



Faculty of Medicine  
University of Dhaka

**KNOWLEDGE AND ATTITUDE OF CHEST PHYSIOTHERAPY  
AMONG THE PATIENTS SUFFERING FROM RESPIRATORY  
COMPLICATIONS IN BANGLADESH**

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Bachelor of Science in Physiotherapy (B.Sc. PT)

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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

**KNOWLEDGE AND ATTITUDE OF CHEST PHYSIOTHERAPY  
AMONG THE PATIENTS SUFFERING FROM RESPIRATORY  
COMPLICATIONS IN BANGLADESH**

Submitted by **Md. Nazmul Haq**, 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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## **DECLARATION**

I declared that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies were my own. I also declared that for any publication, presentation or dissemination of information of the study, I would be bound to take written consent from the Department of Physiotherapy, Bangladesh Health Professions Institute.

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## List of acronyms

<b>&amp;</b>	And
<b>ACBT</b>	Active Cycle of Breathing Techniques.
<b>BHPI</b>	Bangladesh Health Professions Institute.
<b>BMRC</b>	Bangladesh Medical and Research Council.
<b>CPAP</b>	Continuous Positive Airway Pressure.
<b>CRP</b>	Centre for the Rehabilitation of the Paralysed.
<b>IPPB</b>	Intermittent Positive Pressure Breathing.
<b>IRB</b>	Institutional Review Board.
<b>NIDCH</b>	National Institute of Diseases of Chest & Hospital.
<b>NSCISC</b>	National Spinal Cord Injury Statistical Center.
<b>PCF</b>	Peak Cough Flow.
<b>PEP</b>	Positive Expiratory Pressure.
<b>PPC</b>	Post-operative Pulmonary Complications
<b>PRC</b>	Post-operative Respiratory Complications.
<b>SCI</b>	Spinal Cord Injury.
<b>SPSS</b>	Statistical Package for the Social Science.
<b>WHO</b>	World Health Organization.

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## Abstract

**Introduction:** Respiratory complications is defined as new onset or exacerbated respiratory failure following cardio-thoracic or non-cardiac system problem as a result produce shortness of breath. **Aim of study:** It was aimed the knowledge, attitude and practices of chest physiotherapy among the patients for respiratory complications in Bangladesh. **Objectives:** To identify the knowledge and attitude of chest physiotherapy for respiratory complications patients in Bangladesh. **Methods:** This study was done by using quantitative method, which was a cross sectional study on the people with patients the respiratory complications who admitted at CRP & NIDCH in Bangladesh. The study population or total 154 participants were attended willingly & conventionally for this study. Data was collected by self-modified questionnaire. Researcher maintained all-ethics issues. Data were numerically captured in SPSS 25 version. Furthermore, Microsoft excel was used for the analysis of the data and for the presentation of the data as well. **Results:** Among 154 participants the most participants were attended from 26-35 age group (n=56, 36.4%). The most of the participants were male. Data showed that (n= 112, 72.7%) were male. The most of the occupation of participants were service holder and housewife were both (n= 33, 21.4%). The most of the participants educational level were secondary (n=41, 26.6%). The most of the family income were low level. The most of the participants living in semi-urban area (n=57, 37.0%). The most of the participants smoking were (n=66, 42.9%). According to the distribution with health-related questionnaire where p- value was <0.05 and knowledge, attitude & practice had significant with age, gender, occupational & educational level of the participants. **Conclusion:** In this study researcher found significant (p<0.05) of the participants with knowledge of chest physiotherapy and WHO guideline of the patients and believe that chest physiotherapy helped promote quality of life & increased lung function of patient's and when they had done chest physiotherapy exercise.

**Key words:** Chest physiotherapy, Respiratory complications, Knowledge and Attitude.

**Word count:** 10,450.

**1.1 Background: -**

Respiratory complications may be defined that when respiratory failure and acute respiratory distress syndromes cause profoundly distressing symptoms such as rising shortness of breath to the point of air hunger and overpowering anxiety. In these complications that occurs shortness of breath, cough, purulent phlegm, fevers, sweats, weariness, and drowsiness are all common symptoms of aspiration pneumonia (ACSQHC, 2018). Following cardiothoracic or non-cardiothoracic surgery, a postoperative respiratory complication (PRC) is characterized as new onset or aggravated respiratory failure. PRCs are common, occurring in 2% to 378 percent of surgical cases, depending on the type of treatment and the patient's comorbidity. Other complications include atelectasis, fungal lung infection, pulmonary edema, respiratory failure, mechanical ventilation, and pneumonia (Hanh et al., 2021).

Respiratory or pulmonary complications occur in up to 30% of the patients. Several factors predispose to increased risk of pulmonary complications such as disruptions of the normal breathing activity with shallow rapid breathing, prolonged supine position, impaired mucociliary clearance, postoperative pain, and anesthesia-induced diaphragmatic dysfunction. The prevention of pulmonary complications has been thoroughly investigated and several different respiratory interventions that are structured breathing exercises, incentive spirometry, breathing with the assisted inspiratory flow, and different kinds of positive airway pressure breathing have been suggested as possible preventive solutions (Kokotovic et al., 2021).

Postoperative pulmonary or respiratory complications increase hospital morbidity, prolong hospital stay, and contribute to additional health-care costs. Postoperative pulmonary complications seem to be related to the disruption of the normal activity of respiratory muscles, a phenomenon that starts at induction of anesthesia and continues into the post-operative period. These mechanisms lead to a decrease in functional residual and vital capacity for many days, and subsequently to atelectasis that was shown to promote

bacterial growth due to reduced function of alveolar macrophage and reduced functional surfactant, explaining the risk of pneumonia (Pasquina et al., 2006).

Postural drainage (30–45-degree elevation), breathing exercises, and coughing exercises made up CPT. On the first postoperative day, CPT diaphragmatic respiration, incentive spirometry, and coughing were all tested. On the second postoperative day, percussion exercises were introduced and all breathing exercises were completed twice daily. Up to the discharge on day 4, all breathing exercises and percussion were repeated twice daily (Duymaz et al., 2020). The Spinal cord injury (SCI) is among the most common types of physical disabilities and may be congenital or acquired. The causes of acquired SCI are auto mobile accidents, shallow water dives, firearm injuries, tumors, infections, and other diseases that may compromise the integrity of the spinal cord, whereas the congenital SCI mainly involves degenerative diseases, malformations of the central nervous system (CNS) and spina bifida (Lemos et al., 2020).

Damage to the spinal cord as a consequence of trauma, such as a Road Traffic Accident (RTA), or whiplash from illness or disintegration, such as cancer, is referred to as a "spinal cord injury." (WHO., 2013). A Spinal cord injury (SCI) is damage to any part of the spinal cord or nerves at the end of the spinal canal often causes permanent changes in strength, sensation and other body functions below the site of the injury. Injury may make it more difficult to breathe and cough if abdominal and chest muscles are affected the diaphragm and the muscles in chest wall and abdomen. The neurological level of injury will determine what kind of breathing problems may have. If persons have cervical and thoracic SCI, they may have an increased risk of pneumonia or other lung problems. Medications and therapy can treat these problems (Mayo Clinic Staff., 2014).

Chest Physiotherapy (CPT) is the broad term. It helps the spinal cord injury or respiratory problems patients in the world. Postural drainage, percussion, chest shaking, puffing, and coughing are all included in chest physiotherapy. The active cycle of breathing techniques, positive expiratory pressure, and osteopathic manipulative treatment are only a few of the recent innovations in physiotherapy. ACBT consists of forced expiration technique, thoracic expansion exercises, and active breathing control (Yang et al., 2010).

Chest physiotherapy (CPT) is the most effective treatment for respiratory complications in spinal cord injury patients (SCI). Patients with spinal cord injuries benefitted from chest physiotherapy, which enhanced their respiratory or pulmonary function. Chest physiotherapy is a set of physical exercises that assist you enhance your lung function and inhale better. CPT opens the lungs, strengthens the breathing muscles, and relaxes and restores the discharge of heavy lung secretions (William et al., 2020).

Post-operative chest physiotherapy was implemented in the beginning of the 20th century; deep breathing exercise was one of the first methods. Subsequently, a variety of manual treatments including percussion, clapping, vibration, or shaking were developed to improve bronchial drainage & more recently, mechanical breathing devices such as incentive spirometry (IS), blow bottles, intermittent positive pressure breathing (IPPB), and continuous positive airway pressure (CPAP) were introduced into clinical practice (Pasquina et al., 2006). CPT) has been the standard treatment used to treat excessive mucus secretions in CF in North America since the 1950s (McIlwaine 1997). Other airway clearance therapies became popular in the 1990s (McIlwaine 2007). These include the active cycle of breathing technique (ACBT), positive expiratory pressure (PEP) mask therapy, high-pressure PEP (hPEP) In the early 1990s, concern about oxygen desaturation during chest physiotherapy was addressed with the use of sufficient pauses for relaxation and breathing control during ACBT (Pryor 1990b) (Mckoy et al., 2016). RMT (respiratory muscle training) is a type of strength and endurance training that focuses on the inspiratory and/or expiratory muscles. With affordable devices that increase the strain on the respiratory muscles, they can be exercised in a similar fashion to the leg muscles. In each training session, participants are usually expected to inhale or exhale through a device against resistance at a specified percentage of their endurance or maximal inspiratory or expiratory pressure for a certain amount of time (Berlowitz et al., 2013).

The most prevalent complication for spinal cord injury patients is respiratory difficulties. In the acute phase of SCI, respiratory problems are the leading cause of illness and mortality, accounting for 36 percent to 83 percent of cases. Almost two-thirds of patients with severe SCI will develop problems such as atelectasis, pneumonia, or respiratory failure, necessitating the use of mechanical ventilation (Galeiras et al., 2013).

In cervical and high thoracic traumas, where the abdominal wall muscles are paralyzed, effective coughing and failure to clear chest secretions might be a concern. To avoid respiratory difficulties, assisted coughing, respiratory physiotherapy, and breathing exercises should be started as soon as possible (Lee & Thumbikat., 2015). Respiratory function is reduced after a cervical or thoracic lesion due to weakening of the respiratory muscles, which raises the risk of respiratory problems. After SCI, different therapies can improve respiratory function and coughing, however the evidence on which element of respiratory care should be maximized is inconsistent (Raab et al., 2020).

The severity of respiratory dysfunction is proportional to the extent and severity of neurological causes or injuries, with the worst of cervical and thoracic traumas posing the most danger. Several studies have suggested that this is a developing trend in cervical injuries, particularly C1–C4 injuries, with a higher or higher rate of SCI resulting in mechanical ventilation reliance (Galeiras et al., 2013).

SCI-related respiratory dysfunction is a leading source of morbidity, mortality, and economic burden. It is the leading cause of death in persons who have had a spinal cord injury, and it contributes to greater mortality rates in people with SCI than in the general population. Mechanical changes in the lungs and chest wall (especially in persons with cervical cord injuries) cause paradoxical (out of phase) chest wall movement and decreased lung and chest wall compliance (flexibility). As a result, breathing efficiency, maximal static respiratory pressures, and lung capacities are all lowered. Impairment of the inspiratory muscles diminishes vital capacity, hinders deep breaths, and can lead to dyspnea and/or lung collapse (atelectasis). Cough and secretion clearance are hampered by dysfunctional expiratory muscles, which also increase airway resistance and the susceptibility to and persistence of lower respiratory tract infections (Berlowitz et al., 2013). The respiratory impairment that occurs after a spinal cord injury (SCI) is more severe in high or growing cervical injuries, and it is characterized by low lung volumes and a weak cough due to respiratory muscle weakness (Nash et al., 2016).

Spinal cord injuries remain a major health concern the world over, with an annual incidence of 12.1–57.8 cases per million in developed and 2.1– 130.7 cases per million in developing countries up to 10% of these injuries will occur in children. In developing countries, spinal

cord injury (SCI) often involves young adults (aged 20–30) in the prime of their economically productive lives; whereas in developed countries the reported mean age (40–60 years) tends to be higher, possibly due to higher mean population age and better medical care system (Mudzi et al., 2015).

Acute respiratory consequences from spinal cord injury below C4 are less well understood. Respiratory difficulties are still common in patients with injuries above T1, while respiratory function is usually normal with T12 level or lower lesions. These consequences are common in patients with upper thoracic spinal cord injury, according to historical studies. First, preexisting comorbidities, particularly respiratory disorders, must be considered. Second, thoracic trauma is common in patients with spinal cord injuries between C5 and T5, which can lead to breathing difficulties. Significant advancements in spinal cord injury respiratory therapy, particularly non-invasive ventilation and aided coughing procedures, have been made in recent years (Sampol et al., 2020).



## **1.2 Rationale: -**

In Bangladesh, respiratory complications are most common seen in patients with post-operative thoracic or abdominal surgery. Following thoracic and abdominal surgery patients are experiencing chest pain, shortness of breath, dry cough etc. Respiratory complications are the most common problems which are frequently seen after a cervical spinal cord injury, and these are the leading cause of damage and fatality after this type of injury. Atelectasis, pneumonia and exacerbations of respiratory failure are caused by a compromised ventilation system, inadequate cough, increased secretions, and bronchospasm. From the different studies, it is small evident that the chest physiotherapy improved airway pathway for the respiratory complication's patients. Moreover, practice of different types of chest physiotherapy reduced varieties of respiratory complications. Most patients with a full damage at same level of upper cervical or C5 needed a tracheostomy to help with MV or to protect their airway.

