EFFECTIVENESS OF GROUP RESPIRATORY THERAPY AMONG THE TETRAPLEGIC PATIENTS WITH SPINAL CORD INJURY

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Effectiveness of group respiratory therapy among the tetraplegic patient with Spinal Cord Injury.

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Declaration

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

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Acronyms

BHPI	Bangladesh Health Professions Institute
BMRC	Bangladesh Medical Research Council
CRP	Centre for the Rehabilitation of the Paralysed
IRB	Institutional Review Board
PT	Physiotherapy
PTs	Physiotherapist
QoL	Quality of life
SCI	Spinal Cord Injury
WHO	World Health Organization

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ABSTRACT

Purpose: SCI is described as one of the most devastating neurological impairment. It has profound effects on spinal injured person and their activity. SCI patient with cervical injury has respiratory problem. The present study was conducted to analyze and identify the therapeutic effectiveness of the group respiratory therapy for the treatment of tetraplegic patient with SCI. This study has made the comparison, in order to discover the most effective treatment to alleviate the symptoms of the condition. *Objectives:* The aim of the study is to investigate the effectiveness (quality of life) of group respiratory therapy among the tetraplegic patient in CRP. To identify the improvement of their quality of life. To evaluate the activity of respiratory group therapy. To find out the satisfactory level. *Methodology*: The study was an Quasi-experimental design. Total 10 samples were selected conveniently then randomly assigned to single group for pre test, post test this study from inpatient treatment service of Spinal Cord Injury Unit, Physiotherapy Department, Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka. Initially all the subjects were assessed by SCI Assessment Form at the clinical settings using and then the data were collected by questionnaires; Sf-36 questionnaire was used to assess the quality of life of the patients. Pre-test was performed before beginning the treatment. The same procedure was performed to take post-test at the end of 4 weeks of treatment. *Result*: The finding of the study was carried out by using parametric related 't' test to compare the pre test and post test single Group intervention and analysed by interpreting the probability level of significance of '*t'* value. The results were found to be significant for '*t'* value at probability level 0.05. *Conclusion*: The study concluded as the group respiratory therapy is significantly capable of producing beneficial effects on the improvement of their quality of life.

Keywords: SCI, tetraplegic, respiratory complication, respiratory physiotherapy, grouptherapy, QoL.

CHAPTER-I INTRODUCTION

1.1 Background

The World Health Organization (WHO) states that, 10% of total population are disabled in Bangladesh & most of those are physically disabled. These disabled people are very often deprived of social opportunities and their right in our country. SCI is a devastating condition often affecting young & healthy individuals around the world. SCI can happen to anyone at any age. However, men between the age of 19 and 26 are more likely to have a SCI due to an accident or some act of violence (Ackery et al., 2005). SCI occur when the spinal cord is damaged in a way that results in some loss of sensation & motor control. SCI are a major public health problem in Bangladesh.

Respiratory complication are the most common cause of death following SCI. This complication occurs as a result of a reduction in inspiratory and expiratory ability and may cause a reduction in lung volume and capacities. Lung function is considered by the quantification of gas flow or volume. The measurement is usually made by using a spirometre which measure lung volume.

Spinal cord injury (SCI) resulting in tetraplegia has a insightful effect on respiratory function (Royster et al., 2006). Pulmonary complications are the leading cause of morbidity and death both in the shortened longer-term after injury (Berney et al., 2011). In the acute hospitalization phase respiratory complications are highly common with 84% of patients with cervical (1–4) vertebral level and 60% of those with cervical (5–8) vertebral level of injuries experiencing respiratory compromise. The number of respiratory complications during this acute phase contributes considerably to both hospital length of stay and costs (Gething et al., 2006).

The frequency of respiratory complications is correlated with injury level and severity, associated injuries, and the age and pre-existing co-morbidities of the patient (Kirshblum et al., 2007). The nature of the pulmonary complication can also vary with the level of the injury; with high injuries cervical (1–4) vertebral level being more likely to develop pneumonia and lower cervical injuries atelectasis (Gething et al., 2006).

Respiratory management encompasses a variety of strategies including airway management, weaning protocols, respiratory care protocols, and physiotherapy intervention (Ditunno et al., 2005).

Guidelines for respiratory management after SCI were published in 2005 (Berlly & Shem, 2007). However, these recommendations were not specific to the acute care setting and relied on evidence that did not pertain to the acute SCI population. The aims of this systematic review are to identify, evaluate, and synthesize evidence regarding the effectiveness of various treatment strategies for the respiratory management of acute tetraplegia (Rathore et al., 2008).

Impaired respiratory muscle function and increased risk of respiratory complications have been frequently mentioned as indication for respiratory muscle training in persons with spinal cord injury (Wegrzyn et al., 2009). In addition, it is well established that persons with quadriplegia have a reduced physical capacity. Due to the loss of motor function in lower and/or upper limbs and the relatively immobile lifestyle associated with the injury (Van Houtte et al., 2006). In addition, respiratory muscles might participate in non-ventilatory function during exercise. Therefore, it is proved that exercise performance might benefit from respiratory therapy in persons with spinal cord injury.

Respiratory complications are major cause of morbidity & mortality in patient with cervical and high thoracic spinal cord injury especially in patient with high cervical cord injury. As respiratory problem is life threatening for tetraplegic SCI patient so, all patients with an acute lesion need chest physiotherapy and special care (Zimmer et al., 2007).

A spinal cord injury 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. These include the diaphragm and the muscles in chest wall and abdomen (O'Connor and Murray, 2006).

The neurological level of injury will determine what kind of breathing problems may have. If persons have cervical and thoracic spinal cord injury, they may have an increased risk of pneumonia or other lung problems (Kirshblum et al., 2011). Medications and therapy can treat these problems.

Few studies however, have actually determined the incidence of respiratory complications in the acute care stage following an SCI. Here WHO reported a 35.7% pulmonary complication rate; however this study was encompassing only 1 month after injury. Their death rate was 18% with 11% of the deaths attributable to respiratory problems. Bellamy et al retrospectively reviewed 54 patients and cited 64 complications and a 31% death rate. These patients however, were cervical injuries only. More recently, a prospective study revealed that 50% of acutely injured patients developed either atelectasis or pneumonia 1 month post-SCI (Berney et al., 2011).

Respiratory complications is a leading cause of morbidity in patients with spinal cord injury (SCI). Because these patients have such complex and massive needs, routine respiratory care is not always given the priority it deserves in a rehabilitation program. Centre for the Rehabilitation established a committee to formulate guidelines about chest group for the routine respiratory care of patients in Spinal Cord Injury Program. The guidelines consisted of evaluation, treatment, and teaching interventions. The purposes of the guidelines were to increase awareness of the respiratory care of patients with SCI; to be an effective teaching tool for reduction of respiratory complications; and also to be a teaching tool for patients and their families so that routine respiratory care could be continued in the home. After using the guidelines for over a year, we believe that the quality of the respiratory care we provide our patients with SCI has improved. The respiratory care is more comprehensive, consistent, and coordinated among disciplines (Christopher, 2007).

1.2 Rationale

The prevention of respiratory complication is very much essential for SCI patients. Lung volume and vital capacity indicates the ability to take a deep breath, cough effectively for an injured person. The tetraplegic patient face significant respiratory dysfunction if they don't find the proper lung function. Physiotherapist should provide special care to sustain good respiratory function of the tetraplegic patient as a part of rehabilitation program. As the spirometry exercise improves respiratory parameters, strengthen primary & accessory respiratory muscle, improves maximal exercise capacity, improves cardiopulmonary status & ultimately improve lung volume & capacities and help to improve respiratory function, so the researcher intends to find out the effectiveness of spirometry exercise with tetraplegic spinal cord injury patient for the improvement of lung volume (Pellegrino et al., 2005).

1.3 Aim of the study

The aim of the study is to investigate the Effectiveness (quality of life) of group respiratory therapy among the tetraplegic patient in CRP.

1.4 Objectives

1. To identify the improvement their quality of life.
2. To evaluate the activity of respiratory group therapy.
3. To find out the satisfactory level.

1.5 Hypothesis and Null-Hypothesis

Hypothesis

Respiratory group physiotherapy is effective for the treatment of tetraplegic patient with Spinal Cord Injury ($H_A > H_O$).

Null-Hypothesis

Respiratory group physiotherapy is not effective for the treatment of tetraplegic patient with Spinal Cord Injury ($H_O \neq H_A$).

1.6 Variables

Independent variables

Respiratory Physiotherapy

Age

Sex

Dependent variable

Spinal cord injury

1.7 Operational Definition

Spinal Cord Injury

A Spinal cord Injury is defined as damage or trauma to the spinal cord that in turn results in a loss or impaired function resulting in reduced mobility or feeling (Quadriplegic and paraplegic spinal cord injury, 2005).

Effectiveness

Effectiveness is the capacity of producing a desired result. When something is deemed effective, it means it has an anticipated or expected outcome, or produces a deep, vivid impression.

Group therapy

"Group therapy treatment is the combination of structured, adapted group process and tasks or activities aimed at fostering change and adaptation in people with acute and chronic illness, impairment or disabilities".

CHAPTER-II LITERATURE REVIEW

This chapter will focus on the key words of this study: Definition, aetiology, epidemiology, symptoms, prognosis and physiotherapy intervention of respiratory therapy. Besides the role in treatment and rehabilitation of tetraplegic patient with SCI, various problems are faced which also described in this chapter.

Spinal cord is cylindrical in form and considerably flattened in anterior and posterior areas (Back, 2006). It begins at the foramen magnum in the skull and it continuous with the medulla oblongata in the brain. It terminates inferiorly at the level of the lower border of the first lumber vertebra. The location of the spinal cord is within the vertebral foramen which is called the vertebral canal (Snell, 2010). The vertebral bodies protect the spinal cord anteriorly and vertebral arches protect it laterally and posteriorly. Spinal cord is a communicating link between the spinal nerves and the brain. The spinal cord is the major canal through which motor and sensory information travels between the brain and the body (Kirshblum et al., 2011). The receptor of the body receives the sensory stimuli from environment which sends signal to the brain and then the brain sends its messages to the spinal nerves through spinal cord which causes movements of the body (Snell, 2010). Spinal cord becomes damage or gets injury then it is called SCI. SCI may responsible for interrupting whole body communication.

SCI usually occurs after an unexpected, traumatic and non- traumatic damage to the spinal cord. This injury or damage results in fracture, dislocation of vertebrae, intervertebral disc which in turn rupture the spinal cord partially or completely. "A Spinal cord Injury is defined as damage or trauma to the spinal cord that in turn results in a loss or impaired function resulting in reduced mobility or feeling" (Quadriplegic and paraplegic spinal cord injury, 2005). SCI results from an accident that breaks or severely damages the spinal cord in the segments of neck and back.

Group therapy is the combination of structured, adapted group process and tasks or activities aimed at encouragement change and adaptation in people with acute and chronic illness, impairment or disabilities.

