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Impact of Occupational Hazards on Healthcare Professionals' Mental (Psychological) Health: Evidence from Government-Owned Hospitals in Khulna, Bangladesh

Zona Zaman

Master's student in Business Administration at Asian Institute of Technology (AIT)

Khlong Luang District, Pathum Thani-12120, Thailand

Samia Shanjabin

MBA student in Human Resource Management at Khulna University

Khulna 9208, Bangladesh

Sayed Azharul Islam

Assistant Professor of Human Resource Management Discipline at Khulna University, Khulna 9208, Bangladesh

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Abstract

Safe work is a fundamental right of all workers, and HR compliance today is more concerned about maintaining and promoting workplace health and safety. However, occupational hazards are significantly high in the healthcare sector, and healthcare workers face a wide range of vulnerabilities in their job that can lead to - infections, illnesses, injuries, and even death. The paper sought to investigate the relationship between occupational hazards faced by healthcare workers and the degree to which it affects their mental health. This study is causal and quantitative. The data is collected via a non-probability convenience sampling technique from 385 healthcare workers working in 4 different public hospitals in Khulna city. A questionnaire was constructed using a five-point Likert scale with 29 statements, adopted and modified from ILO-International Hazard Datasheets on Occupations and Hospital Anxiety

and Depression Scale. The presence of Biological and Chemical hazards is higher than the others, and overall, a moderate level of Occupational Hazard exists presently in the healthcare sector. Also, Female workers are burdened with higher levels of mental health issues than male workers. Moreover, doctors, nurses, and cleaners have higher levels of mental health issues than others. Moderate levels of occupational hazards are present among healthcare workers in Bangladesh, causing a moderate level of mental health issues. Biological, physical, chemical, and psycho-social hazards have a significant positive degree of impact on healthcare workers' mental health issues, whereas Accidental Hazard has a significant negative impact. The findings may be useful to HR professionals, Compliance managers, Human Rights Agencies, Government bodies, etc., for developing & promoting safe work practices and mental health.

Keywords: Covid-19, healthcare workers, mental health, occupational hazards, occupational health and safety (OHS).

1. Introduction

Workplace safety is regarded as one of the primary rights at the workplace and a widely discussed issue in the area of human resource management. Thus, HR professionals in the age of sustainable development must pay significant attention to attaining workplace safety. Occupational Safety and Health (OSH) is considered one of the most important components of decent work agenda that is a part of Sustainable Development Goals (SDGs). Occupational Safety and Health refers to the condition of the workplace where workers don't face any risks or hazards. However, in recent years millions of people have been affected by occupational safety and health-related hazards. Occupational hazard is considered as danger or inherent risk of a particular occupation related to an unforeseen or existent event, conditions, or activities that could result in injuries, illness, loss, or damage to health, life & property (Lambert et al. 2007). According to Mahmoudifar and Seyedamini (2017), occupational accidents, injuries and illness are the third most common cause of death in the world. As per the International Labor Organization (ILO), around 330 million accidents occur annually because of occupational hazards, and about 160 million people are currently suffering from work-related illnesses (Berhane & Enquselassie, 2016). Not only that, one person in every 15s loses their life due to work-related hazards (Aghakhani et al., 2017).

As the outbreak of novel coronavirus-2 (nCoV-2) surges worldwide, it is declared a pandemic and an international Healthcare emergency according to the report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) (World Health Organization [WHO], 2020). The COVID-19 pandemic has introduced new occupational risks, and some working groups are experiencing higher infections and deaths related to COVID-19 than others. Professions with elevated rates of death due to COVID-19 include healthcare and social care workers, bus/coach/taxi drivers, construction workers, security guards, cleaners, retail and sales assistants, etc. frontline occupations, such-as occupations in the healthcare sector, have experienced increased occupational risks and hazards as their duties involve working near people infected with the virus. Moreover, a variety of research has been conducted on occupational health and safety-related issues. De Los Santos and Labrague (2020) evaluated