The Physiotherapists work or co-related with both of the patient and caregiver. If the patient and caregiver don't understand the cause and determination of chest physiotherapy, they never wanted to take action or treatment. This study helped to find out the understanding of the patients about chest physiotherapy for respiratory complication patients of the spinal cord injury. Physiotherapy was not well-known profession in Bangladesh but that developing day by day. Most of the people did not know about the profession and its services. The Physiotherapists provided to enrich their knowledge, attitude & practice of chest physiotherapy and resource by using this study in Bangladesh.

### **1.3 Research Question**

What were the Knowledge and Attitude of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh?

#### **1.4 Aim of the study**

This study was to elucidate about the knowledge and attitude of chest physiotherapy among the patients suffering from respiratory complications in Bangladesh.

#### **1.5 Objectives of the study**

##### **1.5.1 General objective**

To inspect about the Knowledge and Attitude of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh.

##### **1.5.2 Specific objectives**

1. To find out socio-demographical information of the patients.
2. To gaze out the knowledge about chest physiotherapy for the patients with respiratory complications.
3. To identify the attitude about the chest physiotherapy for the patients with respiratory complications.
4. To elucidate the important role of chest physiotherapy for the respiratory complication's patient.
5. To find out the improved lung function or volume for the respiratory complication patients.

## 1.6 Conceptual framework

### Predictable variables

Age

Gender

Occupation

Educational qualification

Residual area

Marital status

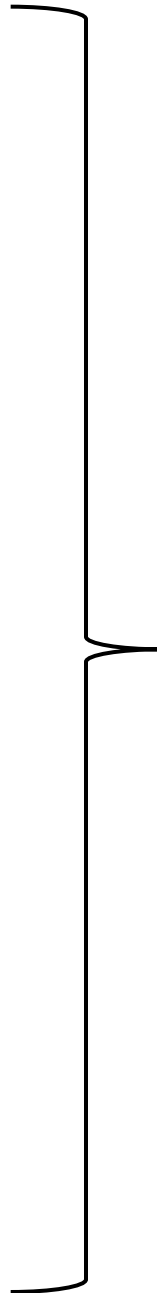
Types of the complications

Causes of complications

Associated problems

### Responsible variable

Knowledge and Attitude



## **1.7 Operational Definition: -**

### **Knowledge**

The term "knowledge" can refer to a theoretical or practical understanding of a subject. It may be defined that the facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

### **Attitude**

It may be defined that is a manner of thinking, feeling, or behaving that reflects a state of mind or disposition. A feeling or opinion about something or someone, or a way of behaving that is caused by this It's often very difficult to change people's attitudes.

### **Chest Physiotherapy**

Chest physiotherapy (CPT) are treatments generally performed by physical therapists and respiratory therapists, whereby breathing is improved by the indirect removal of mucus from the breathing passages of a patient.

Chest physiotherapy (CPT) is described as the external application of a mixture of pressures to promote expiratory flow with the purpose of optimizing mucus transport in patients with respiratory complication, pneumonia, acute bronchiolitis, community-acquired pneumonia, or cystic fibrosis (Pouzot et al., 2021)

### **Spinal Cord Injury**

A spinal cord injury (SCI) is damage to the tight bundle of cells and nerves that sends and receives signals from the brain to and from the rest of the body. SCI can be caused by direct injury to the spinal cord itself or from damage to the tissue and bones (vertebrae) that surround the spinal cord.

**Respiratory complications: -**

Respiratory complications may be defined that when the problem patients for normal breath. When the respiratory complications developed the patients must need oxygen for the patients. The respiratory complications include infections, inflammation and respiratory failure Respiratory failure is a serious condition that develops when the lungs can't get enough oxygen into the blood. Buildup of carbon dioxide can also damage the tissues and organs and further impair oxygenation of blood and, as a result, slow oxygen delivery to the tissue.

Respiratory difficulties impact 36–83 percent of patients with SCI in the acute phase, and respiratory complications account for 80 percent of all deaths in patients with cervical damage. The most common respiratory problems in a prospective analysis of 261 patients with acute SCI were atelectasis (36%), pneumonia (31%), and respiratory failure (23%), with a total of 67 percent of the patients having respiratory issues in the acute phase. Respiratory failure and ineffective mucous mobilization were highlighted as important problems in a 50-year follow-up study from Western Norway, and respiratory causes of death were twice as common as expected based on the age of the entire patient population. Long-term follow-up of Sunna as Hospital patients reveals that respiratory issues are the most common cause of death of the patient group (Tollefsen & Fondenes, 2012).

PPC is characterized as a frequent new onset or aggravation of respiratory failure following surgery. The inconsistent use of the term PPC by researchers makes it difficult to comprehend the clinical implications of PPC fully. Atelectasis, bronchospasm, pneumonia, pulmonary edema, and respiratory failure are among the diagnoses that were formerly considered PPC. Although the most prevalent criterion is failure to be, there is no clear definition of what constitutes respiratory failure, within 48 hours following surgery, extubated. The aim was to investigate the effect of combination of Acapella device and breathing exercises on treatment of post operative pulmonary complications after upper abdominal surgeries. When the reduction in inspiratory capacity, total inspiratory time, and ventilation at the lung bases, leading to a high risk of developing post operative pulmonary complications of the patients (Allam et al., 2016).

Patients may lack comprehension of the necessity of deep breathing due to a lack of education, and this lack of information may limit their capacity to participate. Seventy-three patients were taught how to practice deep breathing exercises, and 51.5 percent of them did so. After surgery, 54.8 percent of patients got deep breathing exercise instruction, and 43.2 percent of those who did so conduct the exercises 10 times each hour (Unver et al., 2018).

Respiratory difficulties are common after a cervical spinal cord injury, and they are the major cause of morbidity and mortality. Atelectasis, pneumonia, and exacerbations of respiratory failure are caused by faulty ventilation mechanics, a bad cough, increased secretions, and bronchospasm. The diaphragm will be impacted if the neurological level of injury (NLOI) is at or above C5. Complete CSCI paralyzes the intercostal and abdominal muscles. Inspiratory and expiratory function may be significantly harmed as a result. The majority of individuals with complete CSCI require endotracheal intubation and mechanical breathing at the time of presentation (MV). Injury to the C5 vertebra, total injury, atelectasis, abundant respiratory secretions, and pneumonia all predict the requirement for MV in the first week following injury (Arora et al., 2012).

Respiratory problems are common after SCI, with mucus retention, atelectasis, pneumonia, and respiratory failure being particularly common. As a result, any intervention that improves respiratory function and hence prevents or alleviates these illnesses would be extremely beneficial to the SCI community. If respiratory muscle training is beneficial for a person with SCI on a daily basis, it could mean easier breathing and speaking, better coughing and expulsion of mucus, and fewer hospital admissions. Each of these outcomes (alone or in combination) has the potential to considerably improve a person's quality of life (Berlowitz et al., 2013).

Respiratory muscle training with an incentive spirometer enhances surfactant synthesis, which reduces surface tension, improves lung compliance, reduces breathing work, and opens compressed alveoli to prevent atelectasis. Various training programs have been used to improve respiratory muscle strength, vital capacity, and residual volume in spinal cord injury (SCI) patients, including respiratory resistance or resistance endurance training, Inspiratory Muscle Strength Training (IMST), Abdominal Weights (AbWts) training with inspiratory muscle training, and respiratory muscle training. Intensive spirometry can be performed in a hospital setting as well as at home to enhance pulmonary function in paraplegic patients (Mantri et al., 2017).

In both the acute and long-term phases of a spinal cord injury (SCI), respiratory problems are the most common cause of morbidity and mortality. The severity of respiratory difficulties is determined by the degree of spinal cord injury and motor disability. Up to



80% of patients with a spinal cord injury experience breathing difficulties during the initial period. Respiratory issues are the most common cause of death among SCI patients, according to long-term follow-up. Atelectasis, pneumonia, and respiratory failure are the most prevalent consequences (Tollefsen & Fondenes, 2012).

Traumatic vertebral column fractures frequently result in acute spinal cord damage (SCI) (VCFs). With an estimated 11000 new cases every year in the United States, SCI remains a significant source of disability, morbidity, and mortality. In patients with cervical level SCI, the rate of post-injury pulmonary episodes can range from 35 to 95 percent. SCI is linked to respiratory muscle weakness and paralysis, resulting in a proclivity for ventilation insufficiency and obstructed airway clearance. As a result, respiratory issues are the leading cause of death among SCI patients, with mortality rates ranging from 20 to 50%. Acute respiratory distress syndrome (ARDS) is a consequence of neurological impairment that leads to aspiration in SCI patients. Acute lung damage, like ARDS, is a less serious condition are characterized by parenchymal inflammation, diffuse alveolar damage and impaired gas exchange leading to respiratory failure (Veeravagu et al., 2013)

Bangladesh is a developing country in South Asia, with a population of over 160 million people. Bangladesh's annual population growth rate was 1.59 percent, with 27 percent in urban areas and 73 percent in rural areas. Bangladesh is a densely populated country with a knowledge growth rate of around 61.0 percent among those aged 15 and up. The record of traumatic spinal cord injuries caused by falls from height (FFH), supported over weight of the head, or either road traffic collision has been experimental worldwide (RTA). Pressure sores, urinary issues, sexual dysfunctions, and intestinal bladder problems are among the many different forms of secondary sequelae that regularly affect spinal cord injury patients (Rahman et al., 2018).

In the United Kingdom, the incidence of SCI is 12-16 per million of the population. Although there is a trend toward an increase in non-traumatic causes of SCI, particularly in older age groups, traumatic causes are more common than non-traumatic causes (ratio of 4:1). Men are more likely than women to suffer a traumatic SCI, with a male to female ratio of 2:1. Young individuals (males: 20-29 years; females: 15-19 years) and elderly people (males 70; females 60) exhibit two age-related peaks in the incidence of traumatic

SCI, according to epidemiological research. The increased risk of falls in the elderly population has resulted in an increase in the incidence of SCI. There's also a tendency toward more incomplete injuries, which contrasts with the scenario many decades earlier, when injuries were more likely to be complete (Lee & Thumbikat., 2015).

Acute spinal cord damage is a particularly serious complication of traumatic injury. In the United States, there are around 40 instances per million people, resulting in approximately 12,000 new cases per year. In different countries, rates range from 12 cases per million to over 60 cases per million population. In the United States, between 238,000 and 332,000 persons have had a spinal cord injury. Males account for more than 80% of spinal cord injury victims. Although traumatic spinal cord injury is often thought to be a disease of young adults, the average age at the time of injury has risen from around 29 years old in the 1970s to more than 40 years old in 2010 (Stein et al., 2015).

Motor vehicle crashes account for 42% of recorded SCI cases in the United States, according to the National Spinal Cord Injury Statistical Center (NSCISC). Falling is the second most prevalent cause of SCI (27.1%), followed by acts of violence (mainly gunshot wounds) (15.3%), and amusing good actions (15.3%). (7.4 percent). Dropping down (DD) accounts for 57.85% of TSCI in Pakistan, followed by RTA 25.2% and gunshots 8.4 percent (Alam et al., 2012).

On magnetic resonance imaging, spinal cord injury (SCI) is usually associated with radiological abnormalities, and the spinal cord may appear compressed, contused, or oedematous. In the short and long term after an accident, respiratory problems are the major cause of morbidity and mortality. Traumatic SCI occurs 15 times per million per year in Australia, 16 times per million in Europe, and 39 times per million in North America.<sup>4</sup> In Australia, 300–400 instances of SCI are documented each year. CSCI accounts for 40 percent to 60% of all SCI (Arora et al., 2012).

Atelectasis, pneumonia, pleural effusion, and tracheobronchial infection are the most frequent side effects, with pneumonia accounting for the majority of fatalities. Shallow breathing, higher secretions, decreased pulmonary compliance, changes in muscle tone, and lung alterations are all causes of these problems. All of these lung issues in the intensive care unit can be avoided or minimized with the help of respiratory physiotherapy.

Respiratory rehabilitation, a comprehensive method that also includes patient assessment, muscle exercise, education, dietary intervention, and psychosocial support, includes Respiratory physiotherapy as one of its components. It can be impossible to finish since it requires prolonged application and the patient's stay in the ICU is occasionally shorter than the length of the entire program. The respiratory physiotherapy includes coughing, vibration, percussion, postural drainage, lung expansion techniques and oscillatory and non-oscillatory systems (Goñi-Viguria et al., 2018).

Active cycle breathing techniques (ACBT), percussion, vibration, and shaking are some of the physiotherapeutic approaches that can help with sputum evacuation. ACBT is a series of treatments that include breathing control, lower thoracic expansion exercises, and the forced expiration technique, all of which can be tailored to the needs of individual patients. Physiotherapists used ACBT 79 percent of the time, 50 percent of the time, 50 percent of the time, four percent of the time, and 34 percent of the time. Four percent of the time, physiotherapists used vibration, and 34 percent of the time, they used vibration. When treating patients with AECOPD, no physiotherapists always used percussion or always used shaking, although 12 (8%) physiotherapists used percussion frequently and 16 (11%) used shaking frequently (Yohannes et al., 2006).

A successful cough necessitates a strong inspiratory effort followed by a rapid and forceful expiration. The therapist must synchronize the applied compressive force with the expiratory process. A compressive force directed inwards and upwards under the diaphragm, as well as compression of the rib cage, may provide manual, expiratory assistance the patient's expiratory effort Mechanical insufflation/exsufflation devices have been shown to help people with neuromuscular diseases and respiratory muscle weakness cough (Berlowitz & colleagues, 2016).