In Bangladesh it is a common practice to carry heavy load on the head. Most of the SCI takes place due to accidental fall while carrying load (Hoque et al., 2012). In Bangladesh during harvesting season the farmers and labourers carry their products on their head and transport them from harvesting areas to local store houses or from one vehicle to another. The common causes of SCI in Bangladesh are fall while carrying heavy load on head, road traffic accidents, falling from a height, fall of a heavy object onto the head or neck, bull attack and diving into shallow water (Hoque et al., 2012). Razzak et al., (2011) mentioned that, between 20-40 people per million of population acquire spinal injury each year. According to the report of National SCI statistical centre (NSCISC) among the developed countries only in the U.S.A. approximately 12000 new cases of SCI are found every year. Approximately 60% of cases occurred in people 16-40 years of age (Ottomaneli & Lind, 2009). Currently there is no accurate number of persons SCI in Bangladesh. Therefore it is difficult to know or estimate the total number of patients with SCI in Bangladesh. The most common age group for SCI ranges from 25-29 years in Bangladesh and 83% of them are male (Islam et al., 2011). The appropriate marriage age in Bangladesh for male is 21 and for female is 18 (UNICEF).

The major complication of SCI is paralysis in body part such as upper and lower extremities. A variety of complications can also result from SCI. The person with SCI might have the complications like lack of skin sensation, pressure sore, bowel and bladder complexities, respiratory complications, and autonomic dysreflexia, sexuality dysfunction etc (Somers, 2006). According to the (Sinclair et al., 2006), there are some other complications like deep vein thrombosis, decreased vital capacity, osteoporosis, postural hypotension, spasticity and heterotrophic ossification. From the practical observation of the researcher at CRP, it has been seen that the most common complication is pressure sore, urinary tract infection, bowel and bladder problem, burning sensation, autonomic dysreflexia, abdominal distension, psychosocial distress etc. One of the common complications of tetraplegic patient is respiratory distress or chest complication. These can be developed at any time after the injury. Complications can also develop during the rehabilitation phase and after discharge.

Patient and caregiver education plays a great role for preventing these complications. In CRP it is seen that, the most of the patients are suffered.

Impairments in respiration resulting from spinal cord injury (SCI) result in medical consequences that are leading causes of morbidity, mortality, and economic burden. Pulmonary complications of SCI include increased risk of pulmonary infection and death, and higher rates of symptoms of respiratory dysfunction. Inspiratory capacity is diminished in individuals with higher level lesions, contributing to micro atelectasis, dyspnea with exertion and in those with more severe impairments, respiratory insufficiency. Muscles of expiration are impaired in many individuals with spinal cord injury with profound effects on cough effectiveness and, presumably, on clearance of secretions and susceptibility to lower respiratory tract infections. In persons with SCI, quality of life is diminished by respiratory symptoms that include cough, phlegm, and wheezing. In those with higher lesions, asthma-like disorders of airway function have been described, which are prevented by cholinergic antagonists (Christopher, 2007).

This abnormality has been attributed to the unopposed effects of parasympathetic innervations on respiratory smooth muscle resulting from disruption of sympathetic efferent. Hope for reductions in the impact of these many respiratory complications comes from new technologies that support respiration, continued growth of knowledge about the specific characteristics and impact of the respiratory complications of SCI, and interventions to reduce their severity. From a more fundamental view point, gains in function of respiratory musculature after SCI, whether occurring spontaneously or stimulated by rehabilitation paradigms, point to the plasticity of the nervous system and its ability to form new connections after SCI (Sekran et al., 2010).

Effectiveness is the capacity of producing a desired result. When something is deemed effective, it means it has an anticipated or expected outcome, or produces a deep, vivid impression.

Respiratory Physiotherapy is something you can do to help your SCI patient breathe better. Sometimes there is too much mucus, or it is too thick. It blocks the air from moving in and out of your SCI patient’s lungs. Mucus makes it hard for your SCI patient to breathe.

Mucus that sits too long in the lungs can also grow germs that can make your SCI patient sick. Respiratory Physiotherapy helps to loosen your SCI patient's mucus, so your SCI patient can cough it up.

The pillars of early treatment of respiratory dysfunction in SCI are intensive management of secretions and atelectasis, which has been shown to improve the results in patients with SCI (Singh et al., 2005). The most important objective of treatment is the expansion of the lungs and the clearing of secretions. The techniques commonly used to help remove secretions include assisted coughing, percussion, vibrations, aspiration and assisted postural drainage. To increase ventilation, respiratory exercises can be used for muscle training, non-invasive positive air pressure support and high tidal volumes in patients on mechanical ventilation (Hicks et al., 2011).

Percussion is a technique which is clapping the chest. Percuss means to tap sharply. A drum is a percussion instrument. Percussion in Respiratory Physiotherapy can be done with either a cupped hand or an electric percussor. The clapping shakes the inside of the chest and loosens mucus, so it is easier to cough out. Percussion and Vibration, these are consist of external manipulations of the chest to mobilize secretions. Percussion consists of rhythmically tapping on different areas of the chest with a cupped hand. The floating ribs should be avoided, and the intensity and duration of the percussion should be accustomed to the patient's comfort level (Van Houtte et al., 2006).

Vibration consists of the application of vibration with the hands to the chest wall and soft tissues of the chest during the expiratory phase. The techniques may be combined with postural drainage. Their contraindications need to be taken into explanation and include instability of the cardiovascular system, tension pneumothorax, pulmonary embolism, significant pleural effusion, unstable spine, contraindication for increased intracranial pressure, acute haemoptysis, fractured ribs, and chest burns and wounds. There are currently no studies that have demonstrated their efficacy in tetraplegic patients (Berney et al., 2011).

Postural drainage moves the mucus by changing the SCI patient's position. Mucus, like water, moves from high places to low places. Tilting the SCI patient helps move the mucus from the small airways at the base of the lungs to the large airways in the middle. The most mucus moves into the large airways when you do percussion and postural drainage together. Deep breathing and coughing helps to move the loosened mucus. Lobe is a segment of the lung. The left lung has two lobes, and the right lung has three lobes. If the patient is immobilized, postural drainage and passive positioning techniques using gravity can assist the movement of secretions. The goal is to move the secretions from the most peripheral regions of the lungs to the main airway, where the secretions can be more easily removed using coughing or other methods of aspiration (Van Houtte et al., 2006).

Assisted Coughing Techniques, the goal of these techniques is to help generate effective cough strength. They are often used with postural drainage and insufflator. Several techniques are used as follows.

Manually Assisted Coughing, this manoeuvre consists of chest compressions coordinated with the patient's breathing. This attempts to imitate the normal cough, helping to move secretions from the lowest areas of the lungs. The therapist who performs the technique places the palm of the hand below the patient's rib cage, between the xiphoid process and the navel, exerting pressure upwards and inwards in sequence with the patient's voluntary expiration or cough. The external pressure acts in the place of the paralyzed intercostals and abdominal muscles. Its effectiveness can be improved with the prior administration of nebulised saline to thin the secretions. The cough can also be increased with prior lung insufflations; it is possible to generate higher expiratory flows by using larger lung volumes. It is contraindicated in cases of unstable spine in traction, internal abdominal complications, rib fractures, and recent placement of a vena cava filter (Berney et al., 2011).

Mechanically Assisted Coughing (Mechanical Insufflations- Exsufflation), it is a procedure which is started by applying positive pressure to the airway (insufflations) via a mechanical apparatus (Cough-Assist) to immediately then transform this positive pressure into negative pressure (exsufflation).

This sudden change of pressure in a short period of time (<0.02 s) generates an air flow able to pulling respiratory secretions to the exterior. Here each session consists of 6–8 cycles with pressures approximately (Van Houtte et al., 2006).

Group sessions, classes and treatment programmes are a fun and cost effective way of having physiotherapy treatment. Patients often say that being treated in a group with other people who are in the same situation as them provides support and reassurance and helps with motivation. There is particularly strong research for the effectiveness of group programmes.

"Group treatment is the combination of structured, adapted group process and tasks or activities aimed at fostering change and adaptation in people with acute and chronic illness, impairment or disabilities". "Group play therapy model is very structured especially at the outside of the intervention and is designed for use with SCI who exhibit significant difficulties with respect to their pair interaction" (Kirshblum et al., 2011).

The therapist use of group process requires knowledge of theories of group process and group dynamics, understanding of conceptual models that describe group principle and parallel therapeutic techniques. This structured group works to treat or train a specific area of function. Group therapist must be able to use this information, along with their knowledge of diagnosis, illness, and reason about the individual patient in the group context. Group integrate the gross motor, fine motor perceptual, speech and language activities, but with more focus any one of the areas (Berg, 2009).

Groups can be as small as three or four people, but group therapy sessions generally involve around seven to twelve individuals. The session might begin with each member of the group introducing themselves and sharing why they are in group therapy. The specific manner of the session depends largely on the goals of the group and the style of the therapist. According to Oded Manor "the minimum number of group therapy sessions is usually around six, but a full year of sessions is more common." There are many benefits of group therapy such as: the group can afford the opportunity to be real with others in an environment of safety and respect.

Members are able to try out new behaviours. The group can allow members the chance to explore and better understand themselves. In group, members can learn new

social techniques, ways of relating, and how to better cope with difficulties (Clayton et al., 2011).

CRP is a non-profitable organisation in Bangladesh. At CRP, patients get physiotherapy treatment for SCI and different neurological condition. CRP is the only rehabilitation centre for the patient with SCI. CRP provides appropriate treatments such as medical, surgical and therapeutic. Physiotherapists are autonomous practitioner who diagnose and treat disorders of movement, function, and human performance caused by activity, injury, disease, disability or ageing, particularly those that affect the muscles, bones, joints, nervous system, heart, circulation and lungs. They identify and maximize movement and function through health promotion, preventative healthcare, treatment and rehabilitation using a variety of physical, electro-physical, cognitive and pharmacological agents.

Physiotherapy is a crucial element of the rehabilitation process and covers a diverse range of approaches such as manual therapy, vertebral therapy, exercise therapy, and electrotherapy. The service is provided in both in-patients and out-patients. Physiotherapists in CRP are primary health care professionals so patients do not require a physician referral to visit a Physiotherapist. Physiotherapists at CRP have developed competency to perform differential diagnosis regarding each of the primary Physiotherapy areas including: Orthopaedics, Neurology and Paediatrics.

Over the years, CRP has developed its physiotherapy services through continuous professional developmental program. For having good international connection, standard of Physiotherapy practice and education offered by CRP are now world standard. Thousands of Patients have been benefited through receiving Physiotherapy from CRP. The Physiotherapy department has also launched a Sports Rehabilitation Unit and a Gymnasium. Specialist services are provided for the cases of stroke through Stroke Rehabilitation Unit. Critical and challenging patients care are provided by the clinical specialist once a week.

Every year many people come to CRP after SCI to take treatment. Most of them are tetraplegic. Physiotherapists ensure comprehensive rehabilitation services since patients admission until discharge of the patients. Physical rehabilitation starts with providing respiratory physiotherapy for the acute patients and it continues through improving mobility, balance, coordination, gait re-education, lifting and transferring from one place to another as the patients progress. Community Based Rehabilitation (CBR) services are also provided by Physiotherapist to make sure appropriate social rehabilitation after being discharged from CRP (CRP Bangladesh, 2014).

