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FACTORS AND RESPIRATORY COMPLICATIONS AMONG TRAFFIC POLICES IN DHAKA CITY

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

FACTORS AND RESPIRATORY COMPLICATIONS AMONG TRAFFIC POLICES IN DHAKA CITY

Submitted by **Md. Tasrif Ahmed Fahim**, for the partial fulfillment of the requirement for the degree of the Bachelor of Science in Physiotherapy (B.Sc. in PT).

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DECLERATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I would bound to take written consent from the Department of Physiotherapy, BHPI.

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ACRONYMS

BHPI   Bangladesh Health Professions Institute

BRTA   Bangladesh Road and Transport Authority

COPD   Chronic Obstructive Pulmonary Disease

CRP   Centre for the Rehabilitation of Paralysed

DMP   Dhaka Metropolitan Police

FVC   Forced Vital Capacity

ILO   International Labour Organization

IRB   Institutional Review Board

QoL   Quality of Life

SGRQ   St. George's Respiratory Questionnaire

SPSS   Statistical Package for the Social Science

WHO   World Health Organization

ABSTRACT

Purpose: To know some respiratory complications and associated findings among traffic police in Dhaka city. ***Objectives:*** To find out the association of some respiratory complications with selected socio demographic variable among traffic polices in Dhaka city. To identify mostly affected ranked people among traffic police. To know the percentages of respiratory complications by the ratio of age. ***Methodology:*** The study design was cross-sectional. The sample size was 203 and the researcher collected 113 due to time limitation and the lack of funding. Convenience sampling technique was used for sample selection from the several traffic police box of Dhaka Metropolitan Police (DMP). All data were collected through face-to-face interview by using St. George's Respiratory Questionnaire. The data was analyzed through descriptive statistics by using table, pie chart and bar chart by SPSS software version 25. ***Results:*** Among 113 participants traffic inspectors were 6.19% (N=7), sergeants were 22.12% (N= 25), sub inspectors were 7.96% (N= 9), assistant sub inspectors were 10.62% (N= 12) and constables were 53.10% (N= 60). All the participants were male in gender. Among the participants, n=64 (56.6%) had coughing at the time of their work, n=72 (63.7%) felt restlessness in their working time and n=65 (57.5%) felt chest heaviness at the working time & most of them rank was constable level. Among the participants only 4 participants were taken physiotherapy treatment. This study found the association between rank and some respiratory complications such as coughing, breathlessness. In this study, the lowest SGRQ score of the participant was 32 and the highest SGRQ score was 52. ***Conclusion:*** Study findings show that there is a substantial difference in the risk of studied respiratory symptoms between different categories of traffic police jobs. The results of the study suggests that low rank traffic polices are in the most vulnerable situation among all the participants. The effect of pollution by vehicular exhausts may be responsible for these pulmonary function impairments. But everybody of the participants claimed in one sentence that this poisonous environment can take them to their big health hazards such as heart problem and lung cancer.

Key words: *Traffic Police, Dhaka City, Respiratory Complications, Dhaka Metropolitan Police (DMP).*

| **CHAPTER I** | **INTRODUCTION** |

1.1 Background

Workplace environmental exposures can have an impact on one's health. Due to the nature of their work, traffic police officers are often found at the side of the road. Roadside vehicle emissions, which can result in both short- and long-term health issues, as part of their duty. Earlier epidemiological research showed a link between respiratory health outcomes for traffic police officers and occupational health risks such environmental pollution from vehicle emissions (Ahmed et al. 2022).

According to the Police Act of 1967, the main responsibility of traffic police officers in Malaysia is to oversee and control traffic flow on public highways and to execute the Road Transport Act of 1987 (Police Act 1967). Thus, kids must spend a lot of time outside (8 to 16 hours per day) (ILO, 2012). The Point Duty Unit of the Traffic Police focuses primarily on controlling traffic flow in congested intersections throughout the country's urban cores and peripheries. Traffic police are necessary to control the flow of traffic since it frequently moves at a high rate (Jamil et al. 2020).

Bengaluru is a metropolitan area with a rapidly growing population, a migrant influx from other regions of the country, and unchecked urbanization; a growth in the number of vehicles on the road and extended traffic jams all contribute to air pollution levels rising. According to information from the Regional Transport Office in Bengaluru, there are around 75 million registered vehicles on the road that potentially cause air pollution. The Karnataka State Pollution Board reports that Bengaluru's ambient air quality ranges from moderate to good. However, PM10 and PM2.5 levels are above average by WHO criteria (Gowda and Thenambigai 2020).

Traffic-related air pollution poses an occupational health risk to people who conduct manual labor close to traffic, according to a study on ambient concentrations of air pollution related to traffic as a risk factor in the work environment of a group of street cleaners in Copenhagen. Moreover, in regions with high traffic density, the general population may also be impacted (Raaschou-Nielsen, Nielsen and Gehl 1995).

The most important source of ultrafine particles in an urban setting comes from motor vehicle emissions, whereas airborne dust contributes significantly to overall atmospheric pollution. These vehicles release a combination of gaseous compounds and particles with various physical and chemical characteristics called smoke. These harm the lungs and airways when they are breathed. The particles make the chemicals contained in the smoke more hazardous. Vehicle emissions are the primary cause of the air quality issue in cities. Indian cities are increasing quickly as a result of the increased economic base. As a result, there are more people owning and using cars, which has caused air pollution levels to grow. It is well known that exposure to air pollution is bad for one's health in general and the lungs in particular. Due to the nature of their work, traffic police officers are constantly exposed to car emissions, putting them at danger in this regard (Gupta et al. 2011).

Dhaka is the capital City of Bangladesh. The air quality of Dhaka is considered to be one of the most polluted in the world, at 82 µg/m3 annual average PM2.5 concentration from a variety of pollution sources and ranked as the third most polluted city among the megacities with at least 14 million people (Ahmed et al. 2022).

The majority of the 504,130.000 motor vehicles registered in Bangladesh in 2019 were de cades old and unsafe for the road, significantly contaminating the environment, according to the Bangladesh Road and Transport Authority (BRTA).
The concentration of PM particles, SO2, Ozone, Carbon monoxide in some cities of Bangladesh including Dhaka city has been found well above the recommended level of the World Health Organization (WHO).
Researcher said that, Environmental exposures might occur during occupational activities. Influence health Traffic cops put in a lot of time. time spent by the roadside due to the nature of their work and are subjected to roadside vehicular emissions that can have long-term and short-term health consequences problems.

Previous epidemiology studies Several studies have found a link between occupational health and environmental hazards such as pollution caused by Vehicle emissions and poor respiratory health results in traffic police officers (Han and Nacher 2006).

Researcher have issued that, road traffic produces volatile organic compounds, suspended particulate matter, nitrogen oxides, sulfur oxides, and carbon monoxide, all of which have

a wide variety of negative health consequences on the exposed population (Dilara et al. 2020).

According to the researchers, Bangladesh, one of the most densely populated nations in the world, has experienced significant urbanization and economic change in recent years. Bangladesh's major cities, particularly Chittagong and Dhaka, are clogged with a large number of motor vehicles, including local transport buses, long route buses, diesel-powered local passenger vans, passenger cars, commercial vans, private cars, compressed natural gas (CNG)-powered auto-rickshaws, and heavy-duty diesel-powered lorry trucks for the shipment of garment products to the Chittagong port. The majority of these cars are powered by high-sulfur diesel (Rahman, Mahamud and Thurston 2019).

The lungs can become damaged by prolonged exposure to chemicals, gases, and fumes that are present in the air near busy streets. The various lung functions decline as a result, changing the test parameters for pulmonary function. It was recommended that traffic police officers wear masks while on duty in congested areas, get frequent health checks to identify respiratory problems, if any, and follow appropriate management techniques. The public should be made aware of the negative impacts of traffic air pollution and instructed to turn off their engines when the signal duration is longer (Pal et al. 2011).

We draw the conclusion that prolonged exposure to chemicals, gases, and fumes that are prevalent in the air near busy roads is bad for the lungs. The various lung functions decline as a result, changing the test parameters for pulmonary function. It was recommended that traffic police officers wear masks while on duty in congested areas, have frequent health checks to identify respiratory problems, if any, and follow appropriate management techniques. The public should be made aware of the negative impacts of traffic air pollution and instructed to turn off their engines when the signal duration is longer (Pal et al. 2011).

1.2 Rationale

A Traffic police is a person who works at the traffic control unit of Bangladesh Police. They are very familiar to us. They play an important role in our daily life. They are well educated. They are brave person. They are very careful about their work. The profession of a Traffic police man is very risky. The main job of a Traffic police to controls the traffic in our highways. The work of a traffic police is very important. They save our time and daily hazard which is cause by traffic. Sometimes a traffic police takes the risk of his life to save others from the traffic. The work of a traffic police is very commendable. They are our friend in daily life. We should show respect to them and his profession.

Traffic polices are the city fighters. They serve us constantly. But we have not a single second to think about them. From that thinking I choose my title about them. According to my assumption most of them have respiratory complications. After successfully completion my study, I can propose to DMP so that they can introduce their 'Central Police Hospital' about "Respiratory Physiotherapy Department" which is absent here. If I can do this, I will be very proud just because of spreading my profession. And also, I will be able to give awareness to them about their health; which is a responsibility for us. And also, this type of study is very rare not only in CRP but also in Bangladesh. The traffic police spend all day long in the road and they are in the high risk of many diseases, such as respiratory diseases. It will be beneficial to know about them from my research.

1.3 Research Question

What are the factors and respiratory complications can find among the traffic polices in Dhaka city?

1.4 Aim of the Study

To determine the respiratory complications and associated findings among the traffic polices in Dhaka city.

1.5 Objectives:

1.5.1 General objectives:

❖ To identify the respiratory complications and some associated findings among the traffic polices in Dhaka city.

1.5.2 Specific objectives:

- To gaze out the sociodemographic condition of the participants.
- To know the mostly affected ranked people in respiratory related problems among traffic polices.
- To identify their treatment related conditions.
- To explore the psycho-social related results with the workplace of traffic polices.
- To find out the association of respiratory complications with selected socio demographic variable among traffic polices.
- To know the percentages of respiratory complications by the ratio of age.

1.6 Conceptual frame work:

| Independent variable | | Dependent variable |

Sociodemographic factor:

Age, Gender, Education level, monthly income, Marital status, Religion, work environment, family types.

Health related risk factor

Factor and respiratory complications among the traffic polices in Dhaka city

Psychological factor
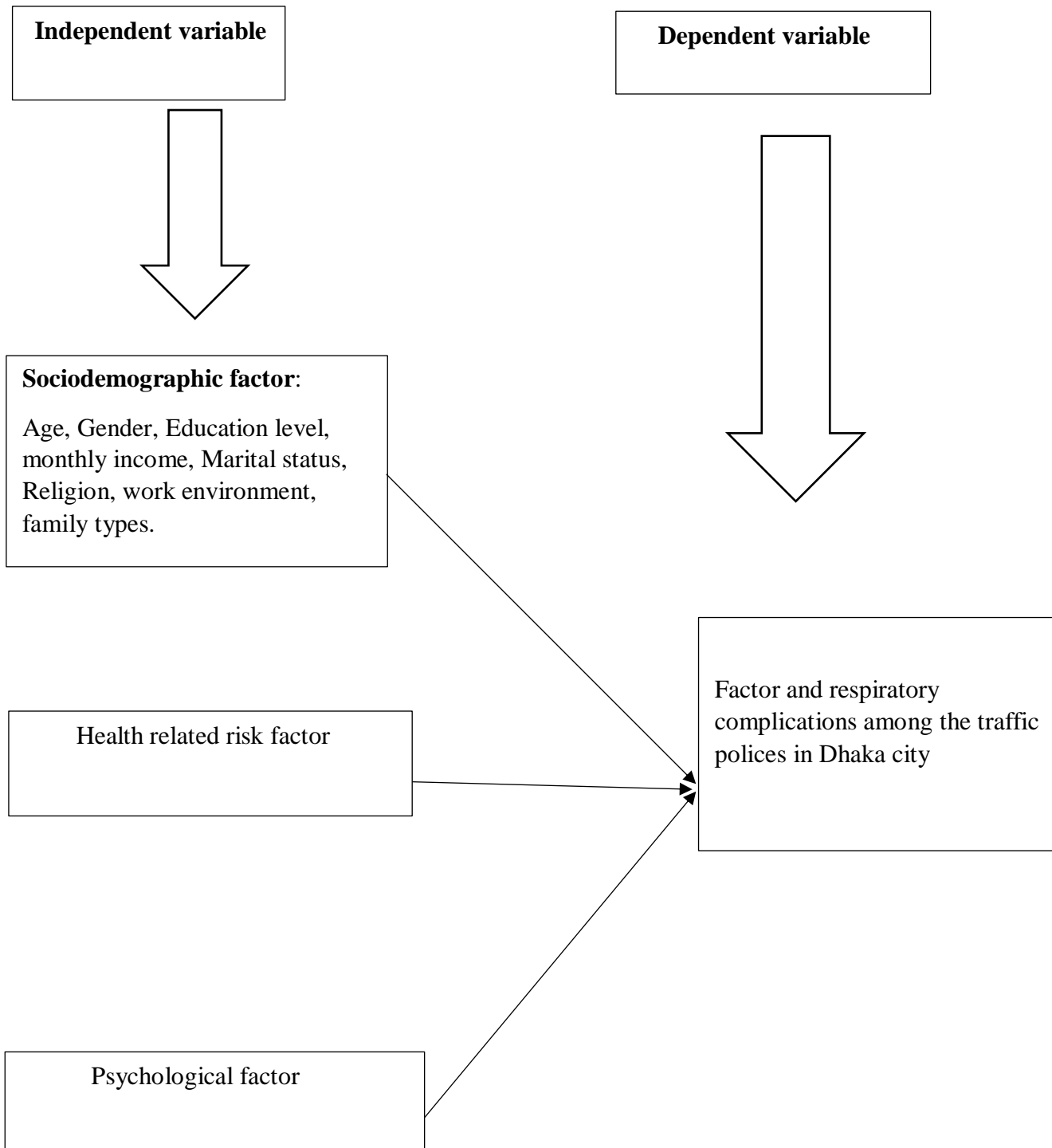
1.7 Operational definition:

Traffic police: Police officers who control traffic and enforce traffic laws are known as traffic police. Police who monitor highways, direct traffic, and address traffic offenses are considered traffic police. They could be part of a transportation authority or highway authority, a unit or division inside a larger police organization, or they could be a sort of assignment given to personnel (Ahmed et al. 2022).