To improve respiratory function, exercise training must be undertaken three times per week for six weeks at a relatively high intensity (70-80 percent of maximum heart rate). The best training regimens have yet to be discovered. Because of a higher prevalence of pneumonia coupled by reduced expiratory flows during cough, people with spinal cord injuries are at risk for secretion retention. This risk is greatest during the acute phase following SCI. In persons with SCI, the prevalence of respiratory infections is still higher than in age-

matched healthy people, despite the fact that it has decreased during the rehabilitation phase of recovery, and secretion retention is a key contributor to respiratory illness in people with SCI. In this population, respiratory problems are the leading cause of morbidity and mortality. Though some research has looked into the efficiency of secretion removal techniques in people with SCI, there are still some inconsistencies in how conventional pulmonary function is assessed (Sheel et al., 2006).

Because respiratory difficulties are the major cause of morbidity in people who have suffered a cervical spinal cord injury (SCI), specialized respiratory care is essential following the injury. Respiratory problems are common during the acute hospitalization phase, impacting 84 percent of those with C1 to C4 SCI. The most prevalent respiratory difficulties for this group during the acute phase are atelectasis 36.4 percent, pneumonia 31.4 percent, and ventilatory failure 22.6 percent (Wong et al., 2012).

More than 85% of individuals with cervical spinal cord injuries have respiratory dysfunction, with more than 40% fulfilling established organ dysfunction scales criteria for respiratory failure. The patients of spinal cord injury are Concomitant injuries, such as pulmonary contusions and pneumothoraxes or hemothoraces, as well as the development of sequelae, such as atelectasis, pneumonia, and pulmonary embolism, all contribute to respiratory dysfunction (Stein et al., 2015).

For a person with a high spinal cord injury to breathe, the person will need a machine called a ventilator to breath for them, this machine forces air in and out of the lungs to re-oxygenate the blood. In order to cough, the person will need help by way of a career performing an assisted cough procedure. An alternative to a ventilator is a diaphragm pacemaker. Pulses are sent down electrodes from the pacemaker implanted under the skin in either the neck or upper chest to the phrenic nerves in the neck, causing the diaphragm to contract. This contraction causes inhalation of air. When the pulses stop, the diaphragms relax and exhalation occurs. Repetition of this series of pulses produces a normal breathing pattern. A breathing pacemaker can provide ventilatory support for patients with chronic respiratory insufficiency whose diaphragm, lungs, and phrenic nerves have residual function (Apparalyzed, 2015).

Cough is a protective mechanism to keep the airways clear from foreign material inhaled or secreted from the lungs, as well as a common symptom of respiratory disease, Cough efficacy is an important factor in determining the risk of aspiration. In adults, spinal cord injury (SCI)-induced paralysis of respiratory muscles results in inability to effectively cough and clear mucus. In addition, impaired cough in these patients increases the risk for aspiration pneumonia. Peak cough flow (PCF) measurements, an expiratory flow parameter of cough, using a pneumotachograph are used to estimate the airway potency, bronchospasm, and cough capacity in children and adults with neuromuscular diseases, Clinical measurement and quantification of cough in children with SCI will be of clinical value to develop improved airway clearance techniques and pediatric guidelines. In addition, a detailed evaluation of the relationship between lung volumes and cough parameters is warranted to further investigate the effectiveness of cough in this population (Singh et al., 2021).

Early physiotherapy to prevent respiratory problems is an obvious and rational treatment for CSCI patients, and it is now considered standard of care. Incentive spirometry, deep breathing exercises, assisted coughing (the "quad cough"), chest percussion, the use of a rotational bed, a gradual increase in the head-up tilt of the bed to 40 degrees, and mobility out of bed with an abdominal binder have all been included in treatment packages. 2-hourly turns, 4-hourly deep breathing exercises, incentive spirometry, prone chest percussion, and assisted coughing were one combination that resulted in a substantial reduction in mortality when compared to historical controls (Arora et al., 2012).

Unless they have pre-existing respiratory issues, patients with lesions below C5 are usually able to breathe satisfactorily. Intercostal muscular paralysis and acute muscle tone loss are caused by cervical injury and high thoracic injuries. This causes intercostal gaps to close during inspiration and a diaphragmatic/abdominal breathing rhythm (paradoxical breathing). A high spinal cord injury or flail chest should be suspected if paradoxical breathing is present. A high SCI is linked to a significant reduction in critical capacity (Lee & Thumbikat, 2015).

The majority of previous research examining between-person differences in the risk of pulmonary complications focused solely on non-modifiable parameters such as demographics (gender and age), injury severity (level and completeness), or spinal shock severity. Lower respiratory muscles may become paralyzed or impaired, and respiratory function is hampered, with increasing levels of damage causing more impairment. Cough impairment is particularly essential because insufficient clearance of airway secretions can lead to mucus clogging and consequences including atelectasis (Raab et al., 2020).

SCI is defined as damage to the spinal cord that causes a loss or impairment of function, resulting in decreased mobility or feeling. Muscles below the level of injury become paralyzed or hindered when the spinal cord is affected. Injury at higher levels results in more impairment. SCI can impact respiratory function due to paralysis or partial paralysis of the respiratory muscles, in addition to paralysis of the lower and/or upper limbs. The severity of respiratory dysfunction is determined by the severity of the injury as well as the extent of the lesion. With spinal cord injuries above C3, total paralysis of all muscles involved in respiration is common. Because the phrenic nerve receives motor supply from C3, C4, and C5, injuries above C6 can affect diaphragm function (Berlowitz et al., 2013).

Cardiovascular and pulmonary problems were the key outcomes of interest. Acute respiratory distress syndrome (ARDS), respiratory illness, cardiac arrest, deep vein thrombosis (DVT), pulmonary embolism (PE), myocardial infarction (MI), and unplanned intubation were among the consequences studied. Alcoholism, trauma, bleeding disorders, congenital anomalies, congestive heart failure, smoking, cerebrovascular accident history, diabetes, history of angina in the previous month, history of myocardial infarction, history of peripheral vascular disease, hypertension requiring medication, cirrhosis, dementia, major psychiatric illness, drug abuse, prehospital cardiac arrest with CPR, and others were among the comorbidity variables (Bell et al., 2017).

Respiratory impairment can be caused by mostly lung/airway disorders, in which case pulmonary function testing (PFT) can be diagnostic and supplementary oxygen useful, or it can be caused by primarily ventilatory impairment, most commonly due to respiratory muscle dysfunction. Hypoxia in the presence of eucapnia or hypocapnia characterizes the

former until an exacerbation causes abrupt respiratory failure (ARF). Hypoventilation-induced hypercapnia and hypoxia, as well as intercurrent episodes of ARF due to an ineffective cough, characterize the latter. Unfortunately, doctors rarely distinguish between the two paradigms, instead evaluating and treating them as lung and airway disorders (Bach, 2012).

Following a spinal cord injury, respiratory failure is a leading cause of morbidity and mortality. Lesions above C3 paralyze all respiratory muscles, including the diaphragm, whereas lower lesions affect only a few respiratory muscles. The extent of dysfunction is determined by the severity of the injury as well as its completeness. Reduced lung capacities and decreased chest wall compliance arise from impaired respiratory muscles following a spinal cord injury (SCI). In SCI patients, a loss in respiratory function can have a major impact on exercise tolerance. Furthermore, lower physical ability caused by a sedentary lifestyle and inactivity causes dyspnea, exercise intolerance, and a reduction in aerobic capacity (Soumyashree & Kaur, 2020).

During the acute and chronic phases of SCI, respiratory problems are a major source of morbidity and mortality. As a result of inspiratory/expiratory muscle paralysis, all patients with an injury level larger than T12 are at risk for respiratory complications (i.e., atelectasis, pneumonia, respiratory insufficiency); the higher the injury level, the greater the risk of respiratory impairment. Patients with cervical SCI who have sustained lesions above the level of the phrenic motor neurons (C3, 4, and 5) and have diaphragm (i.e., inspiratory failure) and expiratory muscular paralysis. (i.e., resulting in insufficient clearance of secretions associated to ineffectual cough), and those with a lower cervical level SCI paralyzes the auxiliary inspiratory and expiratory muscles. Tracheostomy cannulation and mechanical ventilation may be required. Support at an early stage, which is usually started in the Short-term acute care (STAC) hospitals have intensive care units (Gundogdu et al., 2017).

**3.1 Study Design**

Cross sectional study was selected for conduct the study. A cross-sectional study was a quantitative study in which disease and exposure status was measured simultaneously in a given population and the most important advantage where it was quick and cheap. This research will be used a quantitative cross sectional research model to knowledge and attitude of chest physiotherapy among the patients suffering from respiratory complications in Bangladesh. A quantitative research design was used so that there were used large number of participants or population and therefore to collect the data.

**3.2 Study Site**

The data or information were gathered from the spinal cord injury unit at the Centre for the Rehabilitation of the Paralyzed (CRP), Bangladesh's leading rehabilitation center for SCI patients & respiratory complications patients in National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212).

**3.3 Study Population**

Sampling refers to the process of selection the subjects/individual. A population refers to the entire group of people or items that meet the criteria set by the researcher. The study populations were spinal cord injury patients who admitted in CRP for treatment & respiratory complications patients in National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212). The sample was chosen convenience sampling.



### 3.4 Sampling Size

Sample was a group of subjects were selected from population, who was used in a piece of research (Hicks, 2009). A sample was a smaller group taken from the population. Sometimes the sample size might be big and sometimes it might be small, depending on the population and the characteristics of the study.

When the sample frame is finite,

The equation of finite population correction in case of cross-sectional study is: -

$$n = \frac{Z^2 pq}{d^2}$$
$$= \frac{(1.96)^2 \times 0.05 \times 0.5}{(0.05)^2}$$
$$= 384$$

Here,

Z (confidence interval) = 1.96

P (prevalence) = 50%

And, q = (1-p)

$$= (1 - 0.5)$$

$$= 0.5$$

The actual sample size was, n= 384.

The researcher took 154 patients from the Centre that was treated the patient's respiratory complications with spinal cord injury unit and National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212) from March, 2022 to May, 2022. In this study the researcher also considered inclusion and exclusion criteria which helped the researcher to select suitable and appropriate participants for this study.

### **3.5 Sampling Technique**

One hundred fifty-four participants with respiratory complications were selected through convenience sampling technique due to the time limitation and as it was the one of the easiest, cheapest and quicker method of the sample selection. Data were collected data from the patients who were admitted at National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212), and Spinal Cord Injury (SCI) unit in CRP to taken chest physiotherapy treatment or continuing their treatment.

### **3.6 Inclusion Criteria**

- Both male & female were included respiratory complications patients
- Both male and female SCI patients were included.
- Patient age range was between 16-65 years (Farajzadeh et al., 2018)
- Patients who interested or willingness with participants (Trgovcevic et al., 2014)
- Both obstructive & restrictive patients were included

### **3.7 Exclusion Criteria**

- The age less than 15 years
- Patients with mental or psychological disorders (Post & van Leeuwen, 2012)
- Patients who discharged from CRP & NIDCH
- The patients who weren't interested or willing to participate (Melin et al., 2018)

### **3.8 Data Collection Tools**

Data was collected by using a structural mixed type questionnaire paper set, developed by the investigators and validated by a jury of experts involved in chest physiotherapy practice for respiratory complications admitted at National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212), and Spinal Cord Injury (SCI) unit in CRP by conducting to interview to collect information. The questionnaire sought information on

identification demographic information and respiratory complications related questions, neurological related questions and cardio-respiratory related questions. The tools used in collecting data were pen and pencils, paper, approved forms and consent forms, and a bag for storing these tools.

### **3.9 Data Collection Procedure**

There was a questionnaire for acquiring the participant's demographic information including age, sex, marital status, educational status, occupation, history including types of occupation, chest physiotherapy related information such as spinal cord injury (SCI) patients related information, and respiratory complications National Institute of Diseases of Chest & Hospital (NIDCH, Mohakhali, Dhaka-1212), others information. The researcher collected data from both male & female through individual interviewing process in calm environment. The duration of data collection will be need 20-25 minutes for every patient. The questionnaire was provided to responsible physiotherapists for patients and also direct to the patients for finding the answers to the questions given in the questionnaire, consent form, pen, file etc.

### **3.10 Data Analysis**

The data was analyzed using quantitative statistics. Statistical Package for Social Science (SPSS) version 25.0 was used to analyze the data. The variables were identified in a list, and the researcher created a computer-based data definition record file that included an ordered list of variables. The researcher named the variables in SPSS's variable view and defined the data types, values, decimal, label alignment, and measurement level. The next step was to clean fresh data files and examine the inputted data set to confirm that all data from the questionnaire sheet had been appropriately transcribed to the SPSS data view. The raw data was then ready for SPSS analysis. Data was analyzed by descriptive statistics and calculated as percentages and presented by using table, bar graph, pie charts etc. Microsoft office Excel 2013 was used to decorate the bar graph and pie charts. The result of this study was consisted of quantitative data. Data analyzed by Mann- Whitney (U) and Kruskal-Wallis H, test.

### **3.12 Ethical Consideration**

The whole procedure of this research project was done by following the Bangladesh Medical and Research Council (BMRC) strategies and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology were presented to the Institutional Review Board (IRB). Then the proposal of the dissertation including methodology were approved and obtained permission from the concerned authority of ethical committee of Bangladesh Health Professions Institute (BHPI). Ethical considerations were applied to sidestep or avoid ethical problems. Researcher was approved permission from research supervisor and head of the department from the Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI), an academic institute of the CRP to conduct the study. Then the researcher was taken permission from the head of the Physiotherapy department, CRP for collecting data. The ethical considerations were completed by participant's consent form. Informed consent was obtained by giving each participant a clear explanation of the study purpose or determination, the events or procedures were involved in the study and also informing them that they would free to withdraw from the study at any time if they wish. No personal data (e.g., name, address) was documented to must ensure participant confidentiality. Participants were also informed that their information might be published but their name and address would not be used in any way in the research project to preserve confidentiality. The researcher was committed not to share the information given with others except the research supervisor. These resources were predisposed of after completion of the research project. Recorded data, written data, transcript will be destroyed after six months following the study. The members also informed that they would not be harmed due to being a participant of the study.