CHAPTER-III METHODOLOGY

3.1. Study Design

Here Quasi-experimental quantitative design was used for the study design. An experimental design that was not meet all requirements necessary for controlling impacts of extraneous variables. Quasi-experimental research was similarities with the traditional experimental design or randomized controlled trial. Since quasi-experimental designs was used when randomization will impractical and or unethical, they are typically easier to set up than true experimental designs, which require random assignment of subjects. Here researcher was chosen the Single-Group as the subjects in the experimental group was act as their own control. The subjects was given a pre test, followed by treatment intervention and a post test. But this also keeps many challenges for the investigator. This lack of randomization makes it harder to rule out confounds and introduces new threat to internal validity. Utilizing quasi-experimental designs minimizes threats to external validity. Since quasi-experiments are natural experiments, findings in one may be applied and setting, allowing for some generalizations to be made about population. Also, this experimentation method will efficient in longitudinal research that involves longer time periods which will be followed up in different environments.

3.2. Study setting

The researcher was collected data from the inpatient unit of CRP, Savar, Dhaka. SCI patients were treated here. It was easy for the researcher to gather information from the patients with SCI.

3.3. Sampling Technique

As the period of data collection was limited so the researcher was selected 10 tetraplegic patients with SCI conveniently for this study. The sampling procedure was Non-probability convenience sampling. Convenience sampling is also known as Opportunity Sampling; Accidental Sampling or Haphazard Sampling.

In convenience sampling procedure; sample contains subjects who were simply available in a convenient way to the researcher. Subjects, who met the inclusion criteria, was taken as sample in this study. 10 tetraplegic patients with SCI was selected conveniently from inpatient unit of SCI physiotherapy department of CRP, Savar. However; this method was often only feasible one; particularly for students or others with restricted time and resources; and was legally be used provided its limitations were clearly understood and stated. Thus the researcher randomly assigned the conveniently selected patients to the group for pre test & post test intervention (McKenzie & Yang, 2010).

3.4. Inclusion criteria

Tetraplegic SCI patient.

Age range 20-50 years.

Both male & female patients will be included.

Patient who has decreased lung volume and capacity.

Patient with intact cognition.

Included those who showed willingness to participation.

3.5. Exclusion Criteria

Rib fracture patient.

Head injury patient.

Subject who are unwillingness to participate

Medically unstable patient.

3.6. Sample Size

Sample size for this study was 10. This 10 participants was in a single group for pre test & post test intervention.

3.7. Data Processing

3.7.1. Data Collection Tools

Record or Data collection form

Informed Consent

Sf-36 questionnaire

Spirometry

Peakflowmetre

Pen, Papers

3.7.2. Measurement Tools

Sf-36 questionnaire

3.7.3. Data Collection Procedure

The study procedure had conducted through assessing the patient, initial recording, treatment and final recording. After screening the patient at the department, the patients was assessed by a qualified physiotherapist. 4 weeks of treatment was provided for every subject. 10 subjects were chosen for data collection according to the inclusion criteria.

Data were gathered through a pre-test, intervention and post-test and the data was collected by using a written questionnaire form which has been formatted by the researcher. Pre-test was performed before beginning the treatment. The same procedure was performed to take post-test at the end of 4 weeks of treatment. Researcher provided the assessment form to each subject before starting treatment and after 4 weeks of treatment patient. The researcher was collected the data from the group in front of the qualified physiotherapist in order to reduce the biasness. At the

end of the study, parametric related ’t’ test to calculate the significance has been done for statistical analysis.

3.8 Data Analysis

Statistical analysis had performed by using Microsoft Excel 2013 and scientific calculator.

3.8.1 Statistical Test

For the significance of the study, a statistical test was carried out. Statistical analysis refers to the well-defined organization and interpretations of the data by systemic and mathematical procedure and rules (DePoy & Gitlin, 2013).

In order to ensure that the research have some values, the meaning of collected data has to be presented in ways that other research workers can understands. In other word the researcher has to make sense of the results. As a result came from an experiment in this research, data analysis was done with statistical analysis. All participants had code number to maintain participant’s confidentiality. A single group (10) of population was selected for this research. All subjects of this group take score from the Sf-36 questionnaire was scored for all subjects in the group to measure the quality of life before starting treatment and after completing the treatment. Differences were calculated by comparing the pre-test and post-test from Sf-36 Questionnaire. The pre test and post test comparison group design is one of the most extensively used methods to evaluate clinical research (Hicks, 2009). By calculating of the difference between pre test and post test score the level of improvement are deprived. A quantitative research data analysis occurs at the conclusion of data collection (Hissong et al., 2014).

In this study, using a same subject group, where subjects was purposively allocated to the treatment program group. The common methods of analyzing data from a pre test-post test research design were related ‘t’ test on the difference score between pre test and post test (Hicks, 2009). If the variables were quantitative, the mean of each group were calculated. The application of statistical inference test may or may not be required. A ‘t’- test is a common device used to find out the differences between

means. For this reason, this study was use parametric related 't' test to calculate the significance level of the study.

The 't' test was used to find out whether the 't' values was represented a significance differences between the results from before received treatment and after received treatment of the same group of subjects.

The 't' formula:

Formula of related 't' test:

$$\boldsymbol{t = \frac{\sum d}{\sqrt{\frac{N\sum d^2 - (\sum d)^2}{N-1}}}}$$

Where, ∑d = The total of the differences.

$(\sum d)^2$= The total of the differences squared.

$\sum d^2$= The total of the squared differences.

N= The number of subjects.

"The statistical approach to determining sample size was the power calculation. Statistical power is a measure of how likely the study was to produce a statistically significant result for a difference between groups of a given magnitude" (Hicks, 2009).

3.8.2 Level of Significance

In order to find out the significance of the study, the "p" value was calculated. The p values refer to the probability of the results for experimental study. The word probability refers to the accuracy of the findings. A p value is called level of significance for an experiment and a p value of <0.05 was accepted as significant result for health service research. If the p value is equal or smaller than the significant level, the results are said to be significant.

3.9. Ethical Consideration

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines 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). Again before the beginning of the data collection, researcher had obtained the permission from the concerned authorities ensuring the safety of the participants. The researcher strictly maintained the confidentiality regarding participant's condition and treatments.

Here researcher was used an information sheet and consent form both in English and Bengali to take the participant's consent. The researcher had obtained consent to participate from every subject. A signed informed consent form was received from each participant. The participants were informed that they have the right to meet with outdoor doctor if they think that the treatment is not enough to control the condition or if the condition become worsen. So all the participants were informed that they are completely free to decline answering any question during the study and were free to withdraw their consent and terminate participation at any time. Withdrawal of participation from the study did not affect their treatment in the physiotherapy department and they still had got the same facilities. Every subject had the opportunity to discuss their problem with the senior authority or administration of CRP and have any questioned answer to their satisfy.

CHAPTER-IV RESULTS

In general health

In this study, total participants were 10. Among this participants in pre test, their QoL 10% had felt good (50), 70% had fair (25) and 20% had poor (0). In post test 60% had felt good (50), 40% had fair (25), 0% had told poor QoL. Which claims good HRQoL through the short form-36 scoring system.

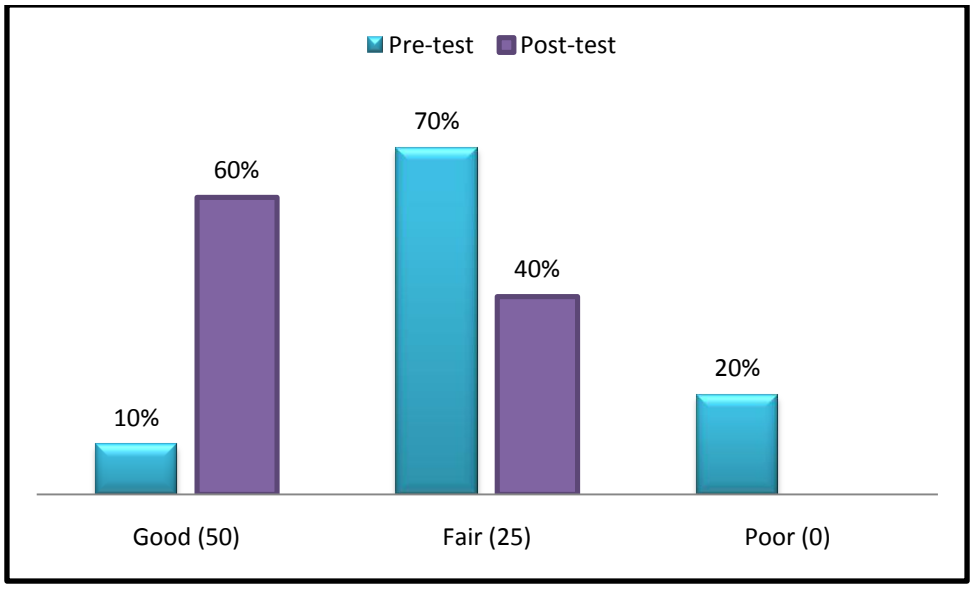

Figure 1 Rate of improvement in general health of participants.

One year ago how would you rate your health

Among this 10 participants in pre test, their QoL 60% had felt somewhat worse now than 1 year ago (25), 40% had much worse than 1 year ago (0). In post test 100% had felt somewhat worse now than 1 year ago (25). Which claims good HRQoL through the short form-36 scoring system.

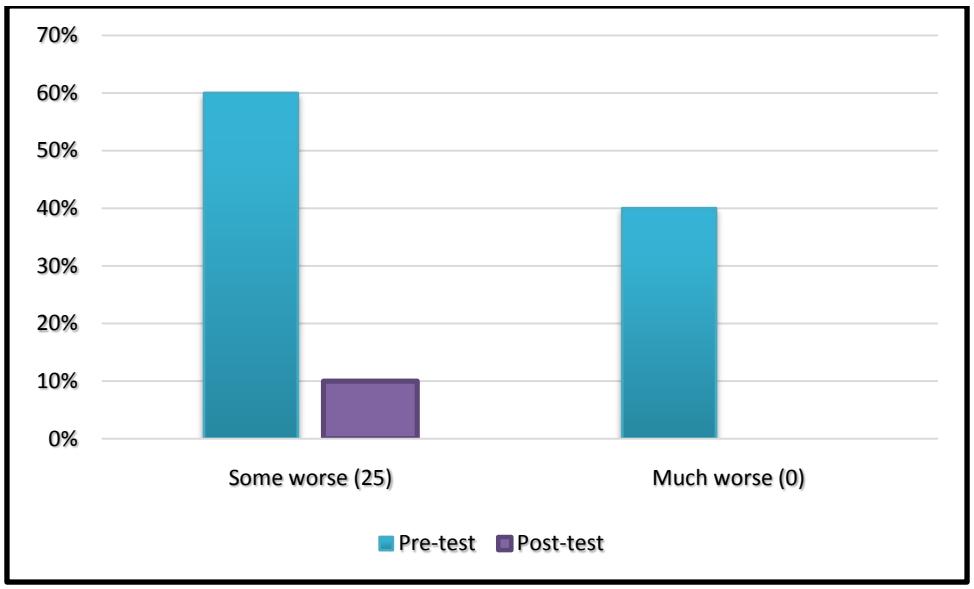

Figure 2 Rate of improvement in general health of participants.

