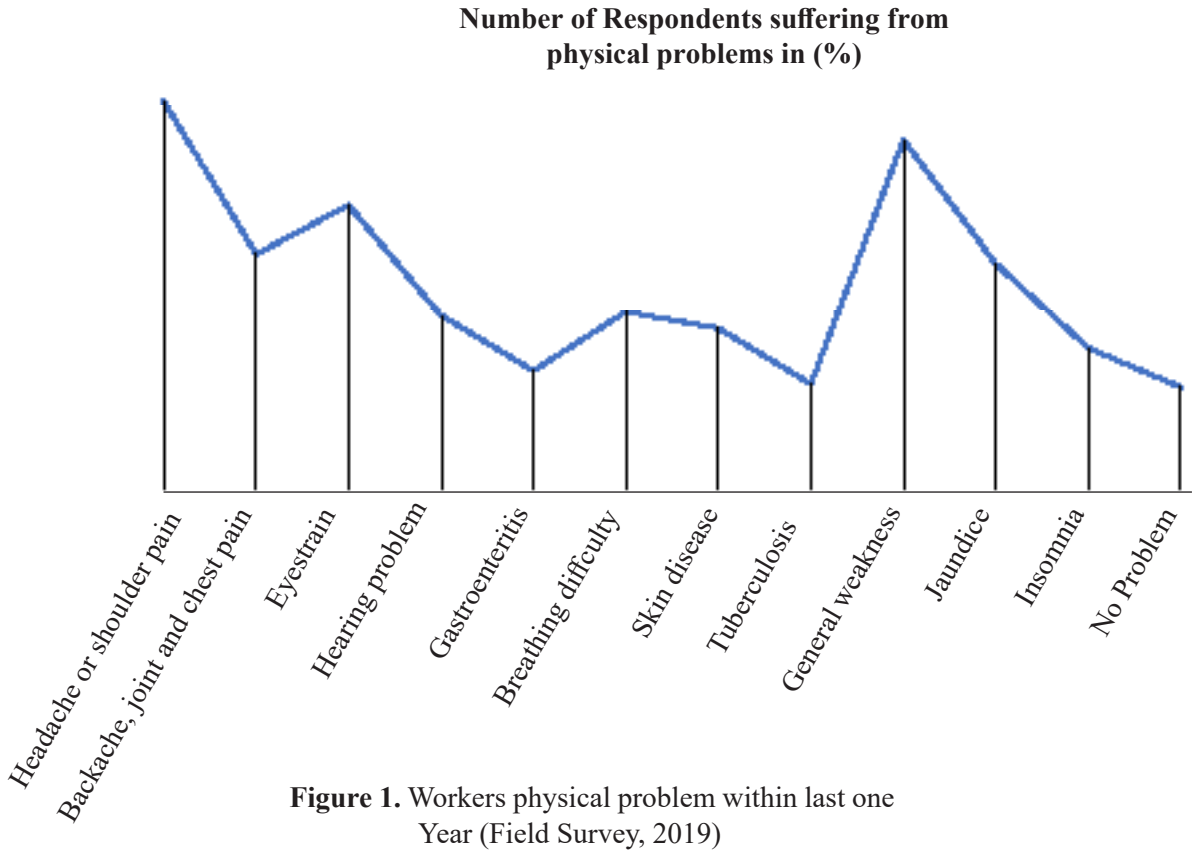


Figure 1. Workers physical problem within last one Year (Field Survey, 2019)

finding the health hazards in the garment industry, this research worked on the health care facilities available in the factory as per the workers' opinion