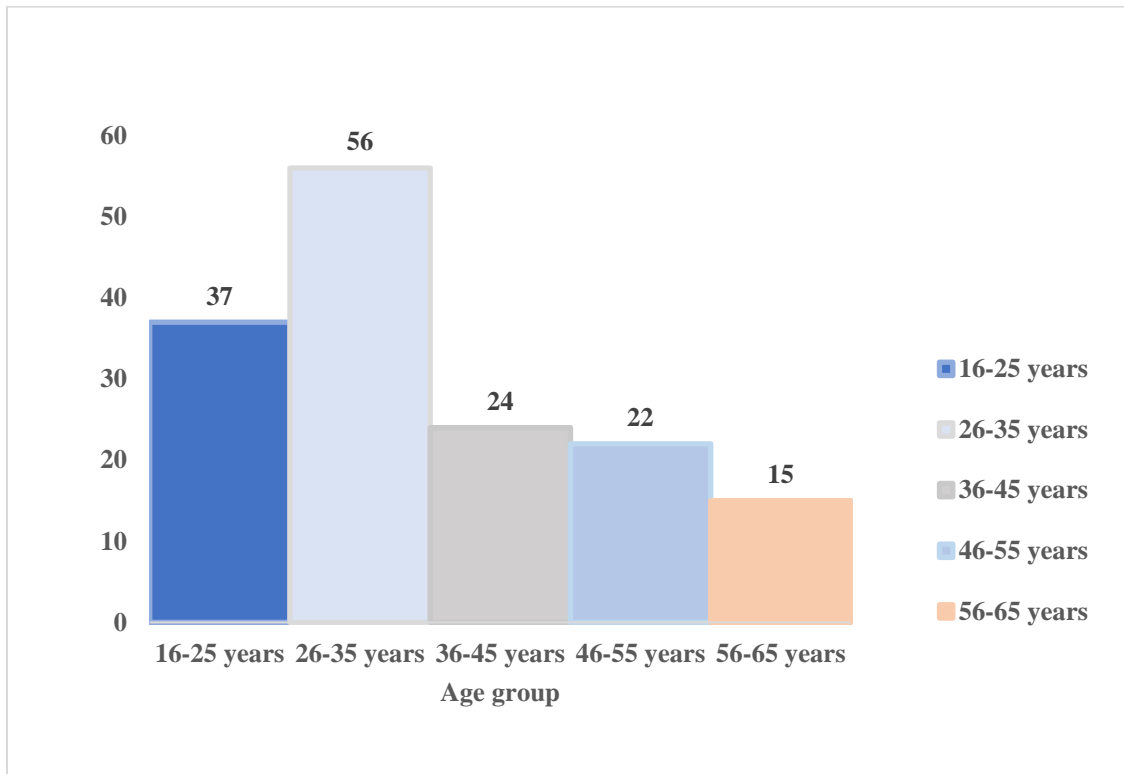
**4.1 Socio-demographical characteristics of the participants of the study: -**

Among 154 participants, the most participants were attended from 26-35 age group 36.4% (n=56) and followed by 16-25 age group (n=37, 24%), 36-45 age group (n= 24, 15.6%), 46-55 age group (n=22, 14.3%), 56-65 age group (n=15, 9.7%). The most of the participants were followed by male. Data showed that were male (n= 112, 72.7%) and female were (n= 42, 27.3%) were female. The occupation level of the participants that followed by Service holder (n=33, 21.4%), Businessman (n= 28, 18.2%), Retired (n=7, 4.5%), Housewife (n= 33, 21.4%), Students (n= 21, 13.6%) and Others (n= 32, 20.8%) when the most of the occupation of participants were service holder and housewife. The educational qualifications of participants Illiterate (n=25, 16.2%), Primary (n= 27, 17.5%), Secondary (n=41, 26.6%), Higher secondary (n=32, 20.8%), Graduation (n=19, 12.3%), post-graduation (n=10, 6.5%) when data showed that most of the participants were educational level were secondary. In this study followed by the most of the participants marital status were married when Un-married (n=35, 22.7%), Married (n=108, 70.1%), Divorced (n=5, 3.2%), Widow (n=6, 3.9%). The family members of the participants are followed by 9.1% (1-3), 78.6% (4-6) and 12.3% (7-9). The data showed that most of the participants family member between 4-6. The family monthly income followed by 10,000-20,000 TK (n=99, 64.3%), 21,000-30,00 TK (n=39, 25.3%), 31,000-40,000 TK (n=14, 9.1%) and 41,000-50,000 TK (n=2, 1.3%). In this study data showed that most of the family income were low level or low class. The residential area of the participants followed by urban (n=43, 27.9%), semi-urban (n=57, 37.0%) and rural (n=54, 35.1%). In this data showed that most of the participants living in semi-urban area. The participants were followed by smoking (n=66, 42.9, bettle leaf (n=31, 20.1%), jorda (n=19, 12.3%), Both bettle leaf & jorda (n=16, 10.4%) and the others (n=22, 14.3%). The data showed that most of the participants smoking were.

**Table no: 1- Socio-demographical characteristics of the participants: -**

<b>Variables</b>	<b>% (n)</b>	<b>Variables</b>	<b>% (n)</b>
<b>Age</b>  (Mean $\pm$ SD), 36.10 $\pm$ 12.874,  16-25 years 26-35 years 36-45 years 46-55 years 56-65 years	       24% (37) 36.4% (56) 15.6% (24) 14.3% (22) 9.7% (15)	<b>Marital status</b>  Un-married Married Divorced Widow	     22.7% (35) 70.1% (108) 3.2% (5) 3.9% (6)
<b>Gender</b>  Male Female	  72.7% (112) 27.3% (42)	<b>Family income</b>  10,000-20,000 21,000-30,000 31,000-40,000 41,000-50,000	    64.3% (99) 25.3% (39) 9.1% (14) 1.3% (2)
<b>Occupation</b>  Service holder Businessman Retired Housewife Students Others	      21.4% (33) 18.2% (28) 4.5% (7) 21.4% (33) 13.6% (21) 20.8% (32)	<b>Residential area</b>  Urban Semi-urban Rural	   27.9% (43) 37.0% (57) 35.1% (54)
<b>Educational level</b>  Illiterate Primary Secondary Higher secondary Graduation Post-graduation	      16.2% (25) 17.5% (27) 26.6% (41) 20.8% (32) 12.3% (19) 6.5% (10)	<b>Personal habits</b>  Smoking Bettle leaf Jorda Both 2 & 3 Others	     42.9% (66) 20.1% (31) 12.3% (19) 10.4% (16) 14.3% (22)

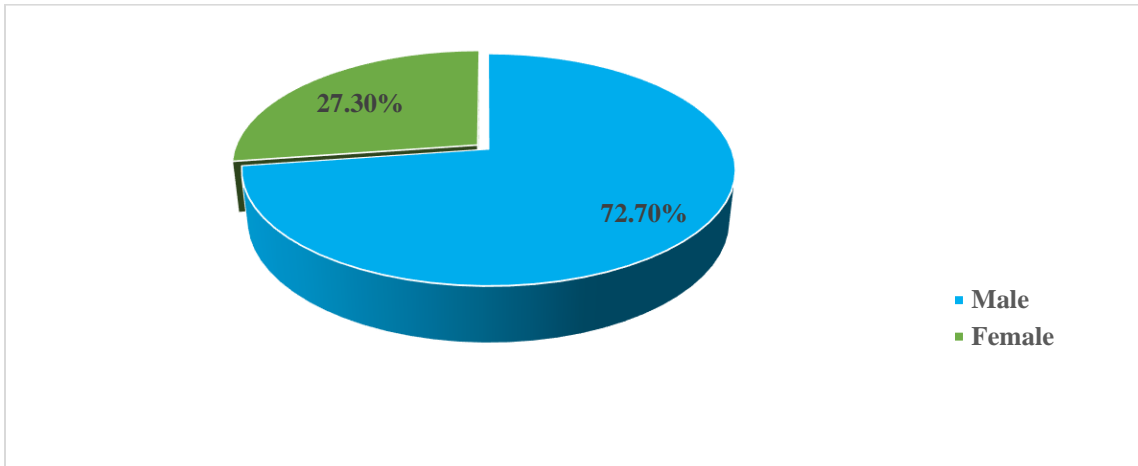
#### 4.1.1 Age: -



**Figure no: 1- Age of the participants**

Among 154 participants the most participants were attended from 26-35 age group 36.4% (n=56). In this study followed by age group of 16-25 (n=37, 24%), age group of 26-35(n=56, 36.4%), age group of 36-45 (n=24, 15.6%), age group of 46-55 (n=22, 14.3%), age group of 56-65 (n=15, 9.7%). Most of the age of group 26-35 years.

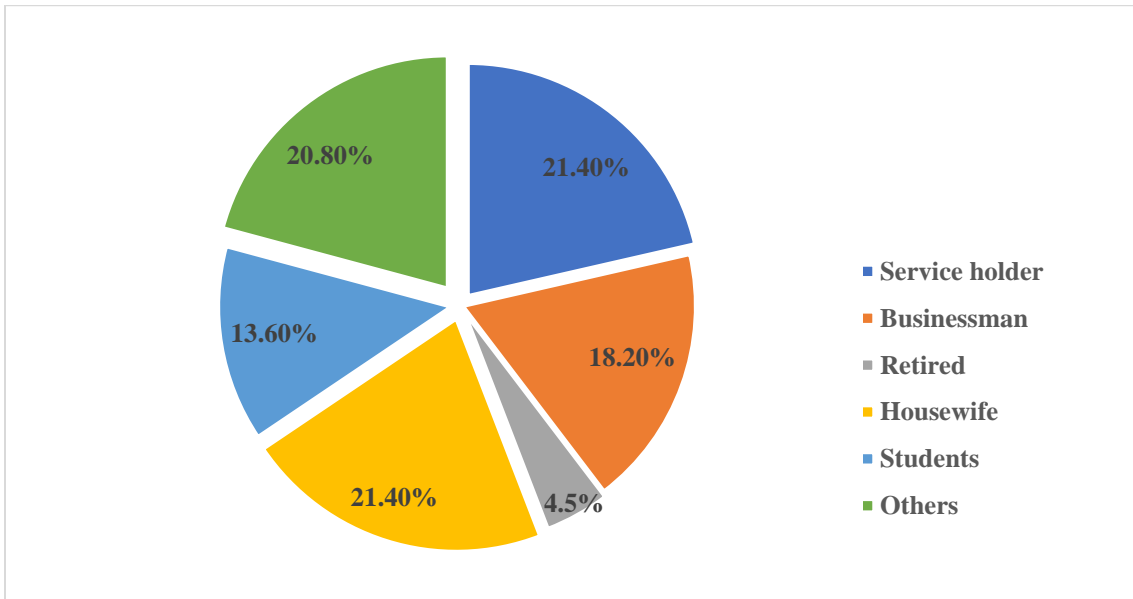
#### 4.1.2 Gender: -



**Figure no: 2- Gender of the participants**

The most of the participants were male. In this study Data showed that male were (n=112, 72.7%), and female were (n=42, 27.3%).

#### 4.1.3 Occupation: -

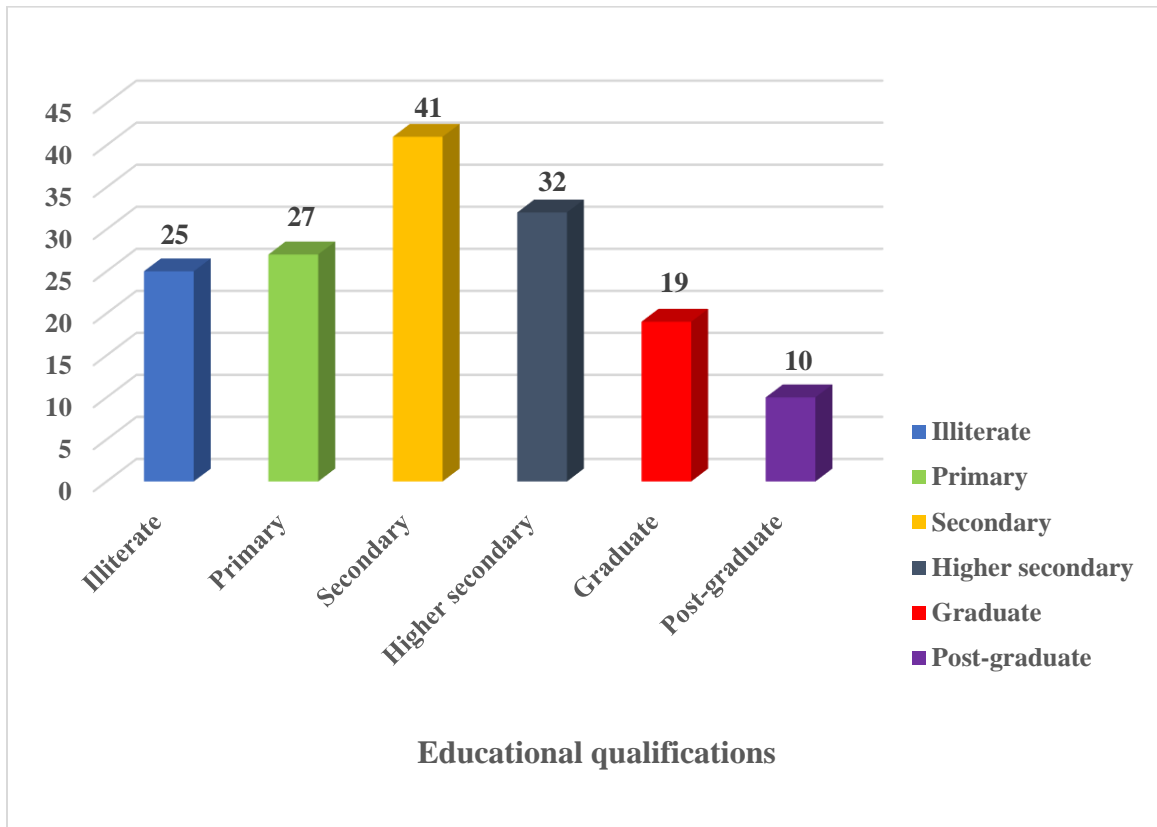


**Figure no: 3- Occupation of the participants**

In this study, data showed that Service holder (n=33, 21.4%), Businessman (n=28, 18.2%), Retired (n=7, 4.5%), Housewife (n=33, 21.4%), Students (n=21, 13.6%) and Others (n=32, 20.8%) when the most of the occupation of participants were service holder and housewife.