Limitations of activities

Climbing several flights of stairs

In this study, among this 10 participants in pre test, their QoL 90% had felt Yes, limited a lot (0) and 10% told Yes, limited a little (50) when climbing several flights of stairs . In post test 40% had felt limited a lot (0) and 60% told Yes, limited a little (50). Which claims good HRQoL through the short form-36 scoring system.

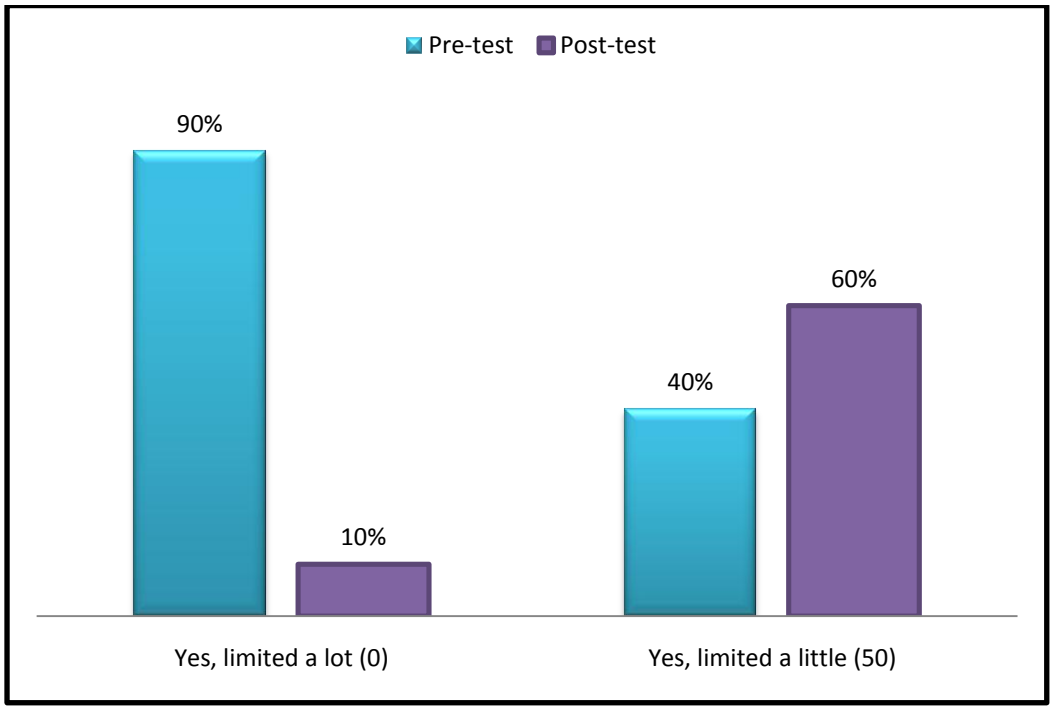

Figure 3 Rate of improvement in Limitations of activities.

Walking several blocks

Among this 10 participants in pre test, their QoL 80% had felt Yes, limited a lot (0) and 20% told Yes, limited a little (50) when walking several blocks. In post test 10% had felt limited a lot (0) and 90% told Yes, limited a little (50). Which claims good HRQoL through the short form-36 dimension.

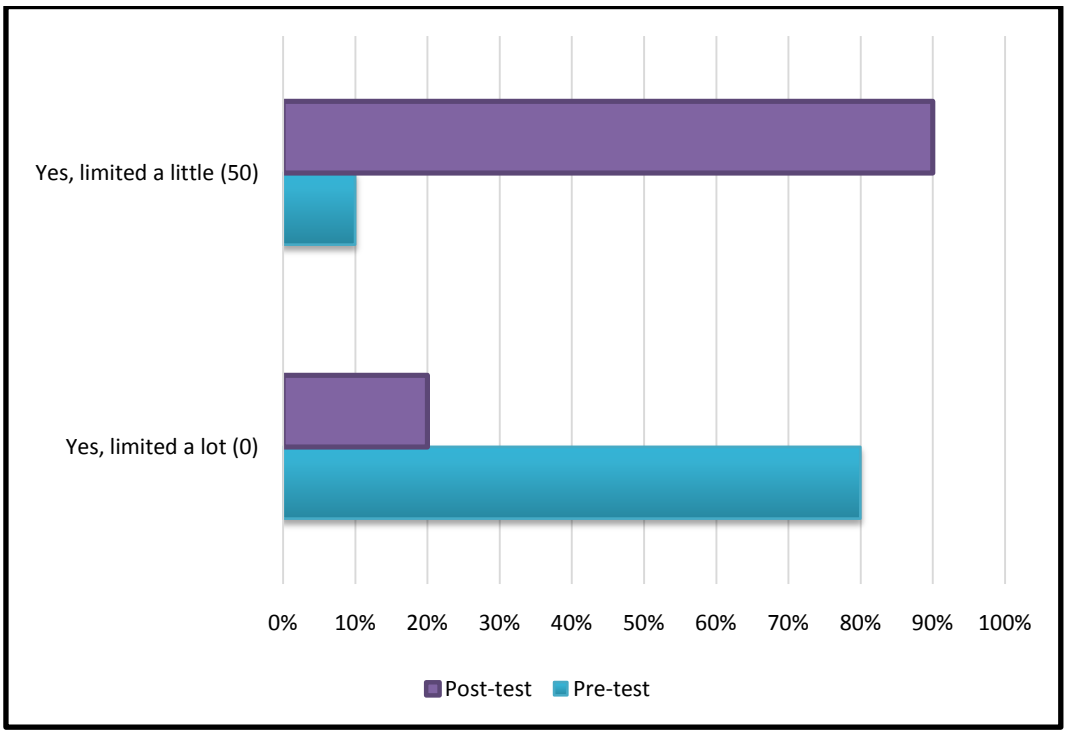

Figure 4 Rate of improvement in Limitations of activities.

Social activities

Emotional problems interfered with patients normal social activities with family, friends, neighbors, or groups.

Among this 10 participants in pre test, their QoL 80% had felt Yes, limited a lot (0) and 20% told Yes, limited a little (50) when walking several blocks. In post test 10% had felt limited a lot (0) and 90% told Yes, limited a little (50). Which claims good HRQoL through the short form-36 dimension.

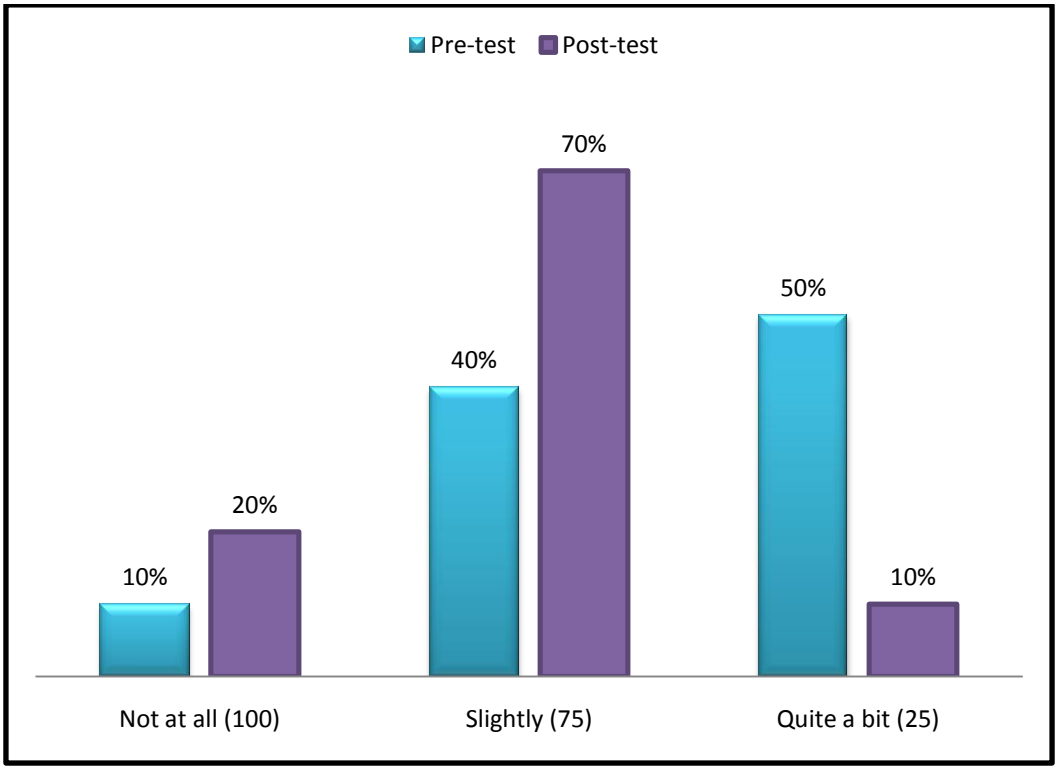

Figure 5 Rate of improvement in social functioning.

Pain

How much bodily pain has patients had during the past 4weeks, this are shown by following.

In this study, among this 10 participants in pre test, 40% had felt pain mild (60), 20% felt moderate (40) pain and 40% had severe (20) pain. In post test, 60% felt very mild (80) pain, 40% had felt pain mild (60), 0% felt moderate (40) pain and 0% had severe (20) pain. Which claims good HRQoL through the short form-36 scoring system.

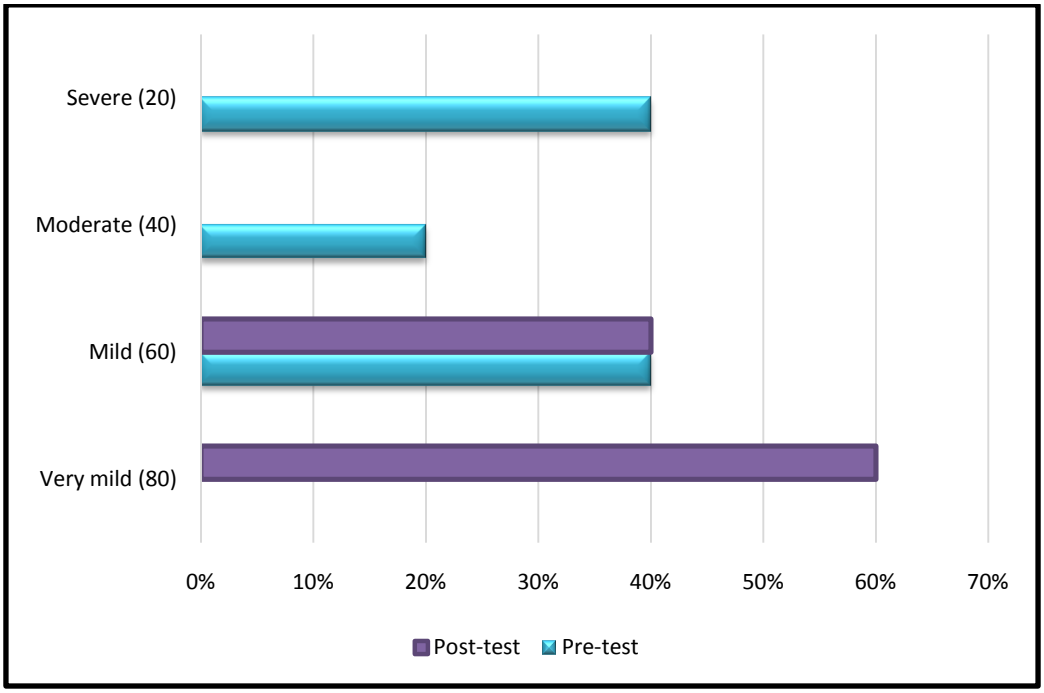

Figure 6 Rate of improvement in bodily pain during the past 4 weeks.

