

# **Occupational Health Hazards among Ceramic Workers in a Selected Ceramic Factory in Bangladesh**



By

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*This thesis is submitted in total fulfilment of the requirements for the subject RESEARCH 2 & 3 and partial fulfilment of the requirements for the degree of*

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## Statement of Authorship

This is to certify that the thesis work entitled "Occupational Health Hazards among ceramic workers in a selected factory in Bangladesh" has been carried out by Shamima Akter Nizum in the Department of B.Sc. in Occupational Therapy, 4<sup>th</sup> year student. Bangladesh Health Professions Institute, Savar Dhaka, Bangladesh. The above thesis work has not been submitted anywhere for the award of any degree. The ethical issue of this study has been strictly considered and protected. The research supervisor will be quite concerned if the findings of this project are disseminated for future publication, and it will be properly acknowledged as an undergraduate thesis.

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## **Dedication**

**Dedicated to my beloved parents & honorable teacher.**

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## List of Abbreviations

**BHPI-** Bangladesh Health Professions Institute

**CRP-** Centre for the Rehabilitation of the Paralyzed

**ILO-** International Labor Organization

**IRB-** Institutional Review Board

**LBP-** Low Back Pain

**LBPDI-** Low Back Pain Disability Index

**MSDs-** Musculoskeletal Disorders

**OSH-** Occupational Health and Safety

**PPE-** Personal Protective Equipment

**QC & QA-**Quality Control & Quality Assurance

**SCL-** Shinepukur Ceramics Limited

**SPSS-** Statistical Package for the Social Sciences

**WMSDs-** Work Related Musculoskeletal Disorders

## Abstract

**Background:** Occupational health is crucial for ensuring the well-being of workers, and the ceramics industry poses different occupational health hazards due to its unique processes. This study focuses on understanding the occupational health hazards among the ceramic worker in selected ceramics factory in Bangladesh.

**Aim:** To know the occupational health hazards among the ceramic worker in selected ceramics factory in Bangladesh.

**Methods:** A cross-sectional quantitative study was conducted from May 2023 to February 2024, involving 197 participants selected through purposive sampling from different section of Shinepukur ceramic industry ltd, Gazipur, Dhaka, Bangladesh. Both male and female workers who work in ceramic factory are included. Data were collected through face-to-face survey, using a self-developed structured questionnaire Occupational Health Hazards Questionnaire.

**Results:** The study revealed occupational health hazards among ceramic workers. Most participants were female, 73.6% and male, 26.4% and mean age of 31.54 years. Ergonomic hazards were the most reported (62.4%), followed by physical (22.8%), chemical (11.2%), biological (6.1%), and psychological (4.1%) hazards. Health problems were reported: respiratory issues 3.0%, physical health problems 24.9%, and musculoskeletal problems 24.4%. The total percentage exceeds 100.0%, suggesting potential overlap in responses or multiple facilities present in some cases. 78.6 % report have knowledge about health hazards. Awareness and Safety Practices with 59.9% used PPE, 48.2% of respondents using facemasks and 19.3% using gloves.

**Conclusion:** The workers reported they are exposed to various risks including ergonomic, physical, biological, chemical, and psychological hazards, with ergonomic

hazards being the most reported. Compared to other research, the prevalence of health problems among these workers is lower. To improve the situation, there is a need for stricter safety measures, comprehensive training, and increased awareness about health hazards.

**Keywords:** Occupational Health, Ceramics Industry, Hazards, Safety Practices, Awareness, Musculoskeletal Disorders

## CHAPTER I: INTRODUCTION

### 1.1 Background

Occupational health is an area of public health that maintains and promotes the highest degree of mental, physical, and social well-being of workers in all occupations (World Health Organization: WHO, 2019).

Health and safety are about preventing people from being harmed at work, by taking the right precautions and by providing a satisfactory working environment (Margareth, 2017)

Occupational health should be a high priority on the international agenda. Although many countries have improved working conditions to high standards, the majority of the world's workers still need to meet the minimum standards and the International Labor Organization (ILO) and the World Health Organization (WHO) set guidelines.

Health hazards encompass substances that pose risks to human health, such as carcinogens, toxins, reproductive toxins, irritants, corrosives, sensitizers, and agents that affect various bodily systems such as the liver, kidneys, nervous system, and respiratory system, as well as those that cause harm to the skin, eyes, or mucous membranes. A physical hazard refers to a chemical substance that has been scientifically proven to possess characteristics such as being combustible, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive. (Hazard Communication - Guidance for Hazard Determination | Occupational Safety and Health Administration, n.d.-b).

Several types of hazards such as physical hazards, chemical hazards, biological hazards, mechanical and ergonomic hazards, and psychological hazards are common in workers (Smedley et al., 2014).

Occupational health refers to the multidisciplinary field focused on promoting and maintaining the well-being of workers in their work environments. It encompasses the physical, mental, and social aspects of health related to work and involves the prevention of work-related illnesses and injuries (Rosenstock, 2006)

Occupational health hazards are risks and dangers present in the workplace that have the potential to harm the health and safety of workers. These hazards can arise from various sources, such as chemical, biological, physical, and psychosocial factors. Examples of occupational health hazards include exposure to harmful chemicals, unsafe working conditions, ergonomic issues, and psychological stress. Identifying and mitigating these hazards are essential components of ensuring a safe and healthy working environment for employees (Rosenstock, 2006)

Occupational hazards are inherent risks to workers' well-being arising from their employment. Unsafe work conditions and behaviors contribute to the emergence of these health risks. Adequate utilization of occupational safety and health services can prevent workplace injuries and hazards (Jain et al., 2018).

Workplace health risks exist in various forms, including chemical, physical, biological, psychological factors, and the neglect of ergonomic principles. Due to the numerous hazards in workplaces and insufficient attention to health and safety by some employers, work-related accidents and diseases persist as significant global concerns (Moursy & Asharaf, 2017), (Fathy Mahmood et al., 2021).

Ceramics factories are establishments dedicated to crafting artifacts using clay and alloying elements, like gravel, to create a malleable and easily shaped mixture when wet. Following the drying process to eliminate moisture, the molded parts undergo exposure to temperatures of 1,000 °C, providing both rigidity and mass durability. Additionally, varnish impregnation on the outer surface may be applied in certain situations (Occupational Safety and Health Administration (OSHA), 2019). Occupational health concerns in Ceramic Factories encompass various issues such as cuts, accidents, musculoskeletal diseases, respiratory problems, hearing loss, circulatory issues, stress-related disorders, vision problems, and illnesses caused by inhaling, touching, or ingesting hazardous substances. Workers endeavor to maintain their well-being by staying physically fit, managing stress, arranging their workspaces correctly, and utilizing appropriate equipment (Smits et al., 2018), (Fathy Mahmood et al., 2021).

Shinepukur Ceramics Limited (SCL) stands at the forefront of the ceramics industry, distinguished for its commitment to crafting high-quality porcelain and bone China tableware. Established in 1997 and commencing commercial production in 1999, SCL has emerged as a leading force in the Ceramics Tableware Industry in Bangladesh. With a clear mission to contribute to the commonwealth of society and a vision to be one of the premier global manufacturers in its field, SCL has consistently upheld the highest standards in its manufacturing, marketing, and exporting endeavors. The company's expansive reach extends to various international markets, including the USA, Canada, UK, Germany, France, Italy, Japan, and more. SCL, a proud member of the esteemed BEXIMCO Group, boasts state-of-the-art manufacturing facilities for both bone China and porcelain, showcasing meticulous craftsmanship and adherence to environmentally

sustainable practices. Certified with ISO 9001:2015, SCL aligns with SEDEX and SMETA standards, emphasizing ethical and responsible business practices. The company has earned numerous accolades, including the National Export Trophy, 'Superbrands' recognition in 2010, and the 'Dun & Bradstreet Corporate Award' in 2011. SCL's commitment to environmental initiatives underscores its dedication to creating a greener planet, employing eco-friendly practices, and optimizing energy consumption (Bol, n.d.)

In the economic context, ceramics play a vital role in Bangladesh, contributing significantly to the country's industrial landscape and export sector. Bangladesh has witnessed a burgeoning ceramics industry, with a focus on the production of high-quality porcelain and bone China tableware.



## **1.2. Justification of the study**

In Bangladesh ceramics industrial plants were established in late 1950s. And it is one of the exports oriented and fast-growing sectors in Bangladesh. In 2015, Bangladesh has 54 ceramics industrial units and about five lakh people are working in the ceramics industry. The industry mainly produced table ware sanitary ware and tiles. Investigating occupational hazards in ceramic factories is essential to ensure the wellbeing of the employees. Workers in such environments may be exposed to various risks and understanding these can lead to improved safety measures. Bangladesh is a country with a growing ceramics industry and the health safety of workers in this sector are importance. Workers in the industry may be exposed to various occupational hazards, including chemical exposure, physical injuries, ergonomic issues, and heat stress. By identifying and addressing health hazards in the ceramic factory, this research can contribute to improving the overall occupational health safety and working conditions within the ceramic manufacturing industry in Bangladesh. Participants will benefit as they will get more concerned about their health and safety. Finding from this research can be used to develop guidelines and recommendations for safer working conditions in ceramic factories, ultimately reducing the risk of accidents and injuries.

### **1.3 Operational Definition**

#### **Occupational Health Hazards:**

Occupational health hazards are risks and dangers present in the workplace that have the potential to harm the health and safety of workers. These hazards can arise from various sources, including chemical, biological, physical, and psychosocial factors. Examples of occupational health hazards encompass instances of being subjected to harmful chemicals, unsafe working conditions, ergonomic issues, and psychological stress. Identifying and mitigating these hazards are essential components of ensuring a safe and healthy working environment for employees (Rosenstock, 2006)

#### **Occupational Health and Safety:**

Occupational safety and health (OSH) or occupational health and safety (OHS), also known simply as occupational health or occupational safety, is a field which concerned the safety, health, and welfare of people at work (i.e. in an occupation), invariably touching on issues related to scientific areas such as medicine – including physiology and toxicology – ergonomics, physics and chemistry, as well as technology, economics, law and other areas specific to various industries and activities. Key elements include the promotion of safe and healthy working environments, continuous improvement, information dissemination, health promotion, and access to occupational health services. Additionally, education and training are essential for raising awareness and implementing safe practices. Responsibilities are delineated for workers, employers, and competent authorities, with policies requiring enforcement through inspection systems to ensure compliance (Ladou, 2003)

**Ceramics:**

Ceramic refers to material that is neither metallic nor organic that may be crystalline, glassy or both crystalline and glassy. Ceramics are typically hard and chemically non-reactive and can be shaped or compacted with heat. Ceramics are commonly associated with pottery and dishes: such as clay, bricks, tiles, glass, and cement. (*Department of Materials Science and Engineering*, n.d.). The ceramic manufacturing process consists of several key steps. Initially, the raw materials (clay, kaolin, quartz, and feldspar) are ground, mixed, and fused together to form a paste. This paste is then poured into molds to create the desired shapes. After molding, the pieces are dried in an oven. Next, any irregular edges are manually smoothed out using a small knife, and the pieces are submerged in a glaze bath for complete coverage. Following this, the pieces are fired at hot temperatures, resulting in durable, vibrantly colored pieces with a glassy surface. Subsequently, the pieces may be decorated through manual painting or the application of stickers. Finally, the finished pieces are carefully wrapped and packaged for distribution (Cristina et al., 2010). Following the drying process to eliminate moisture, the molded parts undergo exposure to temperatures of 1,000 °C, providing both rigidity and mass durability. Additionally, varnish impregnation on the outer surface may be applied in certain situations (Occupational Safety and Health Administration, 2019).

**1.4 Aim of the study**

To know the occupational health hazards among ceramic workers in selected ceramics factory in Bangladesh.

## CHAPTER II: LITERATURE REVIEW

In a 2015 qualitative study conducted in a ceramics factory Brazil, aimed to identify the awareness of occupational risks among twelve workers, primarily males, ranging in age from 18 to 65 years. Results indicated that workers demonstrated sufficient awareness of various occupational risks, such as falling objects and environmental factors, expressing concerns about potential health effects. Emphasizing the importance of personal protective equipment (PPE), the study highlighted the need for ongoing educational initiatives to enhance worker safety and well-being in the ceramics industry (Dantas de Sena Junior et al., 2016)

A descriptive quantitative study in 1989, US in "Postgraduate Medicine," highlights the health hazards associated with working with ceramics. It emphasizes the lack of awareness among ceramics artists and their physicians regarding the potential dangers posed by materials used in ceramics studios. The review discusses the risks of exposure to fibro genic clay compounds, lead poisoning from glazes, and the potential hazards of kiln emissions. It also recommends protective measures, including proper ventilation, personal protective clothing, and awareness of hazardous materials, to reduce health risks for ceramics artists (Fuortes, 2016).

A cross-sectional study published in Researcher in 2010, focusing on respiratory hazards among ceramics workers in Egypt. The study included 150 exposed ceramics workers and 80 controls, with mean ages of  $36.10 \pm 7.26$  and  $37.68 \pm 6.86$ , respectively. The aim was to assess health hazards, exposure-response relationships, and environmental risk factors such as silica and radon dusts. Results showed more respiratory symptoms among exposed workers, elevated levels of free silica and radon progeny, and declines in

ventilatory functions, suggesting implications for occupational health and recommending protective measures for workers (Aziz et al., 2010)

A cross-sectional study published in the *Journal of Occupational Health and Epidemiology in Iran*. The research aimed to evaluate manual material handling using the NIOSH lifting equation and assess low back pain (LBP) and LBP disability index (LBPDI) among workers in a tile and ceramic industrial unit. The study included 30 workers with a mean age of 35.5 years and found that the composite lifting index (CLI) exceeded 3, indicating significant physical stress, with 100% prevalence of LBP among workers; severe LBP intensity ( $68.8 \pm 17.8$ ); LBPDI mean reported as  $41.3 \pm 17.1$  (severe crippled) (Fasih Ramandi, 2018).

Majumder conducted a cross-sectional study published in the *American Journal of Industrial Medicine* in 2016, focusing on ceramic workers in India. The study involved 329 male workers with a mean age of 26.5 years and aimed to examine their work environment and assess associations between work hazards, work category, and self-reported symptoms. Results revealed a high prevalence of musculoskeletal discomfort, particularly lower extremity pain (45%), with load handlers and machine operators facing the highest levels of work hazards. Additionally, poor job autonomy, task clarity, hot workplace conditions, inappropriate workplace design, inadequate auxiliary support, and mental overload were significantly associated with self-reported symptoms (Majumder, 2016).