Respiratory complications: Respiratory complications means that complications which occur in respiratory tract such as asthma, COPD, bronchitis, bronchiectasis, pulmonary edema, pneumonia, and pulmonary hemorrhage etc (Ahmed et al. 2022).

Air pollution: Any substance that alters the natural properties of the atmosphere, whether it be chemical, physical, or biological, is considered an air pollutant. Air pollution can occur indoors or outdoors (Gupta et al. 2011).

Urbanization: Urbanization, the cycle by which enormous quantities of individuals become for all time packed in moderately little regions, shaping urban areas (Pal et al. 2011).

Respiratory rehabilitation: People with chronic respiratory disease who continue to be symptomatic or have decreased function despite receiving standard medical treatment benefit greatly from respiratory rehabilitation, also known as pulmonary rehabilitation. It is a wide restorative idea (Han and Nacher 2006).

Allergy-related respiratory disorders including asthma and rhinitis are thought to be significantly influenced by environmental variables. The pathophysiology of respiratory disorders may be influenced by the presence of numerous particles and gases from vehicle emissions, such as carbon dioxide, carbon monoxide, sulphur, benzene, lead, nitrogen dioxide, nitric oxide, and black smoke, among others. When people are exposed to hazardous chemicals and gases from vehicle emissions over an extended period of time, their lungs and airways get irritated and allergic to them. Air pollution is a problem for traffic police officers who operate in congested traffic signal zones for long periods of time (Pal et al. 2011).

The vast number of youngsters, street children, local streetwalkers, and rickshaw pullers in Dhaka City represent a serious danger to the city's air quality. Young toddlers are usually exposed to cadmium (Cd) by inhalation of smoke and polluted soils and dust from industrial/emissions and sewage sludge. The presence of high levels of lead (Pb) in the environment from gasoline, paints, ceramics, batteries, and other sources has also been linked to an increase in the risk of contaminated air (Gowda and Thenambigai 2020).

According to the Department of Environment, the density of airborne particulate matter (PM) in the city exceeds 463 micrograms per cubic meter (mg/m3) from December to March, the highest level in the world. Mexico City and Mumbai follow Dhaka with 383 and 360 mg/m3 respectively (Daily Star 2009).

Traffic-related air pollution poses an occupational health risk to those who conduct manual labor close to traffic, according to a study on ambient concentrations of air pollution related to traffic as a risk factor in the work environment of a group of street cleaners in Copenhagen. Moreover, in regions with high traffic density, the general population may also be impacted (Raaschou-Nielsen, Nielsen and Gehl 1995). According to the study's findings, inhabitants of Lahore who were exposed to a considerable increase in roadside dust beyond the "WHO defined threshold limit value" (TLV) experienced statistically significant lung function metrics (especially FVC, FEV1, and FEF25-75%) impairment.

The degree of pulmonary function impairment is inversely correlated with exposure to roadside dust (Jafary, Faridi and Qureshi 2007).

Automobiles (auto rickshaws, trucks, and buses, 35% is related to fine particulate matter and 48% is related to hydrocarbon mainly generated by vehicles with two stroke engines (using a direct mix of Mobil and petrol), particularly by baby taxis, tempos, and motorcycles), industrial emissions, bad civic practices, and poor government services are some of the factors contributing to Bangladesh's polluted air (Ahmed et al. 2002).

Environmental exposures during occupational activities might harm health. Due to the nature of their employment, traffic officers spend a significant amount of time at the roadside and are exposed to roadside vehicular pollutants, which can cause both long-term and short-term health problems. Previously performed epidemiological studies indicated the relationship of occupational health risks such as environmental pollution owing to vehicular emissions and unfavourable respiratory health outcomes in traffic police employees (Han and Nacher 2006). The deterioration of air quality caused by vehicular emissions has been found to cause considerable illness and mortality by impacting many organs and systems (Lodovici and Bigagli 2011).

Bangladesh, one of the most densely populated countries in the world, is going through economic transition and rapid urbanisation in recent years. Major cities of Bangladesh, particularly Chittagong and capital city Dhaka are congested with a large number of motor vehicles, including local transport buses, long route buses, diesel-run local passenger vans, passenger cars, commercial vans, private cars, compressed natural gas (CNG)-run auto-rickshaws, and heavy-duty diesel-powered lorry trucks for the shipment of garment products to the Chittagong port. Most of these vehicles are run by high-sulphur diesel (Rahman, Mahamud and Thurston 2019).

Owing to the expanding economic base, Indian cities are growing rapidly. This has led to an increase in the ownership and use of motor vehicles, which is very harmful to health, in general, and to the lungs, in particular. In this respect, traffic policemen are at a risk, since they are continuously exposed to emissions from vehicles, due to the nature of their job (Suresh et al. 2000).

Among the motor vehicle-generated air pollutants, diesel exhaust particles account for a highly significant percentage of the particles emitted in many towns and cities. Acute effects of diesel exhaust exposure include irritation of eyes and nose, lung function changes, headache, fatigue, and nausea. Chronic exposure is associated with cough, sputum production, and lung function decrements. The purpose of this study was to assess the pulmonary function status of traffic cops stationed at various traffic junctions in and around Patiala city, in order to determine whether prolonged exposure to vehicular exhausts had any negative effect on their lung functions. We also attempted to establish a link between the duration of exposure to vehicular exhausts and decrements in various lung parameters of traffic cops (Gupta et al. 2011).

Significant inflammatory reactions occur in the lungs of traffic policemen as they are exposed to excessive amounts of vehicular pollutants for a prolonged period. These reactions can lead to asthma, chronic bronchitis, emphysema, chest infections, pneumonia and lung scarring or fibrosis (Streeton and Adelaide 2000).

Exposure to toxic substances such as vehicular gases, smoke and inhaled pollutants (lead, cadmium, manganese) induce inflammation in the lung. This causes epithelial injury and proteolysis of the extracellular matrix and thereby COPD (Walker BR et al. 2014). Vehicle exhaust particulate matter can easily enter and accumulate in the trachea and bronchi. Small particles of less than 2.5 microns (PM2.5) can enter the small airways and alveoli, causing respiratory diseases such as asthma, bronchitis, COPD, and interstitial lung disease (Rickwood and Knight 2010).

A researchers shown that, 100 traffic police officers were tested, and it was discovered that 68% of them complained of persistent coughing, 22% of them said they had breathing problems, and 36% of them said their respiratory tracts were irritated. In comparison, only 25% of controls reported having a regular cough, 12% reported having shortness of breath, and 15% reported having respiratory tract irritation (Gupta et al. 2011).

Different Researchers discovered a considerable decrease in lung function indices (FVC, FEVI, FEVI /FVC%) among traffic cops (Gupta et al. 2011). The primary source of ambient air pollution is fuel combustion. Primary pollutants (sulphur dioxide, nitrogen oxides, and particles), secondary acidic aerosols and other particles, and oxidant pollutants

(mainly ozone) created by photochemical processes involving hydrocarbons and nitrogen oxides are among them (Gupta et al. 2011).

There are three primary causes of air pollution in Malaysia, namely mobile sources, stationary sources, and mobile sources. Emissions from mobile sources have been the primary cause of air pollution in recent years, accounting for at least 65-75% of overall air pollution. According to a Department of State annual report (Department of Statistics, Malaysia 2015). Under the Police Act, 1967 Section 21 task of regulating, controlling and maintaining the flow of traffic on public roads falls to the responsibilities of a traffic policeman (Police Act 1967, Malaysia: Parliament, 1998). With such duties, individuals have no option but to do the assigned work. Their job is considered a tough duty since they have to cope with crowded traffic and selfish drivers. As a result of work variables, their health will deteriorate if they are exposed to contaminated air. Traffic-related air pollution is an occupational health threat for persons who conduct manual labour near traffic (Suresh et al. 2000).

When traffic officers are on duty in different traffic zones around Dhaka, they are exposed to huge amounts of ambient air pollution. Unlike in wealthy nations, little study has been conducted in Africa on the respiratory health of employees who are heavily exposed to air pollution from automobiles. These studies were mostly conducted by spirometers to assess respiratory functions and gave a fair idea about the respiratory health status of an individual. These changes can be observed even before the disease becomes symptomatic. Hence, this study aimed at evaluating the respiratory health status of traffic policemen using spirometry and also to document the prevalence of respiratory symptoms among traffic policemen (Ranganadin et al. 2013).

Diesel exhaust particles make up a highly important portion of the air pollutants produced by motor vehicles and are released in many towns and cities. Exposure to diesel exhaust can cause immediate side effects as eye and nose irritation, altered lung function, headache, tiredness, and nausea. Chronic exposure is linked to lung function declines, sputum production, and coughing (Sydbom et al. 2001).

Pulmonary function testing revealed that traffic officers' respiratory function was impaired. In traffic cops, all four metrics (PVC, FEVI, PEFR, and MMEF) were lowered. The

considerable disparity between actual and predicted PFT values indicates that hing function has decreased in this occupational group. This is supported by the high prevalence of obstructive disease (28%) in this group. Similar findings have been made in research conducted in India and other nations (Pal et al. 2011).

An Air Quality Index (AQI) of 301 to 400 is deemed detrimental to inhabitants' health. In January 2022, Dhaka's AQI was reported at 288. The AQI is calculated using the concentrations of five major pollutants: Particulate Matter (PM10 and PM2.5), SO2, NO2, CO, and Ozone. Heatwaves (high temperatures for three days in a row) have been common in Dhaka. A light heatwave is defined as 36-38 degrees Celsius, a moderate heat wave as 38-40 degrees, and an intense heatwave as temperatures exceeding 40 degrees. Gulshan, Mirpur, Gabtoli, Goran, Basabo, Tongi, Postogola, Jurain, Hazaribagh, Jatrabari, Sayedabad, Uttara, Farmgate, and Mohakhali, among many more places, with temperatures ranging from 29 to 34.5 degrees Celsius (The financial Express 2022).

In Thornburi, Thailand, traffic police officers' mean FEV1 and FVC values were significantly lower than those of the general Thai population (3.29 0.5 L vs. 3.43 0.5 L, P=0.01 for FEV1 and 3.86 0.5 L vs. 3.98 0.6 L, P=0.047 for FVC). Additionally, it was shown that among traffic officers, the values were much lower among those officers who did not wear protective masks compared to those who did (Phunsup et al. 1999).

According to sources, three traffic officers died last year as a result of pollution-related issues. Two of the constables died of cardiac arrest, one on the job, and another from complications. Another traffic department official stated that they are very much at risk for defective automobiles on the road. At least 1,500 two- stroke automobiles have been scheduled in the previous ten days (The daily star 2022).

According to SK Goyal of the National Environmental Engineering and Research Institute's environmental impact and risk assessment division (Neeri), Vehicle fumes contain key pollutants such as nitrogen dioxide, fine particulate matter, carbon monoxide, sulphur dioxide, and hydrocarbons, which combine to form a hazardous cocktail (The Times of India 2015). The percentage of respondents with respiratory health issues was 79.6% among those who had worked in Dhaka city for less than 10 years, and 87% among those who had worked in Dhaka city for more than 10 years. This suggests that those who

had been exposed to air pollution for more than ten years had significant respiratory difficulties. The same sort of findings was discovered in other studies (Künzli et al. 2000).

Several studies have indicated that where the level of PM10 was elevated, there was an increase in the occurrence of various respiratory health issues, as well as a substantial correlation between them. Furthermore, it was projected in the current study that when PM2.5 and PM10 levels increased, there was a presence of various respiratory health issues, and that where PM2.5 and PM10 levels were low, there was a high prevalence of respiratory disorders. There was also a strong correlation (Krzyzanowski and Cohen 2008).

In the study, 17.5% of participants experienced rhinitis, and 12.9% reported chest symptoms such as cough, wheeze, and trouble breathing/chest tightness. Cross-sectional research done in Puducherry to investigate the respiratory health condition of traffic cops found that 52.1% reported cough and 40% reported rhinitis; and another comparable study in Patiala found that 68% reported regular cough and 22% reported shortness of breath in traffic cops (Ranganadin et al. 2013). Due to the nature of their profession and the environment in which they operate, traffic police officers are constantly exposed to harmful car exhaust fumes. An accurate assessment of the lung volumes and flow is made during a pulmonary function test (PFT) utilizing a computerized spirometer, which helps in the early detection of lung function impairment. Studies on the respiratory morbidities of traffic police officers are few. In order to determine the scope and kinds of respiratory morbidities and evaluate pulmonary function using computerized spirometry, the following investigation was carried out (Gowda and Thenambigai 2020). Chronic cough, asthma, nasal obstruction, respiratory infections, hypertension, eye irritation, sleepiness, headaches, and kidney impairment are all effects of air pollution on the respiratory, cardiovascular, neurological, and renal systems (Tanvir and Begum 2010).

The media should play a part in inspiring people to take action for a cleaner environment and raising public awareness of its significance for current generations as well. Another crucial step is the impounding of smoke-filled cars in addition to proper road cleaning, encroachment clearance, road expansion, sidewalk construction, and appropriate sewage systems for smooth traffic flow. Alongside roadways, plantations, greenbelts, and

waterbodies serve as dust and gaseous pollution filters and barriers naturally (Jafary, Faridi and Qureshi 2007).