How much pain interfere with normal work

Among this 10 participants in pre test, 20% had felt pain that interfere with normal work a little bit (75), 50% moderately (50) and 30% felt pain quite a bit (25). In post test 60% had felt pain that interfere with normal work a little bit (75), 50% moderately (50) and 30% felt pain quite a bit (25). Which claims good HRQoL through the short form-36 scoring system.

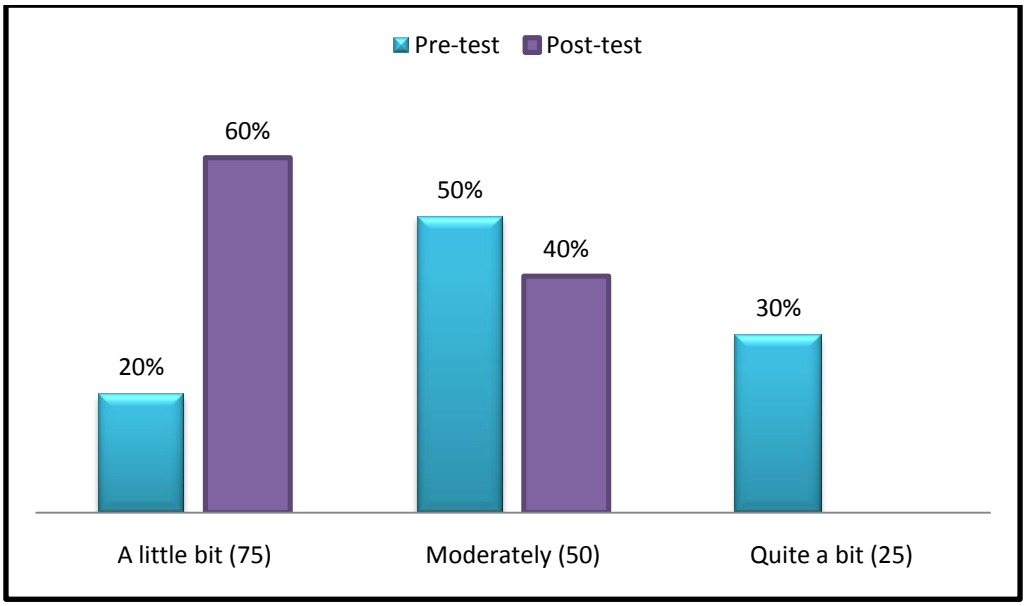

Figure 7 Improvement rate of QoL in a how much pain interfere with normal work.

Energy and emotion

Patients has been a very nervous condition

In this study, among this 10 participants in pre test, their QoL 0% had been a very nervous all of the time (0), 40% most of the time (20), 20% a good bit of time (40), 10% some of the time (60) and 20% a little of the time (80). In post test 10% had a good bit of time (40), 50% some of the time (60), 40% a little bit of time (80) and 0% most of the time (20). Which claims good HRQoL through the short form-36 scoring system.

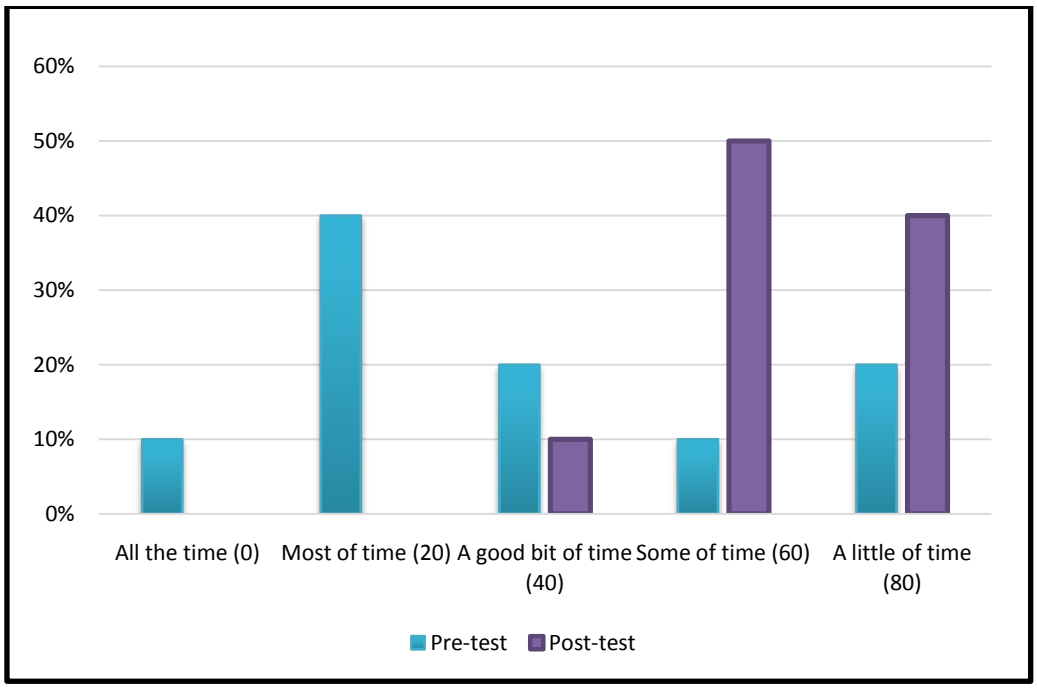

Figure 8 Improvement rate of QoL in a very nervous condition.

Patients has felt down in the dumps nothing cheer up

Among this 10 participants in pre test, their QoL 10% had nothing could cheer up most of the time (20), 70% some of the time (60), 10% a little bit of time (80), 10% none of the time (100). In post test 30% had nothing could cheer up some of the time (60), 70% a little bit of time (80) and 0% most of the time (20). Which claims good HRQoL through the short form-36 scoring system.

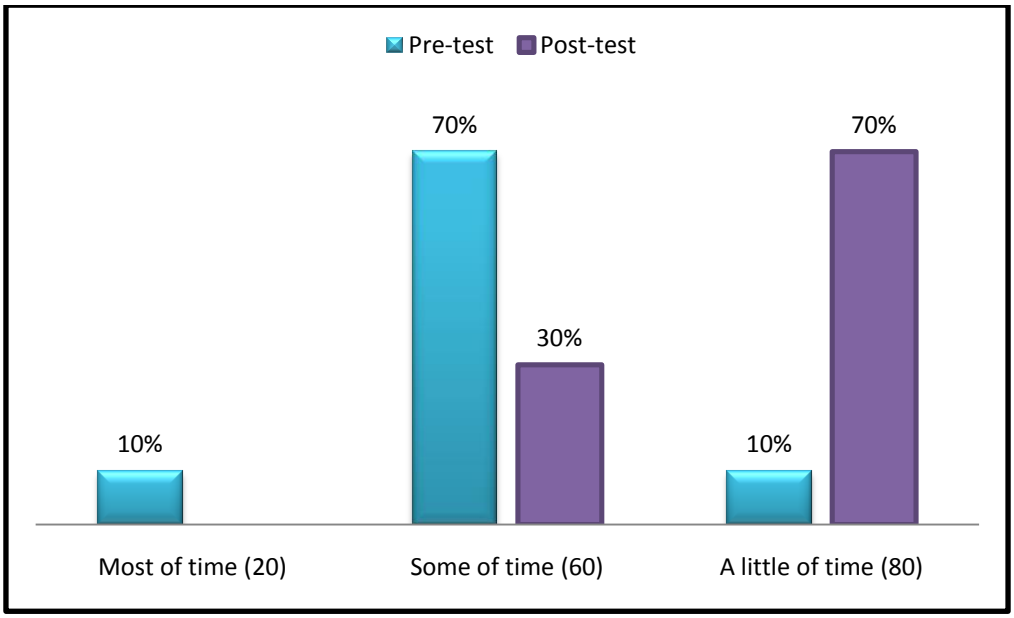

Figure 9 Improvement rate of QoL in the dumps nothing could cheer up.

Patients has felt calm and peaceful

In this study, among this 10 participants in pre test, their QoL 30% had felt calm and peaceful a good bit of time (60), 30% in some of the time (40), 40% had a little bit of the time (20). In post test 30% had felt calm and peaceful most of the time (80), 70% a good bit of time (60) and 0% of some of the time (40) and a little of the time (20). Which claims good HRQoL through the short form-36 scoring system.

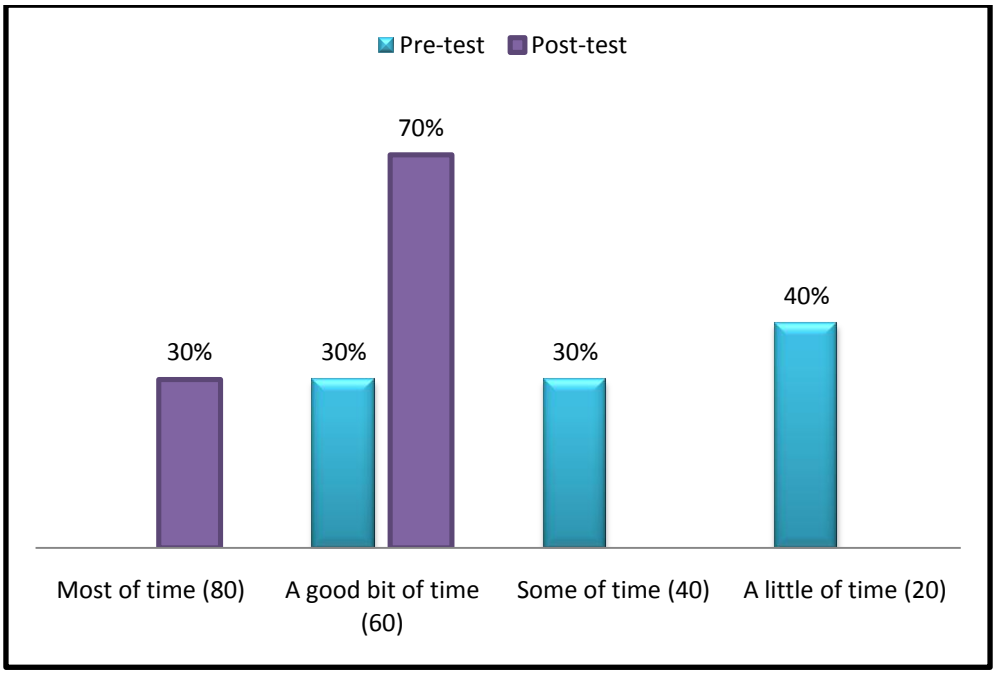

Figure 10 Improvement rate of QoL in the Patients has felt calm and peaceful.