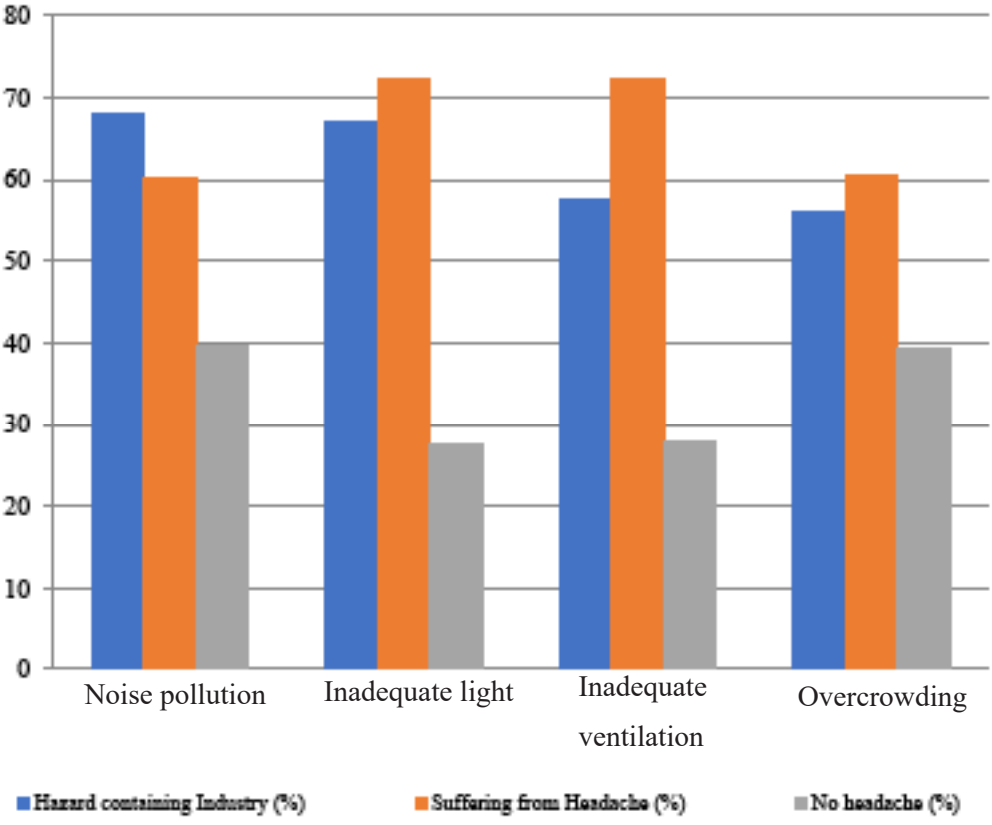
The interior physical environmental condition of ready-made garments as per workers' opinion was statistically analyzed using the ANOVA single factor test with a p-value of 0.0041, which was less than 0.05 (typically ≤ 0.05) and categorized as statistically significant. It indicates strong evidence against the null hypothesis, as there was less than a 5% probability, so the null was correct (and the results were random). Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted.

Table 2 shows the health care facilities available in the factory as per workers' opinion. Among all respondents, the majority (59%) was satisfied with the periodic health check-up, and 56.5% were happy with the constant presence of doctors or nurses in their factory. They also pointed out other facilities, such as canteen facilities (43%), compulsory use of Personal protective equipment (PPE) (54%), primary treatment and free medication (53.5%), maternity leave facility (48.5%), daycare center facility (50.5%) and so on. Only 5.5% complained of no facilities in their factory. This study found that some actions have been taken to recover the infected workers, and no action has been taken to remove the health hazards.

Among all respondents, 72.2% had prepared the best way to exit during a crisis. 65.7% of respondents had prepared themselves for stifling fires, and 55.2% had prepared themselves for medical aid and well-being training. Just 9.8% of respondents did not have any offices to forestall the mishap in the production line they were working in. Moreover, this study tried to investigate the results of the sustainable hazards in the garment industry by analyzing workers' physical problems within the past year.

The health care facilities available in the factory's per workers' opinion was statistically analyzed by the ANOVA single factor test with a p-value of 0.441, which was higher than 0.05 (> 0.05) and categorized as not statistically significant. This indicates strong evidence for the null hypothesis. This means that the null hypothesis was accepted, and the alternative hypothesis was rejected.

Figure 3 presents that the the majority (59.5 %) of respondents experienced a headache or shoulder pain; 53.5% experienced general weakness; 43.5% suffered from eye strain; 36% suffered



Field Survey 2019

Figure 4. The Impact of Hazardous Industries on Worker Headache

from backache, joint, and chest pain; and 34.5% faced jaundice over the past one year. Only 15.5 respondents did not suffer any problems.

This study found that the majority (85%) of garment workers faced different health problems due to the highlighted sustainable health hazards like a dirty workplace, inadequate light and ventilation, noise pollution, and lack of safe drinking water supplied. Insufficient light and ventilation were the leading causes of headaches among workers. The majority of workers suffered from a headache. Therefore, this study tried to investigate the health hazards of headaches.

Figure 4 presents the impact of hazards of industry on headaches among workers. Among the total respondents, 136 respondents or 60.29% of workers suffered from headaches due to noise pollution. A maximum of 72.39% suffered from headaches due to bad light.

A maximum of 72.17% of respondents were sufThe majority (72.17%) of respondents suffered from headaches due to inadequate ventilation. Overcrowding also caused 60.71 respondents to experience headaches. It is clear that the majority of workers suffered from headaches most likely due to hazards in garments industries. Thus, different types of hazards were responsible for headaches among workers.