fear of COVID-19 among nurses addressing the nurses' psychological well-being and turnover intentions. Chew et al. (2020) explored the relationship between physical ailments and psychological outcomes among healthcare workers. Moreover, Luceño-Moreno et al. (2020) explored post-traumatic stress, anxiety, depression, levels of resilience, and burnout in Spanish health personnel during the COVID-19 pandemic. To line up with this, Shaukat et al. (2020) reviewed and summarized the findings of the physical and mental health impacts of the COVID-19 pandemic on healthcare workers. Along with that, Elston (2020) examined the origin of skin damage associated with enhanced prevention measures among frontline hospital staff who are actively treating patients with prevalent coronavirus (COVID-19) infections. Gómez-Ochoa et al. (2021) conducted a systematic review of the prevalence, risk factors, clinical characteristics, and prognosis of severe lung infection among healthcare workers. Gestal (1987) reviewed all the main occupational hazards affecting health workers- accidents, radiation, exposure to noxious chemicals, drug addiction, psychic problems, and assault- except for infectious diseases. So different types of occupational hazards are prevalent among healthcare workers, and the factors responsible for these hazards (Ghosh, 2013). The purposes of the study are-

- To explore the relationship between occupational hazards and the mental health of healthcare employees.
- To measure the level of occupational hazards faced by healthcare workers in the public healthcare facilities
- To understand the condition of mental health of the healthcare workers of public healthcare facilities.
- To explore the extent to which each type of occupational hazard is responsible for attacking mental health.

Based on an extensive literature review and justification, this study has developed five hypotheses which are based on five specific Occupational Hazards listed in ILO's International Hazard Datasheets on Occupation (2015), namely - Physical Hazard, Chemical Hazard, Biological Hazard, Psychosocial Hazard, and Accidental Hazard. The following are the hypotheses of the study.

H1: *Biological hazard has a significant positive impact on healthcare workers' Mental Health Issues.*
H2: *Physical hazard has a significant positive impact on healthcare workers' Mental Health Issues.*
H3: *Chemical hazard has a significant positive impact on healthcare workers' Mental Health Issues.*
H4: *Psycho-social hazard has a significant positive impact on healthcare workers' Mental Health Issues.*
H5: *Accidental hazard has a significant positive impact on healthcare workers' Mental Health Issues.*

Early studies involving Occupational Hazards of healthcare workers mainly focused on

consumers' care and satisfaction rather than the caregiver. Additionally, most studies have primarily been limited to hospital-based physicians and nurses, not factoring in the diverse group of essential staff (e.g., security, clerical, technologists) exposed to the same working environment as other clinicians. Furthermore, even though a few studies have looked at the relationship between PPE availability and testing with subsequent COVID-19 infection in healthcare workers, no study has described the impact of exposure to occupational hazards during this time on the psychological distress and mental health of hospital workers. Furthermore, no comprehensive research on sector-wide OSH risks or emerging trends in public hospitals has been conducted to demonstrate the HR project activities and initiatives to reduce OSH risk in public hospitals. Moreover, only a few studies reported missed opportunities to mitigate sector-wide OSH risk. Still, the wide variability between public hospitals' OSH management practices, such as quality assurance of safety management systems and safety inspections, has not yet come to light. Finally, while previous studies have broadly described occupational stressors, no studies have attempted to sample a broad range of healthcare staff, including security guards, lab technicians, clerks, etc., to evaluate the impact of hazards in relation to mental symptoms among healthcare workers.

1.3 Occupational Hazard

Ilias et al. (2009) defined a hazard as a viable source of harm occurring from an object, event, circumstance, or activity that can damage health, life & property. Occupational hazard, also known as occupational risk or occupational health hazard, can be stated as the danger of inherent risk of a particular occupation that can jeopardize the life or threaten workers' safety associated with that specific occupation (Merriam-Webster, 2022). Rajan (2014) stressed that individuals' health and welfare are directly linked to their particular jobs and the presence of hazards in that work environment. Even though the job may be simple, there may still be triggers of hazards present within each position. Along with these, occupational hazards can be stated as the casualties, damages, and accidents associated with workers' work lives.

1.4 Healthcare Sector

No workplace is limited to without occurrence of accidents in the workplace (Al-aslami et al., 2018). However, hospitals are glorified incubators for every type of infection, accident, allergy, and disease on this planet (Wu et al., 2018). Joseph and Joseph (2016) describe healthcare workers as a doctor or a nurse who directly delivers care and service to patients, as well as aids, helper, laboratory technicians, or even medical waste handlers who indirectly care for and serve the people as well as the community. They are the people whose job is to manage, protect and improve the community's health. Furthermore, the healthcare workforce comprises 12% of the total working population worldwide, roughly 59 million people (Goniewicz et al. 2012). According to Worker Health Chartbook published by the NIOSH-National Institute for Occupational Safety and Health (Centers for Disease Control and Prevention [CDC], 2004), the healthcare sector is the second-fastest-growing sector in the US today, with more than 12 million workers in total. Apart from doctors and specialists, other workers in the healthcare sector, such as Nurses, therapists, technicians, janitorial staff, clerical staff, pharmacists, food service staff, etc., are all an integral part of clinical and