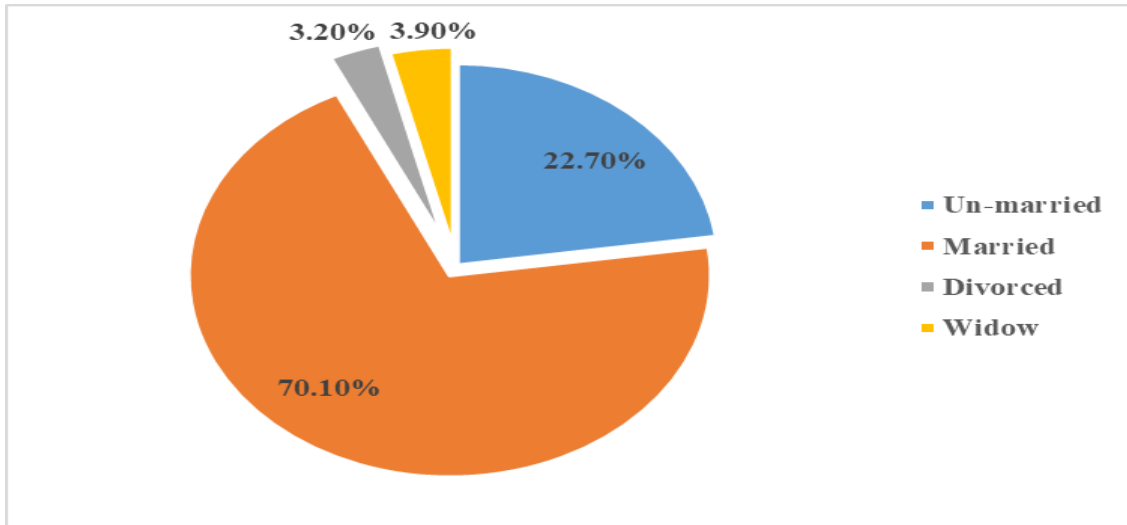
#### 4.1.4 Educational qualifications: -



**Figure no: 4- Educational qualifications of the participants**

The data showed that the educational qualifications of participants were followed by Illiterate (n=25, 16.2%), Primary (n=27, 17.5%), Secondary (n=41, 26.6%), Higher secondary (n=32, 20.8%), Graduation (n=19, 12.3%), post-graduation (n=10, 6.5%) when showed that most of the participants were educational level were secondary.

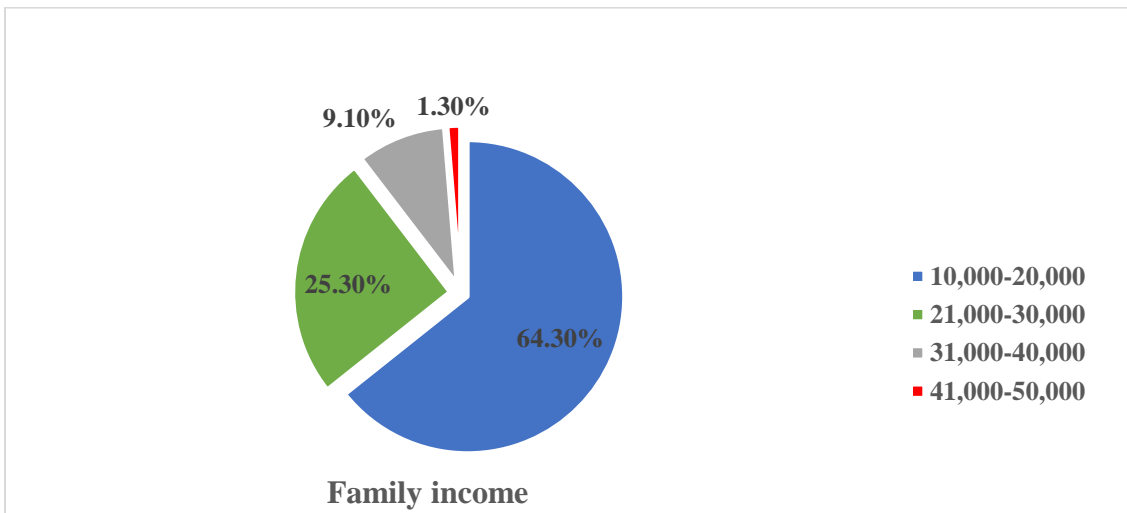
#### 4.1.5 Marital status: -



**Figure no: 5- Marital status of the participants**

In this study data showed that the most of the participants marital status were married when Un-married (n=35, 22.7%), Married (n=108, 70.1%), Divorced (n=5, 3.2%), Widow (n=6, 3.9%) when the most of the participants were married.

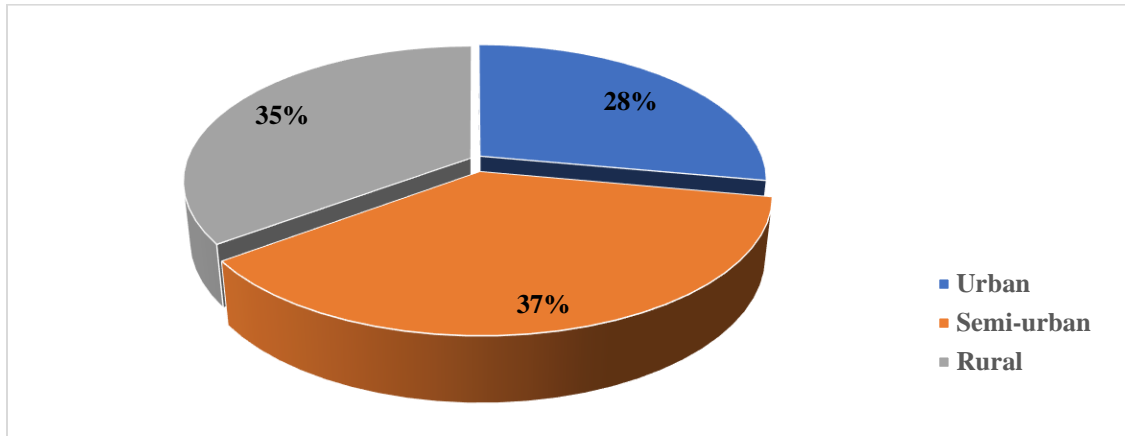
#### 4.1.6 Family income: -



**Figure no: 6- Family income of the participants**

In this study that the family monthly income 10,000-20,000 TK (N=99, 64.3%), 21,000-30,000 (n=39, 25.3%), 31,000-40,000 TK (n=14, 9.1%) and 41,000-50,000 TK (n=2, 1.3%). In this study data showed that most of the family income were low level.

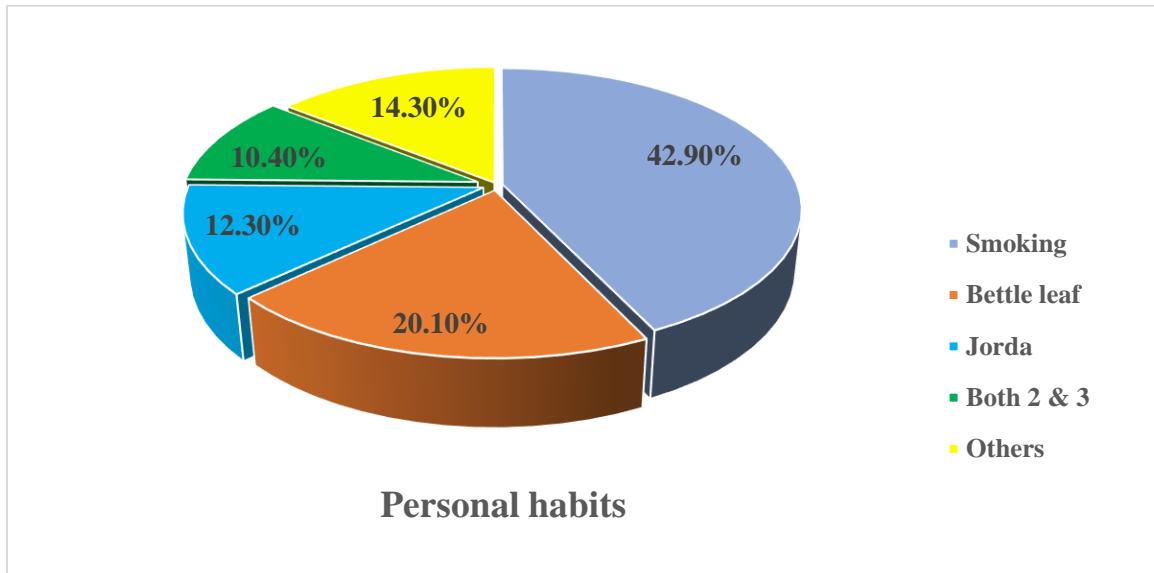
#### 4.1.7 Residential area: -



**Figure no: 7- Residential area of the participants**

The residential area of the participants were followed by urban (n=43, 27.9%), semi-urban (n=57, 37.0%) and rural (n=54, 35.1%) when the data showed that most of the participants living in semi-urban area.

#### 4.1.8 Personal habits: -



**Figure no: 8- Personal habits of the participants**

The participants were followed by smoking (n=66, 42.9%), bettle leaf (n=31, 20.1%), jorda (n=19, 12.3%), both bettle leaf & jorda (n=16, 10.4%) and the others (n=22, 14.3%). The data showed that most of the participants smoking were.

#### **4.2 Complications related characteristics of participants of the study: -**

The types of complications of respiratory failure 5.2% (n=4), Pneumonia 13.0% (n=20) Atelectasis 16.2% (n=25), sleep disorder 26.6% (n=41), Dyspnea 37.7% (n=58) and Others 1.3% (n=2). The data showed that most of the participants are complications is dyspnea 37.7%. The causes of complications of the participants were COPD 5.2% (n= 8), Asthma 18.8% (n= 29), Bronchiectasis 11.0% (n= 17), Pathological 18.8% (n= 29), in this data presented by the causes of complications most of the Traumatic 43.5% (n= 67) and the Others 2.6% (n= 4). There are also the associated problems of the participants were DM 14.3% (n=22), HTN 27.9% (n=43), heart diseases 11.0% (n= 17), kidney diseases 10.4% (n= 16) and others 36.4% (n = 56). When we showed that most of the participants presented the others associated problems of the participants. The final family member anyone presented this condition of the participants were yes 34.4% (n =53) and no 65.6% (n = 101). When we showed that most of the participants had no this condition.