A study conducted by Guimarães and colleagues investigates the working conditions and prevalence of musculoskeletal pain among ceramic industry workers in Pedreira, São Paulo State, Brazil. Utilizing a descriptive observational approach with a quantitative research approach, the study involved 235 workers and employed

questionnaires and direct observation for data collection. Findings shows 38.5% prevalence of musculoskeletal pain, with factors such as repetition, lack of control over decisions, and work dissatisfaction associated with pain (Cristina et al., 2010).

A cross-sectional descriptive study conducted in 2011, Bangladesh, aimed to assess respiratory symptoms among two hundred ceramic factory workers in Mirpur Ceramic Works Limited, Dhaka. With 45.5% prevalence of respiratory problems, including 27.0% chronic bronchitis and 20.0% bronchial asthma Workers not using PPE had a significantly higher prevalence of respiratory problems (78.0%) (Alim et al., 2015)

A study conducted in Egyptian exposed to environmental risk factors like silica and radon dust. They studied 150 exposed workers and eighty controls, conducting questionnaires, clinical exams, chest X-rays, ventilatory function tests, and environmental monitoring. Results showed higher respiratory symptoms among exposed workers, significant declines in lung function parameters, and elevated levels of silica and radon dust. Feldspar, a common raw material, exhibited the highest levels of radionuclides (Aziz et al., 2010).

According to Rajat Das Gupta and colleagues in 2015, highlights the significant health risks faced by garment workers in Bangladesh, a country heavily reliant on the garment industry for foreign currency. The study found that most workers were young and female, and they often experienced health problems, including accidents and occupational illnesses. Noise pollution was a notable concern, with a significant relation<sup>1</sup> found between noise pollution and headaches. The prevalence of occupational health hazards in the study was alarmingly high, emphasizing the urgent need for improved safety measures and health facilities in the garment industry to protect the well-being of these workers and support the

country's economic growth (Gupta et al., 2015).

A study conducted in Egypt. This study reported that 53.3% of them had allergic rhinitis and sinusitis and 74.7% of them had chronic cough as present medical history. In addition, 19.3% of them had good total knowledge scores related to occupational health hazards, 82.7% of studied workers had satisfactory practices regarding prevention of occupational health hazard. Ceramic factories expose workers to various health hazards, including biological, chemical, physical, ergonomic, and psychological factors. Previous research findings suggest that workers in this sector often suffer from respiratory diseases such as allergic rhinitis and sinusitis, as well as chronic cough and other health issues. Despite these risks, most ceramic workers have only average knowledge about occupational health hazards, emphasizing the need for targeted training programs and improved safety measures within the industry (Fathy Mahmoed et al., 2021).

A study on occupational health hazards in Dhaka's garment manufacturing sector in Bangladesh in 2015. In this study the prevalence of occupational health hazards was 88.28%. Among these hazards, noise pollution emerged as a significant concern, impacting the well-being of the workforce (Khan et al., 2016)

A study in Northern Saudi Arabia in 2021. The study found that workers commonly faced needle stick injuries (34.5%) and work-related stress (69.6%). Risk factors associated with these hazards include work setting, smoking status, and mean sleeping duration per day. For non-biological hazards, smoking status and mean sleeping duration per day were significant factors. A substantial number of participants were exposed to both biological (68.5%) and non-biological (87.7%) hazards (Thirunavukkarasu et al., 2021)

A study conducted in Uganda in 2015. In this study they reported that half of the healthcare workers reported experiencing occupational health hazards, with 39.5% experiencing biological hazards and 31.5% experiencing non-biological hazards. Those who worked in government health facilities were more likely to report occupational hazards (Ndejjo et al., 2015).

A study conducted in 2019, Sri Lanka published in BMC Research Notes. The study identified physical hazards in workplaces, including excessive noise, poor lighting, increased temperature, and poor ventilation (Arnold et al., 2019).

A study in Tamil Nadu, India in 2007. They reported that the workers face various health problems due to their labor-intensive tasks, with different sections of the manufacturing process having distinct issues. While workers exhibited a high level of knowledge regarding these health problems (PPE) (Parimalam et al., 2007).

A study conducted in Bangladesh of garment workers the study found that occupational stress had a significant positive influence on health risk. Major health problems reported included headache, weakness, body pain, eye trouble, fever, and cold and cough. Both male and female employees perceived their garment jobs as highly stressful and risky for their health. female employees reported even higher levels of stress and health (Yuan et al., 2022).

A study published in June 2020 in India. It involved eighty pottery workers, aimed to evaluate the physiological health and occupational health, revealing a high prevalence of musculoskeletal disorders in neck, shoulder, lower back, hip, and knee. And significant gender differences in discomfort ratings across various body segments (Arora et al., 2020).

A published in February 2019 in Indonesia. It involved forty-seven production



workers, to assess the risk level of crystalline silica exposure and predict the occurrence of health effects, specifically silicosis, among production workers in the ceramics industry. 42.6% of workers had an unsafe risk level, with a concentration of crystalline silica dust ranging from 0.0078 - 0.4466 mg/m<sup>3</sup>, emphasizing the need for effective risk management strategies to prevent potential health problems. The study also predicts an increasing risk level over the next 20 years (Sahri et al., 2019).

A study published in 2015 in Iran. To evaluate occupational postures and the prevalence of musculoskeletal disorders among porcelain industry workers. The prevalence MSDs among porcelain industry workers was evaluated and most frequent pain and disorder location in was the waist. Suggested that printing, carpentry, engineering, and material supplement units were the most dangerous, while the enamelling unit had the least risk and more educated workers had less pain and MSDs. The most affected body parts were the waist, hands and wrists, neck, shoulders, and elbows (Ahmadi et al., 2015).

A published in 2022, aimed to investigate WMSDs among manual porcelain workers in China. It surveyed 349 workers to determine the prevalence of WMSDs symptoms and identify associated factors. High prevalence of musculoskeletal discomfort, 69.1%, with the highest occurrence in the neck (49.3%), lower back (43.8%), and shoulders (27.5%). Factors such as sex, work experience, daily working hours, perceived work fatigue, and workstation were significantly associated with WMSDs symptoms in different body regions (Hong et al., 2022).

A case study published in Brazil, in October 2016, in Teresina, aimed to identify musculoskeletal risks using Couto's checklist through direct observations. The research

identified potential musculoskeletal risks for brick and tile catchers, due to physical effort, repeatability, and poor postures. (Moreira et al., 2016)

A study published in the *Politeknik & Kolej Komuniti Journal of Social Sciences and Humanities* in 2017, aimed to identify workers' perception of factors causing MSD and found that 81.2% of respondents reported experiencing MSD symptoms, with back pain being the most common (33.33%), 30.8% symptoms from lower back to leg, 15.4% pain from neck to leg, 12.8% symptoms from neck to lower back, and 7.7% leg pain (Melaka et al., 2017).

A descriptive-analytical cross-sectional study published in 2020, in Iran, aimed to investigate the relationship between stress, anxiety, fatigue, workload, morning-evening type, and occupational accidents among 205 workers. Results reported higher prevalence of anxiety among rotating-shift workers (80.9%) compared to day-shift workers (57.1%), and while 33% of day-shift workers reported accidents, only 10% of rotating-shift workers did. (Hosseini et al., 2019)

Applied research conducted by Arsenio et al., aimed at assessing work-related musculoskeletal disorders among twenty sorters at Mariwasa Siam Ceramics Incorporated in Batangas, Philippines. The research identified severe lower back pain as the predominant issue affecting worker absenteeism, highlighting the importance of addressing lumbar strain through ergonomic interventions (Arsenio et al., 2020).

**Key gaps of literature**

There is not sufficient literature that address health hazards related to specific job roles within the ceramics industry there might be a lack of detailed studies on health impacts of workers involved in forming, glazing, firing and other sections of ceramics industry. There is lack of depth analysis of psychological hazards, ergonomics hazards, chemical hazards, and physical hazards issues specific to the ceramics industry in Bangladesh. There may be not adequately explored the effectiveness of training programs on health and safety awareness, knowledge of hazards. Understanding the specific occupational risks and health concerns of workers in the ceramics industry in Bangladesh, particularly with limited research within this context.

## CHAPTER III: METHODS

### 3.1 Study Question, Aim, Objectives

#### 3.1.1 Study question

What are the occupational health hazards among ceramic workers in selected ceramics in Bangladesh?

#### 3.1.2 Aim

To know the occupational health hazards among ceramics workers in selected ceramics factory in Bangladesh.

#### 3.1.3 Objective

- To find out the Occupational Health and Safety status of ceramic workers.
- To identify the common occupational health hazards faced by workers in the ceramic factory.
- To identify the level of awareness among the workers regarding occupational health hazards.
- To find out hazards impact on workers well-being and conditions.

### **3.2 Study Design**

Quantitative study design with cross-sectional survey study was used. It was a systematic and organized effort to investigate a specific problem, aiming to provide a solution by employing rigorous, deductive, and objective approaches. It involved the systematic collection and analysis of numerical data, such as frequencies and percentages, using statistical methods. The researcher utilized structured methodologies, including self-development structure questionnaires, to gather quantifiable information on various aspects, such as occupational health hazards, factory facilities, personal protective equipment (PPE) usage, and safety awareness among ceramic workers. The research methodology emphasized objectivity, reproducibility, and the use of mathematical models for data analysis, ultimately seeking to quantify relationships among variables and generalize findings to a larger population, that's why the researcher chooses this study design (Mohajan, 2020)

A cross-sectional survey study was used to conduct this study because this design allows the researcher to collect data from a sample population at a single point in time to collect data on multiple diseases and risk factors simultaneously. It allows for the investigation of associations between risk factors and diseases within the sample population (Arnett & Claas, 2017).

### **3.3 Study Setting and Period**

#### **3.3.1. Study Setting**

The researcher collected data of ceramic workers of the Shinepukur ceramic industry ltd, Gazipur, Dhaka.

#### **3.3.2 Study Period**

The study was conducted from May 2023-February 2024

### **3.4 Study Participants**

#### **3.4.1 Population**

The target population of this study was all workers of Shinepukur ceramic industry ltd, Gazipur, Dhaka.

#### **3.4.2 Inclusion Criteria & Exclusion Criteria**

##### **Inclusion Criteria:**

- Both male and female workers,
- Workers those who work in ceramic factories.

##### **Exclusion Criteria:**

- Participants who do not work in ceramic factories,
- Participants with speech problems, and
- Workers with severe illness.

### 3.4.3 Sampling

Purposive sampling is a non-probability sampling technique. Purposive sampling was used because the researcher selected participants based on specific criteria predetermined by the research objectives. It involved selecting individuals or elements for inclusion in the study based on their relevance to the research objectives (Mohsin, 2021).

For calculating sample size, the investigator uses the Cochran formula. The population size is unknown.

$$\text{Sample size, } n = \frac{Z^2 pq}{d^2}$$

Here, n= sample size

Z= 1.96 (P value) standard deviated which correspondent to 95%

P= 0.5 (though the precise number of ceramic workers are unknown as well as prevalence of assumed 50%)

q= (1-p) =0.5

d= 0.5

$$\begin{aligned} \text{The sample size, } n &= \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.5)^2} \\ &= 384.16 \end{aligned}$$

The calculated sample size is 384. Following the calculation the researcher initially aimed at 384 samples. It was an educational study for the researcher, as part of professional academic research and there were some limitations to the research work, such as time limitations, cost limitations etc. So, the researcher collected 197 participants for this study.

### **3.5 Ethical Consideration**

#### **3.5.1 Informed Consent from IRB**

The researcher received approval from the Institutional Review Board of the Bangladesh Health Professions Institute through the Department of Occupational Therapy, Bangladesh Health Professions Institute (BHPI). The IRB number CRP/BHPI/IRB/10/2023/773. Permission from head of the department of the Occupational Therapy department, BHPI had been taken. And permission had also been taken from executive director and head of the Human Resource department of Shinepukur Ceramic Limited.

#### **3.5.2 Consent from the Participants**

The researcher explained the aim objective and purpose of the study to the participants through an information sheet and obtained Verbal, or written consent from the participants.

#### **3.5.3 Right of refusal to participate or withdraw.**

Participants had the freedom to choose whether to participate or withdraw from the study.

#### **3.5.4 Unequal relationship**

The researcher maintained an equal relationship with the participants.

#### **3.5.5 Risk and beneficence**

Participants faced no risks, and there were no beneficence outcomes from this research.

#### **3.5.6 Confidentiality**

The researcher was extremely concerned about the confidentiality of participant's information and researcher did not include personal information with questionnaire. The information was not disclosed to anyone except the supervisor which clearly explained in the information sheet.



### **3.6 Data Collection Process**

#### **3.6.1 Participant Recruitment**

Participants were recruited based on inclusion and exclusion criteria. Initial contact was made for an interview, and data collection occurred at a scheduled date and time with the participants, following the Executive Director's permission.

#### **3.6.2 Data collection method**

Data was collected by face-to-face survey using self-developed structured questionnaires and researcher took ethical permission letter from Institutional Review Board (IRB).

#### **3.6.3 Data collection instrument**

A self-developed structured questionnaire was used. Which made by the researcher from different article and a questionnaire, Health worker study instrument. The materials and tools for this study were a consent form, questionnaire, pencil, file, and pen.

A self-developed structured questionnaire consisted of the following six parts:

The first part: A) socio demographic questionnaire of ceramic workers which include 14 questions about (age, gender, residence, educational level, monthly income, marital status, smoking habits, working section, types of workers, working hours, overtime, working experience, health status and health checkup). The second part: B) Health hazards of workers in ceramic factory which included 30 questions. The third part: C) Factory Healthcare Facilities in ceramic factory which included 12 questions. The fourth part: D) Health problem of workers in ceramic factory which included: Present medical history of workers related to working in Ceramic Factories which included ergonomics problems, respiratory problems, and physical problems. The fifth part: E) It's consisted of worker's safety knowledge which is included three questions. The sixth part: F) safety practice of

workers in ceramics factory which included 11 questions (Fathy Mahmood et al., 2021, Ndejjo et al., 2015).

#### **3.6.4 Field Note**

The researcher translated the questionnaire into Bengali, the native language of Bangladesh, with the help of supervisor. The researcher visited the Ceramic Factory for 3 days for field test and obtain data collection permission before data collection. The researcher explained the purpose and importance of the study to the workers and obtained their consent. After the field test, some changes were fixed which help to maintain the quality of questionnaires.

#### **3.7 Data Management and Analysis**

After gathering data, subsequently, all the collected data were analyzed with the software named Statistical Package for Social Science (SPSS), version 20 and descriptive Statistics, multiple response and Chi-square test analysis were used to analyze the data.