hospital services and have primary responsibility for a significant proportion of patient care in healthcare settings (Mossburg et al., 2019). However, all of them are faced with a range of vulnerabilities, including biological, physical, chemical, accidental injuries, diseases, psycho-social hazards, etc., throughout the course of performing their duties (Wu et al., 2018). NIOSH (Worker health chartbook, 2004) report states that the healthcare sector's job-related injury rates have significantly increased over the past decade.

1.5 Occupational Hazard in the Healthcare Sector

Given the nature of the working environment, responsibilities, and duties, hospital healthcare workers are on the frontline of numerous occupational hazards. According to Occupational Health: A manual for primary healthcare workers (Waddell & Burton, 2001), occupational hazards faced by hospital workers on a daily basis are categorized into six broad categories, namely- air containments, chemical, biological, physical, ergonomic, and psycho-social hazards. However, according to ILO-International Hazard Datasheets on Occupation (2015), occupational health hazards among healthcare workers can be classified into five main categories- (1) accidental, (2) physical, (3) biological, (4) chemical, (5) psycho-social, ergonomic and organizational factors. On the contrary, OSHA- Occupational Safety and Health Administration (2020) mentions several dimensions of occupational hazards, namely- biological hazards and blood-borne pathogens, potential chemical and drug exposures, waste-anesthetic-gas exposures, respiratory hazards, ergonomic hazards, and other hazards. Ramsay et al. (2006) pointed out several categories of occupational hazards faced by most healthcare workers today. These are blood-borne pathogenic exposures (HIV, HCV, HBV, etc.), airborne exposure, physical hazards like patient movement and handling, illumination hazards, heat exposure, chemicals hazards, and psycho-social and ergonomic hazards.

1.5 Mental Health

Mental health is a fundamental element of health. According to WHO (2022), "Health is a dynamic state of complete physical, mental, and social well-being, not just certain absence of disease or infirmity. Mental health is considered a state of well-being in which people know their own strengths and can deal with the stresses of everyday life. They can also work well and positively impact their community (Wang et al., 2007). Mental health issues have grown into a global epidemic. According to National Alliance on Mental Illness (2020), 1 in 5 Americans suffers from at least one mental health issue, which is 47.6 million people in the US alone. According to WHO (2022) statistics, the numbers demonstrating the global rates are naturally higher, approximately 450 million. According to Wang et al. (2007), 18% of employees between the age of 15 to 54 have experienced mental health issues in the previous 12-month period. Benenden Health Mental Wellbeing Report (2020), pointed out that the main reasons for workplace-related mental health issues or disorders are- Increased workload (43%), Financial concerns (33%), Workplace culture (30%), Job insecurity (30%), Workplace bullying (28%), External family pressures (21%) Hitting deadlines (20%), Managing people (19%), External relationship pressures (14%), and Managing clients/customers (13%).

1.6 Occupational Hazard and Mental Health

Occupational hazards and mental health issues go hand in hand. Everyone involved in the healthcare sector deals with people's lives daily, which is not only stressful but also can be the

basis of significant harm to the workers' mental and physical health and welfare (Edmund, 2015). They are exposed to unique and infectious environments and stressful and long working hours (Martins et al., 2012; Perry et al., 2003). On top of that, they also work in close contact with hazardous materials such as lasers, radiographic equipment, chemical sterilizers, etc. (Charlier et al., 2021). Risks and hazards at work usually lead to serious physical health problems, like job stress, anxiety disorder, and depression (Rajabi et al., 2020). On the other hand, mental health issues can significantly decline psychological function and cause negative physiological responses, leading to emotional fluctuations and mental health problems. However, these issues regarding workers' mental health often go ignored for the lack of intervention. (Harrison & Dawson, 2016). Despite the increasing research on mental health aspects of workplace conditions and hazards in high-income countries, a dearth of this problem exists globally (Okeafor & Alamina, 2018). According to the NHS Confederation (2020), mental health issues among people, especially frontline healthcare workers across all specialties and fields, have confronted unmatched challenges for themselves and their loved ones in accordance with- patient care, personal safety (disease transmission risk), and psychological misery. Several early studies have shown that healthcare workers directly involved in the diagnosis, treatment, and patient care of COVID-19 are more susceptible to mental health issues (Lai et al., 2020; Rajkumar, 2020; Spoorthy et al., 2020; Kang et al., 2020). Approximately one-third of employees suffered from work-related stress due to financial concerns before COVID-19. Nevertheless, more than half of the total working population is currently suffering from work-related stress caused by job security and wider financial worries (Basyouni & El Keshky, 2021).