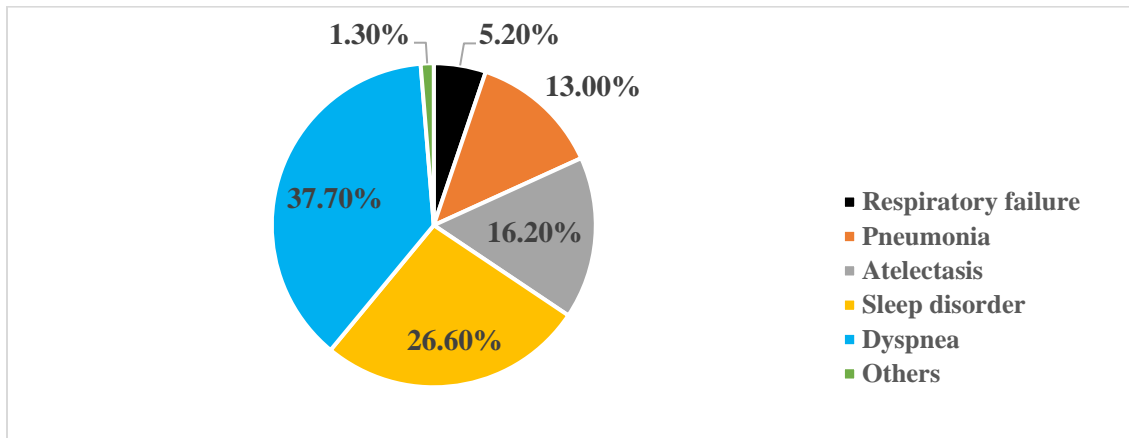
**Table no: 2- Complication related characteristics of the participants: -**

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<b>Variables</b>	<b>Frequency(n=154)</b>	<b>Percentage (%)</b>
<b>Types of complications</b>		
Respiratory failure	4	5.2
Pneumonia	20	13.0
Atelectasis	25	16.2
Sleep disorder	41	26.6
Dyspnea	58	37.7
Others	2	1.3
<b>Causes of complication</b>		
COPD	8	5.2
Asthma	29	18.8
Bronchiectasis	17	11.0
Pathological	29	18.8
Traumatic	67	43.5
Others	4	2.6
<b>Associated problems</b>		
DM	22	14.3
HTN	43	27.9
Heart diseases	17	11.0
Kidney diseases	16	10.4
Others	56	36.4
<b>Family member present respiratory complication</b>		
Yes	53	34.4
No	101	65.6
<b>Take medication for this condition</b>		
Yes	53	34.4
No	101	65.6

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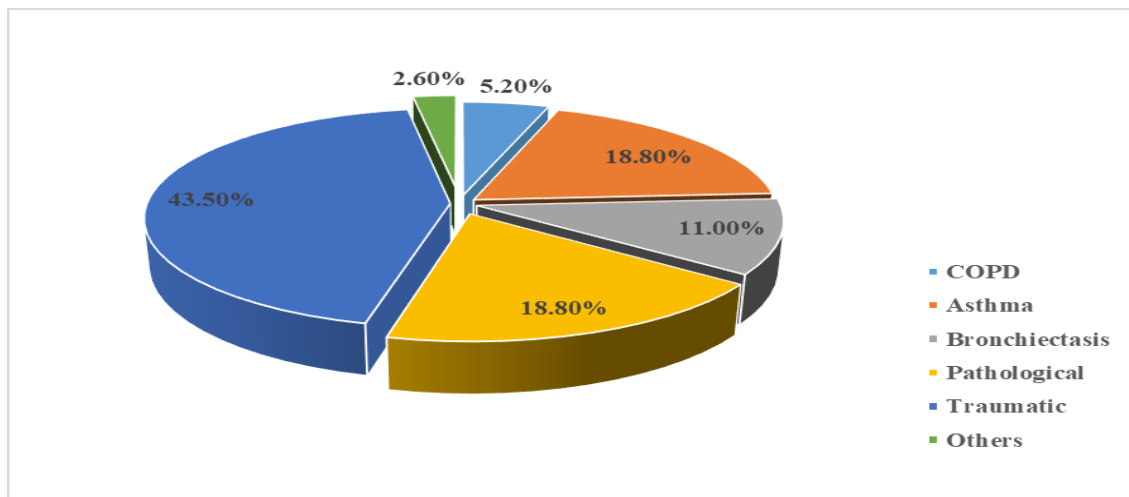
#### 4.2.1 Types of complications: -



**Figure no: 9- Types of complications of the participants**

In this study that followed by the types of complications of respiratory failure (n=4, 5.2%), Pneumonia (n=20, 13.0%) Atelectasis (n=25, 16.2%), sleep disorder (n=41, 26.6%), Dyspnea (n=58, 37.7%) and Others (n=2, 1.3%) when most of the participants complications of dyspnea were 37.7%.

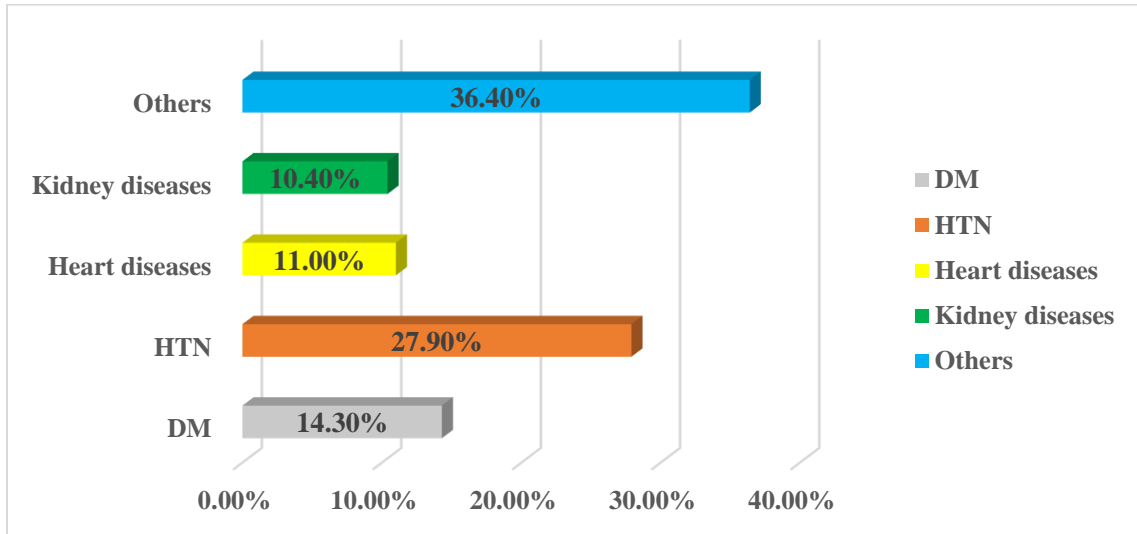
#### 4.2.2 Causes of complications: -



**Figure no:10 – Causes of complications of the participants**

The causes of complications of the participants were COPD (n=8, 5.2%), Asthma (n=29, 18.8%), Bronchiectasis (n=17, 11.0%), Pathological (n=29, 18.8%), in this data presented by the causes of complications most of the Traumatic (n=67, 43.5%) and the Others (n=4, 2.6%).

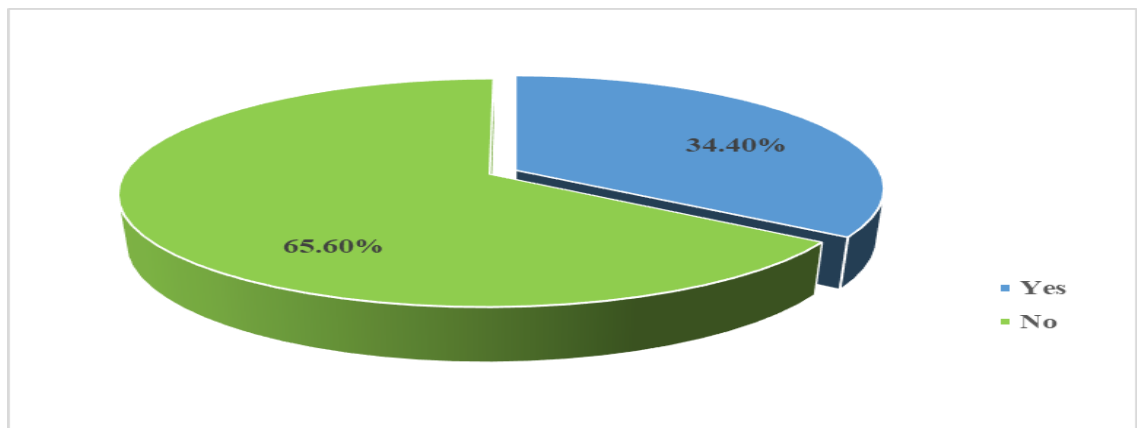
#### 4.2.3 Associated problems: -



**Figure no: 11- Associated problems of the participants**

There are also the associated problems of the participants were DM (n=22, 14.3%), HTN (n=43, 27.9%), heart diseases (n=17, 11.0%), kidney diseases (n=16, 10.4%) and others (n=56, 36.4%) when we showed that most of the participants presented the others associated problems of the participants.

#### 4.2.4 Family member anyone present this condition: -



**Figure no: 12- Family member anyone present this condition of the participants**

The final family member anyone present this condition of the participants were yes 34.4% (n =53) and no 65.6% (n = 101). When we showed that most of the participants have no this condition.

#### **4.2.5 - Distribution with socio-demographical characteristics about health-related: -**

In this study the results from the socio-demographical domains were presented in this table. The independent variable age with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.020 & 0.084. The independent variable gender with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.011 & 0.000. The independent variable occupation with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.112 & 0.000. The independent variable educational qualifications with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.722 & 0.373. The independent variable age with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.025 & 0.175. The independent variable gender with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.005 & 0.000. The independent variable occupation with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.007 & 0.000. The independent variable educational qualification with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.030 & 0.000. The independent variable age with You had experienced to work on chest physiotherapy practices & You had practiced chest physiotherapy last one month the p-value was 0.265 & 0.371. The independent variable gender with you had experienced to work on chest physiotherapy practices & you had practiced chest physiotherapy last one month the p-value was 0.834 & 0.377. The independent variable occupation with you had experienced to work on chest physiotherapy practices & you had practiced chest physiotherapy last one month the p-value was 0.401 & 0.294. The independent variable educational qualifications with you had experienced to work on chest physiotherapy practices & you had practiced chest physiotherapy last one month the p-value was 0.263 & 0.053.



Among the participants who were in between 26 to 35 years old had sufficient knowledge of chest physiotherapy and who were 56 to 65 years had sufficient knowledge about WHO guideline. Male participants had better knowledge on both chest physiotherapy and WHO guideline.

**Table no: 3- Distribution with chest physiotherapy knowledge about health-related and sociodemographic factors through Mann-Whitney(U) test and Kruskal-Wallis(T) test: -**

Variables	Knowledge about chest physiotherapy of the participants		Knowledge about WHO guideline of the participants	
	Mean	P- value	Mean	P-value
<b>Age</b>				
16-25 years	74.16	(a) 0.020*	66.77	0.084
26-35 years	88.49		86.46	
36-45 years	65.90		69.65	
46-55 years	66.95		73.77	
56-65 years	78.73		88.53	
<b>Gender</b>		(b)		
Male	82.74	0.011*	84.44	0.000*
Female	63.54		59.00	
<b>Occupation</b>		(a)		
Service holder	90.00	0.112	85.14	0.000*
Businessman	84.63		100.73	
Retired	98.36		115.14	
Housewife	58.29		53.32	
Students	70.50		67.93	
Others	78.22		72.28	
<b>Educational qualifications</b>		(a)		
Illiterate	75.18	0.722	77.72	0.373
Primary	59.39		68.72	
Secondary	86.04		73.94	
Higher secondary	83.30		81.28	
Graduation	79.05		78.08	
Post-graduation	75.70		102.05	

(\* p<0.05, level of significance; (a)=Kruskal-Wallis(T) test, (b)= Mann-Whitney(U) test)

Among the age-related participants who were believed that chest physiotherapy helped promote quality of life that & believe that chest physiotherapy increased lung function. The participants believed that chest physiotherapy promoted life had much believed and gender related believe that chest physiotherapy increased lung functions. Occupation and educational qualification related found significant that indicated chest physiotherapy helped for quality of life & increased lung functions.

**Table no:4- Distribution with chest physiotherapy attitude about health-related and sociodemographic factors through Mann-Whitney(U) test and Kruskal-Wallis(T) test: -**

Variables	Believe that chest physiotherapy helps promote quality of life		Believe that chest physiotherapy increases lung function of patient's	
	Mean	P- value	Mean	P-value
<b>Age</b>				
16-25 years	86.54	(a) 0.025*	88.11	0.175
26-35 years	66.57		63.79	
36-45 years	78.06		83.96	
46-55 years	84.39		85.86	
56-65 years	85.00		79.93	
<b>Gender</b>				
Male	71.97	(b) 0.005*	66.68	0.000*
Female	92.25		106.36	
<b>Occupation</b>				
Service holder	62.64	(a) 0.007*	61.55	0.000*
Businessman	65.39		52.00	
Retired	64.21		55.29	
Housewife	98.32		111.55	
Students	83.95		81.24	
Others	80.63		83.56	
<b>Educational qualifications</b>				
Illiterate	84.90	(a) 0.030*	92.78	0.000*
Primary	90.06		95.31	
Secondary	68.33		63.17	
Higher secondary	80.42		83.69	
Graduation	80.89		67.37	
Post-graduation	46.90		49.40	

(\* p<0.05, level of significance; (a)=Kruskal-Wallis(T) test, (b)= Mann-Whitney(U) test)

Among the participants age with you had experienced to work on chest physiotherapy practiced & you had practiced chest physiotherapy last one month had less practiced chest physiotherapy in life and educational qualification found significant that indicated they practiced chest physiotherapy last one month.

**Table no: 5 Distribution with chest physiotherapy exercise about health-related and sociodemographic factors through Mann-Whitney(U) test and Kruskal-Wallis(T) test: -**

Variables	You have experience to work on chest physiotherapy exercises		You have had chest physiotherapy last one month	
	Mean	P- value	Mean	P-value
<b>Age</b>				
16-25 years	73.16	(a) 0.265	71.49	0.371
26-35 years	81.38		82.38	
36-45 years	72.21		75.04	
46-55 years	83.00		83.50	
56-65 years	74.13		69.27	
<b>Gender</b>				
Male	77.25	(b) 0.834	78.94	0.377
Female	78.17		73.67	
<b>Occupation</b>				
Service holder	80.67	(a) 0.401	75.33	0.294
Businessman	71.75		78.25	
Retired	69.00		70.00	
Housewife	80.67		77.67	
Students	72.67		66.33	
Others	81.03		87.88	
<b>Educational qualifications</b>				
Illiterate	81.32	(a) 0.263	86.72	0.053*
Primary	80.41		76.11	
Secondary	70.88		68.39	
Higher secondary	81.03		83.06	
Graduation	81.16		87.37	
Post-graduation	69.00		59.00	

(\* p<0.05, level of significance; (a)=Kruskal-Wallis(T) test, (b)= Mann-Whitney(U) test)

This was a cross-sectional study to investigate evaluation the distribution socio-demographic and patients with respiratory complications. The purpose of the study was to evaluate the knowledge, attitude & practice chest physiotherapy for the patients with respiratory complications. To find out the benefits of chest physiotherapy for respiratory complications patients in this study 154 participants were willingly attended.