#### **3.8 Quality Control and Quality Assurance**

All data collect with the concern of respective supervisor and followed all instructions. Questionnaires were pretested by pilot study. It was conducted to evaluate the participant's understanding the questionnaires and ensure that the using methods have been fit for the purpose. Researcher selected three participants for piloting. Questionnaire's quality assurance way was facing validity and content validity. The data was collected from the participants using Bangla version that translated in easy understandable language. Data was entry carefully and then researcher checked for accurate data.

## CHAPTER IV: RESULTS

This chapter represents the finding of the study. The chapter contains the study findings in tables and figures focusing the socio-demographic information, health hazards, Health problems, Level of awareness of workers of ceramics industry.

### 4.1. Socio demographic characteristics of study population

<b>Variable</b>	<b>Category</b>	<b>Frequency, n=197</b>	<b>Percentage</b>
<b>Age</b>	Age in years	Mean age $\pm$ SD =31.54 $\pm$ 9.576 years	
	18-31 years	98	49.7%
	32-44 years	78	39.6%
	45-57 years	21	10.7%
<b>Gender</b>	Male	52	26.4%
	Female	145	73.6%
<b>Residence</b>	Rural	103	52.3%
	Urban	53	26.9%
	Semi urban	41	20.8%
<b>Educational Level</b>	Illiterate	7	3.6%
	Signature	27	13.17%
	Primary	40	20.3%
	Secondary	117	59.4%
	University	6	3%
<b>Monthly income</b>	Income in taka	Mean age $\pm$ SD =8590.48 $\pm$ 1587.011 Taka	
	Under 8000	4	2%
	8000-8900	150	76.1%
	9000-9999	26	13.2%
	10000-10999	12	6.1%
	Above 11000	5	2.5%

<b>Variable</b>	<b>Category</b>	<b>Frequency, n=197</b>	<b>Percentage</b>
<b>Marital status</b>	Married	154	78.2%
	Unmarried	33	16.8%
	Widowed	8	4.1%
	Divorced	2	1%
<b>Smoking habit</b>	Smoker	14	7.1%
	Non-smoker	177	89.8%
	Previous smoker	6	3%
<b>Health status</b>	Very good	7	3.6%
	Good	111	56.3%
	Fair	73	37.1%
	Poor	6	3%
<b>Working section</b>	Body	8	4.1%
	Forming	22	11.2%
	Glaze	17	8.6%
	Decoration	29	14.7%
	Packaging	20	10.2%
	Firing	10	5.1%
	Casting	42	21.3%
	Selection	33	16.8%
	BK inspection	6	3%
	QC & QA	10	5.1%
	<b>Working Hours</b>	8 hours	197
<b>Work experience</b>		Mean $\pm$ SD= 6.66 $\pm$ 6.516 years	
	Less Than 1 Year	15	7.6%
	1-5 Years	96	48.7%
	6-10 Years	39	19.8%
	11-15 Years	24	12.2%
	16-20 Years	12	6.1%
	More than 20 Years	11	5.6%

Table 1 provides a comprehensive overview of sociodemographic and occupational characteristics of the study participants in the ceramics worker in selected ceramics industry among 197 participants. Regarding age distribution, the mean age of the participants is 31.54 years, the researcher found 100% of workers are adults. Workers range from 18 to 57 years. The majority were, almost fifty percent participants within the age categories of 18 years to 31 years 49.7 % (n=98) and 39.6% of workers are between 32 years to 44 years of age (n=78) and only 10.7% (n=21) are between 45 years to 57 years of age.

Gender distribution indicates a significant majority of female workers, comprising 73.6% (n=145) of the total 197 individuals, while male workers 26.4% (n=52).

Residential distribution indicates that more than half of the participants live in rural areas (52.3%, n=103), 26.9% (n=53) live in urban areas and 20.8% live in semi-urban areas (n=41).

The people who working in the ceramic factory maximum are educated only 7% of them illiterate. From collected data researcher find out 59.4% (n=117) are having completed secondary education, among the participants 20.3% (n=40) are primary educated, and 13.17% workers only can sign (n=27). A smaller percentage, only 3% (n=6) are higher educated people.

Workers work as a monthly payment basis. Monthly salary ranges from 7300 to 20000 taka, with the majority workers (76.1%) salary range between 8000-8900 taka (n=150).

Marital status shows that a substantial portion of the participants are married (78.2%), followed by unmarried (16.8%), widowed (4.1%), and only 1% divorced (n=2).

Regarding smoking habits, the majority are 89.8% non-smokers (n=177), while 7.1% are smokers and 3% are previous smokers.

Health status is predominantly reported as good 56.3% (n=111), followed by fair 37.1% (n=73), very good 3.6% (n=7), and poor 3% (n=6).

Among the 197 participants, 4.1% (n=8) of body section, 11.2% (n=22) are work in forming section, 8.6% (n=17) work in glaze section, 14.7% (n=29) work in decoration, 10.2% (n=20) work in packaging, 5.1% (n=10) firing section, 21.3% (n=42) work in casting section, 16.8% (n=33) work in selection section, 5.1% (n=10) work in BK inspection section and 3% (n=6) Workers of quality control and quality assurance section. Their daily working hours are 8 hours including 1 hour rest.

Work experience ranges from 5 months to 25 years, with the majority having 1 year to 5 years of work experience (48.7%) while 19.8% have 6 years to 10 years, and so forth. The mean work experience for all participants is 6.66 years, with a standard deviation of  $\pm 6.516$  years.

#### 4.2 Occupational health hazards faced by the study population.

Hazards	Response (Yes)		Response (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Ergonomic Hazards	123	62.4%	74	37.6%	197	100.0%
Physical Hazards	45	22.8%	152	77.2%	197	100.0%
Biological Hazards	12	6.1%	185	93.9%	197	100.0%
Chemical Hazards	22	11.2%	175	88.8%	197	100.0%
Psychological Hazards	8	4.1%	189	95.9%	197	100.0%

Table 2 shows the prevalence of various hazards faced by participants in the selected ceramics industry. Ergonomic hazards are the most reported, with 62.4% (n=123) respondents indicating exposure, while 37.6% (n=74) workers reported they are not faced with any ergonomic hazard. Physical hazards are also prevalent, albeit to a lesser extent, with 45 respondents acknowledging exposure (22.8%). Biological hazards are reported by 12 respondents (6.1%), while chemical hazards are noted by 22 respondents (11.2%). Psychological hazards have the lowest reported frequency, with only 8 respondents acknowledging exposure (4.1%). Conversely, a significant majority of respondents across all hazard categories reported no exposure, with percentages ranging from 77.2% for physical hazards to 95.9% for psychological hazards. These findings underscore the diverse range of risks present in the ceramics industry, highlighting the importance of addressing and mitigating these hazards to ensure the health and safety of workers.

#### 4.3. Ergonomic hazards faced by the study population.

Ergonomic Hazards	Responses (Yes)		Responses (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Chairs and table used in work are not at the correct height	7	3.6%	190	96.4%	197	100.0%
Frequent manual lifting.	16	8.1 %	181	91.9%	197	100.0 %
Prolong sitting or standing (static)	24	12.2%	173	87.8%	197	100.0 %
Inappropriate seats	5	2.5%	192	97.5%	197	100.0 %
Awkward working posture or movements for prolong.	19	9.6%	178	90.4%	197	100.0 %
Use of high-level force while transporting or supporting load	27	13.7%	170	86.3%	197	100.0 %
Task with repetitive movement	90	45.7%	107	54.3%	197	100.0 %
Expose to constant vibration for a long time	0	0%	197	100.0 %	197	100.0 %

Table 3 shows various ergonomic hazards experienced by workers in the ceramics industry. Among the hazards listed, "Chairs and table used in work are not at the correct height" is reported by 7 participants, accounting for 3.6% of the total, while the majority (96.4%) report no exposure to this hazard. "Frequent manual lifting" is acknowledged by 16 respondents (8.1%), with 181 respondents (91.9%) reporting no exposure. Similarly, "Prolong sitting or standing (static)" is reported by 24 respondents (12.2%), while 173 respondents (87.8%) report no exposure. Inappropriate seats provided reported only 5 participants (2.5%), with 192 respondents (97.5%) reporting no exposure. "Awkward



working posture or movements for prolonged periods" are noted by 19 respondents (9.6%), while 178 respondents (90.4%) report no exposure. "Use of high-level force while transporting or supporting load" was acknowledged by 27 respondents (13.7%), with 170 respondents (86.3%) reporting no exposure. The most prevalent ergonomic hazard reported is "Task with repetitive movement," with 90 respondents (45.7%) acknowledging exposure, while 107 respondents (54.3%) report no exposure. Notably, none of the participants report exposure to "Exposure to constant vibration for a long time."

#### 4.4 Distribution of respondents regarding physical environment of factory

Physical Hazards	Responses (Yes)		Responses (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
The workplace slippery floors	2	1.0%	195	99%	197	100.0 %
Sharp object present	0	0%	197	100.0 %	197	100.0 %
Electrical hazards	2	1.0%	195	99%	197	100.0 %
Dust present	35	17.8%	162	82.2%	197	100.0 %
Inadequate lighting	1	.5%	196	99.5%	197	100.0 %
Presence of noise	20	10.2%	177	89.8%	197	100.0 %
Haigh temperature	5	2.5%	192	97.5%	197	100.0 %
Ventilation system is not good	0	0%	197	100.0 %	197	100.0 %
Overcrowding	0	0%	197	100.0 %	197	100.0 %
Presence of awkward smell	0	0%	197	100.0 %	197	100.0 %

Table 4 shows responses regarding various physical hazards faced by workers in the ceramics industry. Only 1.0% of respondents reported slippery floors, blocked walkways, or cords running across the floor, suggesting a relatively low incidence of tripping, or slipping hazards. No participants reported exposure to sharp objects or inadequate lighting in their workplace, indicating favorable conditions in these aspects. However, 17.8% reported a dirty or dusty workplace environment, highlighting potential hygiene concerns. Similarly, 10.2 % reported the presence of noise pollution, which could pose risks to hearing health. Additionally, 2.5% of participants indicated that the temperature of their workplace was hot, potentially leading to discomfort or heat-related

illnesses. Most respondents, 97.5% and above, did not experience abnormal temperatures. No participants reported issues with the workplace ventilation system, overcrowding, or the presence of awkward smells.

#### 4.5 *Biological hazards faced by the workers.*

<b>Biological Hazards</b>	<b>Responses (Yes)</b>		<b>Responses (No)</b>		<b>Total</b>	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Clean drinking water available	197	100.0%	0	0%	197	100.0%
Separate toilet present	197	100.0%	0	0%	197	100.0%
Intake good quantity of food	185	93.9%	12	6.1%	197	100.0%

Table 5 presents responses regarding biological hazards faced by workers in the selected ceramics industry. All participants, representing 100.0%, reported that clean drinking water is available in their workplace, indicating a positive provision for basic hygiene. Similarly, all participants reported the presence of separate toilets, which is crucial for maintaining sanitation and preventing the spread of diseases. Regarding food intake, most respondents (93.9%) indicated that they consume a good quantity of food, while a smaller proportion (6.1%) reported otherwise.

#### 4.6 Chemical hazards faced by the workers.

Chemical Hazards	Responses (Yes)		Responses (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	percent
Workers are exposed to liquids solvent and paints	22	11.2%	175	88.8%	197	100.0 %
Employees exposed to various gases in the workplace	0	0%	197	100.0 %	197	100.0 %
Presence of flammable materials like gasoline, oxygen tanks, alcohol wipes, etc.	0	0%	197	100.0 %	197	100.0 %

Table 6 shows responses regarding chemical hazards encountered by workers in the ceramics industry. Among the 197 participants, 11.2% (n=22) reported exposure to liquids and paints in the workplace, indicating a potential risk of chemical exposure. However, none of the participants reported exposure to various gases or the presence of flammable materials like gasoline, oxygen tanks, or alcohol wipes in the workplace.

#### 4.7 Psychological hazards distribution of respondents

Psychological Hazards	Responses (Yes)		Responses (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Excessive workload	8	4.1%	189	95.9%	197	100%
Lack of communication opportunity and support from management or colleagues	0	0%	197	100.0%	197	100.0%
Experience of psychological and sexual harassment, third party violence	0	0%	197	100.0%	197	100.0%
Organizational change is weak, and you feel insecure for the job	0	0%	197	100.0%	197	100.0%
Lack/less of flexibility	0	0%	197	100.0%	197	100.0%

Table 7 presents data on psychological hazards in the workplace, indicating the frequency and percentage of responses for each hazard. Among the listed hazards, only 4.1% of respondents reported experiencing excessive workload, while the majority (95.9%) did not. No respondents reported experiencing lack of communication opportunity and support from management or colleagues, psychological and sexual harassment, third-party violence, weak organizational change leading to job insecurity, or lack/less flexibility in the job. Based on the responses provided, the prevalence of these psychological hazards in the workplace is extremely low or nonexistent.

#### 4.8 Distribution of respondents by health care facilities available in the factory

Factory facilities	Responses (Yes)		Responses (No)		Responses (N/A)	
	n	Percent	n	Percent	n	Percent
Primary treatment and free medication facilities are present.	197	100%	0	0%	0	0%
Doctor and nurses Are always present.	196	99.5%	0	0%	1	0.5%
Periodic health checkups take place in organization	159	80.7%	21	10.7%	17	8.6%
First aid kit is easy to reach by worker	196	99.5%	0	0%	1	0.5%
Employer provide worker safety training and education every year	164	83.2%	18	9.1%	15	7.6%
Employer have mandatory policies and regulations regarding the use of PPE's	108	54.8%	24	12.2%	65	33%
Provided training on the use fire extinguisher and emergency exit	164	83.2%	29	14.7	4	2%
Provided maternity leave	197	100.0%	0	0%	0	0%
Have health insurance	194	98.5%	1	0.5%	2	1%
Personal protector equipment provided	120	7.1%	22	11.2%	55	27.9%
Have facility	197	100.0%	0	0%	0	0%
Others						
Workers can take an additional two days off in a month	4	2%				
Canteen	5	2.5%	0	0%	179	90.9%
More flexibility	4	2%				
Extra stand fan is provided in summer season	5	2.5%				

Table 8 presents various aspects of factory facilities and the responses from workers. It indicates that all respondents (100%) confirm the availability of primary treatment and free medication facilities, as well as the presence of doctors and nurses always. The majority (80.7%) mention the occurrence of periodic health checkups, while

virtually all respondents (99.5%) report easy access to first aid kits. Furthermore, a huge portion (83.2%) acknowledges receiving annual worker safety training and education, and a similar percentage (83.2%) state that training on fire extinguisher use and emergency exits is provided. All respondents (100%) affirm the provision of maternity leave and the availability of health insurance, except for one respondent (0.5%). However, only 54.8% of respondents note the existence of mandatory policies and regulations regarding the use of personal protective equipment (PPE), and a relatively small percentage (7.1%) report the provision of PPEs. Additionally, various other facilities are mentioned, such as canteen services, flexibility in work arrangements, and the provision of additional amenities like stand fans during the summer season. Overall, the total percentage exceeds 100.0%, suggesting potential overlap in responses or multiple facilities present in some cases.