Inflammation of the lungs is brought on by exposure to hazardous chemicals such as car exhaust, cigarette smoke, and inhaled toxins (lead, cadmium, and manganese). This results in COPD due to epithelium damage and extracellular matrix proteolysis (Walker BR et al. 2014). We did not redo the exposure evaluation in this work since we had already evaluated the ambient and biological levels of the major pollutants in our working population and the dose in traffic police is known to be much greater than controls (Volpino et al. 2004).

CHAPTER III	METHODOLOGY

3.1 Study design

Cross sectional study was selected for conducting the study. A cross-sectional study is a descriptive study in which disease and exposure status are measured concurrently in a given population and the main advantages are that it is quick and inexpensive.

In a cross-sectional survey, a researcher collects data from a sample drawn from a predetermined population. This design entails identifying a group of people and then gathering the information that the researcher requires when they use a specific service. This type of data can be used to find out a population's respiratory complications and their factors. Survey research is one of the most common types of research that implies asking a huge number of people questions about a specific topic or issue that is of interest to the participant. A survey is a data collection method that involves measuring relevant sample variables (often using a questionnaire) without any manipulation or systemic interference. The survey idea typically approaches a sample of the intended group of interest, interviews them or asks them through a questionnaire.

3.2 Study site

Traffic Police Unit of Dhaka Metropolitan Police (DMP) was chosen for this study. This place had chosen because it was suitable for the study and there had the samples which met inclusion and exclusion criteria of my study. At this place, population with working in traffic area can be found more easily and enough data can be collected at any time. In this study I have collected data from different traffic signals in Dhaka city.

3.3 Study population

Traffic police personnel are the population for this study.

3.4 Study duration

All the data was collected and completed by the researcher himself. The time period of completing total study was from May 1, 2023 to July 31, 2023.

3.5 Method of sampling

Finding the appropriate number and type of people to take part in the study is called sampling. Convenience sampling technique was applied for this study. Convenience sampling is the most widely used sampling method. It is easy to implement and easy to analyze. In this study, each member of the population has an equal chance of being selected as subject.

3.6 Criteria of sampling

The process of selecting subjects/individuals is referred to as sampling (Hicks 1999). A population is the total number of people, events or observations used in a study. In this study, traffic police personnel were the sample population whom are working at traffic police unit of DMP, Dhaka.

3.6.1 Inclusion criteria

- Only the traffic police in Dhaka city will included in this study.
- All ages of traffic police will be included in this study.
- Subject who are willingly participate (Ahmed et al. 2022).

3.6.2 Exclusion criteria

- Subject who was not willing to participate in the study.
- Without traffic police unit, no other unit will count as a study subject/participant (Ahmed et al. 2022).

3.7 Sample size and calculation

We know that;

$$n = z^2 p(1-p)/d^2$$

Here,

n= Required sample size.

z =confidence level at 95% (Standard value is 1.96).

P = P is the prevalence taken as 84.4% (Yeasmin et al. 2021).

d = margin of error at 5% (Standard value is 0.05).

So,

$$n = z^2 p(1-p)/d^2$$
$$= (1.96)^2 \times 0.844(1-0.844)/(0.05)^2$$
$$= 0.5057/0.0025$$
$$= 202.28$$
$$= 203$$

So, the sample size is 203

But the researcher has collected 113 data due to some limitation.

3.8 Data collection tools

The tools were used for collecting data are the printed questionnaire, pen, pencils, white paper, approved forms and consent forms, clip board and a bag for storing these tools.

3.9 Measurement tools

The St. George's Respiratory Questionnaire Score is main measurement tool used in this study.

3.10 Data collection procedure

Data were collected by conducting an interview with a semi-structured questionnaire paper. The questionnaire sought information on socio-demographic information, general health related questions, respiratory problems/complications related questions, treatment related questions, overall psychology such as (depression, anxiety) related questions etc. Data were collected form 01 May, 2023 to 31 May, 2023. The English questionnaires were converted into Bengali to ask questions to the participants during interviews. Researcher took permission from each volunteer participant by using a written consent form in Bengali.

3.11 Data analysis

Data were analyzed by using Statistical Package for the Social Science (SPSS) version 25 software. The variables were labeled in a list and the researcher created a computer-based data definition record file that contained a list of variables in order. The researcher inputted the name of the variables and defined the types, values, decimal, label alignment and data measurement level in the variable view of SPSS. The next task was to check the inputted data set to confirm that all data had been correctly copied from the questionnaire paper to the SPSS data view. The raw data were then ready to be analyzed in SPSS. Data were analyzed by descriptive statistics and calculated as percentages and presented by using tables, bar charts, column charts, pie charts etc. Microsoft office Excel 2013 was used to decorating the column charts, bar charts and pie charts. By this study a lot of information were collected. All results gave idea about some factors and respiratory complications among traffic polices in Dhaka city which is very alarming.

Chi square (χ2) Test

Chi square (χ2) Test is the most popular discrete data hypothesis testing method. It is a non-parametric test of statistical significance for bivibrate tabular analysis with a contingency table. In this study Chi square (χ2) test was done to measure the associations between two variables. It was used to test the statistical significance of results reported in bivariate tables.

Assumption

- Different and Independent variable
- Variables were quantitative
- Normal Distribution of the variable

Formula: the test statistics follow:

$$\chi2=\sum ki=1(O-E)2/E$$

Here,

χ2 = Chi square value

∑ = The sum of

O = Observed count

E = Expected count

Chi square is the sum of the squared differences between observed (O) and the expected

(E) data divided by expected (E) data in all possible categories.

Level of significance

The researcher has used 5% level of significant to test the hypothesis. If the p value for the calculated $\chi2$ is $p<0.05$ conclude that there is significant association between the two variables. The $\chi2$ value and the level of significance are presented through table.

3.12 Ethical consideration

An oral dissertation presentation was presented in front of member of Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). The research proposal was then submitted for approval to the Institutional Review Board (IRB). Then the ethical review board has approved this research.

At first the researcher applied for official permission for the study to the Commissioner of DMP, Dhaka. Then after one month it was permitted from the police headquarters, Dhaka. During the course of this study, interested participants were given written consent forms and also, they were informed about the purpose of the study and the consent form was explained to them verbally in Bengali. The participants were made aware that their participation was entirely voluntary and they had the unrestricted right to withdraw or discontinue at any time without any kind of hesitation. They were also ensured about maintaining confidentiality of their identity. The participants were informed that the information would be collected through a written questionnaire. The consent form and questionnaire were also checked by the supervisor. For this study researcher took permission from every interested participant. The participants were given information about their role in the study. Aim of the research and procedures involved in the study were also described to the participants. Participants were also informed that the information they provided might be published but their personal identities like names and addresses would not be mentioned or used. The study information was only discussed with the supervisor and it was never shared with anyone else. These materials will be exposed of after completion of the study. Although the findings of the study may not have a direct impact on the participants but rehabilitation professionals may get benefit from it in the future.

3.13 Informed consent

Each participant received written material before beginning the questionnaire. The participant's role in the study is explained by the researcher to them. A formal consent form was signed by each participant and given to the researcher. As a result, the participant attested to their comprehension of the consent form and their willingness to participate. The researcher promised the participants that the study wouldn't have any unfavorable consequences on them. Although the study may not have benefited the participants directly, it might have in the future for circumstances like theirs. The participants had the right to withdraw at any time and stop taking part.

CHAPTER IV   **RESULTS**

For this study, a total of 113 participants, who are working in Bangladesh Police in different rank were attending this study. Information was taken from them. The information has analyzed. The results are given below.

4.1 Socio-demographic findings of this study

4.1.1 Age of the participates

Table 1: Age of the participants

Variable	Minimum	Maximum	Mean	Standard deviation
Age	30	56	42.23	6.567

Out of the 113 participants, the minimum age 30 years, maximum age 56 years, the mean of the age is 42.23 and the standard deviation is 6.567.

4.1.2 Age group of the participants

Table 2.1: Age group of the participants

Age Group (years)	N	Percentage (%)
30-40	53	46.90
41-50	49	43.36
>50	11	9.73

Among the 113 participants, maximum participants were between 30-40 and 41-50 age group range whereas the minimum participants were in >50 age groups. In the age group 30-40 were 46.90% (n= 53), age group 41-50 were 43.36% (n=11) & lastly in the age group >50 was 9.73% (n =11).

4.1.3 Age group of the participants according to the rank

Table 2.2: Age group of the participants according to the rank

Rank / Age	T.I.	Sgt.	S.I.	A.S.I.	Constable	Total
30-40	4	25	7	5	12	53
41-50	3	0	1	5	40	49
>50	0	0	1	2	8	11

T.I. = Traffic Inspector; Sgt. = Sergeant; S.I. = Sub Inspector, A.S.I = Assistant Sub Inspector.

Among 113 participants; in the age group of 30-40 there were 4 T.I., 25 were Sgt., 7 were S.I., 5 were A.S.I. and 12 were Constables. In the age group of 41-50 there were 3 T.I., 1 was S.I., 5 were A.S.I. and 40 were Constables. And in the age group of >50; 1 was S.I., 2 were A.S.I. and 8 were Constables. So, in the 30-40 age group maximum participants were sergeant (n=25), in the 41-50 age group maximum participants were constables (n=40) and in the >50 age group maximum participants were constables (n=8).

4.1.4 Rank of the participants

Table 3.1: Rank Of the participants

Rank	N	Percentages (%)
Traffic Inspector	7	6.19%
Sergeant	25	22.12%
Sub Inspector	9	7.96%
Assistant Sub Inspector	12	10.62%
Constable	60	53.10%
Total	113	100%

At the table 3.1 we see that among 113 participants, (n=7) were traffic inspector (6.19%); (n=25) were sergeant (22.12%); (n=9) were sub inspector (7.96%); (n=12) were assistant sub inspector (10.62%) and (n=60) were constable (53.10%). So, we can see that maximum participants were constables(n=60) and minimum participants were traffic inspector(n=7).

We will get a clear picture with a bar chart given below:
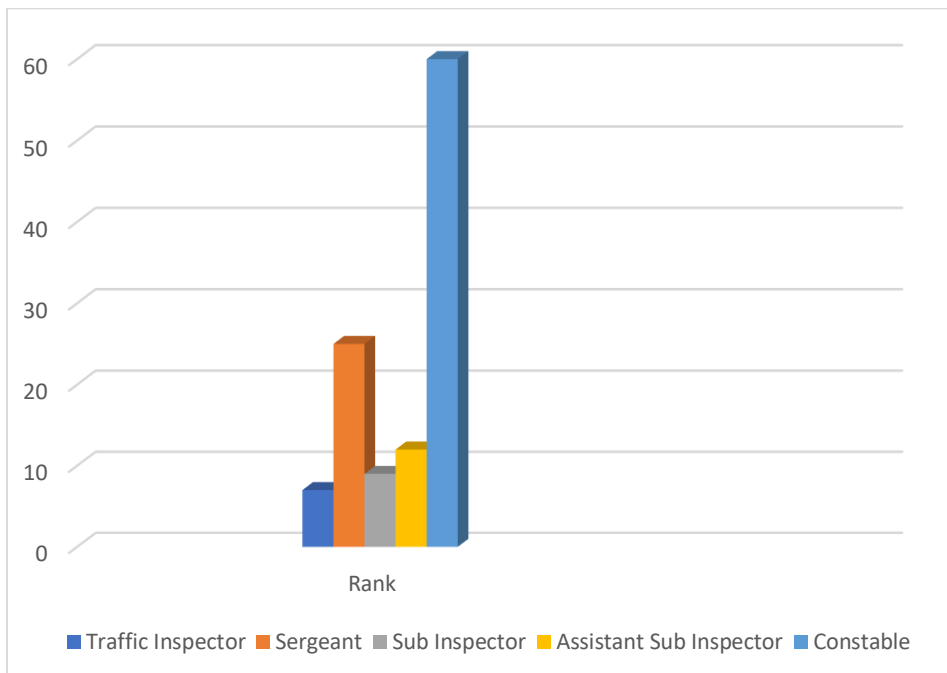
Figure 1: Rank of the participants

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Table 3.2: More about Rank

Mean	3.82
Median	5.00
Mode	5
Standard Deviation	1.428

At the table 3.2 we can see that the mean of rank of the participants were 3.82, median was 5.00, mode was 5 and standard deviation was 1.428.

4.1.5 Gender of the participants

Among 113 participants, all of them are male; N = 113 (100%).

4.1.6 Educational qualification of the participants

Table 4: Educational qualification of the participants

E.Q. Rank	SSC	HSC	Graduation	Post-Graduation
TI	0	0	2	5
Sgt.	0	0	1	24
SI	1	1	4	3
ASI	2	8	2	0
Constable	44	16	0	0

T.I.= Traffic Inspector; Sgt. = Sergeant; S.I. = Sub Inspector; A.S.I = Assistant Sub Inspector.

At the table 4; we can see that only SSS passed participants were 47 where 44 were constables, 2 were ASI and 1 was SI. HSC passed participants were 25 where 16 were constables, 8 were ASI and 1 was SI. Among graduated participants, 2 were TI, 1 was sergeant, 4 were SI and 2 were ASI. Lastly, among post graduated participants 5 were TI, 24 were sergeants and 3 were SI. So here we can see that maximum constables were SSC passed and maximum sergeants & TI were post graduated.