Patients has been a happy person

Among this participants in pre test, their QoL 10% had felt happy a good bit of time (60), 60% in some of the time (40), 20% had a little bit of the time and 10% none of the time. In post test 70% had felt happy a good bit of time (60) and 30% were some of the time (40). Which claims good HRQoL through the short form-36 scoring system.

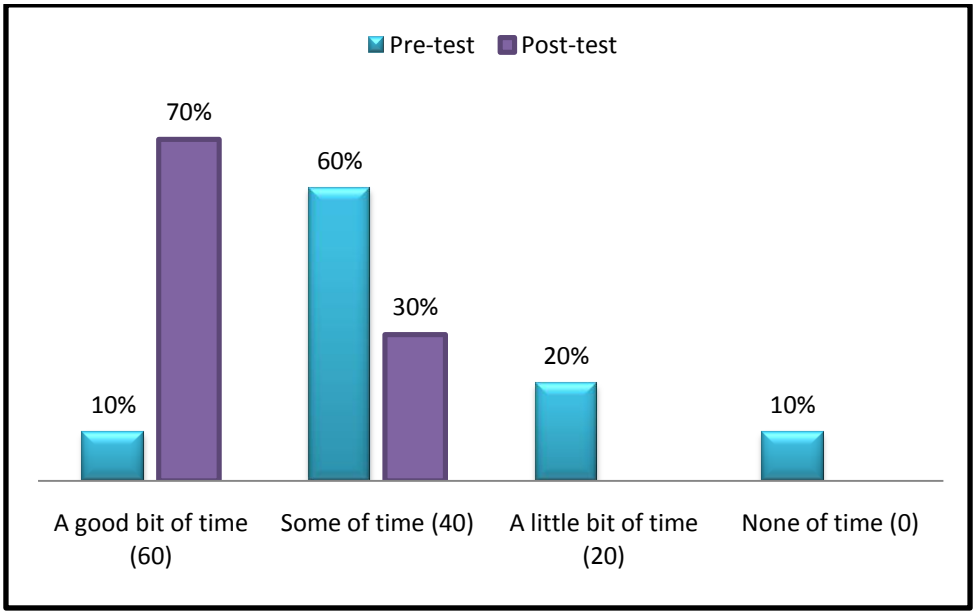

Figure 11 Improvement rate of QoL in the Patients has felt calm and peaceful.

Patient feel full of pep

In this study, total participants were 10. Among this participants in pre test, their QoL 10% had felt full of pep most of the time (80), 20% a good bit of time (60), 20% in some of the time (40) and 50% had a little bit of the time. In post test, 30% felt full of pep most of the time (80), 60% a good bit of time (60) and 10% were some of the time (40). Which claims good HRQoL through the short form-36 scoring system.

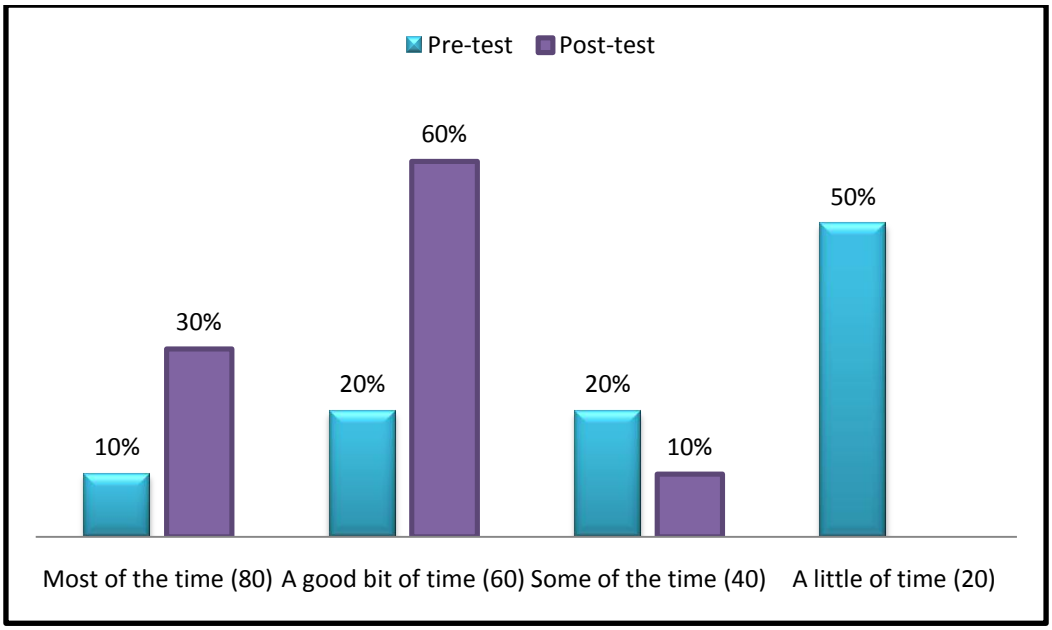

Figure 12 Improvement rate of QoL in the Patients has felt full of pep.

Calculation of significant levels by using 't' formula in different participants

In general health

	Number of participants in pre-testx_1	Number of participants in post-testx_2	Differences between pre-test and post-test, d	d^2
Good (50)	1	6	5	25
Fair (25)	7	4	3	9
Poor (0)	2	0	2	4
			$\sum$d =10	$\sum d^2$ = 38

The 't' formula-

$$\text{'t'}=\frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{10}{\sqrt{\frac{10\times38-(10)^2}{10-1}}}$$

= 1.79

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.79, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.79 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.79 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.79 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Emotional status

Have patient been a very nervous

	Number of participants in pre-test, x_1	Number of participants in post test, x_2	Differences between pre-test and post-test, d	d^2
All of the time (0)	1	0	1	1
Most of the time (20)	4	0	4	16
A good bit of time (40)	2	1	1	1
Some of the time (60)	1	5	4	16
A little of the time (80)	2	4	2	4
			$\sum$d =12	$\sum d^2$ =38

The 't' formula-

$$\text{'t'} = \frac{\sum d}{\sqrt{\frac{N \times \sum_d 2 - (\sum d)^2}{N-1}}}$$

$$= \frac{12}{\sqrt{\frac{10 \times 38 - (12)^2}{10-1}}}$$

=2.34

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=2.34, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.01.

Here the ‘t’ value is larger than 2.262 and smaller than 2.821. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 2.34 comes some where between 0.025 and 0.01. In other words the probability for ‘t’=2.34 is less than P< 0.01 but P> 0.025. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 2.34 is less than P< 0.01.

This is expressed as:

P<0.01 means that the hypothesis was accepted.

Pain

How much bodily pain have patient had during the past 4 weeks

	Number of participants in pre-test,x_1	Number of participants in post test,x_2	Differences between pre-test and post-test, d	d^2
Very mild (80)	0	6	6	36
Mild (60)	4	4	0	0
Moderate (40)	2	0	2	4
Severe (20)	4	0	4	16
			$\sum$d =12	$\sum d^2$ =56

The ‘t’ formula-

$$\text{‘t’}= \frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{12}{\sqrt{\frac{10\times56-(12)^2}{10-1}}}$$

=1.77

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.77, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.77 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.77 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.77 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

How much pain interfere with normal work

	Number of participants in pre-test,x_1	Number of participants in post-test,x_2	Differences between pre-test and post-test, d	d^2
A little bit (75)	2	6	4	16
moderately (50)	5	4	1	1
Quite a bit (25)	3	0	3	9
			$\sum$d =8	$\sum d^2$ =26

The ‘t’ formula-

$$\text{‘t’}=\frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{8}{\sqrt{\frac{10\times26-(8)^2}{10-1}}}$$

=1.71

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.71, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.71 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.71 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.71 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Have patient felt down in the dumps nothing cheer up

	Number of participants in pre-test,x_1	Number of participants in post test,x_2	Differences between pre-test and post-test, d	d^2
Most of the time (20)	1	0	1	1
Some of the time (60)	7	3	4	16
A little of the time (80)	1	7	6	36
None of the time (100)	1	0	1	1
			∑d =12	$\sum d^2$ =54

The ‘t’ formula-

$$\text{‘t’}= \frac{\sum d}{\sqrt{\frac{N \times \sum_d 2 - (\sum d)^2}{N-1}}}$$

$$= \frac{12}{\sqrt{\frac{10 \times 54 - (12)^2}{10-1}}}$$

=1.81

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.81, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.81 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.81 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.81 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Did patient feel full of pep

	Number of participants in pre-test,x_1	Number of participants in post test,x_2	Differences between pre-test and post-test, d	d^2
Most of the time (80)	1	3	2	4
A good bit of time (60)	2	6	4	16
Some of the time (40)	2	1	1	1
A little of the time (20)	5	0	5	25
			$\sum$d =12	$\sum d^2$ =46

The ‘t’ formula-

$$\text{‘t’}= \frac{\sum d}{\sqrt{\frac{N \times \sum_d 2 - (\sum d)^2}{N-1}}}$$

$$= \frac{12}{\sqrt{\frac{10 \times 46 - (12)^2}{10-1}}}$$

=2.03

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=2.03,df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.025.

Here the ‘t’ value is larger than 1.833 and smaller than 2.262. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 2.03 comes some where between 0.05 and 0.025. In other words the probability for ‘t’=2.03 is less than P< 0.025 but P> 0.05. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’ = 2.03 is less than P< 0.025.

This is expressed as:

P<0.025 means that the hypothesis was accepted.

Social functioning

Physical health / emotional problems interfere social activity

	Number of participants in pre-test,x_1	Number of participants in post-test,x_2	Differences between pre-test and post-test, d	d^2
Not at all (100)	1	2	1	1
Slightly (75)	4	7	3	9
Quite a bit (25)	5	1	4	16
			$\sum$d =8	$\sum d^2$ =26

The ‘t’ formula-

$$\text{‘t’}=\frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{8}{\sqrt{\frac{10\times26-(8)^2}{10-1}}}$$

=1.71

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.71, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.71 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.71 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.71 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Physical functioning

Climbing one fligths of stair

	Number of participants in pre-test, x_1	Number of participants in post-test,x_2	Differences between pre-test and post-test, d	d^2
Yes, limited a lot (0)	9	4	5	25
Yes, limited a little (50)	1	6	5	25
			$\sum$d =10	$\sum d^2$ =50

The ‘t’ formula-

$$\text{‘t’}= \frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{10}{\sqrt{\frac{10\times50-(10)^2}{10-1}}}$$

=1.50

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.50, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.50 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.50 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.50 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Walking several blocks

	Number of participants in pre-test,x_1	Number of participants in post-test,x_2	Differences between pre-test and post-test, d	d^2
Yes, limited a lot (0)	8	1	7	49
Yes, limited a little (50)	2	9	7	49
			$\sum$d =14	$\sum d^2$ =98

The ‘t’ formula-

$$\text{‘t’}= \frac{\sum d}{\sqrt{\frac{N\times\sum_d 2-(\sum d)^2}{N-1}}}$$

$$=\frac{14}{\sqrt{\frac{10\times98-(14)^2}{10-1}}}$$

=1.50

Calculating the degree of freedom (df) from the formula

df= N-1

= 10-1

= 9

Now ‘t’ value for significance,

The ‘t’ value=1.50, df = 9

Six number of critical values of ‘t’=

1.383 1.833 2.262 2.821 3.250 4.781

P value: P <0.05.