#### 4.9 Distribution of respondents by health problem

Health Problem	Cases					
	Yes		No		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Musculoskeletal problem	48	24.4%	149	75.6%	197	100.0%
Respiratory problem	6	3.0%	191	97.0%	197	100.0%
Physical problem	49	24.9%	148	75.1%	197	100.0%

Table 9 presents the number and percentage of cases for different health problems reported by participants. Workers in ceramics experience a range of health problems, with musculoskeletal issues being the most common, affecting 24.4% of workers surveyed. Respiratory problems are less prevalent at 3.0%, followed by physical problems at 24.9%.



#### 4.10 Musculoskeletal symptoms prevalence of different body parts among workers

Body parts	Responses (Yes)		Responses (No)		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Neck pain	0	0%	197	100%	197	100%
Upper back	3	1.5	194	98.5	197	100%
Lower back	17	8.6%	180	91.4%	197	100.0%
Shoulder	8	4.1%	189	95.9%	197	100.0%
Elbows	4	2%	193	98%	197	100.0%
Wrist/ hands	6	3%	191	97%	197	100.0%
Hips/ thigh	5	2.5%	192	97.5%	197	100.0%
Knees	12	6.1%	185	93.9%	197	100.0%
Ankles	12	6.1%	185	93.9%	197	100.0%

Table 10 shows the prevalence of musculoskeletal problems among respondents that none of the respondents reported experiencing neck pain, while a small percentage reported upper back pain (1.5%). However, a notable portion reported lower back pain (8.6%), shoulder pain (4.1%), elbow issues (2%), wrist/hand discomfort (3%), hip/thigh problems (2.5%), knee pain (6.1%), and ankle issues (6.1%). Conversely, most respondents reported not experiencing these musculoskeletal symptoms, with percentages ranging from 91.4% to 100%.

#### 4.11 Distribution of respondents by respiratory symptoms

Respiratory symptoms	Responses (Yes)		Responses (No)		Total	
	n	Percent	n	Percent	n	Percent
Cough	5	2.5%	192	97.5%	197	100.0%
Phlegm (sputum)	3	1.5%	194	98.5%	197	100.0%
Shortness of breath (dyspnoea)	0	0%	197	100.0%	197	100.0%
Wheeze	0	0%	197	100.0%	197	100.0%
Hemoptysis (blood in the sputum)	0	0%	197	100.0%	197	100.0%
Chest pain	0	0%	197	100.0%	197	100.0%

Table 11 indicates among the 197 respondents, 2.5% report coughing most days a week, while 1.5% mention bringing up phlegm most days a week. No respondents report experiencing shortness of breath, wheezing (especially worse in the morning), hemoptysis (blood in the sputum), or chest pain most days a week. In each case, the percentage of respondents reporting these symptoms is 0%. Overall, the table highlights a low prevalence of respiratory symptoms.

#### 4.12 Distribution of respondents by physical problem

Physical problem	Responses (Yes)		Responses (No)		
	n	Percent	n	Percent	
Hearing problem	3	1.5%	194	98.5%	
Skin infected disease	3	1.5%	194	98.5%	
Weakness	4	2%	193	98%	
Cut / injury/ fracture	3	1.5%	194	98.5%	
Headache	10	5.1%	187	94.9%	
Chemical burn	0	0%	197	100%	
Allergies	9	4.6%	188	95.4%	
Lung, kidney, Liver problem	0	0%	197	100%	
Jaundice	0	0%	197	100%	
Insomnia	0	0%	197	100%	
Tuberculosis	0	0%	197	100%	
Asthma	2	1%	195	99%	
Hypotension	12	6.1%	185	93.9%	
Hypertension	4	2%	193	98%	
Others	Eye strain	6	3.0%	190	96.4%
	Anal fissure	1	.5%		

The table provides the prevalence of various physical ailments. Hearing problems, skin infections, weakness, and cut/injury/fracture were reported by a small percentage of participants, ranging from 1.5% to 2%. Headaches were slightly more prevalent, reported by 5.1% of individuals. However, more severe issues like chemical burns and lung/kidney/liver problems were not reported by any participants. Interestingly, while asthma, hypotension, and hypertension were reported by a small percentage of individuals (ranging from 1% to 6.1%), a massive portion of the sample did not report any of these conditions. Additionally, eye strain and anal fissures were reported by 3.0% and 0.5% of participants, respectively.

#### 4.13 Hazards knowledge among workers

Knowledge	Responses (Yes)		Responses (No)	
	Frequency	Percent	Frequency	Percent
Health problems related to the working environment	58	29.4%	139	70.6%
Know how to use a fire extinguisher	58	29.4%	139	70.6%
Know about health hazards and effects to your health?				
		<b>Frequency</b>	<b>Percent</b>	
It does have effect		57	28.9%	
It doesn't have effect		98	49.7%	
I don't know		42	21.3%	

Table 14 presents responses regarding knowledge and awareness of health-related issues among the participants. About 29.4% of participants acknowledge the possibility of health problems associated with their working environment, while a similar percentage (29.4%) indicate they know the use of a fire extinguisher. Regarding understanding health hazards and their effects, 78.6 % report they have knowledge about health hazards. Among them 28.9% recognize the impact of these hazards on health, while 49.7% believe they do not have an effect. Interestingly, 21.3% of participants admitted to them do not know about health hazards and their consequences.

#### 4.14 Distribution of respondents regarding safety practices

Safety practices	Responses (Yes)		Responses (no)		Responses (N/A)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
PPE use	118	59.9%	79	40.1%		
Apron	19	9.6%	33	16.8%	145	73.6%
Eye goggles	3	1.5%	55	27.9%	139	70.6%
Facemask	95	48.2%	27	13.7%	75	38.1%
Gloves	38	19.3%	37	18.8%	122	61.9%
Head covers/Hair Covers/Bonnets	1	0.5%	20	10.2%	176	89.3%
Footwear	3	1.5%	18	9.1%	176	89.3%
Have devices that aid in lifting and transporting	29	14.7%	26	13.2%	142	72.1%
Cover mouth and nose with bent elbow or tissue when cough or sneeze	194	98.5%	3	1.5%		
Wash hands with soap and water and use paper towels to dry them	195	99.0%	2	1.0		
Avoid eating or drinking at the workplace	127	64.5%	60	30.5%	10	5.1%
Ear plug	7	3.6%	4	2.0%	186	94.4%

Table 14 provides information on safety practices in the workplace, detailing the frequency and percentage of responses for each safety measure. 59.9% of respondents

reported using Personal Protective Equipment (PPE), indicating a considerable adherence to safety protocols. Among specific PPE items, 9.6% of respondents reported using aprons, while 16.8% indicated they did not, and 73.6% stated it was not necessary. Only 1.5% of respondents reported using eye goggles, with 27.9% stating they did not use them, and 70.6% considering them unnecessary. Approximately 48.2% of respondents reported using facemasks, while 13.7% did not, and 38.1% deemed it not necessary. 19.3% of respondents used gloves, 18.8% did not, and 61.9% considered them unnecessary. A minimal percentage (0.5%) reported using head covers, with 10.2% not using them, and 89.3% considering them unnecessary. Only 1.5% of respondents used specific footwear, while 9.1% did not, and 89.3% deemed it unnecessary. Approximately 14.7% of respondents reported having such devices for lifting, 13.2% did not, and 72.1% considered them not necessary. The vast majority (98.5%) covered their mouth and nose when coughing or sneezing, with 1.5% not following this practice. 99.0% of respondents reported washing hands with soap and water and using paper towels to dry them, with only 1.0% not adhering to this practice. Approximately 64.5% avoided eating or drinking at the workplace, 30.5% eat and drink in the workplace, and 5.1% considered it not necessary to eat or drink in the workplace because there is a canteen. A small percentage (3.6%) reported using ear plugs, most of them are workers in BK inspection and body section, 2.0% did not use ear plugs to prevent sound, and 94.4% considered them it is not necessary to use earplug as there was no noise or sound present.

**4.15 Relationship among Headache with Physical Environment and Regular Health Checkup**

		Headache		P-Value
		Yes	No	
Noise pollution	Yes	2	18	.290
	No	8	169	
Regular health checkup	Yes	4	24	.017
	No	6	163	

The table shows among 197 participants, 10 participants said that they suffered from headache. Among those suffering from headaches, 2 of them reported noise pollution and 8 participants reported no present of noise pollution. Among those not suffering from headaches, 4 reported they checkup health regularly while 6 reported did not. Chi-square test for the relationship between headache, physical environment and regular health checkup produced p-value .290, .017 respectively. It means there was no association between noise pollution with headache but associated with regular health checkup.

#### 4.16. Association between Working Section and Musculoskeletal Symptoms

Musculoskeletal Symptoms		Working section											P-Value
		B o d y	F o r m i n g	Gl a z e	De c o r a t i o n	Pa c k a g i n g	Fi r i n g	C a s t i n g	Se l e c t i o n	BK i n s p e c t i o n	Q C & Q A	Tot al	
Low bac k pain	ye s	0	2	1	0	0	1	7	6	0	0	17	.11 1
	no	8	2 0	16	29	20	9	35	27	6	10	18 0	
Sho ulde r pain	ye s	2	1	1	0	0	0	3	1	0	0	8	.14 3
	no	6	2 1	16	29	20	10	39	32	6	10	18 9	
Wri st/ han ds	ye s	0	0	0	0	0	0	6	0	0	0	6	0.0 07
	no	8	2 2	17	29	20	10	36	33	6	10	19 1	
Kne es	ye s	0	3	0	2	0	1	2	4	0	0	12	.46 8
	no	8	1 9	17	27	20	9	40	29	6	10	18 5	
Ank les	ye s	0	7	0	0	2	0	0	3	0	0	12	.00 0
	no	8	1 5	17	29	18	10	42	30	6	10	18 5	

The table shows the chi-square test for the relationship between working section and musculoskeletal symptoms, it was found that the p-values for wrist/hand pain or discomfort and ankle pain/discomfort were 0.007 and 0.000, respectively, which were  $<0.05$ . This indicated an association between wrist pain and ankle pain with the working section. Furthermore, the p-values for low back pain, shoulder pain, and knee pain were 0.111, 0.143, and 0.468, respectively, which were  $>0.05$ .



#### 4.17 Association between Age and Musculoskeletal Symptoms

Musculoskeletal Symptoms		Age Group			Total	P-Value
		18-31	32-44	45-57		
Lower back pain	yes	2	13	2	17	0.003
	no	96	65	19	180	
Shoulder pain	yes	2	5	1	8	0.340
	no	96	73	20	189	
Wrist/ hands	yes	1	3	2	6	.105
	no	97	75	19	191	
Knees	yes	4	4	4	12	.030
	no	94	74	17	185	
Ankles	yes	4	7	1	12	.389
	no	94	71	20	185	

The table shows the chi-square test for the relationship between age and Musculoskeletal symptoms, it was observed that the p-values for low back pain or discomfort and knee pain/discomfort were 0.003 and 0.030, respectively, which were  $<0.05$ . This indicated an association between age and low back pain as well as knee pain. Additionally, the p-values for shoulder pain, wrist/hand pain, and ankle pain were 0.340, 0.105, and 0.389, respectively, which were  $>0.05$ .

## CHAPTER V: DISCUSSION

The aim of the study was to determine the occupational hazards, effect or health problem and safety practice of ceramic workers. Occupational health is important because work plays a vital role in people's lives. Most workers spend at least eight hours a day in the workplace. Occupational health hazard in ceramic factories is classified based on physical, chemical, biological psychological and ergonomic property. That may have acute effects; according to Hoke et al., 2018 Ceramic Factory is one of the most the most accidents industries.

Physical hazards were reported by 22.8 % of participants. However, 17.8% reported the presence of dust, 10.2 % reported the presence of noise pollution, and 2.5% of participants indicated the temperature. The finding is similar to the (Fathy Mahmoed et al., 2021) Who studied a study, workers had good monitoring of workers to control noise when using machines good lighting for safety services. In this study biological hazard reported 6.1%, biological hazards all (n=12) worker reported that they have intake poor quantity of food workers. This is not a major problem. Uganda in 2015, a study reported that half of the healthcare workers reported experiencing occupational health hazards, with 39.5% experiencing biological hazards and 31.5% experiencing non-biological hazards (Ndejjo et al., 2015). Another study identified physical hazards in workplaces, including excessive noise, poor lighting, increased temperature, and poor ventilation(Arnold et al., 2019). These findings are a little similar. Chemical hazard reported 11.2%, Psychological hazard reported 4.1%. In this study accident or cut injury is only 1.5 % but a study in Iran reported 33% day shift workers reported accident, which is totally different. (Hosseini et al., 2019)

In this study musculoskeletal discomfort in at least one body region within the past 12 months was 24.4%: lower back pain (8.6%), shoulder pain (4.1%), elbow issues (2%), wrist/hand discomfort (3%), hip/thigh problems (2.5%), knee pain (6.1%), and ankle issues (6.1%) among 197 participants. These findings disagree with a study in China where musculoskeletal discomfort in at least one body region within the past 12 months was 69.1% among the participants: the neck (49.3%), lower back (43.8%), and shoulders (27.5%). Sex, work experience, daily working hours, perceived work fatigue, and workstation, were significantly associated with WMSDs symptoms in different body regions (Hong et al., 2022). But in this study the association is not done only the frequency are determined. There was a high prevalence of pain and discomfort in different regions of the body and the lower back is the most affected region (41.9% prevalence) followed by knee (24.0%) and lower leg (15.9%). The workers experienced relatively less pain and discomfort in the upper part of the body, hand/wrist (16.2%), shoulder (13.3%), neck (2.9%), and upper back (2.9%), (Majumder et al., 2016). Previous studies show a high prevalence of musculoskeletal symptoms among ceramic workers, but when compared with these results, it is seen that in this study, the prevalence of musculoskeletal symptoms among workers is lower. Another study shows 100% prevalence of LBP among workers (Fasih Ramandi, 2018) which is totally disagree with this study.