We will be very clear about this concept after watching the bar chart given below:

Educational Qualification
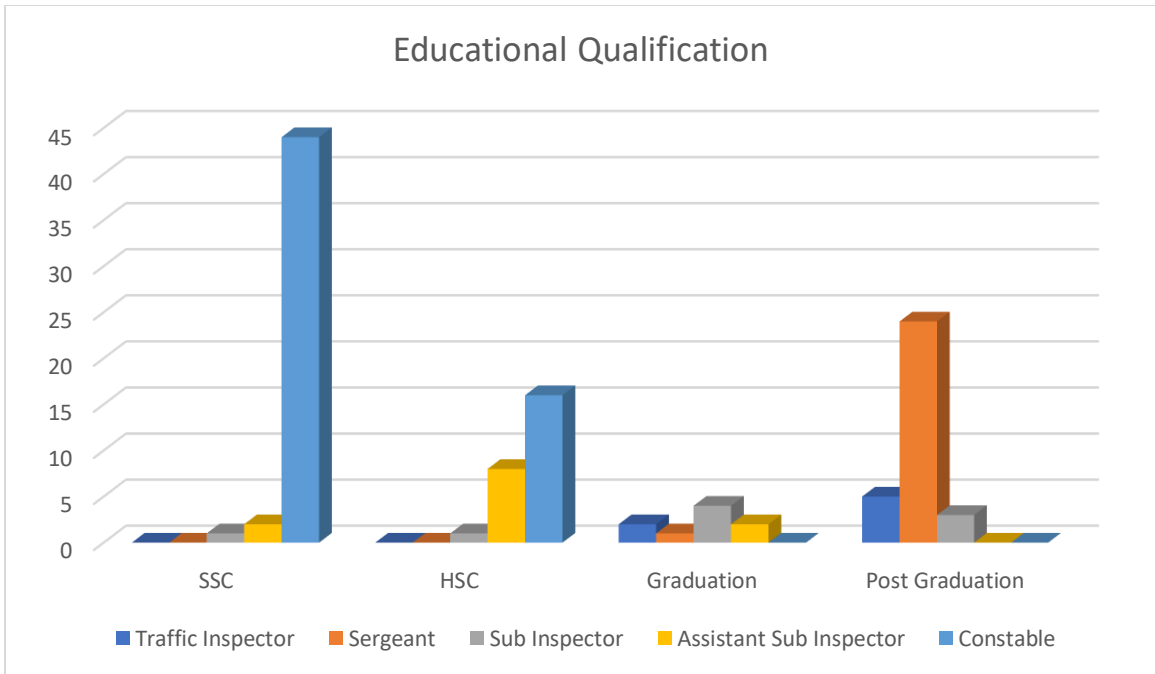
Figure 2: Educational qualification of the participants

4.1.7 Family type of the participants

Table 5: Family type of the participants

Family Type	N	Percentages (%)
Single Family	83	73.5
Joint Family	30	26.5

Table 5 is showing to us that among 113 participants, there have 83 participants (73.5%) who stay in the single family and another 30 participants (26.5%) stay in the joint family.

A very clear picture through a pie chart is given below:
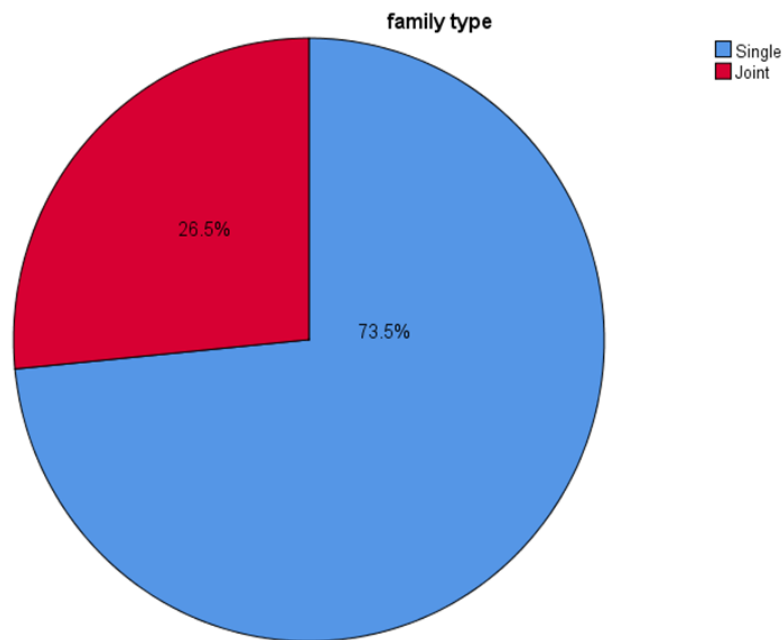
Figure 3: Family type of the participants

4.1.8 Religion of the participants

This pie chart is showing to us that the maximum participants were Muslim's (91.2%), some of them were Hindu's (8%) and rare participants were Buddhist (0.9%).
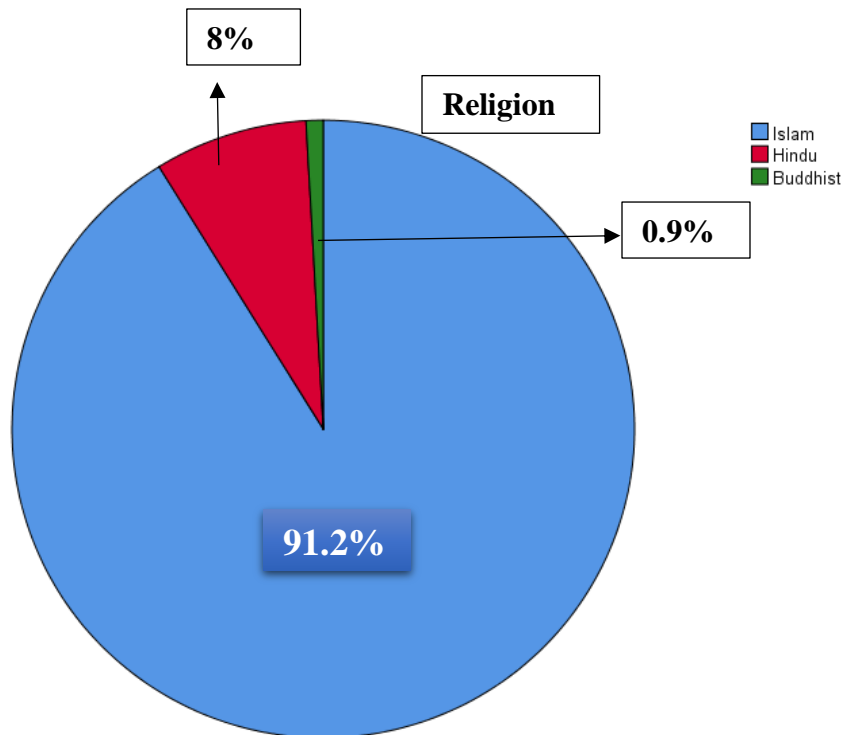
Figure 4: Religion of the participants

4.1.9 BMI of the participants

Table 6: BMI of the participants

Variable	Value
Minimum BMI	21.16
Maximum BMI	29.94
Mean	25.1669
Standard deviation	2.03018

From the table 6.1 we are able to know, that the minimum value of BMI of the participants is 21.16 which is in normal category and the maximum value of BMI of the participants is 29.94 which is in overweight category.

From figure 5 we can see that, about 53.10% participants (n=60) were in normal range of BMI and about 46.91% participants (n=53) were in overweight range of BMI. So, we can say that more than half of the participants are fit.
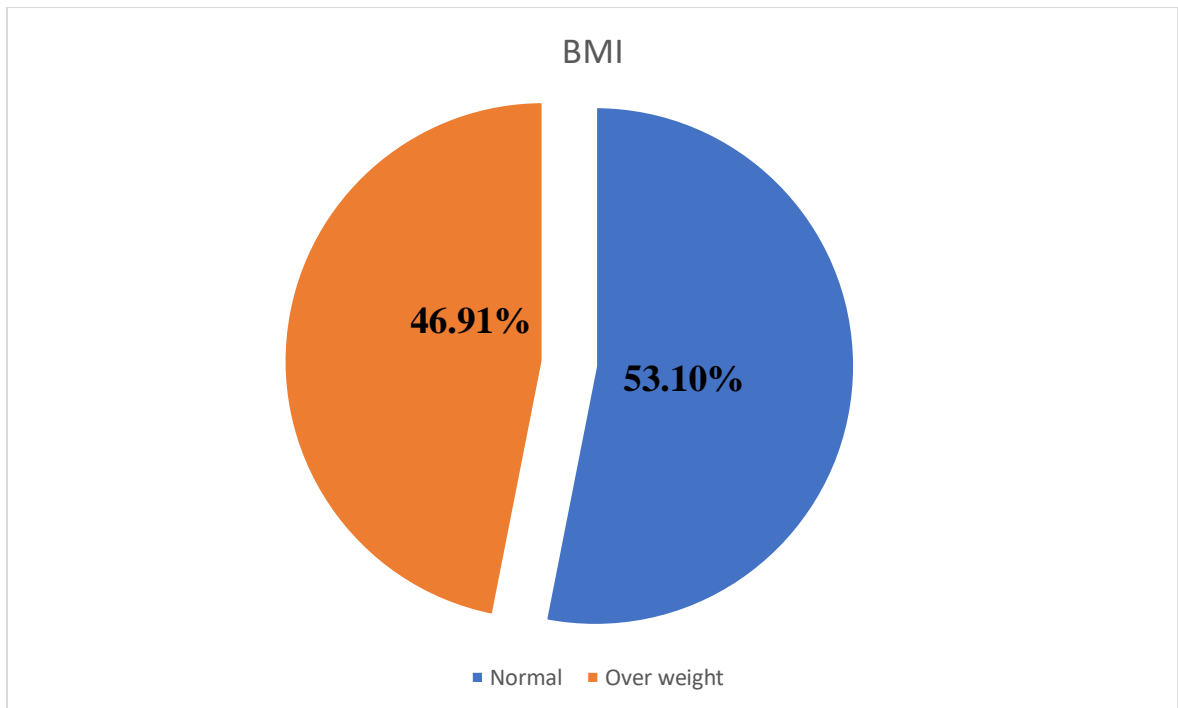
Figure 5: BMI of the participants

4.1.10 Smoking habits of the participants

Table 7: Smoking habits of the participants

Smoking habit	N	Percentages (%)
Yes	34	30.1
No	79	69.9

From the table 7 we can see that 30.1% participants (n=34) had the habit of smoking and 69.9% participants (n=79) hadn't the habit of smoking which is very fruitful for our police force.

We will get a clear pic of it from the pie chart given below:

Do you have the habit of smoking?

30.1%

69.9%

Yes
No
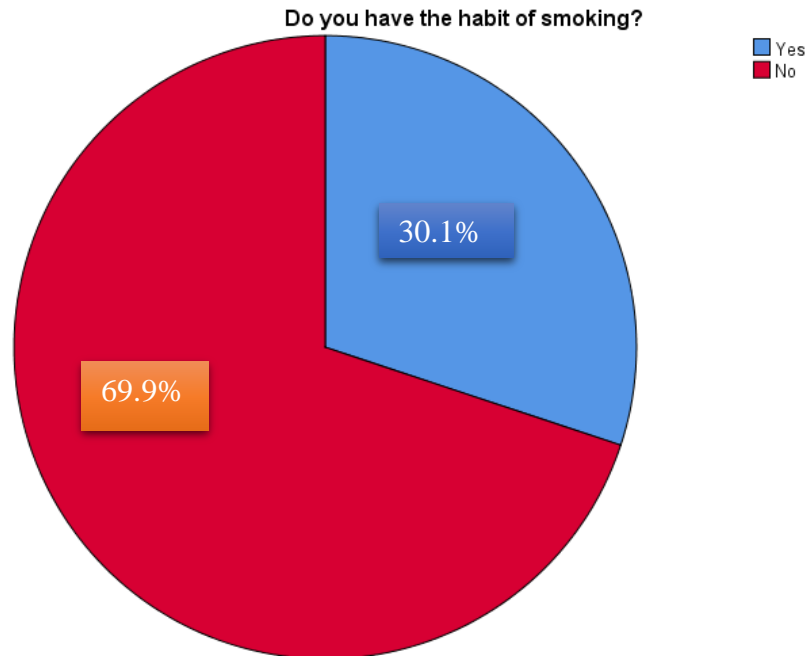
Figure 6: Smoking habit of the participants

4.1.11 Suffering from diseases of the participants

Table 8: Suffering from diseases of the participants

Suffering diseases	N	Percentages (%)
High Pressure	42	37.17
Asthma	7	6.2
Cardiovascular disease	4	3.5
Respiratory disease	13	11.5
I don't know	48	42.48
Others	7	6.2

From the table 8 we can see that most of participants n=48 (42.48%) was unknown about their diseases. Among the known participants, high pressure or hypertension(n=42) was the most common disease (37.17%), second more common disease was respiratory disease(n=13) (11.5%) and third more common disease was asthma n=7 (6.2%).

4.2 Mostly affected ranked people in respiratory related problems

4.2.1 Coughing at the time of work of the participants

Table 9: Coughing at the time of work vs rank of the participants

Rank	Coughing at the time of work		Total
	Yes	No	
T.I.	4	3	7
Sgt.	13	12	25
S.I.	9	0	9
A.S.I.	6	6	12
Constable	32	28	60
Total	64	49	113

T.I.= Traffic Inspector; Sgt. = Sergeant; S.I. = Sub Inspector; A.S.I = Assistant Sub Inspector.

From table 9 we can see that, majority of the participants in every rank claimed that they had cough at the time of their work. Among 7 T.I., n=4 participants claimed 'yes'; among 25 sergeants n=13 participants claimed 'yes'; among 9 S.I., all of them claimed 'yes'; among 12 A.S.I. equal participants claimed 'yes' and 'no' and lastly among 60 constables n=60 participants claimed 'yes'. So overall, among 113 participants, n=64 participants claimed that they had cough at their time of the work.

4.2.2 Feeling restlessness at the time of work of the participants

Table 10: Restlessness at the time of work

Rank	Restlessness at the time of work		Total (N)
	Yes	No	
T.I.	2	5	7
Sgt.	17	8	25
S.I.	5	4	9
A.S.I.	9	3	12
Constable	39	21	60
Total	72	41	113

T.I.= Traffic Inspector; Sgt. = Sergeant; S.I. = Sub Inspector; A.S.I = Assistant Sub Inspector.

From table 10 we can see that maximum constables(N=39), sergeants(N=17) and A.S.I.(N=9) had complained that they were suffering from restlessness because of chest trouble at their time of the work. That's because of they were fully exposed in the polluted air rather than T.I. and S.I.

In the bar chart we will get a clear picture.