Here the ‘t’ value is larger than 1.383 and smaller than 1.833. This means that for this study’s one tailed hypothesis, the probability associated with this ‘t’ value of 1.50 comes some where between 0.10 and 0.05. In other words the probability for ‘t’=1.50 is less than P< 0.05 but P> 0.10. According to convention, we always say that ‘P’ is less than a given value and so here the ‘P’ value for ‘t’= 1.50 is less than P< 0.05.

This is expressed as:

P<0.05 means that the hypothesis was accepted.

Result are shown in the table below

Table 1

Significant level of health

No	Variables	Observed t value	Observed P value	Significant
1	**In general health**	1.79	0.05	Significant

Table 2

Significant level of pain

No	Variables	Observed t value	Observed P value	Significant
1	**Bodily pain during the past 4 weeks**	1.77	0.05	Significant
2	**Pain interfere with normal work**	1.71	0.05	Significant

Table 3

Significant level of energy and emotion

No	Variables	Observed t value	Observed P value	Significant
1	**Patient feel full of pep**	2.03	0.025	Significant
2	**Nothing could cheer up**	1.81	0.05	Significant
3	**Patient had been a very nervous**	2.34	0.01	Significant

Table 4

Significant level of social functioning

No	Variables	Observed t value	Observed P value	Significant
1	**Physical health / emotional problems interfere with social activity**	1.71	0.05	Significant

Table 5

Significant level of physical functioning

No	Variables	Observed t value	Observed P value	Significant
1	**Climbing one flights of stair**	1.50	0.05	Significant
2	**Walking several blocks**	1.50	0.05	Significant

CHAPTER-V DISCUSSION

The purpose of this study was to evaluate the effectiveness of quality of life among tetraplegic SCI patients. In this experimental study 10 tetraplegic patients with SCI were randomly assigned. Among these 10 patients, there was a single group design. This group attended in the SCI indoor department of physiotherapy, CRP, Savar in order to demonstrate the improvement. The outcome was measured by using Sf-36 dimension. The researcher found significant improvement of (In general health, bodily pain during the past 4 weeks, pain interfere with normal work, energy and emotion: patient feel full of pep, nothing could cheer up, patient have been very nervous, social functioning: Physical health / emotional problems interfere social activity, physical functioning: climbing one flights of stair, walking several blocks).

In single group, improvement in general health is 1.79, bodily pain during the past 4 weeks is 1.77, pain interfere with normal work is 1.71, patient feel full of pep is 2.03, nothing could cheer up is 1.81, patient have been a very nervous is 2.34, Physical health / emotional problems interfere social activity is 1.71, climbing one flights of stair is 1.50, walking several blocks is 1.50.

In this way a patient may work sporadically to maintain his/her QoL (In general health, bodily pain during the past 4 weeks, pain interfere with normal work, energy and emotion: patient feel full of pep, nothing could cheer up, patient have been very nervous, social functioning: Physical health / emotional problems interfere social activity, physical functioning: climbing one flights of stair, walking several blocks). Patients tends to develop more psychopathology than physical fitness and confidence than the general population. This can reduce visit to physicians (Belasco & Sesso, 2008).

Patients did not want to depend on their care-giver. They try to improve their QoL by their own force. Now a days the QoL has become a major topic of research in the area of health and the finding contribute to the definition and approval of treatments and evaluation of cost benefits of the patients to improve their QoL.

The HRQoL of patients with SCI was measured by the Sf-36 and results showed a greater impact on the physical component. The most influenced individual dimension were social functioning (29.7) and mental health (33.5) which showed the lowest value in a scale ranging from 0 to 100. Considering the individual need of the tetraplegic patients, special adaptations are required. As the two activities of patients, which affected QoL the most, were the ones early in the process, there are reasons to recognize these early phases of these people involved because of their transitory character. Nurses can support adaptation by exploring the problems, listening and helping out with practical problems as well as by providing knowledge about how a patient can improve their QoL (Ekwall et al., 2006).

As this was a experimental study, we consider this research as a preliminary study that can yield valuable information that may clarify many important questions related to patients with SCI. The obtained results may lead to the elaboration of strategies to reduce the impact caused by the disease in the life and help to improve QoL in patients with SCI. If their quality of life is improved then the group respiratory physiotherapy is more effective.

In this study, for this Sf-36 questionnaire the total scores may range from 0 to 100. Each scales ranging from 0 (presence of all problems) to 100 (no problems at all) within the dimension (Roux et al., 2005).

Limitations

The main limitation of this study was its short duration.

The study was conducted with 10 tetraplegic patients with Spinal Cord Injury, which was a very small number of samples in single group and was not sufficient enough for the study to generalize the wider population of this condition.

In this study, interventions were given by clinical physiotherapists. So, the inter-rater reliability was not maintained due to lack of time and patient's availability.

There was no available research done in this area in Bangladesh. So, relevant information about tetraplegic patient with specific intervention for Bangladesh was very limited in this study.

The research project was done by an undergraduate student and it was first research project for her. So the researcher had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes that overlooked by the supervisor and the honourable teacher.

CHAPTER-VI CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The study was an quasi-experimental single group pre-test and post-test design to examine the effectiveness of group respiratory therapy, where the results of the study have demonstrated that the group therapy technique is significantly capable of producing beneficial effects on the improvement of the quality of life in tetraplegic patient with Spinal Cord Injury. Respiratory physiotherapy has very importance to minimize or reduce respiratory and pulmonary complication.

From this research the researcher explore the effectiveness (quality of life) of group respiratory therapy among the tetraplegic patient with Spinal Cord Injury, which will be helpful to facilitate their rehabilitation, to enhance functional activities and to improve their quality of life.

From this research, researcher concluded the specific variables and comparison of their improvement. This will aid the professionals to decide the specific and effective treatment protocol for tetraplegic SCI patients.

6.2 Recommendation

Physiotherapist should implement a broader role and holistic treatment techniques for the persons with SCI. Physiotherapists need to update their knowledge in this area. Physiotherapists should involve the patients in treatment to reduce respiratory problem. Physiotherapists need to concentrate more on this issue during the treatment period. If the Physiotherapists do not involve the patients in their treatment, it would not be significant. For these reason it is necessary to involve the patients in respiratory physiotherapy etc.

Despite the limitations of the study particularly small sample size, the results of the study give further motivation to controlled clinical trials with sufficient time and sample size. Future study should include a multiple blinding procedure of data collection to maintain intra-rater reliability. It could be also suggested that for future studies can be carried out with comparable patient variables with emphasis on ergometrics and functional levels.

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ANNEXURE

1. Information sheet (English)
2. Consent form (English)
3. Questionnaire (English)
4. Information sheet (Bangla)
5. Consent form (Bangla)
6. Questionnaire (Bangla)
7. Permission Letter

Information Sheet

The name of the researcher is Nure Taslima Tarin. She is the student of 4th year, Department of Physiotherapy, Bangladesh Health Professions Institute (BHPI). As a part of her academic issues, she has to conduct a dissertation in this academic year. So researcher would like to invite you to participate in this study. The title of the study is **"Effectiveness of group respiratory therapy among the tetraplegic patient with Spinal Cord Injury".**

Your participation is voluntary in the study. You can withdraw your participation in anytime. There is not the facility to get any pay by this participation. The study will never be any harm to you but it will help the service user to know your experience, which is very important for the service provider to plan for their future activities.

Confidentiality of all records will be highly maintained. The gathered information from you will not be disclosed anywhere except this study and supervisor. The study will certainly never reveal the name of participants.

If you have any query regarding the study, please feel free to ask to the contact information stated below:

Nure Taslima Tarin
Student of 4th year
B.Sc. in Physiotherapy
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI),
Centre for the Rehabilitation of the Paralysed (CRP),
Chapain, Savar, Dhaka-1343

Consent Form

This research is part of Physiotherapy course and the name of the researcher is *Nure Taslima Tarin.* She is a student of Bangladesh Health Professions Institute (BHPI) in B.Sc. in Physiotherapy in 4th year. The study was entitled as **"Effectiveness of group respiratory therapy among the tetraplegic patient with Spinal Cord Injury.**" The aim of the study is to explore the effectiveness (quality of life) of Spinal Cord Injury patients about group respiratory physiotherapy.

In this study I am …… a participant and I have been clearly informed about the purpose and aim of the study. I will have the right to refuse in taking part any time at any stage of the study. I will not be bound to answer to anybody. This study has no connection with me and there will be no impact on me and my patient regarding treatment at present and in future.

I am also informed that, all the information collected from the interview that is used in the study would be kept safety and maintained confidentiality. My name and address will not be published anywhere. Only the researcher and supervisor will be eligible to access in the information for his publication of the research result. Your name and address will not published anywhere of this study. I have been informed about the above-mentioned information and I am willing to participate in the study with giving consent.

Signature/Finger print of the Participant:	Date:
Signature of the Researcher:	Date:
Signature/Finger print of the witness:	Date:

SF-36 QUESTIONNAIRE

Name:_____ Ref. Dr:_____ Date: _____

ID#: _____ Age: _____ Gender: M / F

Please answer the 36 questions of the **Health Survey** completely, honestly, and without interruptions.

GENERAL HEALTH:

In general, would you say your health is:

- o Excellent
- o Very Good
- o Good
- o Fair
- o Poor

Compared to one year ago, how would you rate your health in general now?

- o Much better now than one year ago
- o Somewhat better now than one year ago
- o About the same
- o Somewhat worse now than one year ago
- o Much worse than one year ago

LIMITATIONS OF ACTIVITIES:

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.

- o Yes, Limited a lot
- o Yes, Limited a Little
- o No, Not Limited at all

Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Lifting or carrying groceries

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Climbing several flights of stairs

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Climbing one flight of stairs

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Bending, kneeling, or stooping

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Walking more than a mile

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Walking several blocks

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Walking one block

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

Bathing or dressing yourself

- Yes, Limited a Lot
- Yes, Limited a Little
- No, Not Limited at all

PHYSICAL HEALTH PROBLEMS:

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

Cut down the amount of time you spent on work or other activities

- Yes
- No

Accomplished less than you would like

- Yes
- No

Were limited in the kind of work or other activities

- Yes
- No

Had difficulty performing the work or other activities (for example, it took extra effort)

- Yes
- No

EMOTIONAL HEALTH PROBLEMS:

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

Cut down the amount of time you spent on work or other activities

- Yes
- No

Accomplished less than you would like

- Yes
- No

Didn't do work or other activities as carefully as usual

- Yes
- No

SOCIAL ACTIVITIES:

Emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

- Not at all
- Slightly
- Moderately
- Severe
- Very Severe

PAIN:

How much bodily pain have you had during the past 4 weeks?