A documented higher prevalence (45.5%) of respiratory problems among the ceramic workers (Alim et al., 2015) in Mirpur, Dhaka, Bangladesh. Ceramic Factory indicates a high prevalence of respiratory issues (Fathy Mahmood et al., 2021). These findings are different from this study. In this study find out only 4%. This prevalence is extremely low.

A study in Iran, 56.7% and 50.9% of the 108 people who had sleep apnea were rotating- and day-shift workers and Workload, stress, and sleeplessness were diagnosed as the factors of fatigue among all the workers (Hosseini et al., 2019) In this study Psychological problems were relatively low, with stress being the most reported (2.5%).

According to socio demographic characteristics of studied ceramic workers, the present study showed that among 197 participants the studied ceramic workers their mean age  $31.54 \pm$  years, 50.3 percent worker's age more than 31 years these findings agreed with (Fathy Mahmood et al., 2021) Who studied ceramic workers their age was 30 years and more with mean age  $32.54 \pm 8.47$  years. The mean age of the participants was  $32.27 \pm 6.17$  years (Hosseini et al., 2019).

In present study gender distribution indicates a significant majority of female participants, comprising 73.6% (n=145) of the total 197 participants, while only males 26.4% (n=52). Which agree a study that reported most of the worker was female 89% (n=80)(Cristina et al., 2010), Which totally disagree a study in China most porcelain workers were men 77.0% (Hong et al., 2022).

Residential distribution indicates that more than half of the participants live in rural areas (52.3%), followed by urban (26.9%) and semi-urban areas (20.8%).

Most of the participants live in rural areas, 78.0% and 22.0% urban areas. Regarding smoking habits, the majority are non-smokers (89.8%), while only 7.1% are smokers and 3% are previous smokers. These results are difference from the previous results of the study in Egypt where 58.7% was smoker, non-smoker 34.6%, 6.7% was previous smoker (Fathy Mahmood et al., 2021). "Task Distribution, Work Environment, and Perceived Health Discomforts, Among Indian Ceramic Workers" India, reported

smoker 36% (Majumder et al., 2016). Smoking habits that involve the inhalation of smoke which cause severe health risks, increase the chances of lung cancer, heart disease, and respiratory issues.

The present study showed that all the workers of the studied ceramic worker worked 8 hours. This result was in the same line with (Fathy Mahmood et al., 2021) who studied a research more than three quarters of the studied ceramic workers worked for 6-8 hours/day. The educational background shows this study more than fifty (59.4%, n=117) of the participants having completed secondary education and Marital status shows that a generous portion of the participants are married. In another study shows less than forty percent of the participant (34%) completed secondary education.

The majority have 1-5 years of experience (48.7%). Which also different from other study, other study showed that two fifth of the studied sample had 1-5 years of work experience at Ceramic Factory (Fathy Mahmood et al., 2021) (Halvani et al. 2018). In other study worker with more than 16 years of work experience only 7.03%. The study report 11.7 % of worker has more than 16 years of work experience.

The study shows the workers of ceramic factory reported their health status majority more than fifty percent ceramic workers reported their health status is good (n=111), 37.1% reported fair only 3% reported is poor.

100.0%, suggesting potential overlap in responses or multiple facilities present in the ceramic factory. In other research factory facilities are not mentioned in such details. However, in a study done in Brazil, 97.5% ceramics workers are satisfied with their work (Cristina et al., 2010).

In this study 78.6 % of the report have knowledge about health hazards. Awareness and Safety Practices with 59.9% participant reported that the use PPE, and 48.2% of respondents using facemasks and 19.3% using gloves. Another study highlighted significant resistance among workers towards using PPE due to discomfort, despite their ability to perceive and relate to occupational risks in their work environment(Dantas de Sena Junior et al., 2016).

In this study relationship among headache and noise the p-value .290 that means there are no relation between noise and headache. Another study in Bangladesh reported among headache and noise p-value 0.014 Significantly reported relation between headache and noise (Gupta et al., 2015).

## CHAPTER VI: CONCLUSION

### 6.1 Strengths and Limitations

#### 6.1.1 Strengths

- Data collection from participants and data entry process was non-biased.
- Data was collected in a face-to-face survey method and stored in a safe area with protected security.
- There was no unauthorized access without the researcher and responsible supervisor.
- The study response rate was 100%. It is a great strength of this study.

#### 6.1.2 Limitations

- The questionnaire for this study is not available, researchers use the study questionnaire which is a self-developed questionnaire.
- Expected sample size was 384 for this study due to resource constraints the researcher could manage just 197 samples which is very small to generalize the result for the wider population of ceramics workers.
- There is few literatures about the ceramic's workers, so it is difficult to compare the study with other research.

## **6.2. Practice Implications**

### **6.2.1. Recommendations for further practice**

- The research implies the need for increased attention to occupational health and safety in the ceramics industry, focusing on worker awareness, proper use of PPE, and educational initiatives.
- Provide training programs on occupational health and safety practices to empower workers to protect their health and well-being.
- This research has allowed to develop understanding of occupational health hazards specific to ceramic workers, which will inform practice when working with individuals in similar occupational settings in the future.

### **6.2.2. Recommendations for further research**

Some research recommendations are as follows:

- Explore the quality of life of ceramics workers.
- Identify the job satisfaction of ceramics workers.



### **6.3. Conclusion**

The purpose of the study to know the occupational health hazards among ceramics workers in selected ceramics factory in Bangladesh. Workers reported that their company facilities are good. Workers are exposed to a small range of risks, including ergonomic, physical, biological, chemical, and psychological hazards, which can have detrimental effects on their health and safety. Ergonomic hazards were the most reported, indicating issues such as improper seating, repetitive movements, and manual lifting, and a small percentage of workers had health problems, compared with other research, their reported health problems are significantly lower. Efforts should be made to implement stricter safety measures and provide adequate training and education for workers to raise awareness about health hazards and promote safe working practices. Additionally, regular health check-ups and access to healthcare facilities are essential to monitor and address any health issues that may arise. By addressing these concerns and improving working conditions, the ceramics industry can ensure the well-being of its workforce and contribute to a safer and healthier work environment for all employees.

## LIST OF REFERENCE

- Ahmadi, A., Mirzayee, R., & Ansari, H. (2015). Assessment of work postures and prevalence of musculoskeletal disorders among porcelain industry workers. *Journal of Occupational Health and Epidemiology*, 4(3), 146–153. <https://doi.org/10.18869/acadpub.johe.4.3.146>
- Alim, M. A., Biswas, M. K., Biswas, G., Hossain, M. A., & Ahmad, S. A. (2015). Respiratory health problems among the ceramic workers in Dhaka. *Faridpur Medical College Journal*, 9(1), 19–23. <https://doi.org/10.3329/fmcj.v9i1.23617>
- Arnett, D. K., & Claas, S. A. (2017). Introduction to Epidemiology. In *Clinical and Translational Science: Principles of Human Research: Second Edition*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-802101-9.00004-1>
- Arnold, S. M., Wickrematilake, M. S. K., Fernando, R. M. S. D., Sampath, H. M. R. C., Karunapema, R. P. P., Mahesh, P. K. B., Munasinghe, P. M., & Denawaka, C. J. (2019). Occupational hazards in medium and large scale industrial sectors in Sri Lanka: Experience of a developing country. *BMC Research Notes*, 12(1), 1–5. <https://doi.org/10.1186/s13104-019-4790-2>
- Arora, D., De, N., Sau, S. K., & Mahata, H. (2020). *An Assessment of the Physiological Health and Occupational Health*. 26(June), 150–171.
- Arsenio, C. F., Borja, A. L., Garcia, P. C., Maigne, N. H., & Curbano, R. J. (2020). *Work Related Musculoskeletal Disorders in Sorting Process Area at Mariwasa Siam Ceramics Incorporated : An Assessment*. 4(3), 38–45.
- Aziz, H., Ahmed, S., & Saleh, I. (2010). Respiratory hazards among Egyptian ceramics workers. *Researcher*, 2(6), 65–73.

[http://www.sciencepub.net/researcher/research0206/09\\_3107research0206\\_65\\_73.pdf](http://www.sciencepub.net/researcher/research0206/09_3107research0206_65_73.pdf)


- Cristina, A., Melzer, D. S., & Iguti, A. M. (2010). *Working conditions and musculoskeletal pain among Brazilian pottery workers Condições de trabalho e dor osteomuscular entre ceramistas brasileiros*. 26(3), 492–502.
- Dantas de Sena Junior, L. C., Alves da Silva, R. E., Mendonça Torres, L., Gomes de Sousa, Y., de Medeiros, S. M., & Bittencourt Leite de Carvalho, J. (2016). Knowledge workers on occupational hazards in the industry of ceramics. *International Archives of Medicine*, 1–8. <https://doi.org/10.3823/2008>
- Fasih Ramandi, F. (2018). Study of low back pain intensity and disability index among manual material handling workers of a tile and ceramic industrial unit, Iran (2016). *Journal of Occupational Health and Epidemiology*, 7(3), 167–173. <https://doi.org/10.29252/johe.7.3.167>
- Fathy Mahmood, A., Sobhy Abd El-Aziz, M., & Hamido Abo sree, T. (2021). Occupational Health Hazards among Workers in Ceramic Factories. *Journal of Nursing Science Benha University*, 2(2), 54–68. <https://doi.org/10.21608/jnsbu.2021.186423>
- Fuortes, L. J. (2016). *Health hazards of working with ceramics Recommendations for reducing risks*. 5481(May). <https://doi.org/10.1080/00325481.1989.11700540>
- Gupta, D. R., Nag, S., Datta, D., Roy, S., Das, S., & Aziz, S. M. Y. (2015). Occupational health hazards among workers in garment factories in Bangladesh: A cross-sectional study. *Developing Country Studies*, 5(5), 90–98.
- Hong, X., Chi, Y., & Shuzhang, L. (2022). Musculoskeletal symptoms and associated factors among manual porcelain workers at different workstations : a cross - sectional

- study. *International Archives of Occupational and Environmental Health*, 95(9), 1845–1857. <https://doi.org/10.1007/s00420-022-01879-z>
- Hosseini, F., Keramati, F., & Koohpaei, A. (2019). *Effects of Psychological and Physical Factors and Morning- Evening Type on Occupational Accidents among the Workers of Porcelain Industry in Iran : Structural Equation Modeling*. 8(3), 215–224.
- Khan, N. R., Dipti, T. R., Ferdousi, S. K., Hossain, M. Z., Ferdousi, S., Sony, S. A., Zafrin, N., Paul, N., & Islam, M. S. (2016). Occupational Health Hazards Among Workers of Garment Factories in Dhaka City, Bangladesh. *Journal of Dhaka Medical College*, 24(1), 36–43. <https://doi.org/10.3329/jdmc.v24i1.29560>
- Ladou, J. (2003). *International occupational health*. 11, 1–11.
- Majumder, J. (2016). *Task Distribution , Work Environment , and Perceived Health Discomforts Among Indian Ceramic Workers*. 1155, 1145–1155. <https://doi.org/10.1002/ajim.22659>.
- Margareth, H. (2017). No Title *ةيبرعلا ةغللا سيردت قرط*. In *Экономика Региона*.
- Melaka, P., Shaoie, S. S., Melaka, P., Farizal, M., & Melaka, P. (2017). *A Study Of Ergonomic Awareness Of Musculoskeletal Disorder ( Msd ) For Workers In Casting Line In Ceramic Factory*. 1, 69–81.
- Mohajan, H. (2020). Munich Personal RePEc Archive Quantitative Research: A Successful Investigation in Natural and Social Sciences. In *Journal of Economic Development, Environment and People* (Vol. 9, Issue 4). <https://mpa.ub.uni-muenchen.de/105149/>
- Mohsin, A. (2021). *A Manual for Selecting Sampling Techniques in Research*. University of Karachi, Iqra. University. *Munich Personal RePEC Archive*, 2016, 1–56.
- Moreira, F., Bastos, C., & Amé, P. (2016). *Ergonomic Diagnosis of a Ceramic Industry :*

- A Case Study Using Coulters Checklist.* 6(10), 794–798.  
<https://doi.org/10.18178/ijssh.2016.6.10.751>
- Ndejjo, R., Musinguzi, G., Yu, X., Buregyeya, E., Musoke, D., Wang, J. S., Halage, A. A., Whalen, C., Bazeyo, W., Williams, P., & Ssempebwa, J. (2015). Occupational Health Hazards among Healthcare Workers in Kampala, Uganda. *Journal of Environmental and Public Health*, 2015. <https://doi.org/10.1155/2015/913741>
- Parimalam, P., Kamalamma, N., & Ganguli, A. K. (2007). Knowledge, attitude and practices related to occupational health problems among garment workers in Tamil Nadu, India. *Journal of Occupational Health*, 49(6), 528–534.  
<https://doi.org/10.1539/joh.49.528>
- Sahri, M., Tualeka, A. R., & Widajati, N. (2019). Quantitative risk assesment of crystalline silica exposure in ceramics industry. *Indian Journal of Public Health Research and Development*, 10(2), 601–604. <https://doi.org/10.5958/0976-5506.2019.00358.9>
- Thirunavukkarasu, A., Alrawaili, K. A. H., Al-Hazmi, A. H., Dar, U. F., Alruwaili, B., Mallick, A., Wani, F. A., & Alsirhani, A. I. E. (2021). Article prevalence and risk factors of occupational health hazards among health care workers of northern saudi arabia: A multicenter study. *International Journal of Environmental Research and Public Health*, 18(21). <https://doi.org/10.3390/ijerph182111489>
- Yuan, D., Gazi, M. A. I., Rahman, M. A., Dhar, B. K., & Rahaman, M. A. (2022). Occupational stress and health risk of employees working in the garments sector of Bangladesh: An empirical study. *Frontiers in Public Health*, 10(1). <https://doi.org/10.3389/fpubh.2022.938248>

## APPENDICES

### Appendix A: Approval Letter



**বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)**  
**Bangladesh Health Professions Institute (BHPI)**  
 (The Academic Institute of CRP)

Ref: **CRP-BHPI/IRB/10/2023/773**
Date: **18.10.2023**

To  
 Shamima Akter Nizum  
 4<sup>th</sup> Year B.Sc. in Occupational Therapy  
 Session: 2018-2019; Student ID: 122180330  
 Department of Occupational Therapy  
 BHPI, CRP, Savar, Dhaka-1343, Bangladesh


**Subject:** Approval of the thesis proposal “Occupational health hazards among ceramic workers in selected ceramic factory in Bangladesh” by ethics committee.