Restlessness Among the Participants
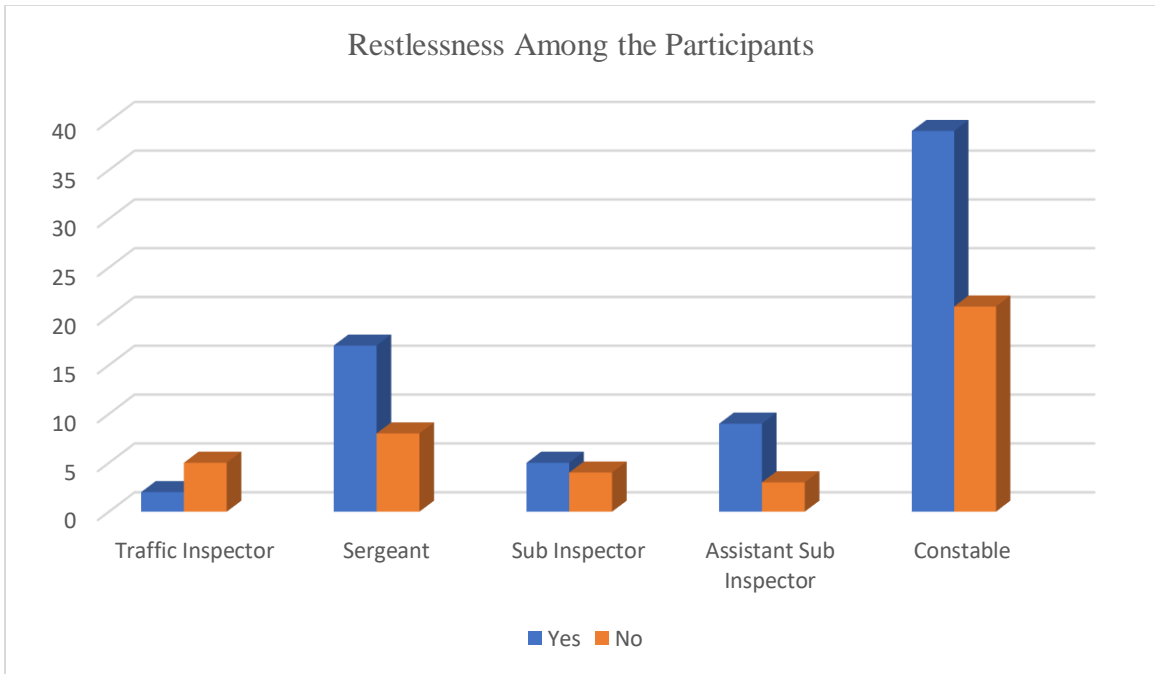
Figure 7: Restlessness of the participants

4.2.3 Chest heaviness among the participants

Table 11: Chest heaviness among the participants

Chest heaviness	N	Percentages (%)
Yes	65	57.5
No	48	42.5
	Total = 113	

From table 10 we can see that among 113 participants, 57.5% of the participants(n=65) were experiencing chest heaviness where 42.5% participants(n=48) were not experiencing this problem.

And this chest heaviness problem was mostly occurred to the sergeants and constables which we will see the bar chart given below:
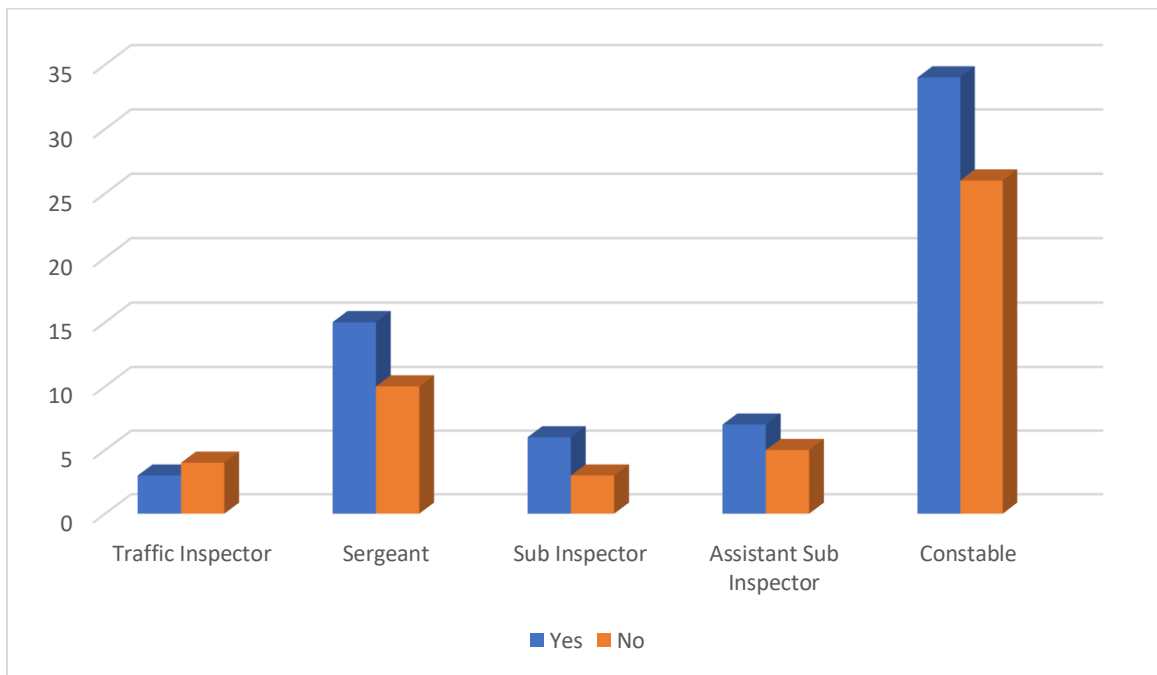
Figure 8: Chest heaviness vs rank of the participants

4.2.4 Coughing in last 4 weeks of the participants

Table 12: Coughing in last 4 weeks of the participants

| | | Did you have coughing in last 4 weeks? | | | | | |
		Almost every day	Several days	A week	A few days	Not at all	Total
Rank	Traffic Inspector	0	2	1	0	4	7
	Sergeant	0	2	3	9	11	25
	Sub Inspector	0	0	3	5	1	9
	Assistant Sub Inspector	0	1	1	7	3	12
	Constable	1	5	1	17	36	60
Total (N)		1	10	9	38	55	113

From table 11 we can see majority of the participants(n=55) had no coughing in last 4 weeks. But most of the participants(n=38) had coughing in a few days in last 4 weeks.

4.3 Treatment related conditions

4.3.1 Taking treatment of the participants

Table 13: Taking treatment of the participants

Taking Treatment	N				Percentage
Yes	Drug	Physiotherapy	Surgery	Others	56.64%
	58	4	1	1	
No	49				43.37%

From table 12 we are able to know that majority of the participants (n=64) were taking treatments which is approximately 56.64%. Those who were taking treatment most of them were taking drugs(n=58), a few were taking physiotherapy(n=4).

We will be able to know with more specifically with the bar chart given below:
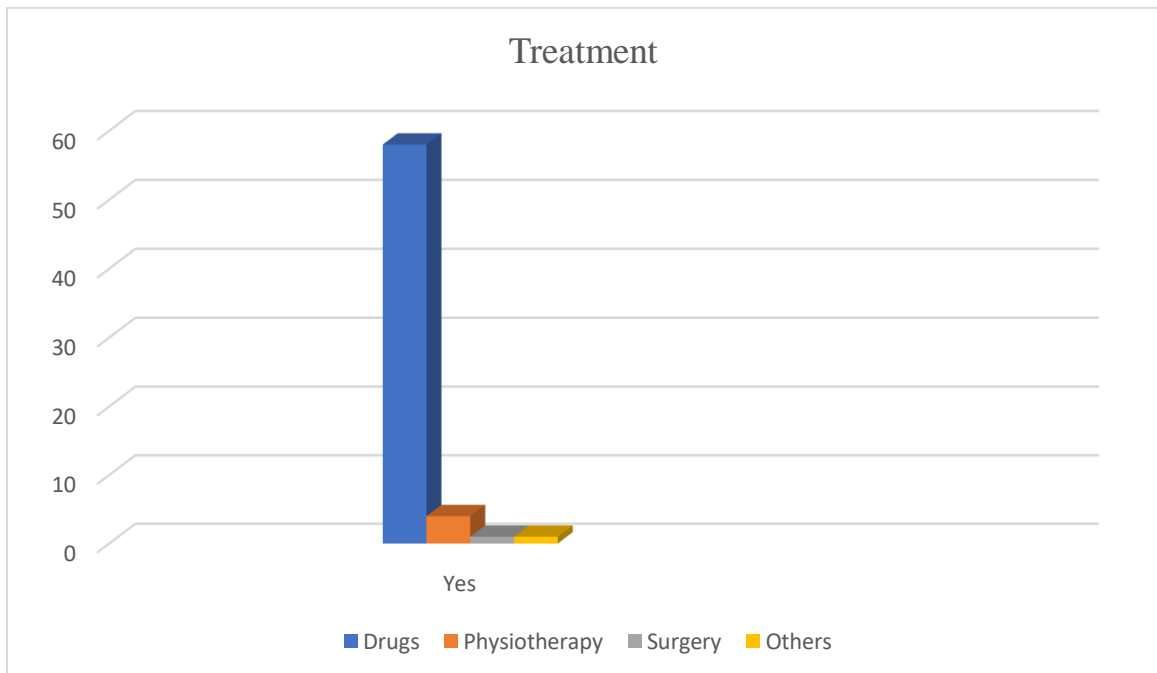
Figure 9: Taking treatments of the participants

4.3.2 Taking progress of the participants

Each of the participants told that, their treatment was working, had no side effect and had no problem with their daily life.

4.4 Psycho-social related results

4.4.1 Mental pressure related results

We have shown from the given pie chart that among 113 participants, 51.3% of the participants(n=58) had mental pressure whereas 48.7% of the participants(n=55) had no mental pressure.
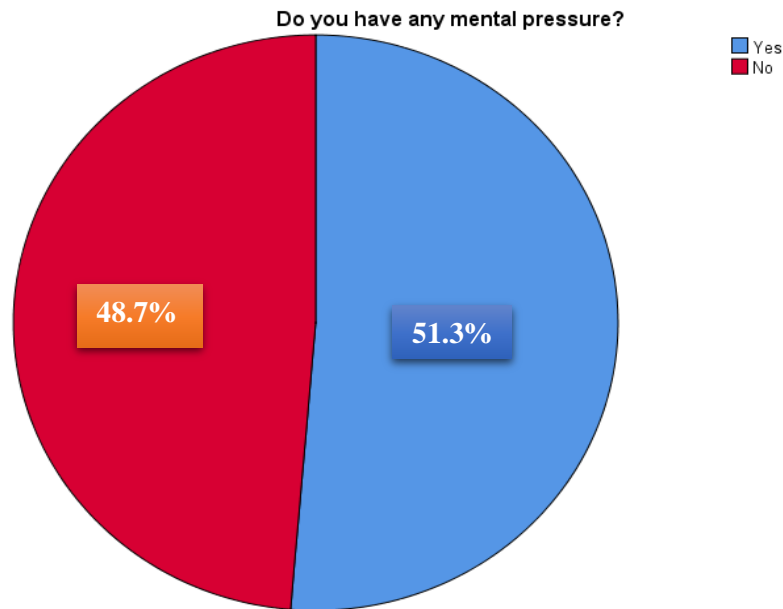
Figure 10: Mental Pressure of the participants

4.4.2 Tension related results

We have shown from the given pie chart that among 113 participants, 50.4% of the participants(n=57) had tension related pressure whereas 49.6% of the participants(n=56) had no tension related pressure.

Are you tensed about anything?

49.6%

50.4%

Yes
No
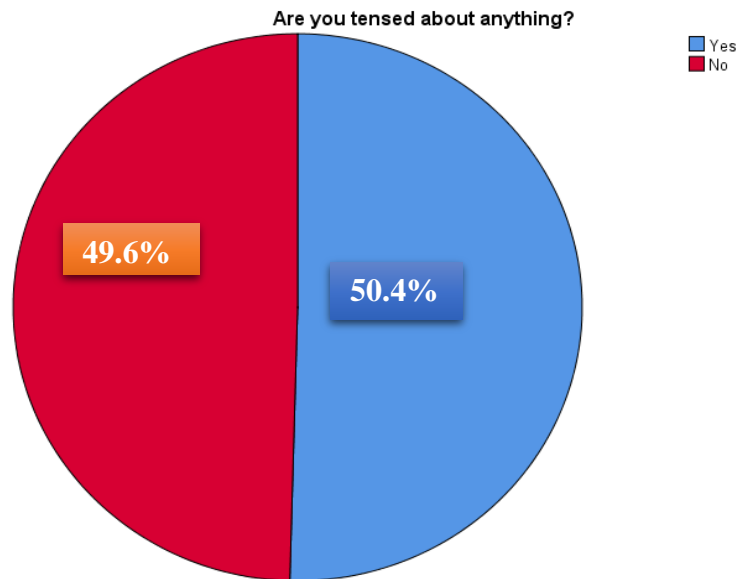
Figure 11: Tension of the participants

4.4.3 Causing of shortness of breath related results

We have seen that 51.3% participants(n=58) complained that this polluted environment is responsible for their shortness of breath.