The opinions of garment workers about the impact of hazards of industry on headaches were statistically analyzed by the ANOVA single factor test with a p-value of 0.00012, which was less than 0.05 (typically ≤ 0.05) and categorized as statistically significant. It indicates strong evidence against the null hypothesis, as there was less than a 5% probability, so the null was correct (and the results were random). Therefore, the null hypothesis was rejected, and t the alternative hypothesis was accepted.

DISCUSSION

This descriptive cross-sectional research aimed to determine the occupational health risks among garment workers of both sexes and of all ages. The research findings related to the majority of the workers' age and average work age are in line with results of research of Jahan (2017) which mentioned

that two-thirds of the employees were between the ages of 15 and 22 years old. Khan *et al*. (2016) observed that most of the workers, accounting for 58 workers (40.0 %) were discovered in the age group of 16-20 years old, while the smallest number, accounting for 2 workers (1.4 %) was identified in the age group of 41-45 years old. The average age was 23.30±6.92 years, with a range of 11 to 45 years. According to the "Employment of Minors' Act 1938," children under the age of 16 should not be engaged in this research. They are also unskilled and prone to harm (International Labour Organization, 2021a).

The results of this research related to workers' sexes are in line with research of Khan *et al*.(2016) which mentioned that 89% were female workers, while only 11% were males. Moreover, The workers' marital status of this research findings is also similar to research of Jahan (2017) which discovered that out of 30 women, 19 (63.3%) were single, and 9 (30%) were married. Another research of Khan *et al*.(2016), on the other hand, showed that 81 (55.9%) were married, and 62 (42.8%) were unmarried.

The worker categorization and their education level are also justified by research of Khan *et al* (2016) which stated that the highest number of people accounting 70 respondents (43.3%) of the population had completed elementary school. Only 22 (15.2%) of the respondents were illiterate. Moreover, only 25 respondents (17%) had temporary work, whereas 120 (83%) had a permanent job. In addition, the highest number of respondents (52.4%) worked as machine operators, while 41 respondents (28.3%) worked as helpers. Also, 109 respondents (75%) were unskilled, whereas 36 respondents (25%) were competent.

This research also investigated permanent illnesses among the respondents, such as gastroenteritis, headaches or shoulder pain, backache, joint and chest pain, eyestrain, hearing problem, breathing difficulty, skin disease, tuberculosis, general weakness, and jaundice. Similar findings were found in research conducted by Khan *et al*. (2016). In their study, the majority of respondents, accounting for 74 respondents (51%) reported to experience headaches or shoulder discomfort, 45 (31%) reported joint pain, 41 (28.3%) reported general weakness, 38 (26.2%) reported chest pain, and 36 (24.8%) reported backaches. In addition, gastroenteritis was responsible for 31 cases (21.4%), whereas jaundice was responsible for 30 cases (20.7%). 29% of people suffered from insomnia , 20 people (13.8%) suffered from eye strain, and 12 people (8.3%) suffered from a hearing impairment. Also, 8 people (5.5%) had skin problems and trouble breathing. 5 (3.4%), and TB (3.4%). 4 (2.8%) and 20 (13.8%) respondents reported no problems in the previous year. Similar findings were also found in research conducted by Jahan (2017). Thomas (2011), furthermore, also observed comparable results, with 12.66 % having knee discomfort, 5.096 % having stomach pain, 1.9 % having blood pressure, 30 % having asthma, 35 % having a stretch of work, and 0.82 % having mental stress.

Khan *et al*.(2016) also found that the majority of employees (84.8%) received medical care due to the continuous presence of a doctor or nurse. Primary therapy and free medicines were provided to 78.6% of employees. 44.1% received a pre-placement examination, while 48.3% had regular health check-ups. Approximately 78.6% of female employees were on maternity leave, while 64.1% used childcare. Canteen facilities were rated as satisfactory by 80.7% of employees, which are necessary for good health. To avoid dust-borne illnesses, 80% of people were observed to wear a hat, mask, and apron. 13.1% of those polled said they had health insurance. Jahan (2017), on the other hand, discovered that employees in five clothing companies were denied access to therapy. Every factory had a first-aid kit to deal with minor mishaps, but the general doctor was unavailable. There were also no child-care services available. Only one outfit required the employees to wear masks and gloves, while others did not offer acts. There were also no canteens in any of the enterprises.