Dear Shamima Akter Nizum,  
 Congratulations.  
 The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above mentioned dissertation, with yourself, as the principal investigator and Nayan Kumer Chanda as thesis supervisor. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation/thesis/research Proposal
2	Self-development questionnaire (English & / or Bengali version)
3	Information sheet & consent form

The purpose of the study is to know the occupational health hazards faced by the workers in ceramic factory. The study involves use of self-development structured questionnaire to identify the occupational health hazards faced by the workers that may take about 15 to 20 minutes to fill in the questionnaire for collection of specimens and there is no likelihood of any harm to the participants and the industry and no economic benefits for the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8.30 AM on 23<sup>rd</sup> September 2023 at BHPI 38<sup>th</sup> IRB Meeting.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards, 

**Muhammad Milat Hossain**  
 Associate Professor  
 Project & Course Coordinator  
 Dept. of Rehabilitation Science  
 BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Member Secretary  
 Institutional Review Board (IRB)  
 BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭  
 CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647  
 E-mail : principal-bhpi@crp-bangladesh.org. Web: bhpi.edu.bd

## Permission Letter



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
 BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)  
 (The Academic Institute of CRP)  
 CRP-Chapain, Savar, Dhaka, Tel: 02224445464 , 02224441404, Website: www.bhpi.edu.bd

Date: 30.10.2023

To  
 Executive Director  
 Shinepukur Ceramics Ltd.  
 Beximco Industrial Park,  
 Sarabo, Kashimpur, Gazipur, Bangladesh.

Subject: *Regarding Data collection for dissertation.*

Greetings from Bangladesh Health Professions Institute (BHPI). I would like to inform you that, BHPI, the Academic Institute of CRP is running B.Sc in Occupational Therapy Course, under Faculty of Medicine, University of Dhaka.

According to the content of 4<sup>th</sup> year of University course curriculum, the students have to do Research and Course work in different topics to develop their skills. Considering the situation, your institute will be the most appropriate place to collect data.

4<sup>th</sup> year students of BHPI Shamima Akter Nizum would like to collect data in your organization from 01.11.2023 to 31.12.2023. Her title: "Occupational Health Hazards among Ceramic workers in Selected Ceramic Factory in Bangladesh".

We shall remain grateful to you if you could kindly allow us in conducting the placement.


With regards

  
 Sk. Moniruzzaman

Associate Prof. & Head  
 Dept. of Occupational Therapy  
 BHPI.



*Received*

  
 30/10/23  
 MD. AMNUZUL ISLAM  
 Dy Manager, HR & Admin  
 Shinepukur Ceramics Ltd.  
 (A Beximco Company)



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
 BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)  
 (The Academic Institute of CRP)

CRP:Chapain, Savar, Dhaka. Tel: 02224445464, 02224441104, Website: www.bhpi.edu.bd

Date: 30.10.2023

To  
 Executive Director  
 Shinepukur Ceramics Ltd.  
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Subject: *Regarding Data collection for dissertation.*

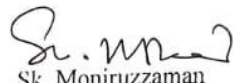
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We shall remain grateful to you if you could kindly allow us in conducting the placement.

With regards

  
 Sk. Moniruzzaman  
 Associate Prof. & Head  
 Dept. of Occupational Therapy  
 BHPI.







## Appendix B: Information Sheet & Consent Form

### Part A1: Information sheet, Consent form and Withdrawal from (English Version)



বাংলাদেশ হেলথ প্রফেশনস ইন্সটিটিউট  
(বিএইচপিআই)



Bangladesh Health Professions Institute  
(BHPI)

Department of Occupational Therapy

CRP-Chapain, Savar, Dhaka-1343, Telephone: 02-7745464-5. 7741404. Fax: 0774506

Code Number:

#### Research information.

**Research title:** Occupational Health Hazards among Ceramic Workers in selected ceramic factory in Bangladesh.

**Researcher:** Shamima Akter Nizum, B.Sc. in Occupational Therapy (4th Year), Session: 2018-2019, Bangladesh Health Profession Institute (BHPI), Savar, Dhaka- 1343

**Supervisor:** Nayan Kumer Chanda, Assistant professor, Department of Occupational Therapy, Bangladesh Health Professions Institute.

Lecturer, Department of Occupational Therapy, Bangladesh Health Profession Institute.

**Research place:** The study will be conducted in Shinepukur ceramic ltd. Gazipur, Dhaka

#### Information sheet

##### Information Sheet Introduction:

I'm Shamima Akter Nizum, BSc in occupational therapy student at Bangladesh health professions institute BHPI), Must conduct a thesis as a part of this bachelor course under thesis supervisor Nayan Kumer Chanda. You are going to have detailed information about the study purpose, data collection process, ethical issues.

You do not have to decide today whether you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. If this consent form contains some words that you do not understand please ask me, I will take time to explain.

**Background and purpose:**

You are being invited to be a part of this research. The general purpose of the study is to identify the hazard of occupational health of the workers of selected ceramic factory.

**Research related Information:**

The research related information will be discussed with you in detail before you sign the consent form. If you want to participate in this study, you must sign the consent form. Participants will then be asked to complete a structured questionnaire. This questionnaire will contain questions on socio-demographic factors.

The information will be maintained confidentiality, and your identity will not be disclosed, only a number will identify you and no one expect Nayan Kumer Chandra, supervisor of the study.

**Right to Withdraw:**

If you think you shouldn't give consent, you may withdraw your participation without providing any explanation to the researcher until the time before the data is approved.

**Risks and Benefits:**

During the research project, you may have to answer some personal and confidential questions due to which you may feel uncomfortable. If you don't want to answer any questions or take part in a discussion it is also okay. On the other hand, you may not benefit directly from participating in this study, but your valuable participation will help you to

know the occupational health hazards among ceramic workers. It is expected that there is no additional risk, hazard, or discomfort in participating in the relevant research here.

### **Confidentiality**

By signing this consent letter, you have allowed the research staff studying in this research project to collect and use your personal information that will not be shared with anyone outside of the research team. The information about you will have been mentioned in a number. Only the researcher will have access to this information that we will lock with a lock and key. The information will not be shared with anyone except the supervisor Nayan Kumer Chanda of this research.

### **Sharing the results**

It is expected that nothing will be shared with anybody outside of the research team and attributed to you by name but the results or knowledge that we get from this research project will be published and presented in various forums. A summary of the results will be received by the participant. There will be a small presentation, and these will be published. People who are interested will learn from the research, so we published the results according to the presentation.

### **Who to contact?**

If you have any questions about the research project, you can ask now or at any later time. If you wish to ask questions you may contact the following: Shamima Akter Nizum, Bachelor of Science in Occupational Therapy, Department of Occupational Therapy, and cell phone 01305539872. This proposal has been reviewed and approved by Institutional Review Board (IBR), Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh.

## Consent Form

I am Shamima Akter Nizum, 4<sup>th</sup> year, B.Sc. in Occupational Therapy student at Bangladesh Health Profession Institute (BHPI) under the Faculty of Medicine, University of Dhaka. As a part of B.Sc. in Occupational Therapy course curriculum, I am going to conduct research under the supervisor of Nayan Kumer Chanda, Assistant Professor, Department of occupational Therapy, Bangladesh Health Professions Institute (BHPI). The research title is “Occupational Health Hazards among ceramic worker in selected ceramic factory in Bangladesh”.

In this research I am \_\_\_\_\_

\_\_\_\_\_ A participant and I have been clearly informed about the purpose and aim of the study. I am also informed that the information collected will only be used for study purposes and would be kept confidential. Name and address will not be published anywhere. Participation in this study is voluntary, I am willing to participate in the study.

Signature of the participant: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of the researcher: \_\_\_\_\_ Date: \_\_\_\_\_

## Withdrawal Form

**Research Title:** Occupational Health Hazards among ceramic worker in selected ceramic factory in Bangladesh.

**Name of the Researcher:** Shamima Akter Nizum, 4<sup>th</sup> year, Occupational Therapy student, Roll: 33

I \_\_\_\_\_ confirm that I wish to withdraw all my data from the study before the data analysis has been completed and that none of my data will be included in the study.

Signature of the participant: \_\_\_\_\_ Date: \_\_\_\_\_

Name of the Researcher: \_\_\_\_\_ Date: \_\_\_\_\_

**Part A2: Information sheet, Consent form and Withdrawal from  
(Bangla Version)**



বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট  
(বিএইচপিআই)



Bangladesh Health Professions Institute  
(BHPI)

অকুপেশনাল থেরাপি বিভাগ

সিআরপি-চাপাইন, সাভার ঢাকা-১৩৪৩, টেলিফোন: ০২-৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪, ফেক্স:  
০৭৭৪৫০৬

কোড নাম্বার:

**গবেষণা তথ্য**

**গবেষণার শিরোনাম:** বাংলাদেশের সিরামিক শ্রমিকদের মধ্যে পেশাগত স্বাস্থ্যের ঝুঁকি নির্ণয়।

**গবেষক:** শামীমা আক্তার নিজুম, ৪র্থ বর্ষ, বি.এসসি অকুপেশনাল থেরাপি বিভাগ, সেশন: ২০১৮-১৯, বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউট (বিএইচপিআই), সাভার, ঢাকা- ১৩৪৩

**তত্ত্বাবধায়ক:** নয়ন কুমার চন্দ,, অকুপেশনাল থেরাপি বিভাগ, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট। প্রভাষক, অকুপেশনাল থেরাপি বিভাগ, বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউট (বিএইচপিআই)

গবেষণার স্থান: গবেষণাটি শাইনপুকুর সিরামিক লিমিটেড গাজীপুর, ঢাকায় পরিচালিত হবে

**আমার স্নাতকের তথ্য পত্রের ভূমিকা**

আমি শামীমা আক্তার নিজুম, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট বিএইচপিআই-এর অকুপেশনাল থেরাপি (বিএসসি) শিক্ষার্থী, থিসিস সুপারভাইজার নয়ন কুমার চন্দের অধীনে, এই ব্যাচেলর কোর্সের অংশ হিসাবে একটি থিসিস পরিচালনা করতে হবে। আপনার কাছে অধ্যয়নের উদ্দেশ্য, ডেটা সংগ্রহ প্রক্রিয়া, নৈতিক সমস্যা সম্পর্কে

বিস্তারিত তথ্য থাকবে।

আপনি গবেষণায় অংশগ্রহণ করবেন কিনা তা আজকে সিদ্ধান্ত নিতে হবে না। আপনি সিদ্ধান্ত নেওয়ার আগে, গবেষণা সম্পর্কে আপনি যার সাথে স্বাচ্ছন্দ্য বোধ করেন তার সাথে কথা বলতে পারেন। যদি এই সম্মতি ফর্মে এমন কিছু শব্দ থাকে যা আপনি বুঝতে না পারেন দয়া করে আমাকে জিজ্ঞাসা করুন, আমি ব্যাখ্যা করব।

### **পটভূমি এবং উদ্দেশ্য**

আপনি এই গবেষণা একটি অংশ হতে আমন্ত্রিত. অধ্যয়নের সাধারণ উদ্দেশ্য হল নির্বাচিত সিরামিক কারখানার শ্রমিকদের পেশাগত স্বাস্থ্যের ঝুঁকি চিহ্নিত করা।

### **গবেষণা সম্পর্কিত তথ্য**

আপনি সম্মতি ফর্মে স্বাক্ষর করার আগে গবেষণা সম্পর্কিত তথ্য আপনার সাথে বিশদভাবে আলোচনা করা হবে। আপনি যদি এই গবেষণায় অংশগ্রহণ করতে চান, তাহলে আপনাকে অবশ্যই সম্মতি ফর্মে স্বাক্ষর করতে হবে। অংশগ্রহণকারীদের তারপর একটি কাঠামোগত প্রশ্নাবলী সম্পূর্ণ করতে বলা হবে। এই প্রশ্নাবলীতে সামাজিক-জনসংখ্যা বিষয়ক প্রশ্ন থাকবে। তথ্য গোপনীয়তা বজায় রাখা হবে এবং আপনার পরিচয় নয়ন কুমার চন্দ্র, অধ্যয়নের তত্ত্বাবধায়ক ব্যতীত কারো কাছে প্রকাশ করা হবে না, শুধুমাত্র একটি সংখ্যা আপনাকে সনাক্ত করবে।

### **প্রত্যাহারের অধিকার**

আপনি যদি মনে করেন যে আপনার সম্মতি দেওয়া উচিত নয়, তাহলে ডেটা অনুমোদনের আগে পর্যন্ত আপনি গবেষককে কোনো ব্যাখ্যা না দিয়েই আপনার অংশগ্রহণ প্রত্যাহার করতে পারেন।

### **ঝুঁকি এবং সুবিধা**

গবেষণা প্রকল্পের সময়, আপনাকে কিছু ব্যক্তিগত এবং গোপনীয় প্রশ্নের উত্তর দিতে হতে পারে যার কারণে আপনি অস্বস্তি বোধ করতে পারেন। আপনি যদি কোনো প্রশ্নের উত্তর দিতে না চান বা আলোচনায় অংশ নিতে না চান তাহলেও ঠিক আছে। অন্যদিকে, আপনি এই গবেষণায় সরাসরি অংশগ্রহণ করে উপকৃত নাও হতে পারেন, কিন্তু আপনার মূল্যবান অংশগ্রহণ আপনাকে সিরামিক কর্মীদের মধ্যে পেশাগত স্বাস্থ্যের ঝুঁকি জানতে সাহায্য করবে। এটি প্রত্যাশিত যে এখানে প্রাসঙ্গিক গবেষণায় অংশগ্রহণ করার জন্য কোন