Do you think that this environment is responsible for your shortness of breath?
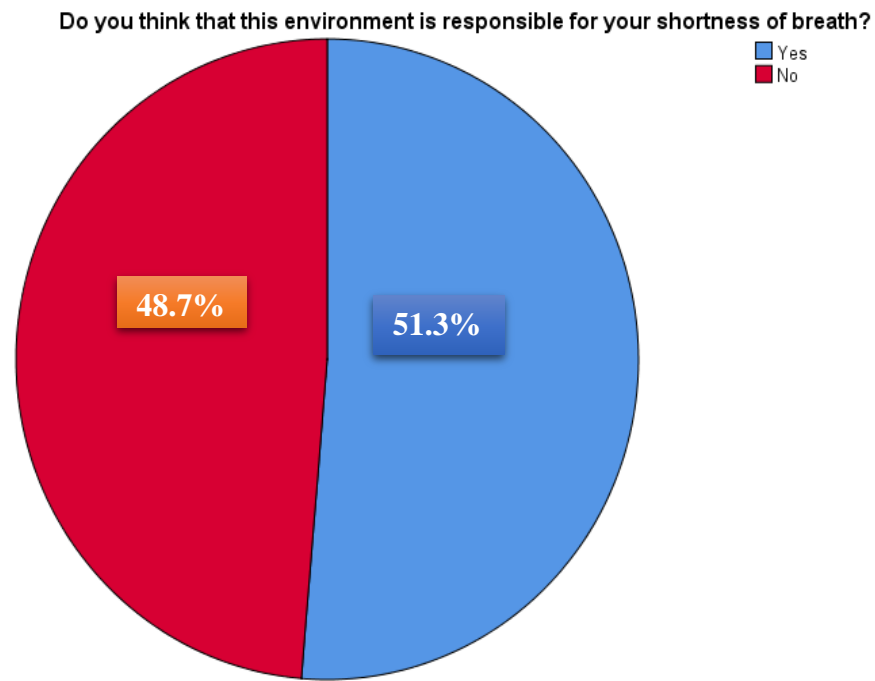
Figure 12: Causing of shortness of breath of the participants

4.4.4 Wearing mask related results

Table 14: Wearing mask related results

Wearing Mask	Frequency (N)	Percentage (%)
Yes	95	84.07%
No	18	15.93%

From table 14 we see that a big number of participants(n=95) almost 84.07% were conscious about their health whereas some participants(n=18) almost 15.93% were not.

4.4.5 Lung cancer related results

All the participants thought that this polluted environment is taking him to the lung cancer.

4.4.6 Cardiovascular disease related results

All the participants thought that this polluted environment can be the cause to take him to the cardiovascular related disease.

4.5 SGRQ Score

Table 15: SGRQ score in this study

Minimum	Maximum	Mean	Standard deviation
32	52	43.9558	3.69215

According to SGRQ score interpretation, 0 is the lowest and 100 is the highest score. The higher score indicates the poorer respiratory quality of life. Here in this study the minimum SGRQ score was 32 and the maximum SGRQ score was 52 where the mean value was 43.9558 and the standard deviation was 3.69215.

4.5.1 Association of respiratory complication with socio demographic variable

Table 16: Association between smoke and restlessness

Sociodemographic variable	Respiratory complication	Chi-square value ($\chi 2$)	P - value
Smoking	Restlessness	**0.021**	**0.886**

In this study, there was no association in between smoking and restlessness. In this statement chi-square ($\chi 2$) value was 0.021 which was not statistically significant (p<0.886) with the smoking as my P-value was 0.05.

Table 17: Association between smoke and cough

Sociodemographic variable	Respiratory complication	Chi-square value ($\chi 2$)	P - value
Smoking	Coughing	0.011	0.0915

In this study, there was no association in between smoking and cough. In this statement chi-square ($\chi 2$) value was 0.011 which was not statistically significant (p<0.0915) with the smoking as my P-value was 0.05.

Table 18: Association between smoke and chest heaviness

Sociodemographic variable	Respiratory complication	Chi-square value ($\chi2$)	P - value
Smoking	Chest heaviness	1.027	0.311

In this study, there was no association in between smoking and chest heaviness. In this statement chi-square ($\chi2$) value was 1.027 which was not statistically significant (p<0.311) with the smoking as my P-value was 0.05.

Table 19: Association between smoke and weakness

Sociodemographic variable	Respiratory complication	Chi-square value ($\chi2$)	P - value
Smoking	weakness	2.596	0.107

In this study, there was no association in between smoking and weakness. In this statement chi-square ($\chi2$) value was 2.596 which was not statistically significant (p<0.107) with the smoking as my P-value was 0.05.

Table 20: Association between rank and coughing

Sociodemographic variable	Respiratory complication	Chi-square value (χ2)	P - value
Rank	Coughing	28.071	0.031

In this study, there was association in between rank and coughing. In this statement chi-square (χ2) value was 28.071 which was statistically significant (p>0.031) with the rank as my P-value was 0.05.

Table 21: Association between rank and breathlessness

Sociodemographic variable	Respiratory complication	Chi-square value (χ2)	P - value
Rank	Breathlessness	31.486	0.002

In this study, there was association in between rank and breathlessness. In this statement chi-square (χ2) value was 31.486 which was statistically significant (p>0.002) with the rank as my P-value was 0.05.

4.5.2 Association between respiratory life and Socio demographic-related variables of the Participants

Table 22: Overall Association

Dependent variable: Respiratory life (SGRQ Score)			
Independent Variable	**Test Name**	**P- Value**	**Significance**
Age Category	Chi-square	0.314	Not Significant
Resident	Chi-square	0.974	Not Significant
Educational Qualification	Chi-square	0.169	Not Significant
Family Type	Chi-square	0.253	Not Significant
Religion	Chi-square	0.179	Not Significant
Smoking	Chi-square	0.538	Not Significant
Rank	Chi-square	0.284	Not Significant

From table 22, we can see that there have no association between any of socio demographic variable and respiratory life of the participants. All the P-value of chi-square test is more than 0.05 (P>0.005); for this reason, we can't reject the null hypothesis.

4.6 Percentages of respiratory complications by the ratio of age

4.6.1 Percentage of coughing by the ratio of age

From figure 13, we come to know that the percentages of coughing were increasing according to increase of age category. At the 30-40, age the percentage was 50.1%; at 41-50 the percentage was 61.2% and lastly at 51-60 age category the percentage was 63.6%.
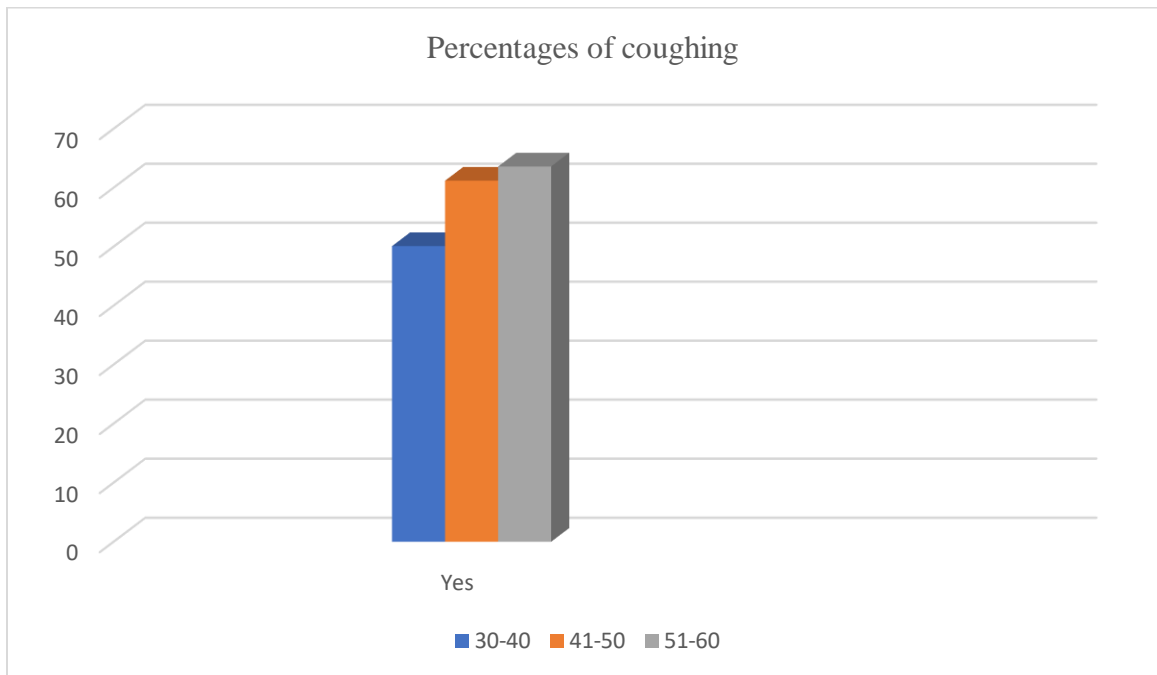
Figure 13: Percentage of coughing by the ratio of age

4.6.2 Overview of restlessness due to chest trouble by the ratio of age

From figure 14, we come to know that the percentages of restlessness due to chest trouble were increasing according to increase of age category. At the 30-40, age the percentage was 54.7%; at 41-50 the percentage was 73.5% and lastly at 51-60 age category the percentage was 75.7%.

Figure 14: Restlessness due to chest trouble by the ratio of age

4.6.3 Proportion of chest heaviness by the ratio of age

From figure 15, we come to know that the percentages of chest heaviness were increasing according to increase of age category. At the 30-40, age the percentage was 52.8%; at 41-50 the percentage was 63.3% and lastly at 51-60 age category the percentage was 54.5%.
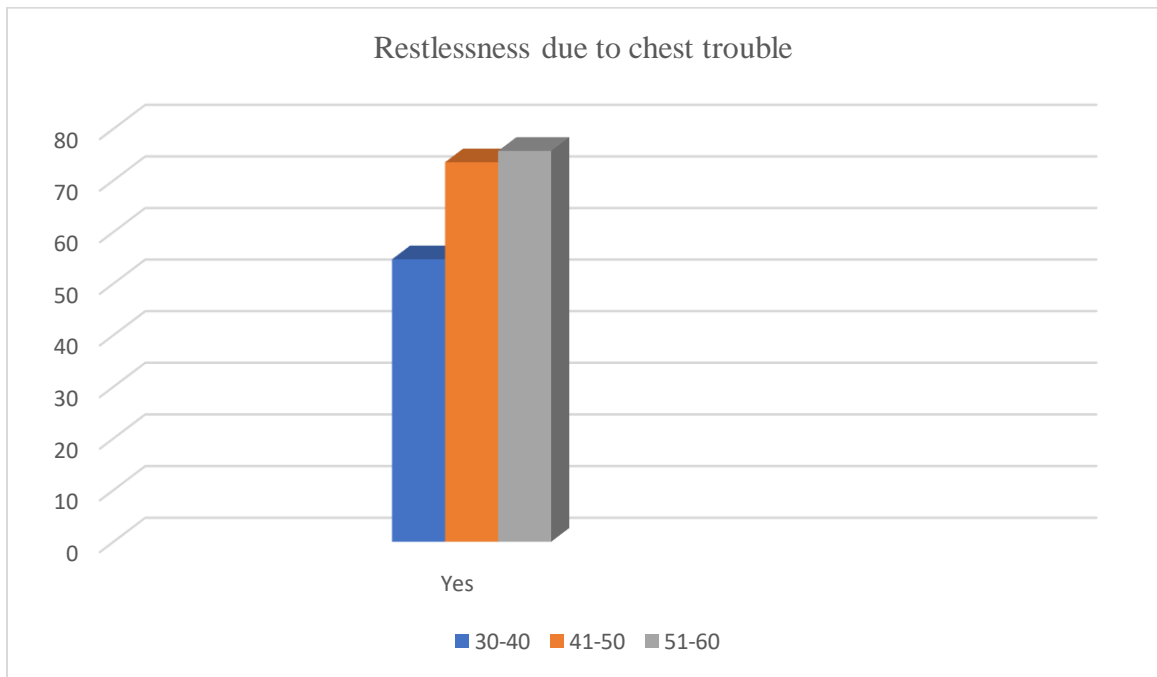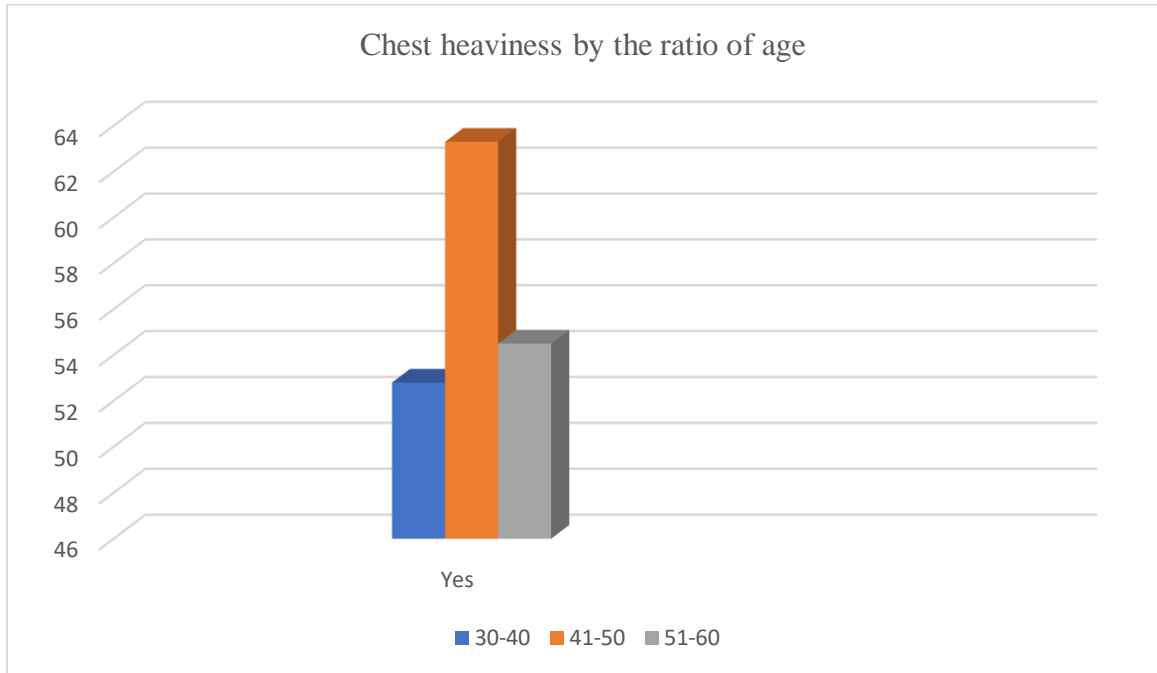

Figure 15: Chest heaviness by the ratio of age

CHAPTER V	DISCUSSION

In Bangladesh, air pollution is a significant public health issue, particularly for individuals who live and work in urban areas. One of the causes of the declining air quality is the increase in automobile traffic. Employees of traffic police who are frequently exposed to air pollution are at great danger. The goal of the current study was to evaluate the frequency and risk of respiratory symptoms among traffic police officers. The study investigated the high frequency of respiratory problems in several occupational groups of traffic police (Ahmed et al. 2022).