1.7 Occupational Safety and Health (OSH) Conditions in Bangladesh

The current regulatory structure of the country on Occupational Safety and Health (OSH) refers mainly to the workers of industries. Still, it does not justly cover all healthcare workers in the country. Bangladesh Labor Act (2006) is considered to be the main framework for Occupational Safety and Health (OSH) laws. A number of other laws and regulations also have some provisions related to Occupational Safety and Health (OSH). Nonetheless, the workforce standards in healthcare industries are often not enforced due to weak implementation of the regulatory provisions regarding OSH in hospitals. Moreover, there are enormous problems like hazards, accidents, and complaints relating to OSH conditions in hospitals countrywide (ILO, 2015). For this reason, receiving a complete and comprehensive representation of OSH in Bangladesh is not easy. Additionally, weaknesses in health department HR and OSH regulators have contributed to the failure to attain better management of OSH risk by public hospitals. Moreover, hospitals' HR and OSH departments do not comprehensively understand sector-wide OSH risks or emerging trends in public hospitals (ILO, 2015). HR in the hospital is unable to demonstrate how the project activity reduces OSH risk in public hospitals. Collaboration between the hospital management and HR department is so poor that opportunities are regularly missed to reduce sector-wide OSH risk. Even though it's crucial for employers and employees to avoid injuries and save money, many hospitals and clinics haven't yet adopted safety and health management systems that combine patient and worker safety.

2. Method

2.1 Population

The population of the study includes all the workers in the healthcare sector in Bangladesh. According to the HRH Data Sheet published by Bangladesh Medical & Dental Council (2019), at present, there are 76,867 registered doctors, 9,608 registered dentists, 54,603 registered nurses,12,744 laboratory technologists, 3,435 radiology & imagining technologists, 576 radiotherapy technologist, 2,376 physiotherapy technologist, 1,05,700 certified diploma pharmacist, 2,620 sanitary inspectors, 14,081 Medical assistants, 23,285 Domiciliary staff, 218 other Non-medical staff. According to this calculation, the total population size for this study was over 3,00,000.

2.2 Sampling Procedures

A survey was conducted using a nonprobability sampling technique for the investigation of the study. More specifically, a convenience sampling technique was used for this specific study (Zikmund et al., 2013).

2.2.1 Sample Size, Power, and Precision

As the total population size for this study was over 1,00,000 with an unknown degree of variability, the formula given by Cochran (1977) is used to calculate the sample size manually.

The formula is- $n = \frac{z^2 \times p\,(1-p)}{e^2}$.

So, a sample size of 385 healthcare workers working in Govt. Hospitals in Khulna city were considered for this study. Data is collected using a nonprobability sampling technique; more specifically, a convenience sampling technique was used for this study. The medical workers of Public hospitals in Khulna, Bangladesh, were used as the primary source of data.

2.2.2 Measures and Covariates

The variables were constructed with 29 statements to investigate the impact of occupational hazards on healthcare workers' mental health. The questionnaire had three parts. To begin with, the demographic profile of respondents. Then included statements to measure the five different occupational hazards: physical hazard, biological hazard, chemical hazard, accidental hazard, and psycho-social hazard (International Labour Organization [ILO], 2015) and the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) to measure the mental health impact accurately. Finally, the part is comprised of statements to measure the impact on mental health, including the level of anxiety, stress, and depression in healthcare workers.

Table: Components of the variables

Variable Name	Variable Type	Measuring Items	Adopted and Modified from
Physical Hazard	Independent	4	International Hazard Datasheets On Occupations
Biological Hazard	Independent	4	

Chemical Hazard	Independent	4	(ILO, 2015)
Accidental Hazard	Independent	4	
Psycho-social Hazard	Independent	4	
Mental Health Issues (Anxiety, Depression & Stress)	Dependent	9	Hospital Anxiety and Depression Scale- HADS (Zigmond & Snaith, 1983)

2.2.3 Research Design

Cronbach's Alpha (α) was used to determine how reliable the questionnaire was, so reliability is measured through it. Here, the Alpha (α) coefficient for the 29 items is 0.906, which suggests relatively high internal consistency within the items (Zikmund et al., 2013). Descriptive, inferential analysis has been implemented on the data collected, with descriptive statistics being used to describe the general characteristics of the sample, variables, and indicators. Based on the collected data, inferential analysis has been used at the later stage to identify correlation and regression among the variables and indicators.