অতিরিক্ত ঝুঁকি, বিপত্তি বা অস্বস্তি নেই।

### গোপনীয়তা

এই সম্মতি পত্রে স্বাক্ষর করার মাধ্যমে, আপনি এই গবেষণা প্রকল্পে অধ্যয়নরত গবেষণা কর্মীদের আপনার ব্যক্তিগত তথ্য সংগ্রহ এবং ব্যবহার করার অনুমতি দিয়েছেন যা গবেষণা দলের বাইরের কারো সাথে শেয়ার করা হবে না। আপনার সম্পর্কে তথ্য একটি সংখ্যা উল্লেখ করা হবে। শুধুমাত্র গবেষকের কাছে এই তথ্যের অ্যাক্সেস থাকবে যা আমরা একটি তালা এবং চাবি দিয়ে লক করব। এই গবেষণার তত্ত্বাবধায়ক নয়ন কুমার চন্দ ছাড়া অন্য কারো সাথে তথ্য শেয়ার করা হবে না। ফলাফল শেয়ার করা এটা আশা করা যায় যে গবেষণা দলের বাইরের কারো সাথে কিছুই প্রকাশ করা হবে না এবং নাম দ্বারা আপনাকে চিহ্নিত করা হবে তবে না, আমরা এই গবেষণা প্রকল্প থেকে যে ফলাফল বা জ্ঞান পাই তা প্রকাশ করা হবে এবং বিভিন্ন ফোরামে উপস্থাপন করা হবে। ফলাফলের সারাংশ অংশগ্রহণকারীরা পাবেন। সেখানে হবে ছোট উপস্থাপনা হবে এবং এই প্রকাশ করা হবে। যারা আগ্রহী তারা গবেষণা থেকে শিখবেন যাতে আমরা উপস্থাপনা অনুযায়ী ফলাফল প্রকাশ করেছি।

### কার সাথে যোগাযোগ করবেন?

গবেষণা প্রকল্প সম্পর্কে আপনার কোন প্রশ্ন থাকলে, আপনি এখন বা পরে যেকোনো সময় জিজ্ঞাসা করতে পারেন। আপনি যদি প্রশ্ন করতে চান তবে আপনি নিম্নলিখিতগুলির সাথে যোগাযোগ করতে পারেন: শামীমা আক্তার নিজুম, অকুপেশনাল থেরাপিতে ব্যাচেলর অফ সায়েন্স, অকুপেশনাল থেরাপি বিভাগ, এবং সেল ফোন 01305539872। এই প্রস্তাবটি প্রাতিষ্ঠানিক পর্যালোচনা বোর্ড (আইআরবি), বাংলাদেশ দ্বারা পর্যালোচনা এবং অনুমোদিত হয়েছে বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউটে (বিএইচপিআই), সিআরপি-সাভার, ঢাকা-১৩৪৩, বাংলাদেশ।



## সম্মতি পত্র

আমি শামীমা আক্তার নিজুম, ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধীনে বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউটে (বিএইচপিআই) এর অকুপেশনাল থেরাপি বিভাগের ৪র্থ বর্ষের একজন ছাত্রী। বিএসসি অকুপেশনাল থেরাপি কোর্স কারিকুলামের একটি অংশ হিসেবে আমি নয়ন কুমার চন্দ, সহকারী অধ্যাপক, অকুপেশনাল থেরাপি বিভাগ, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) এর তত্ত্বাবধানে একটি গবেষণা পরিচালনা করতে যাচ্ছি। গবেষণার শিরোনাম "বাংলাদেশে নির্বাচিত সিরামিক কারখানার সিরামিক শ্রমিকদের মধ্যে পেশাগত স্বাস্থ্যের ঝুঁকি নির্ণয়"।

এই গবেষণায় আমি \_\_\_\_\_  
 একজন অংশগ্রহণকারী এবং অধ্যয়নের উদ্দেশ্য এবং লক্ষ্য সম্পর্কে আমাকে স্পষ্টভাবে অবহিত করা হয়েছে। আমাকে আরও জানানো হয়েছে যে সংগৃহীত তথ্য শুধুমাত্র অধ্যয়নের উদ্দেশ্যে ব্যবহার করা হবে এবং গোপন রাখা হবে। নাম ঠিকানা কোথাও প্রকাশ করা হবে না। এই গবেষণায় অংশগ্রহণে একজন স্বেচ্ছাসেবী হিসেবে আমি গবেষণায় অংশগ্রহণ করতে ইচ্ছুক।

অংশগ্রহণকারীর স্বাক্ষর: \_\_\_\_\_ তারিখ: \_\_\_\_\_

গবেষকের স্বাক্ষর: \_\_\_\_\_ তারিখ: \_\_\_\_\_

## প্রত্যাহার পত্র

(শুধুমাত্র স্বৈচ্ছায় প্রত্যাহারের জন্য প্রযোজ্য)

গবেষনার শিরনামঃ বাংলাদেশের নির্বাচিত সিরামিক কারখানায় সিরামিক কর্মীদের মধ্যে পেশাগত স্বাস্থ্যের ঝুঁকি নির্ণয়।

গবেষক: শামীমা আক্তার নিজুম, ৪র্থ বর্ষ, অকুপেশনাল থেরাপি বিভাগ

আমি \_\_\_\_\_ (অংশগ্রহণকারী),

আমার অংশগ্রহণ থেকে উদ্ভূত ডেটা ব্যবহারের জন্য আমার সম্মতি প্রত্যাহার করতে চাই।

প্রত্যাহারের কারণ \_\_\_\_\_

অংশগ্রহণকারীর স্বাক্ষর \_\_\_\_\_ তারিখ: \_\_\_\_\_

গবেষকের স্বাক্ষর \_\_\_\_\_ তারিখ: \_\_\_\_\_

## Appendix C: Questionnaire

### Part A: Socio-demographic Information

1. Age: \_\_\_\_\_
2. Sex:
  - Male  Female
3. Residence: Rural/Urban/ Semi urban
4. Educational Level:
  - a. Illiterate
  - b. Signature
  - c. Primary
  - d. Secondary
  - e. University education
5. Monthly Income \_\_\_\_\_
6. Marital Status:
  - a. Married
  - b. Unmarried
  - c. Widowed
  - d. Divorced
7. Smoking Habits:
  - a. Smoker
  - b. Non-smoker
  - c. Previous smoker
8. Working Section:
  - a. Body
  - b. Forming
  - c. Glaze
  - d. Decoration
  - e. Packaging
  - f. Firing
  - g. Casting
9. Types of workers
  - h. Selection
  - i. BK inspection
  - j. QC & QA
10. Working Hours per Day: \_\_\_\_\_
11. Do you work overtime or beyond your shift hours?
  - Yes  No
12. Work Experience at Ceramic Factory:
  - \_\_\_\_\_ Months/years.
13. What is your status of health?
  - a. Very good
  - b. Good
  - c. Fair
  - d. Poor
  - e. Very Poor
14. Did you checkup your health in the last 3 months?
  - Yes  No

### General Information

## Self-developed Structured Questionnaire

### Part B: Hazards in the factory:

<b>Ergonomic Hazards</b>	<b>Yes</b>	<b>No</b>
1.1. Chairs and machines used in work are not at the correct height?		
1.2. Frequent manual lifting.		
1.3 Prolong sitting or standing (static)?		
1.4. Inappropriate seats provided?		
1.5. Awkward working posture or movements for prolong. (e.g.: twisting, bending, overreaching, elbow above the shoulder, working with the neck or back bent without support and lack of abilities to vary posture).		
1.6. Use of high-level force while transporting or supporting load?		
1.7. Task with repetitive movement?		
1.8. Expose to constant vibration for a long time?		
<b>Physical Environment</b>	<b>Yes</b>	<b>No</b>
2.1. The workplace is slippery floors, blocked walkway cords or running across the floor?		
2.2. Workers exposed to sharp object?		
2.3. Electrical hazards like frayed cords, missing ground pins, improper wiring, and wire in damp?		
2.4. Workplace environment is dirty or dust present?		
2.5. Is the lighting inadequate in your workplace?		
2.6. Presence of noise pollution (loud noise for a long time)?		
2.7. Is temperature of your workplace hot?		
2.8. Work environment ventilation system is not good?		
2.9. Work environments have not enough space for work (Overcrowding)		
2.10. Presence of awkward smell?		
<b>Biological Hazards</b>	<b>Yes</b>	<b>No</b>
3.1. Clean drinking water available?		
3.2. Separate toilet present?		
3.3. Intake good quantity of food?		

<b>Chemical Hazards</b>	<b>Yes</b>	<b>No</b>
3.4. Workers are exposed to liquids solvent and paints?		
3.5. Employees exposed to various gases in the workplace?		
3.6. Presence of flammable materials like gasoline, oxygen tanks, alcohol wipes, etc.?		
<b>Psychological Hazards</b>	<b>Yes</b>	<b>No</b>
4.1. Have excessive workload?		
4.2. Lack of communication opportunity and support from management or colleagues?		
4.3. Experience of psychological and sexual harassment, third party violence?		
4.4. Do you think your organizational change is weak, and you feel insecure for the job?		
4.5. Lack/less of flexibility in the job?		

### **Part C: Healthcare facilities available in the factory**

	<b>Yes</b>	<b>No</b>	<b>N/A</b>
6.1. Are there primary treatment and free medication facilities?			
6.2. Are doctor and nurses always present?			
6.3. Do periodic health checkups take place in your organization?			
6.4. Is first aid kit easy to reach by worker?			
6.5. Does your employer provide worker safety training and education every year?			
6.6. Does your employer have mandatory policies and regulations regarding the use of PPE's			
6.7. Are worker's provided training on the use fire extinguisher and emergency exit?			
6.8. Had provide maternity leave?			
6.9. Have any health insurance?			
6.10. Is any personal protector equipment provided?			
6.11. Others (If yes, specify)			

6.12. No facility?			

**Part D: Health problems that you faced.**

<b>Biomechanical and Ergonomic Problem</b>	<b>Yes</b>	<b>No</b>
(Pain, discomfort, and numbness distribution during the last 12 months)		
7.1. Neck pain		
7.2. Upper back pain		
7.3. Lower back pain		
7.4. Shoulder		
7.5. Elbows		
7.6. Wrist/ hands		
7.7. Hips/ thigh		
7.8. Knees		
7.9. Ankles		
<b>Respiratory problem</b>	<b>Yes</b>	<b>No</b>
8.1. Do you cough most of the days a week?		
8.2. Do you have brought up phlegm (sputum) most of the days a week?		
8.3. Do you feel shortness of breath most days a week (dyspnoea)?		
8.4. Do you have wheeze, is it worse when you get up in the morning?		
8.5. Do you have hemoptysis (blood in the sputum).		
8.6. Do you have chest pain in most of the days a week.		
<b>Physical Problem</b>	<b>Yes</b>	<b>No</b>
9.1. Hearing problem		
9.2. Skin infected disease		
9.3. Weakness		
9.4. Cut / injury/ fracture		

9.5. Headache		
9.6. Chemical burn		
9.7. Lung, kidney, Liver problem		
9.8. Allergies		
9.9. Jaundice		
9.10. Insomnia		
9.11. Tuberculosis		
9.12. Asthma		
9.13. Hypotension		
9.14. Others		

### Part E: Knowledge

10.1. Do you think you might have health problems related to the environment you are working?	Yes	No
10.2. Do you know how to use a fire extinguisher		
10.3. What do you know about health hazards and effects to your health?	It does have effect	
	It doesn't have effect	
	I don't know	

### Part F: Safety

11. Do you wear any safety equipment during work?	Yes	No	N/A
11.1. Apron			
11.2. Eye goggles			
11.3. Facemask			
11.4. Gloves			
11.5. Head covers/Hair Covers/ Bonnets			
11.6. Footwear			
11.7. Do you have devices that aid in lifting and transporting patients and/or heavy objects?			

11.8. Do you cover your mouth and nose with your bent elbow or tissue when you cough or sneeze?			
11.9. Are you wash hands with soap and water and use paper towels to dry them?			
11.10. Do you avoid eat or drink at the workplace?			
11.11. Others (If any, please specify)			



### পার্ট A: সোসিওডেমোগ্রাফিক প্রণাবলী

1. বয়স: \_\_\_\_\_  
 2. লিঙ্গ:  পুরুষ  মহিলা  
 3. বাসস্থান: গ্রামীণ/শহর/\_\_\_\_\_  
 4. শিক্ষাগত যোগ্যতা:  
 ক. নিরক্ষর      খ. স্বাক্ষর  
 গ. প্রাথমিক      গ. মাধ্যমিক  
 ঙ. বিশ্ববিদ্যালয়ের শিক্ষা
5. মাসিক আয়: \_\_\_\_\_  
 6. বৈবাহিক অবস্থা:  
 ক. বিবাহিত      খ. অবিবাহিত  
 গ. বিধবা      ঘ. তালাকপ্রাপ্ত
7. ধূমপানের অভ্যাস:  
 ক. ধূমপায়ী      খ. অ ধূমপায়ী  
 গ. পূর্ববর্তী ধূমপায়ী
8. কাজের বিভাগ:  
 ক. বডি      খ. ফরমিং  
 গ. গ্লেজ      ঘ. ডেকোরেশন  
 ঙ. প্যাকিং      চ. ফায়ারিং  
 ছ. কাস্টিং      জ. সিলেকশন  
 ঝ. বিকে ইন্সপেকশন
9. কর্মীদের প্রকার  
 ক. এসটিওয়ান      খ. এইচএসটি  
 গ. এসএসটি      ঘ. ইউএসটি  
 ঙ. এডাল্লিউ      চ. এসটি-২  
 ছ. এইচটি-২
10. প্রতিদিন কাজের সময়: \_\_\_\_\_  
 11. আপনি কি ওভারটাইম বা আপনার শিফটের সময়ের বাইরে কাজ করেন?  
 হ্যাঁ       না
13. সিরামিক ফ্যাক্টরিতে অভিজ্ঞতা: \_\_\_\_\_  
 \_\_\_\_\_ মাস/ বছর
14. আপনি কি বলবেন আপনার স্বাস্থ্য ভালো-?  
 ক. খুব ভালো      খ. ভাল  
 গ. স্বাভাবিক      ঘ. খারাপ  
 ঙ. খুব খারাপ
15. আপনি কি গত ৩ মাস আপনার স্বাস্থ্য পরীক্ষা করেছেন?  
 হ্যাঁ       না

**কর্মস্থলের ঝুঁকিসমূহ:**

আর্গনোমিক ঝুঁকি	হ্যা	না
1.1. চেয়ার এবং কাজের ক্ষেত্রে ব্যবহৃত মেশিনের উচ্চতা সঠিক নেই?		
1.2. দ্রুত পেশিশক্তি ব্যবহার করে ভার উত্তোলন করা হয়?		
1.3. দীর্ঘক্ষণ স্থির বসে থেকে বা দাঁড়িয়ে কাজ করতে হয়?		
1.4. অনুপযুক্ত আসন প্রদান করা হয়?		
1.5. কাজ করার ভঙ্গি সঠিক নেই বা দীর্ঘ সময়ের জন্য নড়াচড়া। (যেমন: মোচড়ানো, বাঁকানো, বেশি পৌঁছানো, কাজের সময় কাঁধের উপরে কনুই, ছাড়াই ঘাড় বা পিঠ বাঁকিয়ে কাজ করা এবং ভঙ্গি বা পরিবর্তন করার ক্ষমতার অভাব)		
1.6. লোড/ওজন পরিবহন বা সমর্থন করার সময় উচ্চ শক্তি ব্যবহার করা হয়?		
1.7. পুনরাবৃত্তিমূলক কাজ করা হয়?		
1.8. একটি দীর্ঘ সময়ের জন্য কম্পনের সংস্পর্শে থাকা হয়?		
শারীরিক পরিবেশ	হ্যা	না
2.1. কাজের জায়গার মেঝে পিচ্ছিল, হাটার রাস্তা প্রতিবন্ধক থাকে তার বা অন্যান্য জিনিস দ্বারা?		
2.2. শ্রমিকরা ধারালো বস্তুর সংস্পর্শে থাকে?		
2.3. ইলেক্ট্রনিক বিপদ যেমন ফ্রায়েড কার্ড (তার), মিসিং গ্রাউন্ড পিনস, ওয়ারিং সঠিক নেই?		
2.4. কাজ করার পরিবেশ অপরিষ্কার বা ধুলো উপস্থিত?		
2.5. কর্মস্থলে পর্যাপ্ত আলোর ব্যবস্থা নেই?		
2.6. শব্দ দূষণ হয় (উচ্চ শব্দ একটা দীর্ঘ সময় পর্যন্ত)?		
2.6. আপনার কাজের পরিবেশের তাপমাত্রা কি বেশি?		
2.7. কর্মস্থলে বায়ু চলাচল ব্যবস্থা ভালোনা?		