Theresearch findings related to hazards and their effect on the workers' health are also justified by previous research. Occupational hazards may lead to a variety of health issues for employees. Khan *et al*. (2016) found that 44.1% of respondents said their physical surroundings were good. Noise pollution was cited by 33.8% of respondents. Furthermore, Jahan (2017) discovered that there wasovercrowding of 13.8%, a lack of clean drinking water of 15.9%, low light of 9.7%, ventilation of 4.1%, a dirty workplace of 9%, and unavailable separate bathroom facilities of 5.5%. Only one plant was overcrowded, cluttered, and inadequately ventilated, with employees complaining about noise pollution as well. There were no sufficient bathrooms or clean drinking water in any of the enterprises. Long working hours, unsafe working conditions, lack of supervision and training, use

of old machinery and equipment, overcrowded production units with very crowded space, working with machines and equipment, use of electricity, use of chemicals in industries, and dusty worksites were all identified as significant causes of occupational hazards (Joshi, Shrestha and Vaidya, 2011).

Setyaningsih *et al*. (2018) also found that respondents suffered from headaches (51.72 %), visual issues (34.48 %), ringing ears (6.9 %), coughing and shortness of breath (8.62 %), tingling (63.78 %), and muscle and bone pain (67.24 %), among health concerns reported. Discomfort in the joints (75.9 %), stiffness (53.4 %), and muscular pain were the most often reported forms of injuries (15.5 %). The findings of Setyaningsih *et al*. (2018) were also similar to this study.

Dhaka City's garment employees are just like those in any other cities' garment industry. They put their health and safety at risk to get the job done. In addition, they put in long shifts every day of the week. There is a risk to the health of the employees because of these conditions (Wagstaff and Sigstad, 2011). Before starting a long shift, the body of employees who are obliged to labor non-stop begins to weary (Setyaningsih, Astuti, and Husodo, 2016). Also, previous studies on garment workers have mentioned muscular problems such as lower back discomfort, shoulder and wrist pain, as well as knee and ankle pain. Physical exertion, occupational safety, and psychological stress all have a role in the development of muscle problems (Miranda *et al*., 2011). Also, fatigue has detrimental impacts on safety, productivity, and product quality in addition to the health hazards it poses to employees (Tucker and Folkard, 2012).

Workers in the garment industry who are exposed to dust risks have a 9.4-fold higher risk of developing health issues. The vast majority of employees do not wear PPE while being on the job. PPE does not remove dangers; rather, it acts as a buffer between employees and the causes of such dangers (Konya, Akpiri and Orji, 2013). However, workers and their bosses have not given much thought to safety and health in the workplace (Setyaningsih *et al*., 2018). Health and safety training is lacking in the clothing industry. Workplaces with a healthy workforce, on ther other hand, provide better goods and services because employees are more engaged and motivated (Ali, 2018). Healthy and productive workers are also contributors to their families' and communities' well-being as a result of efforts to promote occupational health (Aritonang, Sitti and Sinaga, 2016). Workers in this case have a significant role in preventing occupational and environmental hazards (Setyaningsih *et al*., 2018).

To balance job capacity, workload, and work environment, occupational health and safety concepts have been developed (Ali, 2018). The principles of occupational safety and health should still be reviewed, even if employees do not seem ill and continue to work as usual (Setyaningsih *et al*., 2018).

Akhter, Rutherford and Chu (2019) noted that the lack of properly qualified workers and equipment hinders the collection of valuable data for evidence-based decision-making in industries to monitor industrial health and safety. Additionally, employers' lack of collaboration is a major obstacle to successful industrial health and safety for employees. Finally, the government's ability to implement rules is restricted by the lack of resources and authority. The health and safety of this vital working population, which is dominated by women, is jeopardized because of such shortcomings. The results of of this study are similar to those of Akhter, Rutherford and Chu (2019).

Chronic exposure to physical environmental variables may cause all of these long-term illnesses and health issues. Pre-placement health examinations may detect certain diseases, and regular health check-ups can help to prevent them. Other healthcare institutions must work to minimize health issues and diseases. The current state of the employees and the workplace is also improved through health and safety training and frequent workplace monitoring, and vulnerability to harm.

CONCLUSION

This research reveals the work-related health hazards among Bangladeshi garment factory workers. Because clothing items are the most critical industry in Bangladesh, this incident should concern clothing manufacturers and the Bangladeshi government about worker safety, security, and government support. The majority of the respondents in this research were between the ages of 15 and 20 years old, and the majority of them were females. These young female laborers do their work, but their terrible working conditions, low pay, and lack of knowledge of particular hazards render them helpless in the face of specific threats. The constant display of physical and ecological components may be causing work-related health risks. Therefore, pre-

situation health assessments, periodic health exams, health education, security, planning, and routine monitoring of the work environment may help workers develop their skills. The performance and profitability of the company are solely dependent on the health of the workers. As a result, improving the health and well-being of garment workers is critical for Bangladesh's economic recovery.

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