In this study, there were a total of one hundred and thirteen people that took part. There were 113 people who took part in the study, and the mean age of those participants was 42.23 years old, with a standard deviation was 6.567. The age was 56, and the lowest age was 30 and all the participants were male (100%). If we compare it with another study, Gowda and Thenambigai (2020) stated that there were involved 217 traffic police officers in all. There were 14 (6.5%) women and 203 (93.5%) men among them. The mean age was (39 ± 11.2) years (Mean ± standard deviation [SD]).

Here in this study, among 113 participants, (n=7) were traffic inspector (6.19%); (n=25) were sergeant (22.12%); (n=9) were sub inspector (7.96%); (n=12) were assistant sub inspector (10.62%) and (n=60) were constable (53.10%). So, we can see that maximum participants were constables(n=60) and minimum participants were traffic inspector(n=7) whereas a total of 369 traffic police officers made up of 25 inspectors (6.7%), 145 sergeants (39.3%), and 199 constables (53.9%). The distribution of socio-demographic factors showed a significant disparity, which might be somewhat accounted for by the relatively small numbers in some categories. For instance, 16.0% of traffic inspectors, 34.5% of traffic sergeants, and 13.6% of traffic constables reported using masks at work (Ahmed et al. 2022).

Gowda and Thenambigai (2020) stated that among 101 of them, or 46.6%, were bachelor's degree holders. 97 (44.7%) of the research participants were constables, followed by 85 (39.2%) chief constables. Seventy-six (106.5%) of them had been employed by the traffic

division for less than three years. But in this study, we can see that only SSS passed participants were 47 where 44 were constables, 2 were ASI and 1 was SI. HSC passed participants were 25 where 16 were constables, 8 were ASI and 1 was SI. Among graduated participants, 2 were TI, 1 was sergeant, 4 were SI and 2 were ASI. Lastly, among post graduated participants 5 were TI, 24 were sergeants and 3 were SI. So here we can see that maximum constables were SSC passed and maximum sergeants & TI were post graduated.

Gowda and Thenambigai (2020) also stated that, Out of the total respondents, 54 (24.9%) were current smokers. With respect to personal protective equipment, 101 (46.5%) respondents used a mask. Of these, only 7 (6.9%) used respirator mask, whereas 94 (93.1%) used disposable tissue mask; though in my study I can see 30.1% participants (n=34) had the habit of smoking and almost 84.07% were conscious about their health & for this reason they used protective equipment such as mask.

Most of participants n=48 (42.48%) was unknown about their diseases. Among the known participants, high pressure or hypertension(n=42) was the most common disease (37.17%), second more common disease was respiratory disease(n=13) (11.5%) and third more common disease was asthma n=7 (6.2%) in present study. Some additional information was n=64 (56.6%) had coughing at the time of their work, n=72 (63.7%) felt restlessness in their working time and n=65 (57.5%) felt chest haviness at the working time in this study. Another study shows that 68 (31.3%) of the 217 traffic police officers had respiratory morbidities, either one or more. 38 (17.5%) people had allergic rhinitis, and 28 (12.9%) had chest symptoms as coughing, wheezing, and breathing problems/chest tightness. 33 (15.2%) trial participants reported experiencing allergic eye symptoms such redness and wetness. 44 people (20.3%) were found to have symptoms that had gotten worse at work (Gowda and Thenambigai 2020).

Constables' increased risk of the investigated respiratory symptoms may be explained by their ongoing, direct exposure to roadside pollution. It has been demonstrated to be directly related to research done earlier (Kumar, Shaker and Kann 2012). In this dissertation I have also found that low ranked traffic police someone like constables were in the vulnerable situation with their life risk. If we see in different segment such as complain in the question of coughing at the time of work the, most of the constables (n=32) said 'Yes'. In the

question of restlessness at the time of work, most of the constables (n=39) gave us the positive result. Same result repeated at the health related or respiratory related questions such as in chest heaviness, wheezing, shortness of breath etc. it is just because of the fully exposure and continuous standing at the roadside with polluted air. According to a recently completed comparative research in Malaysia, traffic police officers who operate by the roadside have a higher risk of respiratory problems than occupational groups that are not exposed because of constant and direct roadside exposure (Chean et al. 2019).

In the present investigation, a questionnaire proved helpful in accounting for a wide range of possible confounders. After adjusting for relevant variables, it was shown that constables were more likely than inspectors to have chest discomfort, shortness of breath, wheezing, and coughing up blood. Similar to the current study, a previous epidemiological investigation conducted in Italy found that traffic police officers who are tasked with managing and controlling traffic on the side of the road are more likely to experience respiratory problems like coughing, wheezing, and shortness of breath than those who are tasked with performing coordination and administrative tasks in an office (DeToni, Fillon and Finotto 2005).

In this dissertation, I have seen that n=64 (56.64%) participants took various kind of treatment. This treatment includes drugs, physiotherapy, inhaler, surgery and others. Among these 64 participants, 58 were taking drugs, 4 were taking physiotherapy. So, we can see that this physiotherapy treatment is rare even nowadays. It needs to be increased because it has no side effect and very effective which has proven by other researchers.

A self-administered questionnaire called the SGRQ is used to assess how individuals with airway diseases like asthma and COPD are affected by their health. 50 items make up the questionnaire, which asks patients to rate their recall of their symptoms, the effect of their symptoms on their daily physical activities, and their psychosocial dysfunction. A total score incorporates scores from each component of the SGRQ which ranges from 1 to 100, where 0 indicates best health and 100 indicates worst health. In this study I have found the minimum SGRQ score was 32 and the maximum SGRQ score was 52 where the mean value was 43.9558 and the standard deviation was 3.69215. So, we can say that there has mild to moderate health impacts shown in this study.

The lungs and airways are irritated and allergic to the harmful chemicals and gases produced by vehicle emissions, which block the airways and increase mucus production, resulting in obstructive lung disorders. Despite the fact that the human bronchopulmonary tract is protected by a number of systems, including mucosal cilia and the air-blood barrier, air pollutants can collect in or pass-through lung tissues depending on their size and chemical makeup (D'Amato et al. 2010). In this study, all the participants were very much worried about their health especially respiratory health. All of them believed that this polluted environment could lead to their cardiovascular disease or lung cancer.

In the study researcher didn't find any overall association with the sociodemographic variable and SGRQ score (respiratory complications). But individually there have association with rank and some selected respiratory complications such as (rank and coughing) where the p value was 0.031 which is $P<0.05$, in (rank and breathlessness) where the p value was 0.002 which is $P<0.05$. So, in these two cases we can reject the null hypothesis and can say that there have association in these two variables. And also, it can be said that participants who were exposed to the polluted air with a long working hour were suffering much from many more respiratory complications.

Limitation of the study:

The current study had some potential limitations. Regarding this study, there were some limitations or barriers to consider the result of the study. The limitation of this study was small sample size. It was taken only 113 samples. The quality of life and the factors of respiratory complications of traffic police could not be measured through small sample size. More samples could not be able to collect due to some restrictions given by DMP and short study period. One of the major limitations was time. To conduct the research project on this topic, time period was very limited. As the study period was short, so the adequate number of samples could not arrange for the study. Time and samples were limited which have a great deal of impact on the study. Another major limitation was manpower. Manpower was too short. For this reason, data from all areas of Dhaka city could not be collected so the real result was unknown. Funding was another massive limitation of this study. To further understand and quantify the pollution-related respiratory effects in traffic police officers, more epidemiological studies using bigger samples and ambient air quality data are needed with using a more structured questionnaire. And if possible, need to do more kind of statistical analysis, which will help us to get a more specific result.

CHAPTER VI   CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Bangladesh is a small country with a large population. Dhaka is the capital of her. There have a huge vehicle (almost 1.6 million) running here and there in Dhaka city. To control these vehicles, traffic polices are recruited. Almost 4 thousand of traffic polices are continuously working. Road traffic generates volatile organic compounds, suspended particulate matter, oxides of nitrogen, sulfur oxides, and carbon monoxide which impose a wide range of adverse health effects on the exposed population. Traffic police personnel consumes a long period of time by roadside due to the nature of their work and are exposed to roadside vehicular emissions that can cause both long- and short-term health hazards.

Air pollution in Bangladesh is a major public health concern, especially among those who live and work in cities. The growing number of vehicles is one of the contributing factors for the deteriorating air quality. Traffic police personnel who are continuously exposed to air pollutants are at high risk.

Air pollution is a major public health problem in Dhaka in the past few decades. The most important source of ultrafine particles in an urban setting comes from motor vehicle emissions, and airborne dust contributes significantly to overall atmospheric pollution.

Study findings show that there is a substantial difference in the risk of studied respiratory symptoms between different categories of traffic police jobs. The results of the study suggests that low rank traffic polices are in the most vulnerable situation among all the participants. The effect of pollution by vehicular exhausts may be responsible for these pulmonary function impairments. In this study there have no association between age and respiratory complications; smoke and respiratory complications (P>0.05). But the researcher found the association between the rank of the participants and some of the respiratory complications (P<0.05). But everybody of the participants claimed in one sentence that this poisonous environment can take them to their big health hazards such as heart problem and lung cancer.

Traffic police officers' respiratory function decreased compared to what was predicted. In this occupational category, precautions must be taken to avoid and manage respiratory illnesses. Pre-placement and routine medical checks will assist to identify employees who may be at danger, and the proper care may be implemented at an early stage of the disease itself.

6.2 Recommendation

After completing the research, the researcher found some recommendation. Some points to be noted that might be taken for the better accomplishment for further study. The main recommendations would be as follow:

- Should take more samples for generating the result and make more valid and reliable.

- For the cross-sectional study, sample should collect from different metropolitan area in different districts of Bangladesh to generalize the result.

- To find out an effective and efficient result in generalized form, other measurement scales should be used in consideration.

- A larger sample size may increase the statistical significance of some of the results.

- There were some limitations of this study mentioned at the relevant section and it is recommended to overcome those limitations during further study.

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সম্মতিপত্র

আমি মোঃ তাসরিক আহমেদ ফাহিম, বাংলাদেশ হেলথ প্রফেশন্স ইনস্টিটিউট এর বিএসসি ইন ফিজিওথেরাপি বিভাগের শেষ বর্ষের ছাত্র। আমার ডিগ্রি সম্পন্ন করতে গবেষণার অংশ হিসেবে, "ঢাকা শহরের কর্মরত ট্রাফিক পুলিশদের শ্বাসপ্রশ্বাস জনিত সমস্যা এবং এর কারন" শিরোনামের একটি গবেষণার কাজ করছি। এখানে আপনার পেশা সম্পর্কিত যানজট নিরসনে কর্মরত থাকার এর কারনে দীর্ঘক্ষণ ধুলোবালিময় পরিবেশে থাকতে হয়, সেজন্য শ্বাসপ্রশ্বাসজনিত সমস্যা নির্ধারনের জন্য কিছু প্রশ্নের তালিকা দেয়া আছে যা আপনাকে পূরণ করতে হবে। আপনার নিজের দ্বারা এই সাক্ষাৎকার দিতে ৫ থেকে ৭ মিনিট সময় লাগবে। আপনাকে প্রত্যেকটি প্রশ্নের উত্তর দিতে হবে। এই গবেষণার প্রাপ্ত তথ্য শুধুমাত্র শিক্ষা ক্ষেত্রে ব্যবহার করা হবে এবং অংশগ্রহণকারীর ব্যক্তিগত তথ্য সম্পূর্ণ গোপনীয়তার মধ্যে থাকবে, অন্য কোথাও প্রকাশ করা হবে না। গবেষণা চলাকালীন সময়ে অংশগ্রহণকারী কোন রকম দ্বিধা বা ঝুঁকি ছাড়াই যেকোনো সময় এটাকে বাদ দিতে পারবেন। আপনার সহযোগিতা কামনা করছি।

অংশগ্রহণকারীর ঘোষনা

আমাকে এই নিরীক্ষার জন্যে আমন্ত্রণ জানানো হয়েছে। আমাকে সম্পূর্ণ পড়ে বুঝানো হয়েছে এবং আমি কোন ধরনের দ্বিধা ছাড়াই উত্তর দিয়েছি। আমি লক্ষ্য করেছি, এই গবেষণায় আমার অংশগ্রহন সম্পূর্ণ স্বেচ্ছায় এবং আমি যে কোন সময় এটাকে বাদ দিতে পারব, কোন রকম ঝুঁকি ছাড়াই। আমি এই গবেষণায় অংশগ্রহনে সম্পূর্ণ সম্মতি জ্ঞাপন করছি।

অংশগ্রহণকারীর নাম:

মোবাইল নাম্বার:

ঢাকা শহরে কর্মরত ট্রাফিক পুলিশদের শ্বাস প্রশ্বাস জনিত সমস্যা এবং এর কারন :

কোড নং :

নাম ....

ঠিকানা ....

তারিখ ....

মোবাইল নম্বর ....

APPENDIX-B

CONSENT FORM

I am Md. Tasrif Ahmed Fahim, final year student of B.Sc in Physiotherapy Department of Bangladesh Health Professions Institute. As a part of research to complete my degree, I am doing a research work titled **"Factors and Respiratory Complications Among Traffic Polices in Dhaka City"**. Here is a list of questions you will need to answer to diagnose respiratory problems due to your occupational exposure to dusty environments. This interview should take 5 to 7 minutes by yourself. You have to answer each question. The information obtained from this study will be used only for educational purposes and the personal information of the participants will be kept completely confidential and will not be disclosed elsewhere. During the course of the study the participant can withdraw at any time without any hesitation or risk. Requesting your cooperation.