3. Results

3.1 Reliability Analysis

Table 1. Data Reliability

Sl.	*Concepts/ Variables*	*N of Items*	*Cronbach's Alpha (A)*
1	Biological Hazard	4	0.879
2	Physical Hazard	4	0.706
3	Chemical Hazard	4	0.661
4	Psycho-social Hazard	4	0.854
5	Accidental Hazard	4	0.732
6	Mental Health Issues	9	0.864
	Overall	29	0.906

Source: Presented by Researchers Using SPSS v24 Outputs

The higher the value of Cronbach's Alpha, the better the reliability of what the instrument intends to measure. The above table shows that Cronbach's alpha (α) value for all variables is higher than 0.65, indicating they are acceptable and have good statistics (Cronbach, 1951). Furthermore, the reliability value of the overall data set is .906, which according to Tavakol & Dennick (2011), is considered the best. So, it's clear that the data used in this study to measure the independent and dependent variables are accurate and reliable.

3.2 Demographic Characteristics of the Respondents

This segment shows the demographic factors (gender, age, education level, working experience, job nature, and occupation in healthcare).

Table 2. Demographic Profile of the Respondents

Variables	Category	Frequency (N)	Percent (%)
Gender	Male	232	60.30
	Female	153	39.70
Age	21-30	103	26.80
	31-40	187	48.60
	41-50	76	19.70
	Above 50	19	4.90
Education Level	None	106	27.50
	SSC	45	11.70
	HSC	56	14.50
	Diploma	114	29.60
	Honors / Graduate/ MBBS	95	24.70
	Masters	14	3.60
	MPhil/ PhD	42	10.90
Working Experience	0-5	106	27.50
	6-10	168	43.60
	11-15	55	14.30
	Above 15	56	14.50
Job Nature	Full Time	385	100.00
	Part-Time	0	0.00
Occupation in healthcare	Doctor	104	27.00
	Registered Nurse (or Equivalent)	71	18.40
	Radiologist/ X-Ray Technician	33	8.60
	Physical Therapist	12	3.10
	Pharmacist	35	9.10
	Laboratory Personnel	31	8.10
	Admission/ Reception Clerk	30	7.80
	Ward-boy/ Patient Transporter	32	8.30
	Catering Staff	7	1.80
	Cleaner	30	7.80
Total		385	100.00

Source: Presented by Researchers Using SPSS v24 Outputs.

From the above table, it can be observed that 63.30% of the respondents who participated in the study were males, while 39.70% were female. According to the age profile, 26.80% of the respondents were between the age of 21-30, 48.60% were in the age category of 31-40 years, 19.70% were in the age category of 41-50 years, and only 4.90% were in the age category of above 50. Furthermore, 27.50% of the respondents had no educational background, 11.70% of respondents passed SSC, 14.50% of respondents passed HSC, 29.60% of respondents had a diploma degree, 24.70% of respondents had honors/graduate/MBBS degree, only 3.60% of respondents had a master's degree, and finally only 10.90% of the respondents had an MPhil/Ph.D. degree. Again, 27.50% of respondents had working experience of 0-5 years, a significant portion of the respondents (43.60) had working experience of 6-10 years, and

14.30% of the respondents had working experience of 11-15 years. The rest of the respondents (14.50%) had working experience of more than 15 years. Moreover, 100% of the respondents hold full-time jobs in Public hospitals. Finally, about 27% of the respondents are doctors, 18.40% of the respondents are registered nurses (or equivalent), 9.10% are pharmacists, 8.10% are laboratory personnel, 8.60% are radiologists/x-ray technicians, 7.80% are admission/reception clerks, 8.30% ward-boy/patient transporter, 7.80 cleaner & rest (1.80%) are catering staff.

3.3 Univariate Analysis

Univariate analysis is the simplest form of statistical analysis, and it is descriptive (Denis, 2018). Univariate data included central tendency: mean, median, mode, and dispersion: range, variance, maximum, minimum, quartiles, standard deviation, etc.