2.8. কাজের পরিবেশে কাজ করার জন্য পর্যাপ্ত খালি স্থান রয়েছে নেই? (ঘনত্ব বেশি)		
2.9. বাজে গন্ধের উপস্থিতি রয়েছে?		
<b>জীববিজ্ঞানসংক্রান্ত ঝুঁকি</b>	<b>হ্যা</b>	<b>না</b>
3.1. পরিষ্কার খাবার পানির সুব্যবস্থা রয়েছে?		
3.2. আলাদা টয়লেটের ব্যবস্থা রয়েছে?		
3.3. সঠিক পরিমাণ খাবার গ্রহণ করা হয়?		
<b>রাসায়নিক ঝুঁকি</b>	<b>হ্যা</b>	<b>না</b>
4.1. শ্রমিকরা তরল যেমন বিভিন্ন পরিষ্কারক পণ্য, দ্রাবক, এবং রঙ সংস্পর্শে আসে?		
4.2. কর্মক্ষেত্রে শ্রমিকরা বিভিন্ন গ্যাসের সংস্পর্শে আসে?		
4.3. গ্যাসোলিন, অক্সিজেন ট্যাংক, অ্যালকোহল ওয়াইপ ইত্যাদির মত দাহ্য পদার্থের উপস্থিতি রয়েছে?		
<b>মানসিক ঝুঁকি</b>	<b>হ্যা</b>	<b>না</b>
5.1. অতিরিক্ত কাজের চাপ আছে?		
5.2. যোগাযোগের সুযোগ এবং সহকর্মী বা ম্যানেজারের সাপোর্টের অভাব?		
5.3. মানসিক এবং যৌন হয়রানির অভিজ্ঞতা, তৃতীয় পক্ষের সহিংসতার অভিজ্ঞতা?		
5.4. আপনি কি মনে করেন আপনার কম্পানির পরিবর্তন দুর্বল এবং আপনি কি আপনার জব নিয়ে অনিরাপত্তায় ভোগেন?		
5.5. চাকরিতে নমনীয়তার অভাব/কম?		

### পার্ট C: ফ্যাক্টরিতে স্বাস্থ্যসেবা সুবিধা

6.1. প্রাথমিক চিকিৎসা ও বিনামূল্যে ঔষধ সুবিধা আছে কি?	<b>হ্যা</b>	<b>না</b>	<b>N/A</b>
6.2. ডাক্তার এবং নার্স কি সবসময় উপস্থিত থাকে?			
6.3. আপনাদের প্রতিষ্ঠানে কি একটি নির্দিষ্ট সময় পরপর স্বাস্থ পরীক্ষা করা হয়?			

6.4. শ্রমিকরা কি সহজেই প্রাথমিক চিকিৎসার সরঞ্জাম ব্যবহার করতে পারে?			
6.5. আপনার নিয়োগকর্তা কি প্রতি বছর কর্মীদের নিরাপত্তা প্রশিক্ষণ এবং শিক্ষা দেয়?			
6.6. আপনার নিয়োগকর্তা নিকট হতে কি ব্যক্তিগত সুরক্ষা সরঞ্জাম ব্যবহার সংক্রান্ত বাধ্যতামূলক নীতি এবং বিধান রয়েছে?			
6.7. কর্মীদের কি অগ্নি নির্বাপক যন্ত্র ব্যবহার এবং জরুরী বহির্গমন সম্পর্কে প্রশিক্ষণ দেওয়া হয়?			
6.8. মাতৃকালীন ছুটি দেওয়া হয়?			
6.9. কোনো স্বাস্থ্য বীমার ব্যবস্থা আছে?			
6.10. কোন ব্যক্তি সুরক্ষা সরঞ্জাম কম্পানি থেকে প্রদান করা হয়?			
6.11. অন্যান্য ( যদি থাকে, উল্লেখ করুন)			
6.12. কোনো সুবিধা নেই			

**পার্ট D: আপনি যে স্বাস্থ্য সমস্যার সম্মুখীন হয়েছেন**

বায়োমেকানিক্যাল এবং আর্গোনোমিক সমস্যা (গত ১২ মাসে ব্যথা, অস্বস্তি এবং অসারতা বা অবসত)	হ্যা	না
7.1. ঘাড় ব্যথা		
7.2. উপরের পিঠে ব্যথা		
7.3. পিঠের নিচের দিক বা কোমড় ব্যথা		
7.4. কাঁধে ব্যথা		
7.5. কনুই ব্যথা		
7.6. কব্জি/হাতে ব্যথা		
7.7. উরুতে ব্যথা		
7.8. হাটুতে ব্যথা		

7.9. গোড়ালি		
<b>শ্বাসকষ্ট সম্পর্কিত সমস্যা</b>	<b>হ্যা</b>	<b>না</b>
8.1. আপনার কি সপ্তাহের অধিকাংশ দিনগুলিতে কাশি হয়?		
8.2. সপ্তাহের অধিকাংশ দিনগুলিতে কি আপনার কফ (থুথু) আসে?		
8.3. আপনি কি সপ্তাহে বেশিরভাগ দিন শ্বাসকষ্ট অনুভব করেন?		
8.4. আপনার কি বুকের ভিতর শ্বাস নেওয়ার সময় সাঁ সাঁ শব্দ হয় এবং সকালে বেড়ে যায় যখন ঘুম থেকে উঠেন?		
8.5. আপনার কি হেমোপ্টিসি আছে (থুথুর সাথে রক্ত)?		
8.6. আপনার কি সপ্তাহের কয়েকদিন বুকে ব্যথা হয়?		
<b>শারীরিক সমস্যা</b>	<b>হ্যা</b>	<b>না</b>
9.1. শ্রবণে সমস্যা আছে?		
9.2. চর্মরোগ জাতীয় রোগ আছে?		
9.3. আপনি কি অধিকাংশ সময় দুর্বলতা অনুভব করেন?		
9.4. কখনো কি কাজ করতে গিয়ে আঘাত পেয়েছেন, কেটে বা ভেঙ্গে গিয়েছিল?		
9.5. আপনার কি মাথাব্যথা আছে?		
9.6. রাসায়নিক লেগে শরীরের কোথাও কি জ্বলে বা পুড়ে গেছে?		
9.7. আপনার কি ফুসফুস/কিডনি/লিভারের সমস্যা আছে?		
9.8. এলার্জি আছে?		
9.9. জন্ডিস?		
9.10. অনিদ্রার সমস্যা আছে?		
9.11. যক্ষ্মা?		
9.12. হাঁপানি?		
9.13. নিম্নরক্তচাপ?( প্রেসার লো)		
9.14. উচ্চ রক্তচাপ?		
9.15. অন্যান্য (যদি থাকে)		

### পার্ট E: নিরাপত্তা সম্পর্কিত জ্ঞান

10.1. আপনি কি মনে করেন আপনি যে পরিবেশে কাজ করছেন তার ফলে আপনার স্বাস্থ্য সমস্যা হতে পারে?	হ্যা	না
10.2. আপনি কি জানেন কিভাবে অগ্নিনির্বাপক যন্ত্র ব্যবহার করতে হয়?		
10.3. আপনার স্বাস্থ্য ঝুঁকি এবং এর প্রভাব সম্পর্কে আপনি কী জানেন?	এটার প্রভাব আছে	
	এটার কোনো প্রভাব নেই	
	আমি জানিনা	

### পার্ট F: নিরাপত্তা

11. আপনি কি কাজের সময় নিচের সরঞ্জামগুলো ব্যবহার করেন?	হ্যা	No	N/A
11.1. এপ্রোন			
11.2. চশমা			
11.3. ফেসমাস্ক			
11.4. গ্লাভস			
11.5. হেডকাভার/হেয়ার কাভার/বানেট			
11.6. ফুটওয়ার			
11.6. আপনার কি এমন কোনো ডিভাইস আছে যা ভারী জিনিস তুলতে সাহায্য করে?			
11.8. আপনি কি কাশি বা হাঁচির সময় আপনার কনুই ভাজ করে বা টিস্যু দিয়ে মুখ এবং নাক ঢেকে রাখেন?			
11.9. আপনি কি সাবান এবং পানি দিয়ে হাত ধৌত করেন এবং শুকানোর জন্য তোয়ালে ব্যবহার করেন?			
11.10. আপনি কি কর্মস্থলে খাবার খান বা পান করেন?			
11.11. অন্যান্য ( যদি থাকে, উল্লেখ করুন)			

Bangladesh Health Professions Institute  
 Department of Occupational Therapy  
 4<sup>th</sup> Year B. Sc in Occupational Therapy  
 OT 401 Research Project

Thesis Supervisor- Student Contact; face to face or electronic and guidance record

Title of thesis: Occupational Health Hazards among Ceramic Workers in selected ceramic factory in Bangladesh.

Name of student: Shamima Akter Nizum

Name and designation of thesis supervisor: Nayan Kumer Chanda, Assistant professor, Department of Occupational Therapy, Bangladesh Health Professions Institute.

Appointment No	Date	Place	Topic of discussion	Duration (Minutes/Hours)	Comments of student	Student's signature	Thesis supervisor signature
1	8.8.20	BHPI building	THE aim, objective	1 hour	Submission of aim and objective	Shamima	Nayan
2	09.08.20	BHPI building	Feed back of aim and objective	1 hour	Find out data collection instrument	Shamima	Nayan
3	10.08.20	BHPI building	Research design and ethical consideration	30 minutes	Reasoning of research design	Shamima	Nayan
4	13.08.20	BHPI building	Feed back on data collection instrument	1 hour	Understand to make scale	Shamima	Nayan
5	15.08.20	BHPI building	Keywords and literature	1 hour	Unhelpful to find keywords	Shamima	Nayan
6	16.08.20	BHPI building	Feed back on methodology overall	1 hour	Understand the mistake	Shamima	Nayan

7	17.08.23	BHPI building	Feedback on literature	1 hour	Got effective guideline	Shamima	✓
8	19.08.23	BHPI building	Feedback on methodology	1 hour	Got effective guideline	Shamima	✓
9	22.08.23	BHPI building	Feedback on data collection instrument	1 hour	Understand and correct mistakes	Shamima	✓
10	27.08.23	BHPI building	Feedback on significance methodology	1 hour	Clear about reasoning	Shamima	✓
11	12.09.23	BHPI building	Feedback on introduction	2 hours	Got proper guideline	Shamima	✓
12	14.09.23	BHPI building	Feedback on proposal presentation	1.30 hours	Understand what to do next	Shamima	✓
13	16.09.23	BHPI building	Feedback on appendix	1 hour	Got effective guideline	Shamima	✓
14	18.09.23	BHPI building	Data collection procedure	1.30 hours	Got effective guideline	Shamima	✓
15	21.09.23	BHPI building	Permission procedure to collect data	1 hour	Got effective guideline	Shamima	✓
16	23.09.23	BHPI building	Feedback on data collection	30 minutes	Got effective guideline	Shamima	✓
17	11.10.23	BHPI building	Feedback on field test	1 hour	Got effective guideline	Shamima	✓
18	21.10.23	BHPI building	Feedback on data collection tool after field test	1 hour	Got correct mistakes	Shamima	✓



13	25.10.23	BHPI building	Feedback on introduction on 1st draft submission	2 hours	Got effective feedback	Shamina	✓
20	16.1.24	BHPI building	Feedback on literature review	2 hours	Got effective feedback	Shamina	✓
21	18.1.24	BHPI building	Feedback on significance write-up	1.30 hours	Got effective feedback	Shamina	✓
22	20.1.24	BHPI building	Feedback on the results for 1st draft	2 hours	Find out the way to correct feedback	Shamina	✓
23	22.1.24	BHPI building	Feedback on discussion conclusion for 1st draft	2 hours	Got effective guideline	Shamina	✓
24	20.01.24	BHPI building	Feedback on 1st draft	1 hour	got effective guideline	Shamina	✓
25	3.02.24	BHPI building	Feedback on result	1 hour	Understand the result	Shamina	✓
26	09.2.24	BHPI building	Feedback on result and conclusion	1 hour	Understand the res task	Shamina	✓
27	19.03.24	BHPI building	Feedback on 2nd draft	1 hour	Got effective guideline	Shamina	✓
28	22.03.24	BHPI building	Feedback on analysis	1 hour	Understand the analysis	Shamina	✓
29	29.3.24	BHPI building	Feedback on formatting of whole thesis	1 hour	Understand the formatting.	Shamina	✓
30	30.3.24	BHPI building	Feedback on result of the study	30 minutes	Understand the process	Shamina	✓

31	28.09.24	DHPI building	Feedback on result of the thesis (Discussion)	30 minutes	Understand the process and tests	Shamina	✓
32	02.09.24	DHPI building	Discussion about connection of 2nd draft	1 hours	Get necessary guideline for connection of mistakes	Shamina	✓
33	4.9.2024	DHPI building	Discussion about making power point presentation submission	1 hours	Get effective guideline	Shamina	✓

Note:

1. Appointment number will cover at least a total of 40 hours; applicable only for face contact with the supervisors.
2. Students will require submitting this completed record during submission your final thesis.