Among 154 participants the most participants were attended from 26-35 age group 36.4% (n=56). In this study followed by age group of 16-25 (n=37, 24%), age group of 36-45 (n=24, 15.6%), age group of 46-55 (n=22, 14.3%), age group of 56-65 (n=15, 9.7%). Most of the age of group 26-35. The others study showed that majorities (28.67%) were aged between 30-39 years and 23.33% of the participants were aged from 20-29 years (Arafat et al., 2018).

The most of the participants were male. In this study Data showed that male was (n=112, 72.7%), and female were (n=42, 27.3%). In this current study of 2018 in Bangladesh the frequency of male and female among the 135 of the respondents were 90% and 10% (Arafat et al., 2018).

In this study data showed that the most of the participants marital status were married when Un-married (n=35, 22.7%), Married (n=108, 70.1%), Divorced (n=5, 3.2%), Widow (n=6, 3.9%) when the most of the participants were married. In a study of 2001, it had presented that among all the respondents there were 35.4% un-married. In this current time of the study of Bangladesh 96 participants were married and 49 were unmarried, 4 were separated and 1 was widower (Andalib et al., 2018).

The residential area of the participants were followed by urban (n=43, 27.9%), semi-urban (n=57, 37.0%) and rural (n=54, 35.1%) when the data showed that most of the participants living in semi-urban area. The residential area of the participants of this study that involved or included urban 23%, semi-urban 11% and rural 65% gradually in a socio-demographic conditions of the spinal cord injury (Stinson et al., 2013).

In this study that the family monthly income 10,000-20,000 TK (N=99, 64.3%), 21,000-30,000 (n=39, 25.3%), 31,000-40,000 TK (n=14, 9.1%) and 41,000-50,000 TK (n=2, 1.3%). In this study data showed that most of the family income were low level. There were 69% employed and 31% unemployed among all 127 respondents where 61% had lower income (<12,000 BDT) and 39% had higher income (>12,000 BDT) all of the participants (William., et al 2014).

In this study that followed by the types of complications of respiratory failure (n=4, 5.2%), Pneumonia (n=20, 13.0%) Atelectasis (n=25, 16.2%), sleep disorder (n=41, 26.6%), Dyspnea (n=58, 37.7%) and Others (n=2, 1.3%) when most of the participants complications of dyspnea were 37.7%. In the C5 to C8 group, the most common complication was atelectasis 34% followed by pneumonia 28% and ventilatory failure 23% (Berlly & Kazuko, 2007). The most frequent types of severe and moderate complications were respiratory failure 60%, pneumonia 2.5%, acute respiratory distress 12.5%, cardiac arrest 25% (Grossman et al., 2012).

The causes of complications of the participants were COPD (n=8, 5.2%), Asthma (n=29, 18.8%), Bronchiectasis (n=17, 11.0%), Pathological (n=29, 18.8%), in this data presented by the causes of complications most of the Traumatic (n=67, 43.5%) and the Others (n=4, 2.6%). In this study most of the causes of respiratory complications of the spinal cord injury patients followed by COPD 1.5%, asthma 1.5%, traumatic 92.4% and others 4.6% (Leelapattana et al., 2012).

The independent variable age with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.020 & 0.084. The independent variable gender with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.011 & 0.000. The independent variable occupation with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.112 & 0.000. The independent variable educational qualifications with knowledge of chest physiotherapy and knowledge about WHO guideline of the participants the p-value was 0.722 & 0.373.

The independent variable age with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value

was 0.025 & 0.175. The independent variable gender with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.005 & 0.000. The independent variable occupation with believe that chest physiotherapy helped promote quality of life & believe that chest physiotherapy increases lung function of patients the p-value was 0.007 & 0.000. The independent variable educational qualification with believed that chest physiotherapy helped promoted quality of life & believe that chest physiotherapy increased lung function of patients the p-value was 0.030 & 0.000.

The independent variable age with You had experienced to work on chest physiotherapy practiced & You had practiced chest physiotherapy last one month the p-value was 0.265 & 0.371. The independent variable gender with you had experience to work on chest physiotherapy practiced & you had practiced chest physiotherapy last one month the p-value was 0.834 & 0.377. The independent variable occupation with you had experienced to work on chest physiotherapy practiced & you had practiced chest physiotherapy last one month the p-value was 0.401 & 0.294. The independent variable educational qualifications with you had experienced to work on chest physiotherapy practiced & you had practiced chest physiotherapy last one month the p-value was 0.263 & 0.053.

#### **Limitation of the Study: -**

This study didn't represent the overall image of the patients with respiratory complications of Bangladesh in respect and 100% accuracy hadn't been possible in any research so that some limitation may exist.

1. The patients had no proper knowledge about the chest physiotherapy.
2. The limitation of the study was small sample size
3. It was very tough to evaluate the knowledge, attitude & practice of chest physiotherapy among the patients
4. Short time duration as result weren't collect the data properly

### 6.1 Conclusion

The aim of the study was to evaluate the knowledge, attitude & practice chest physiotherapy among the patients of respiratory complications. There were many substantive evidence that chest physiotherapy prevention of the secondary complications that related to patients of the respiratory complications. Though the patients faced some barriers perform chest physiotherapy but they had benefitted for promote quality of life and helps for body fit. More specially, there were reports that the patients perform of chest physiotherapy that helped many associated benefits. Though the study had some limitations but identified some further step that might be taken for the better accomplishment of further research. From this study researcher concluded the specific variables and the benefits of the patients of respiratory complications. The relationship of KAP with socio-demographic data demonstrated that educational status and relationship between the patient showed significant relationship with KAP whereas, age group had significant effect on knowledge and attitude level about chest physiotherapy. In this study researcher found significant p-value of the participants gender with knowledge of chest physiotherapy and knowledge about WHO guideline of the patients, believe that chest physiotherapy helped promoted quality of life & believe that chest physiotherapy increased lung function of patient's and when practiced chest physiotherapy helped with patient's respiratory complications.

## 6.2 Recommendation

It was recommended that the patients of the respiratory complications need up-dated knowledge and information about chest physiotherapy in order to improve their practice or prevention of respiratory complications. Although the attitude of chest physiotherapy was neutral and the practice of chest physiotherapy was mild and the knowledge of chest physiotherapy among the patients of respiratory complications was also moderate. These findings indicated that attitudes and practices were most important factors in relation to practice on chest physiotherapy for prevention in respiratory complication patients. This study will help of the respiratory complications patients that recommendations were put forward to improved knowledge, attitude, and practice chest physiotherapy for the respiratory complication's patients.

- To gained the knowledge, attitude & practice of chest physiotherapy among the patients of respiratory complications that prevention to the secondary complications or risk factors. It helped the patients for promote quality of life and recovery from secondary complications.
- When the patients were performed chest physiotherapy as a result, they gained the proper knowledge or information for the chest physiotherapy that led to quality of life.
- To improved the confidence level that chest physiotherapy prevention respiratory complications.
- Need more proper guideline procedure, indication or benefits for the chest physiotherapy important for the respiratory complication's patients.
- Need more knowledge about chest physiotherapy as a result that carry positive thinking this treatment for respiratory complications patients.



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## Appendix-1

### সম্মতি-পত্র

(অংশগ্রহন কারীকে পড়ে শোনাতে হবে)

আসসালামু আলাইকুম/নমস্কার,

আমি মোঃ নাজমুল হক, বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), সিআরপি, ডিপার্টমেন্ট অব ফিজিওথেরাপি-তে অধ্যয়ন-রত শেষবর্ষের ছাত্র। আমি একটি গবেষণা পরিচালনা করছি যা আমার কোর্সের অন্তর্ভুক্ত, যার শিরোনাম “বাংলাদেশে শ্বাসতন্ত্রের জটিলতায় ভুগছেন এমন রোগীদের মধ্যে চেস্ট ফিজিওথেরাপির জ্ঞান, মনোভাব এবং অনুশীলন”। এই গবেষণার মাধ্যমে আমি শ্বাসতন্ত্রের জটিলতায় ভুগছেন এমন রোগীদের মধ্যে চেস্ট ফিজিওথেরাপির জ্ঞান, মনোভাব এবং অনুশীলন সম্পর্কে কতটুকু জানে তা খুঁজে বের করা। এই জন্য আমাকে শ্বাসতন্ত্রের জটিলতায় ভুগছেন এমন রোগীদের থেকে তথ্য সংগ্রহ করতে হবে। গবেষণার ক্ষেত্র বিবেচনা করে, আমি আপনাকে এই গবেষণায় অংশগ্রহন কারী হিসাবে আমন্ত্রণ জানাতে চাই। আপনি যদি এই গবেষণায় অংশগ্রহন করেন, আমি আপনাকে চেস্ট ফিজিওথেরাপি সম্পর্কে আপনার থেকে এই সম্পর্কিত কিছু প্রশ্ন জিজ্ঞাসা করব। আপনার সমস্ত তথ্য গোপন রাখা হবে। আপনার অংশগ্রহন স্বেচ্ছায় হবে এবং যে কোন সময় সম্মতি প্রত্যাহার এবং অংশগ্রহন বন্ধ করার অধিকার আপনার থাকবে। এতে আনুমানিক ২০-২৫ মিনিট সময় নিবো।

যদি এই গবেষণা সম্পর্কে বা অংশগ্রহন কারী হিসাবে আপনার কোন প্রশ্ন থাকে, তাহলে যোগাযোগ করতে পারেন,

গবেষক মোঃ নাজমুল হক অথবা আমার সুপারভাইজার, **এহসানুর রহমান**, সহযোগী অধ্যাপক, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-১৩৪৩।

প্রশ্নাবলী শুরু করার আগে আপনার কোন প্রশ্ন আছে?

তাহলে ইন্টারভিউতে এগিয়ে যাওয়ার জন্য আমি কি আপনার সম্মতি পেতে পারি?

হ্যাঁ ...

না...

আমি ..... ফর্মের বিষয়বস্তু পড়েছি এবং বুঝেছি। আমি স্বেচ্ছায় এই গবেষণায় অংশগ্রহন করতে সম্মত।

অংশগ্রহনকারী স্বাক্ষর .....

তারিখ.....

সাক্ষীর স্বাক্ষর .....

তারিখ.....

**Appendix-2**

**CONSENT FROM**

**(Please read out to the participations)**

Assalamualaikum/Namaskar,

I am Md. Nazmul Haq, a final year student studying at Bangladesh Health Professions Institute (BHPI), CRP, Department of Physiotherapy. I am conducting a study that includes my course, titled "**Knowledge, Attitude and Practice of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh**", under University of Dhaka. Through this study I find out know about the knowledge, attitude, and practice of chest physiotherapy among the patients suffering from respiratory complications. For this I have to collect data from patients suffering from respiratory complications. Considering the field of research, I would like to invite you as a participant in this study. If you participate in this study, I will ask you some questions related to this from you about chest physiotherapy. All of your information will be kept confidential. Your participation will be voluntary and you will have the right to withdraw consent and stop participating at any time. It will take about 20-25 minutes.

If you have any questions about this study or as a participant, you can contact, the researcher is Md. Nazmul Haq or my supervisor, Ehsanur Rahman, Associate Professor, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before starting the questionnaire?

So, can I get your consent to proceed to the interview?

Yes.....

No.....

I..... I have read and understood the contents of the form. I agree to participate in this study voluntarily.

Signature of the Participant.....

Date.....

Signature of the interviewer .....

Date.....