3.3.1 Present Condition of Occupational Hazard

Table 3. Present Condition of Occupational Hazard

	Mean	Mode
Biological Hazard	3.96	4.5
Physical Hazard	2.67	2.75
Chemical Hazard	3.77	4
Psycho-social Hazard	2.79	2.5
Accidental Hazard	2.46	2.5
Occupational Hazard	3.13	3.3

Source: Presented by Researchers Using SPSS v24 Outputs.

Here, the mean value represents the average response of the respondents. Here, the mean value of Biological and Chemical hazards are 3.96 and 3.77, indicating a moderately high level of Biological and Chemical hazards. Additionally, the mean value of Occupational Hazard is 3.13, indicating a moderate level of Occupational Hazard. The rest indicate a moderately low level of Physical, Psycho-social, and Accidental hazards. Here, the mode value represents the most common response from the respondents. According to the above table, the mode value of Biological and Chemical Hazards are respectively 4.5 and 4.0, which specifies that presently most healthcare workers are susceptible to a high level of Biological and Chemical Hazards. Here, the mode value of total Occupational Hazard is 3.3, suggesting that according to most respondents, healthcare workers are currently exposed to a moderate level of occupational hazard. Lastly, the mode value of Physical, Psycho-social, and Accidental hazards indicates a moderately low level of hazards.

3.3.2 Present Condition of Mental Health

Table 4. Present Condition of Occupational Hazard

	Category	Mental Health Issues
Gender	Male	3.29
	Female	3.74

Occupation in healthcare	Doctor	3.83
	Registered Nurse (or Equivalent)	4.02
	Radiologist/ X-Ray Technician	2.61
	Physical Therapist	2.58
	Pharmacist	3.23
	Laboratory Personnel	2.98
	Admission/ Reception Clerk	3.46
	Ward-boy/ Patient Transporter	3.33
	Catering Staff	1.06
	Cleaner	3.73
Total		3.47

Source: Presented by Researchers Using SPSS v24 Outputs.

Here, the mean value represents the average response of the respondents. For male respondents, the mean value of mental health issues (i.e., anxiety, depression, and stress level) for male respondents is 3.29, which is within the moderate level. Similarly, for female respondents, the mean value of mental health issues is 3.74, which specifies the presence of moderately high mental health issues, which specifically indicates the level of anxiety, depression, and stress, among female respondents. In the case of total respondents, the mean value of mental health issues is 3.47, which again falls under the moderate level (mean value <3.50= moderate). In case of doctors and cleaners, the presence of mental health issues (i.e., anxiety, depression and stress) are moderately high as the mean values are respectively 3.83 and 3.73. Moreover, a high level of mental health issues is present among registered nurses (or equivalent), with a mean value of 4.02. However, mental health issues are the lowest among catering staff, as the mean value is 1.06. Finally, the mean value of mental health issues for other designations ranges from 2.50 to 3.50, which indicates a moderate level of mental health issues, which specifically indicates the level of anxiety, depression, and stress level, which are present among people across different designations in the healthcare sector.

3.4 Correlation Analysis

The absolute value of the correlation coefficient expresses the strength of the relationship. The larger the number, the stronger the relationship between variables.

Table 5. Correlations

Correlations								
		Biological Hazard	Physical Hazard	Chemical Hazard	Psycho-social Hazard	Accidental Hazard	Occupational Hazard	Mental Health Issues
Biological Hazard	Pearson Correlation	1						
	Sig. (2-tailed)							
Physical Haza-	Pearson Correlation	.299**	1					

	Sig. (2-tailed)	.000	.000					
Chemical Hazard	Pearson Correlation	.825**	.236**	1				
	Sig. (2-tailed)	.000	.000	.000				
Psycho-social Hazard	Pearson Correlation	.397**	.159**	.309**	1			
	Sig. (2-tailed)	.000	.002	.000	.000			
Accidental Hazard	Pearson Correlation	.283**	.669**	.234**	.255**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
Occupational Hazard	Pearson Correlation	.832**	.613**	.757**	.644**	.651**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
Mental Health Issues	Pearson Correlation	.673**	.246**	.704**	.503**	.205**	.687**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Presented by Researchers Using SPSS v24 Outputs.

In these results, the correlation between Biological hazard and Mental health is .673, indicating a strong positive relationship between the variables. The P-value of the correlation between Biological Hazard and Mental health is significant at 0.000; this is less than .001, which indicates that the correlation coefficient is statistically significant.