DECLARATION FORM

I have been invited for this audit. I was fully read and understood and I answered without any hesitation. I note that my participation in this study is completely voluntary and that I may withdraw at any time without any risk. I give full consent to participate in this study.

Participant's name:

Mobile no:

Factors and Respiratory Complications Among Traffic Polices in Dhaka City

Code no:

Name:………………………….. ……………………… Date:………………………..

Address:……………………………………………..Mobile no:…………………………..

জনতাত্ত্বিক প্রশ্নমালা

প্রথমাংশ:

ক্রমিক নং	প্রশ্ন	উত্তর
১.	বয়স	
২.	লিঙ্গ ১. পুরুষ ২. মহিলা)	
৩.	বাসস্থান ১. শহর ২. উপশহর	
৪.	শিক্ষাগত যোগ্যতা ১. এস এস সি ২. এইচ এস সি ৩. স্নাতক ৪. স্নাতকোত্তর ৫. অন্যান্য	
৫.	পরিবারের ধরন ১. একক ২. যৌথ	
৬.	ধর্ম ১. ইসলাম ২. সনাতন	

	৩. বৌদ্ধ	
	৪. খ্রিস্টান	
	৫. অন্যান্য	

দ্বিতীয়াংশ:

ক্রমিক নং	প্রশ্ন	উত্তর
১.	উচ্চতা	
২.	ওজন	
৩.	ধূমপানের অভ্যাস ১. আছে ২. নেই	
৪.	আপনি কি নিম্নোক্ত কোনো রোগে ভুগছেন ? যদি হয় তাহলে অনুগ্রহ করে ডান পাশের খালি জায়গায় রোগের পাশে থাকা সংখ্যাটি লিখুন, ১. উচ্চরক্তচাপ ২. এজমা ৩. হৃদরোগ ৪. শ্বাসপ্রশ্বাস জনিত সমস্যা ৫. ক্যান্সার ৬. স্নায়ুবিক রোগ ৭. কোনো রোগ জানা নেই	

	৮. অন্যান্য (উপরে বর্ণিত নেই)	

তৃতীয়াংশ:

অনুচ্ছেদ-১ শ্বাসপ্রশ্বাস জনিত সমস্যা নির্ধারনের জন্য প্রশ্নাবলি। **(অনুগ্রহপূর্বক যথাযথ স্থানে টিক চিহ্ন ٧ দিন)**

ক্রমিক নং	প্রশ্নাবলি	১. হ্যাঁ	২. না
১.	কাজের সময় কি আপনার প্রবল কাশি হয়?		
২.	আপনার বুকের কষ্টের কারণে আপনি কি অস্থির বোধ করেন ?		
৩.	পারফিউম বা সুগন্ধির কারনে আপনার কি শ্বাসকষ্ট অনুভব হয়?		
8.	ঘুমের সময় আপনার কি শ্বাস নিতে কষ্ট হয়?		

৫.	শ্বাসকষ্ট জনিত সমস্যার কারণে আপনার কি কাজের সময় দুর্বলতা বোধ হয় ?		
৬.	হাসির সময় আপনার কি দম ফুড়িয়ে আসে?		
৭.	আপনার বুক কি ভারী ভারী লাগে ?		

অনুচ্ছেদঃ ২ অনুগ্রহ করে বিগত ৪ সপ্তাহের উপর ভিত্তি করে আপনার শ্বাসপ্রশ্বাস জনিত সমস্যার বিবরন দিন। **যথাযথ স্থান অনুগ্রহ করে গোল করুন**

১. বিগত ৪ সপ্তাহে আমার কাশি হয়েছে।

   ১. প্রায় প্রতিদিন।

   ২. বেশ কিছুদিন

   ৩. এক সপ্তাহ

   ৪. কিছুদিন মাত্র

   ৫. একদমই না

২. বিগত ৪ সপ্তাহে আমার কফ হয়েছে

১. প্রায় প্রতিদিন।

২. বেশ কিছুদিন

৩. এক সপ্তাহ

৪. কিছুদিন মাত্র

৫. একদমই না

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৩. বিগত ৪ সপ্তাহে আমার শ্বাসকষ্ট হয়েছিলো

১. প্রায় প্রতিদিন

২. বেশ কিছুদিন

৩. এক সপ্তাহ

৪. কিছুদিন মাত্র

৫. একদমই না

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৪. বিগত ৪ সপ্তাহে আপনার কতগুলো দিন ভালো ছিলো

১. প্রায় প্রতিদিন

২. বেশ কিছুদিন

৩. এক সপ্তাহ

৪. কিছুদিন মাত্র

৫. একদমই না

৫. রাতে যদি আপনার শ্বাসকষ্ট হয়, সকাল হতে হতে এটি কি আরো বাড়ে?

১. হ্যাঁ

২. না

৬. আপনি আপনার সমস্যাটিকে কিভাবে দেখেন?

১. আমার সবচেয়ে বড় সমস্যা এটি।

২. এটি আমার অনেক বড় সমস্যার কারন

৩. এটি আমার জন্য কিছু সমস্যা সৃষ্টি করছে

৪. এটি আমার তেমন কোনো সমস্যা করছে না

৫. উপরের কিছুই আমার সাথে যাচ্ছেনা

৭. চিকিৎসা সংক্রান্ত প্রশ্ন

আপনি কি কোনো চিকিৎসা নিচ্ছেন?	১. হ্যাঁ ২. না
আপনি কি ধরনের চিকিৎসা নিচ্ছেন ?	১. ওষুধ ২. ফিজিওথেরাপি ৩. সার্জারি বা অপারেশন ৪. অন্যান্য

নিচের প্রশ্নটি আপনার ওষুধের উপকার সম্পর্কিত। **অনুগ্রহ করে আপনার ক্ষেত্রে প্রযোজ্য স্থানে টিক চিহ্ন √ দিন**

প্রশ্ন	১. সত্যি	২. মিথ্যা
আমার ওসুধ আমার কোনো কাজে দিচ্ছে না		

ওষুধগুলি আমার কিছু পার্শ্ব প্রতিক্রিয়া দিচ্ছে		
এই চিকিৎসা আমার জীবনে ব্যাঘাত ঘটাচ্ছে		

৮ মনোবিজ্ঞান সংবলিত প্রশ্ন-

প্রশ্ন	১. হ্যাঁ	২. না
আপনি কি মানসিক চাপে আছেন?		
আপনি কি কোনোকিছু নিয়ে চিন্তিত?		

৯. পরিবেশ বিষয়ে আপনার মতামত জানার জন্য প্রশ্নাবলি

ক্রমিক নং	প্রশ্নাবলি	১. হ্যাঁ	২. না
১.	আপনার কি মনেহয় এই আশেপাশের পরিবেশ আপনার শ্বাসকষ্ট-এর কারন?		
২.	আপনি কি এই অবস্থা থেকে বাঁচতে কোনো সুরক্ষাবস্তু (মাস্ক) ব্যাবহার করেন ?		

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৩.	আপনার কি মনেহয় এই দুষিত পরিবেশ আপনাকে ফুসফুসের ক্যান্সার (লাং ক্যান্সার) এর দিকে নিয়ে যাচ্ছে?		
8.	আপনার কি মনেহয় এই দুষিত পরিবেশ আপনার হৃদরোগ এর কারন হতে পারে?		

Section1:

Sociodemographic information (kindly enter the number in the blank space)**.**

Q.N	Question	Answer
1	What is your age? (Years).	
2	What is your gender? 1. Male 2. Female	
3	Where do you live? 1. Urban 2. Semi urban	
4	What is your educational qualification? 1. SSC 2. HSC 3. Graduate 4. Post graduate 5. Others	
5	Types your family? 1. Nuclear 2. Extended	
6	What is your religion? 1. Muslim 2. Hindu 3. Buddhist 4. Christian	

	5. Others	

Section 2:

General health related information

Q.N	Question	Answer
1	Height of the participant. (feet)	
2	Weight of the participant. (kg)	
3	Do you have smoking habit? **1.** Yes **2.** No	
4	Are you suffering from any health problems? (kindly enter the number in the blank space). 1. Hypertension 2. Asthma 3. Cardiovascular disease 4. Respiratory problem 5. Lung cancer 6. Neurological disease 7. No known disease history 8. Others	

Section 3:

Part:1 Respiratory complication related question

question	Yes (1)	No (2)	N/A
1.Do you suffer from coughing attack during the work?			
2.Because of your chest trouble do you often feel restless?			
3.Do you suffer from chest symptoms as a result of exposure or perfume?			
4.Do you feel breathlessness while trying to sleep?			
5.Because of your chest trouble do you suffer from breathlessness carrying out your activities of work?			
6. Because of your chest trouble do you feel breathlessness when you laugh?			
7. Do you have a feeling of chest havinesss?			

Part 2.

Please describe how often your respiratory problems have affected you over the past 4 weeks.

1. Over the past 4 weeks, I have coughed

    1. Almost every day

    2. Several days

    3. A week

    4. A few days

    5. Not at all

2.Over the past 4 weeks, I have brought up phlegm (sputum)

    1. Almost every day
    2. Several days
    3. A week
    4. A few days
    5. Not at all

3. Over the past 4 weeks, I have had shortness of breath

    1. Almost every day
    2. Several days
    3. A week
    4. A few days
    5. Not at all

4.Over the past 4 weeks, in a typical week, how many good days (with few respiratory problems) have you had?

    1. Almost every day
    2. Several days
    3. A week
    4. A few days
    5. Not at all

5.If you wheeze, is it worse when you get up in the morning?

    1. Yes

    2. No

6.How would you describe your respiratory condition?

     1. The most important problem I have

     2. Causes me quite a lot of problems

     3. Causes me a few problems

     4. Causes me no problem

     5. I have no complain

7. Treatment related questions

No	QUESTION	RESPONSE
1	Do you take any treatment?	1= yes 2=No
2	Which type of treatment?	1=Medicine 2=Physiotherapy 3=Surgery 4=Other

These are questions about your treatment and medication

QUESTIONS	YES (1)	NO (2)
1. My treatment does not help me very much		
2. I have unpleasant side effects from my medication		
3. My treatment interferes with my life a lot		

8. Psychological related Information.

	QUESTION	RESPONSE
1	Do you have any mental stress?	1=Yes 2=No
2	Are you tensed about anything?	1=Yes 2=No

9. Environment Related Questions (your opinion)

No.	Questions	Yes (1)	No (2)
01	Do you think that your surrounding environment is responsible for your shortness of breath?		
02	Do you use any protective equipment (mask) to escape from this situation?		
03	Do you think that this polluted environment is taking you to lung cancer?		
04	Do you think that this polluted environment can responsible of your heart disease?		

APPENDIX-E

Approval of the Dissertation Proposal from IRB

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

Ref: Date:

CRP/BHPI/IRB/03/2023/689   13/03/2023

To
Md. Tasrif Ahmed Fahim
B.Sc. in Physiotherapy,
Session: 2017-2018, DU Reg. No: 8627
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

Subject: Approval of the dissertation proposal **"Factors and Respiratory Complications among Traffic Polices in Dhaka City"**- by ethics committee.

Congratulations
Dear
Md. Tasrif Ahmed Fahim,
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 Fabiha Alam, Assistant Professor, Department of Physiotherapy, BHPI, as dissertation supervisor. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form

The purpose of the study is to find out the factors and respiratory complications among traffic polices in Dhaka city. Should there be any interpretation, type, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 10- 15 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34th 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 Millat Hossain
Associate Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB) BHPI,
CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +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

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APPENDIX-F

Application for review and ethical approval

Date: 11th February, 2023
The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professions Institute (BHPI), CRP
Savar, Dhaka-1343, Bangladesh.

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Md. Tasrif Ahmed Fahim, student of B.Sc. in Physiotherapy program at Bangladesh Health Professions Institute (BHPI) the academic institute of Centre for the Rehabilitation of the Paralysed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a dissertation entitled **"Factors and Respiratory Complications Among Traffic Polices in Dhaka City"** under the supervision of Fabiha Alam, Assistant Professor, Department of Physiotherapy, BHPI.

The purpose of the study is to find out the factors and respiratory complications among traffic polices in Dhaka city. The study involves face-to-face interview by using semi-structured questionnaire to explore the frequency of respiratory complications among traffic polices due to environmental pollutions at Dhaka in Bangladesh that may take 10 to 15 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the dissertation proposal and to start data collection. I can also assure you that I will maintain all the requirements for the study.

Sincerely,

Tasrif.

Md. Tasrif Ahmed Fahim
4th Year B.Sc. in Physiotherapy
Session: 2017-2018, Student ID: 112170414
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Recommendation from the dissertation supervisor

Fabiha Alam
Assistant Professor
Department of Physiotherapy, BHPI.

Dissertation presentation date: 9th January, 2023

Shofiq 18.02.2023

Head, Department of Physiotherapy, BHPI

Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

APPENDIX-G

Permission letter of Data Collection

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: 21.03.2023

Addl. Pol. Com- (Traffic)

Commissioner
Addl. Comm. (Admin)
Addl. Comm. & Ops.
Addl. Comm. (I.A.P)

To
Date 30 MAR 2023
Commissioner of Police,
Dhaka Metropolitan Police,
Dhaka.

অতিরিক্ত পুলিশ কমিশনার (ট্রাফিক)
ঢাকা মেট্রোপলিটন পুলিশ, ঢাকা।

ডায়েরী নং... ৬ ...
তারিখ :.. ০২.০৪.২৩

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 Physiotherapy Course, under Faculty of Medicine, University of Dhaka.

According to the content of 4th 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 division will be the most appropriate place to collect data.

4th year students of BHPI Md. Tasrif Ahmed Fahim would like to collect data from traffic Police, as his dissertation title is **"Factors and Respiratory Complications Among Traffic Polices in Dhaka city".**

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

With regards

Prof. Dr. Md. Omar Ali Sarker
Principal
BHPI, CRP, Savar, Dhaka.