### Appendix-3

#### পার্ট: ১ সাধারণ তথ্যাবলি

দয়া করে সঠিক উত্তরটি টিক ✓ দ্বারা চিহ্নিত করুন

ক্রমিক নং	প্রশ্ন	উত্তর
১.১	রোগীর নাম	
১.২	বয়স	
১.৩	লিঙ্গ	১. পুরুষ ২. মহিলা
১.৪	ঠিকানা	
১.৫	মোবাইল	
১.৬	পেশা	১. চাকুরিজীবী ২. স্বাবসায়ী ৩. অবসরপ্রাপ্ত ৪. গৃহিনী ৫. ছাত্রছাত্রী ৬. অন্যান্য
১.৭	শিক্ষাগত যোগ্যতা	১. কোনো প্রাতিষ্ঠানিক শিক্ষা নেই ২. প্রাথমিক শিক্ষা ৩. মাধ্যমিক ৪. উচ্চ মাধ্যমিক ৫. স্নাতক ৬. স্নাতোকোত্তর
১.৮	বৈবাহিক অবস্থা	১. অবিবাহিত ২. বিবাহিত ৩. তালকপ্রাপ্ত ৪. বিধবা
১.৯	পরিবারের সদস্য সংখ্যা	.....জন

১.১০	মাসিক উপার্জন	.....টাকা
১.১১	বসবাসের এলাকা	১. শহর ২. মফস্বল ৩. গ্রাম
১.১২	ব্যক্তিগত অভ্যাস	১. সিগারেট ২. পানপাতা ৩. জর্দা ৪. অন্যান্য

**পার্ট: ২ রোগের জটিলতা সংক্রান্ত তথ্যাবলি**

২.১	শ্বাসতন্ত্রের জটিলতার ধরন	১. শ্বাসতন্ত্রের ফেইলর ২. নিউমোনিয়া ৩. ফুসফুসের সমস্যা ৪. ঘুমের সমস্যা ৫. শ্বাসকষ্ট ৬. অন্যান্য
২.২	শ্বাসতন্ত্রের জটিলতার কারণ	১. সিওপিডি ২. অ্যাজমা ৩. ব্রংকিয়াকটেটিস ৪. প্যাথলজিক্যাল ৫. আঘাতজনিত ৬. অন্যান্য
২.৩	অন্যান্য আরও কোন রোগ আছে?	১. ডায়াবেটিস ২. উচ্চ রক্তচাপ ৩. হার্টের সমস্যা ৪. কিডনির সমস্যা ৫. অন্যান্য
২.৪	আপনার পরিবারের আর কারও এই সমস্যা আছে?	১. হ্যাঁ ২. না

২.৫	আপনার এই সমস্যার জন্য কোনও ঔষধ খান?	১. হ্যাঁ ২. না
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**পার্ট: ৩ চেস্ট ফিজিওথেরাপির জ্ঞান সম্পর্কে**

৩.১	আপনি চেস্ট ফিজিওথেরাপি সম্পর্কে কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার
৩.২	আপনি চেস্ট ফিজিওথেরাপির বিভিন্ন ধরণ সম্পর্কে কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার
৩.৩	চেস্ট ফিজিওথেরাপি শ্বাসতন্ত্রের জটিলতার রোগীদের স্বাস্থ্যের জন্য উন্নতি করে এই সম্পর্কে আপনি কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার
৩.৪	বিশ্ব স্বাস্থ্যসংস্থার নির্দেশনা মতে চেস্ট ফিজিওথেরাপি শ্বাসতন্ত্রের যে কোন জটিলতায় বাধা দেয় এই সম্পর্কে আপনি কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার
৩.৫	চেস্ট ফিজিওথেরাপি কখন বন্ধ রাখতে হয় এই সম্পর্কে আপনি কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার
৩.৬	চেস্ট ফিজিওথেরাপি শ্বাসতন্ত্রের জটিলতার রোগীদের ক্ষেত্রে কতটা কার্যকারিতা এই সম্পর্কে আপনি কতটুকু জানেন?	১. খুবই কম ২. কম ৩. মোটামুটি ৪. ভালো ৫. চমৎকার

**পার্ট: ৪ চেস্ট ফিজিওথেরাপির মনোভাব সম্পর্কে**

8.১	আপনি কি বিশ্বাস করেন শ্বাসতন্ত্রের জটিলতার রোগীদের ক্ষেত্রে চেস্ট ফিজিওথেরাপির ইতিবাচক ভূমিকা আছে?	<ol style="list-style-type: none"> <li>১. দৃঢ়ভাবে একমত</li> <li>২. একমত</li> <li>৩. নিরপেক্ষ</li> <li>৪. দ্বিমত</li> <li>৫. দৃঢ়ভাবে দ্বিমত</li> </ol>
8.২	আপনি কি বিশ্বাস করেন শ্বাসতন্ত্রের জটিলতার রোগীদের জীবনযাত্রার মান উন্নয়নের ক্ষেত্রে চেস্ট ফিজিওথেরাপি সাহায্য করে?	<ol style="list-style-type: none"> <li>১. দৃঢ়ভাবে একমত</li> <li>২. একমত</li> <li>৩. নিরপেক্ষ</li> <li>৪. দ্বিমত</li> <li>৫. দৃঢ়ভাবে দ্বিমত</li> </ol>
8.৩	আপনি কি বিশ্বাস করেন শ্বাসতন্ত্রের জটিলতার রোগীদের ক্ষেত্রে ফুসফুসের কার্যকারিতার বৃদ্ধিতে চেস্ট ফিজিওথেরাপি সাহায্য করে?	<ol style="list-style-type: none"> <li>১. দৃঢ়ভাবে একমত</li> <li>২. একমত</li> <li>৩. নিরপেক্ষ</li> <li>৪. দ্বিমত</li> <li>৫. দৃঢ়ভাবে দ্বিমত</li> </ol>
8.৪	আপনি কি বিশ্বাস করেন শ্বাসতন্ত্রের জটিলতার রোগীদের ক্ষেত্রে ফুসফুসের ভলিউম উন্নতিতে চেস্ট ফিজিওথেরাপি সাহায্য করে?	<ol style="list-style-type: none"> <li>১. দৃঢ়ভাবে একমত</li> <li>২. একমত</li> <li>৩. নিরপেক্ষ</li> <li>৪. দ্বিমত</li> <li>৫. দৃঢ়ভাবে দ্বিমত</li> </ol>
8.৫	আপনি কি বিশ্বাস করেন শ্বাসতন্ত্রের জটিলতার রোগীদের ক্ষেত্রে মানসিক অবস্থা উন্নতিতে চেস্ট ফিজিওথেরাপি সাহায্য করে?	<ol style="list-style-type: none"> <li>১. দৃঢ়ভাবে একমত</li> <li>২. একমত</li> <li>৩. নিরপেক্ষ</li> <li>৪. দ্বিমত</li> <li>৫. দৃঢ়ভাবে দ্বিমত</li> </ol>

**পার্ট: ৫ চেস্ট ফিজিওথেরাপির অনুশীলন সম্পর্কে**

৫.১	আপনার কি চেস্ট ফিজিওথেরাপির অনুশীলনে কাজ করার অভিজ্ঞতা আছে?	১. হ্যাঁ ২. না
৫.২	আপনার কি কোনও ধারণা আছে যে শ্বাসতন্ত্রের জটিলতার রোগীদের জন্য কতবার চেস্ট ফিজিওথেরাপির অনুশীলন করা হয়?	১. হ্যাঁ ২. না
৫.৩	শ্বাসতন্ত্রের জটিলতার রোগীদের জন্য চেস্ট ফিজিওথেরাপির জন্য কতক্ষণ বা সময়কাল অনুশীলন করে সে সম্পর্কে আপনার কি কোনও ধারণা আছে?	১. হ্যাঁ ২. না
৫.৪	আপনি কি জানেন যে কতজন লোক শ্বাসতন্ত্রের জটিলতার রোগীদের জন্য চেস্ট ফিজিওথেরাপি অনুশীলন করে?	১. হ্যাঁ ২. না
৫.৫	গত এক মাসের পরামর্শ অনুযায়ী আপনার কি চেস্ট ফিজিওথেরাপি অনুশীলন করা হয়েছে?	১. হ্যাঁ ২. না

## Appendix-4

Title: -

**Knowledge, Attitude & Practice of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh.**

### **Part-I Subjective Information**

Please mark the correct answer by ✓ tick

Serial no	Questions	Answers
1.1	Patient's name	
1.2	Age	
1.3	Gender	1. Male 2. Female
1.4	Address	
1.5	Mobile	
1.6	Occupation	1. Service holder 2. Businessman 3. Retired 4. House wife 5. Students 6. Worker 7. Others
1.7	Educational qualifications	1. Illiterate 2. Primary 3. Secondary 4. Higher secondary 5. Graduation 6. Post-graduation
1.8	Marital status	1. Un-married 2. Married 3. Divorced 4. Widow
1.9	Family member	

<b>1.10</b>	Monthly Income	
<b>1.11</b>	Residual area	1. Urban 2. Semi-rural 3. Rural
<b>1.12</b>	Personal habits	1. Smoking 2. Bettle leaf 3. Jorda 4. Others

### **Part-II Complications related information**

<b>2.1</b>	Types of complications	1. Respiratory failure 2. Pneumonia 3. Atelectasis 4. Sleep disorder 5. Dyspnea 6. Others .....
<b>2.2</b>	Causes of complications	1. COPD 2. Asthma 3. Bronchiectasis 4. Pathological 5. Traumatic 6. Others.....
<b>2.3</b>	Associated diseases	1. DM 2. HTN 3. Heart diseases 4. Kidney diseases 5. Others ...
<b>2.4</b>	Does anyone else in your family have this problem?	1. Yes 2. No
<b>2.5</b>	Do you take any medications for this problem?	1. Yes 2. No

### **Part-III About Knowledge**

<b>3.1</b>	How much do you know about chest physiotherapy?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent
<b>3.2</b>	How much do you know about different types of chest physiotherapy?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent
<b>3.3</b>	How much do you know about that chest physiotherapy promote health for respiratory complications patients?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent
<b>3.4</b>	How much do you know about that WHO guideline of chest physiotherapy prevents any complications for the patients?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent
<b>3.5</b>	How much do you know about when the chest physiotherapy avoids for respiratory complications patients?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent
<b>3.6</b>	How much do you know about the effectiveness of chest physiotherapy for respiratory complications patients?	1. Very poor 2. Poor 3. Medium 4. Good 5. Excellent




**Part: IV About Attitude**

<b>4.1</b>	Do you believe that chest physiotherapy has positive role on respiratory complications patients?	<ol style="list-style-type: none"><li>1. Strongly agree</li><li>2. Agree</li><li>3. Neutral</li><li>4. Disagree</li><li>5. Strongly disagree</li></ol>
<b>4.2</b>	Do you believe that chest physiotherapy helps promote quality of life for respiratory complications patients?	<ol style="list-style-type: none"><li>1. Strongly agree</li><li>2. Agree</li><li>3. Neutral</li><li>4. Disagree</li><li>5. Strongly disagree</li></ol>
<b>4.3</b>	Do you believe that chest physiotherapy can increase lung function for patients with respiratory complications?	<ol style="list-style-type: none"><li>1. Strongly agree</li><li>2. Agree</li><li>3. Neutral</li><li>4. Disagree</li><li>5. Strongly disagree</li></ol>
<b>4.4</b>	Do you believe that chest physiotherapy improves lung volume for patients with respiratory complications?	<ol style="list-style-type: none"><li>1. Strongly agree</li><li>2. Agree</li><li>3. Neutral</li><li>4. Disagree</li><li>5. Strongly disagree</li></ol>
<b>4.5</b>	Do you believe that chest physiotherapy has improves emotional status for patients with respiratory complications?	<ol style="list-style-type: none"><li>1. Strongly agree</li><li>2. Agree</li><li>3. Neutral</li><li>4. Disagree</li><li>5. Strongly disagree</li></ol>

**Part: V About Practice**

<b>5.1</b>	Do you have experience to work on chest physiotherapy practices?	1. Yes 2. No
<b>5.2</b>	Do you have any idea how many times practice of chest physiotherapy for respiratory complications patients?	1. Yes 2. No
<b>5.3</b>	Do you have any idea how long period or duration practices chest physiotherapy for respiratory complications patients?	1. Yes 2. No
<b>5.4</b>	Do you know about how many people practices chest physiotherapy for respiratory complications patients?	1. Yes 2. No
<b>5.5</b>	Do you have practice chest physiotherapy according to advice on last one month?	1. Yes 2. No

## Appendix-5

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

Ref: CRP/BHPI/IRB/03/2022/565 Date: 02/03/2022

Md. Nazmul Haq  
4<sup>th</sup> Year B.Sc. in Physiotherapy  
Session: 2016-2017  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

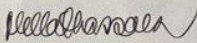
**Subject:** Approval of the research project proposal “**Knowledge, Attitude & Practice of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh**” by ethics committee.

Dear Md. Nazmul Haq,  
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 Ehsanur Rahman as thesis 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 knowledge, attitude & practice of chest physiotherapy among the patients suffering from respiratory complications. Since the study involves questionnaire that takes maximum 20-30 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 12<sup>th</sup> October, 2021 at BHPI (30<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 Millat Hossain  
Assistant Professor, Dept. of Rehabilitation Science  
Member Secretary, Institutional Review Board (IRB)  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404  
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd, www.crp-bangladesh.org



06/03/2022

The Head of Department  
Department of Physiotherapy  
Centre for the Rehabilitation of the Paralysed (CRP)  
Chapain, Savar, Dhaka-1343.

**Through:** Head, Department of Physiotherapy, BHPI

**Subject:** Seeking permission for data collection of 4<sup>th</sup> year physiotherapy research project.

Respected Sir,

With due respect and humble submission to state that I am Md. Nazmul Haq, student of 4<sup>th</sup> Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical committee has approved my research project entitled on "**Knowledge, Attitude & Practice of Chest Physiotherapy among the patients suffering from respiratory complications in Bangladesh**" under the supervision of Ehsanur Rahman, Associate Professor & MPT co-ordinator (BHPI), department of Physiotherapy, CRP, Savar, Dhaka-1343, Bangladesh. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for my research project from the patients with respiratory complications in spinal cord injury unit, department of Physiotherapy, CRP-Savar. So, I need permission for data collection from the spinal cord injury unit of Physiotherapy department of CRP-Savar. I would like to assure that anything of my study will not be harmful for the participants.

May I, therefore pray and hope that you would be kind enough to grant my application & give me permission for data collection and oblige thereby.

Yours obediently,

Nazmul  
Md. Nazmul Haq  
4<sup>th</sup> professional B.Sc. in Physiotherapy  
Roll: 28, Session: 2016-17, ID No: 112160353  
Bangladesh Health Professions Institute (BHPI)  
(An academic Institute of CRP)  
CRP, Chapain, Savar, Dhaka-1343.

Forwarded  
E. Rahman  
6/3/2022

**Ehsanur Rahman**  
Associate Professor  
Coordinator, M.Sc. Physiotherapy Program  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343

Approved  
12/03/22  
**MOHAMMAD ANWAR HOSSAIN**  
Senior Consultant &  
Head of Physiotherapy Dept  
Associate Professor, BHPI  
CRP Savar, Dhaka-1343

Recommended  
Shofiqi  
12.03.22  
**Md. Shofiqul Islam**  
Associate Professor & Head  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343