In these results, the correlation between Physical hazards and Mental health is .246, indicating a weak positive relationship between the variables. The P-value of the correlation between Physical Hazard and Mental health is significant at 0.000; this is less than .001, which indicates that the correlation coefficient is statistically significant.

In these results, the correlation between Chemical Hazards and Mental health is .704, indicating a strong positive relationship between the variables. The P-value of the correlation between Chemical Hazard and Mental health is significant at 0.000; this is less than .001, which indicates that the correlation coefficient is statistically significant.

In these results, the correlation between Psycho-social Hazard and Mental health is .503, indicating a moderate positive relationship between the variables. The P-value of the correlation between Psycho-social Hazard and Mental health is significant at 0.000; this is less than .001, which indicates that the correlation coefficient is statistically significant.

In these results, the correlation between Accidental Hazard and Mental health is .205, indicating a weak positive relationship between the variables. The P-value of the correlation between Accidental Hazard and Mental health is significant at 0.000; this is less than .001,

which indicates that the correlation coefficient is statistically significant.

In these results, the correlation between Occupational Hazard and Mental health is .687, indicating a strong positive relationship between the variables. The P-value of the correlation between Accidental Hazard and Mental health is significant at 0.000; this is less than .001, indicating that the correlation coefficient is statistically significant.

3.5 Regression Analysis

Table 6. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775[a]	.600	.595	.42579

a. Predictors: (Constant), Accidental Hazard, Chemical Hazard, Psycho-social Hazard, Physical Hazard, Biological Hazard

Source: Presented by Researchers Using SPSS v24 Outputs.

In the table, the value of R is 0.775, which indicates a strong positive correlation between dependent and independent variables. Here, the value of R^2 is 0.600, which measures how much variability of the dependent variable (Mental Health Issues) is accounted for by the independent variables (Accidental Hazard, Chemical Hazard, Psycho-social Hazard, Physical Hazard, and Biological Hazard). Adjusted R square gives a better idea of how well the model fits. In the table above, an adjusted R square of 0.595 shows that independent variables can explain 59.5 % of the impact on mental health issues like anxiety, depression, and stress level. (Accidental Hazard, Chemical Hazard, Psycho-social Hazard, Physical Hazard, and Biological Hazard).

3.6 ANOVA

Table 7. ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.154	5	20.631	113.797	.000[b]
	Residual	68.711	379	.181		
	Total	171.866	384			

a. Dependent Variable: Mental Health Issues (Anxiety, Depression, and Stress level)
b. Predictors: (Constant), Accidental Hazard, Chemical Hazard, Psycho-social Hazard, Physical Hazard, Biological Hazard

Source: Presented by Researchers Using SPSS v24 Outputs.

The significance value in the above table shows the goodness of the model. The significance value is .000 ($p < 0.05$), indicating that the model used in this study fits with the data because the lower the significance value, the better the model fit.

Table 8. Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		(p-value)
1	(Constant)	.334	.161		2.081	.038
	Biological Hazard	.107	.044	.148	2.447	.015
	Physical Hazard	.123	.052	.104	2.339	.020
	Chemical Hazard	.516	.061	.488	8.484	.000
	Psycho-social Hazard	.243	.029	.302	8.389	.000
	Accidental Hazard	-.098	.045	-.098	-2.184	.030

a. Dependent Variable: Mental Health Issues (Anxiety, Depression, and Stress level)

Source: Presented by Researchers Using SPSS v24 Outputs.

Here, the p-value of the above model is 0.038, which is lower than 0.05, indicating that the model is significant at a 5% margin of error. Subsequently, the p-value for the rest of the specific independent variables are 0.015, 0.020, 0.000, 0.000, and 0.030, all of which are below 0.05, which indicates that the relationship between the dependent (Mental Health Issues) and independent variables (Biological Hazard, Physical Hazard, Chemical Hazard, Psycho-social Hazard, Accidental Hazard) are statistically significant.

In case of Biological Hazard, the beta value is 0.148, and the p-value is 0.015<0.05, which indicates a positive and significant relationship between Biological Hazard (independent variable) and Mental Health Issues (dependent variable). The value of t statistics is above +2, which is 2.447, indicating that the difference between the effects of Biological Hazard and the constant is statistically significant. According to the result, the first hypothesis (H1) is accepted. It means a significant positive association exists between Biological hazards and Mental Health Issues (Anxiety, Depression, and Stress level).

Again, in the case of Physical Hazard, the beta value is 0.104, and the p-value is 0.020<0.05, indicating a positive and significant relationship between Physical Hazard (independent variable) and Mental Health Issues (dependent variable). The value of t statistics is greater than +2, which is 2.447. This means that the relative effect of Physical Hazard and constant is statistically significant. So, the second hypothesis (H2) is accepted. The result indicates that Physical Hazard has a significant positive impact on healthcare workers' Mental Health issues (Anxiety, Depression, and Stress level).

For Chemical hazards, the beta value is 0.488, and the p-value is 0.000<0.05, which shows a positive and significant relationship between Chemical hazards (independent variable) and Mental Health Issues (dependent variable). The value of t statistics is also above +2, which is 8.484. This shows that the relative effect of Chemical Hazard and constant is meant to be statistically significant. So, the third hypothesis (H3) is accepted. The result implies a significant positive impact of Chemical hazards on healthcare workers' Mental Health issues (Anxiety, Depression, and Stress level).

Furthermore, for Psycho-social Hazard, the beta value is 0.302, and the p-value is 0.000<0.05, specifying a positive and significant relationship between Psycho-social Hazard (independent variable) and Mental Health (dependent variable). The value of t statistics is greater than +2, which is 8.389. This means that the relationship between Psycho-social Hazard and constant is statistically significant. As per this result, the fourth hypothesis (H4) is accepted. Therefore,

the presented result infers a statistically significant impact of Psycho-social Hazards on healthcare workers' Mental Health issues (Anxiety, Depression, and Stress level).

Finally, in the case of Accidental Hazard, the beta value is -0.098, and the p-value is 0.030<0.05, indicating a negative and significant relationship between Accidental Hazard (independent variable) and Mental Health (dependent variable). The value of t statistics is less than -2, which is written as -2.184. Here, the result is contradictory to the fifth hypothesis. So, the fifth hypothesis (H5) is rejected. Therefore, according to the results, Accidental Hazard does not significantly impact healthcare workers' Mental Health issues.

4. Discussion

With the aim of investigating the relationship between Occupational Hazards on Healthcare Professionals' Mental (psychological) Health, we found that expect accidental hazards, all other types of hazards, i.e., biological, physical, chemical, and psycho-social hazards, have a significant positive degree of impact on healthcare workers' mental health issues. This may be because, fundamentally, everyone involved in healthcare is exposed to unique and infectious environments and stressful and long working hours. Also, they need to work in close contact with hazardous materials, which is not only nerve-wracking but also can be the basis of significant harm to the mental health and welfare of the workers. For instance, in public hospitals, chemical hazards are high as workers have to work in an environment where they are constantly exposed to carcinogenic, mutagenic, or teratogenic agents, such as disinfectants and sterilants, hazardous drugs, latex, anesthetic agents, etc. These types of possible chemical exposures can cause severe and irreversible health damages such as Latex allergy (dermatitis, asthma), cancer, and reproductive issues, which in turn causes anxiety and stress, and takes a toll on the workers' mental health. However, as the research is confined to Khulna Region, the findings of this study might not be generalizable across different levels of healthcare professionals in Bangladesh since situations might be worse elsewhere, and some information, especially self-reported mental health, may carry respondents' bias.

Every person in the country uses the services of the healthcare sector, which is why occupational hazards and their impact on workers' mental health can directly affect the workers, their families, and their customers- in short, the whole nation. This paper will provide direction and guidance for HR managers, professionals, and administrative staff of various public and private hospitals, as well as the Government, to better understand the presence of occupational hazards in the healthcare sector, factors or causes of such hazards, and the mental toll that occupational hazards can have on the workers, which will enable them to develop mitigating strategies, training programs, and initiatives focusing on intensive awareness regarding work-related anxiety, depression, and stress. The Human Resource/Administration department of the Government and the Ministry of Health and Family Welfare can use this research to understand occupational hazards in the healthcare sector, which can help develop effective occupational safety and health policies, establish proper monitoring and audit system for the healthcare sector, raise awareness among workers and protect their rights to a safe and decent workplace.

HR professionals and compliance managers from different industries can use this research in

the context of their industry and for further fact-finding and qualitative research. Future researchers can extend the same study nationwide with a large sample size or focus on the magnitude and root causes of occupational hazards that exist among workers working with single-specialty hospitals, private hospitals, and diagnostic centers and the mental impact it has on the workers, their families and the customers receiving their services.

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