- None
- Very Mild
- Mild
- Moderate
- Severe
- Very Severe

During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

- Not at all
- A little bit
- Moderately
- Quite a bit
- Extremely

ENERGY AND EMOTIONS:

These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.

Did you feel full of pep?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Have you been a very nervous person?

- All of the time
- Most of the time

- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Have you felt so down in the dumps that nothing could cheer you up?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Have you felt calm and peaceful?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Did you have a lot of energy?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Have you felt downhearted and blue?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time

- A little bit of the time
- None of the Time

Did you feel worn out?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Have you been a happy person?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

Did you feel tired?

- All of the time
- Most of the time
- A good Bit of the Time
- Some of the time
- A little bit of the time
- None of the Time

SOCIAL ACTIVITIES:

During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

- All of the time
- Most of the time
- Some of the time

- A little bit of the time
- None of the Time

GENERAL HEALTH:

How true or false is each of the following statements for you?

I seem to get sick a little easier than other people

- Definitely true
- Mostly true
- Don't know
- Mostly false
- Definitely false

I am as healthy as anybody I know

- Definitely true
- Mostly true
- Don't know
- Mostly false
- Definitely false

I expect my health to get worse

- Definitely true
- Mostly true
- Don't know
- Mostly false
- Definitely false

My health is excellent

- Definitely true
- Mostly true
- Don't know
- Mostly false
- Definitely false

তথ্য পত্র

গবেষণাকারীর নাম নূরে তাসলিমা তারিন। সে বাংলাদেশ হেলথ্ প্রফেশন্স্ ইনস্টিটিউটের (সিআরপির শিক্ষা প্রতিষ্ঠান) ফিজিওথেরাপি বিভাগ এ ৪র্থ বর্ষে অধ্যয়নরত। তার প্রাতিষ্ঠানিক কার্যের অংশ হিসেবে চলন্ত শিক্ষাবর্ষে তাকে একটি গবেষনা মুলক কাজ করতে হচ্ছে যার শিরোনাম "মেরুরজ্জুতে আঘাতপ্রাপ্ত টেট্রাপ্লেজিক রুগীদের মধ্যে রেসপিরেটরি গ্রুপ থেরাপির উপকারিতা"।

গবেষনায় আপনার অংশগ্রহন সম্পূর্ণ রুপে স্বেচ্ছায়। আপনি যেকোন সময় গবেষনায় আপনার অংশগ্রহন করা থেকে বিরত থাকতে পারবেন। এই গবেষণায় অংশগ্রহনে গবেষক আপনাকে কোনভাবে আর্থিক সাহায্য প্রদানে অপারগ। এই অংশগ্রহন কখনোই আপনার জন্য ক্ষতির কারণ হয়ে দাঁড়াবেনা কিন্তু এই গবেষনার মাধ্যমে সেবাপ্রদানকারী সদস্যগণ, আপনার অভিজ্ঞতার কথা জানতে পারবেন এবং প্রাপ্ত তথ্য সমূহ সেবার মানোন্নয়নে সাহায্য করবে । এই গবেষণা পরবর্তীতে অন্যান্য শুশ্রষাকরীদেরও ক্ষেত্রেও সহায়ক হবে।

আপনার কাছ থেকে প্রাপ্ত তথ্যসমূহের সর্বোচ্চ গোপনীয়তা রক্ষা করা হবে। গবেষণা এবং গবেষণার সমন্বয়কারী ব্যতীত এই তথ্যগুলো অন্য কোথাও প্রকাশিত হবেনা এবং গবেষণার কোথাও অংশগ্রহনকারীর নাম প্রকাশ হবেনা।

গবেষণা সম্পর্কিত যেকোন ধরনের প্রশ্নের জন্য নিম্নলিখিত ব্যক্তির সাথে যোগাযোগ করার জন্য অনুরোধ করা যাচ্ছে।

নূরে তাসলিমা তারিন
৪র্থ বর্ষবিএসসি ইন ফিজিওথেরাপি
ফিজিওথেরাপি বিভাগ
বাংলাদেশ হেলথ্ প্রফেশন্স্ ইনস্টিটিউট
পক্ষাঘাতগ্রস্তদের পূনর্বাসন কেন্দ্র (সিআরপি)
চাপাইন, সাভার, ঢাকা-১৩৪৩ ।

সম্মতিপত্র

এই গবেষণাটি ফিজিওথেরাপির একটি অংশ এবং গবেষণাকারীর নাম নূরে তাসলিমা তারিন। সে বাংলাদেশ হেলথ্ প্রফেশন্স্ইনস্টিটিউটের ফিজিওথেরাপি বিভাগ এর ৪র্থ বর্ষের ছাত্রী। এই গবেষনাটির শিরোনাম "মেরুরজ্জুতে আঘাতপ্রাপ্ত টেট্রাপ্লেজিক রুগীদের মধ্যে রেসপিরেটরি গ্রুপ থেরাপির উপকারিতা"।

এই গবেষনাতে আমি একজন অংশগ্রহনকারী এবং পরিষ্কারভাবে এই গবেষনার উদ্দেশ্য সম্পর্কে অবগত। আমার যেকোন সময়ে এই গবেষনা থেকে নিজেকে সরিয়ে আনার অধিকার আছে। এজন্য আমি প্রশ্নের উত্তর প্রদান করার জন্য করোকাছে দায়বদ্ধ না। এই গবেষণাটির সাথে আমার কোন সম্পৃক্ততা নেই। আমি আরও অবগত আছি যে, এই কথোপকথন থেকে নেওয়া সমস্ত তথ্যাবলি নিরাপদে এবং গোপন রাখা হবে। আমার নাম এবং ঠিকানা কোথাও প্রকাশ হবে না। শুধুমাত্র গবেষণাকারীর এবং তার গবেষণার সমন্বয়কারীর সাথে এই গবেষণার পদ্ধতি সম্পর্কে অথবা যে কোন প্রশ্নের উত্তর জানার জন্য কথা বলতে পারব।

আমি উপরোক্ত তথ্যগুলো ভালোভাবে জেনে নিজ ইচ্ছায় এই গবেষনায় অংশগ্রহন করছি।

অংশগ্রহনকারীর স্বাক্ষর/ টিপসই	তারিখ:
গবেষণাকারীর স্বাক্ষর	তারিখ:
সাক্ষ্যপ্রদানকারীর স্বাক্ষর/ টিপসই	তারিখ:

প্রশ্নপত্র (বাংলা)

নামঃ রেফারেন্স ডক্টরঃ তারিখঃ

ID নম্বরঃ বয়সঃ লিঙ্গঃ

অনুগ্রহ করে স্বাস্থ্য সমীক্ষার ৩৬টি প্রশ্নের উত্তর দিন (সম্পূর্ণ, অকপট ও কোন প্রকার বাধা ছাড়াই)।

সাধারণ স্বাস্থ্যঃ

সাধারণত, আপনার স্বাস্থ্য কেমন?

- চমৎকার
- খুব ভাল
- ভাল
- সাধারণ
- দুর্বল

এক বছর আগের তুলনায়, কিভাবে আপনি এখন সাধারণভাবে আপনার স্বাস্থ্য মূল্যায়ন করবেন?

- এক বছর আগের এখন তুলনায় অনেক ভালো
- এক বছর আগের এখন তুলনায় কিছু ভালো
- একই
- এক বছর আগের এখন তুলনায় কিছু খারাপ
- এক বছর আগের এখন তুলনায় অনেক খারাপ

কার্যকলাপের সীমাবদ্ধতাঃ

নিম্নোক্ত বিষয়গুলো একটি সাধারণ দিনে আপনার কার্যক্রম হতে পারে। আপনার স্বাস্থ্য কি এখন এইসব কার্যক্রমে আপনাকে সীমাবদ্ধ করছে? যদি করে, তাহলে কিভাবে?

সক্রিয় কার্যক্রম যেমনঃ শ্রমসাধ্য ক্রীড়ায় অংশগ্রহণ, ভারী বস্তু উত্তোলন, দৌড়ানো।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

মাঝারি কার্যক্রম যেমনঃ টেবিল সরানো, গলফ খেলা, বল করা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

মুদি উত্তলন বা বহন করা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

একাধিক তলা সিঁড়ি দিয়ে উঠা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

এক তলা সিঁড়ি দিয়ে উঠা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

বাঁকা হওয়া, হাঁটু গেড়ে বসা বা নত হওয়া।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

এক মাইলের বেশি হাঁটা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ

- না, সীমাবদ্ধ নয়

একের অধিক ব্লক হাঁটা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

এক ব্লক হাঁটা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

গোসল বা নিজের কাপড় পরা।

- হ্যাঁ, অনেক সীমাবদ্ধ
- হ্যাঁ, কিছুটা সীমাবদ্ধ
- না, সীমাবদ্ধ নয়

শারীরিক স্বাস্থ্যজনিত সমস্যাঃ

গত ৪ সপ্তাহ সময়,আপনার শারীরিক স্বাস্থ্যজনিত কারণে আপনার কাজ বা অন্যান্য নিয়মিত দৈনন্দিন কার্যক্রমে নিম্নলিখিত কোন সমস্যাগুলি ছিল?

আপনার কাজ বা অন্যান্য কার্যক্রম কাটানো সময় পরিমাণ কমে যাওয়া।

- হ্যাঁ
- না

আপনার যতটুকু চান তার চেয়ে কম কাজ সম্পন্ন।

- হ্যাঁ
- না

আপনার কাজ বা অন্যান্য যে কোন ধরনের কার্যক্রম সীমাবদ্ধ ছিল।

- হ্যাঁ
- না

আপনার কাজ বা অন্যান্য কার্যক্রম সম্পাদন করতে অসুবিধা ছিল (উদাহরণস্বরূপ, এটি অতিরিক্ত প্রচেষ্টা গ্রহণ)।

- হ্যাঁ
- না

মানসিক স্বাস্থ্যজনিত সমস্যা:

গত ৪ সপ্তাহ সময়,আপনার মানসিক স্বাস্থ্যজনিত কারণে আপনার কাজ বা অন্যান্য নিয়মিত দৈনন্দিন কার্যক্রমে নিম্নলিখিত কোন সমস্যাগুলি ছিল?

আপনার কাজ বা অন্যান্য কার্যক্রম কাটানো সময় পরিমাণ কমে যাওয়া।

- হ্যাঁ
- না

আপনার যতটুকু চান তার চেয়ে কম কাজ সম্পন্ন হওয়া।

- হ্যাঁ
- না

পুর্বের মত সাবধানে স্বাভাবিকভাবে কাজ বা অন্যান্য কাজকর্ম করা হয়নি।

- হ্যাঁ
- না

সামাজিক কার্যক্রমঃ

মানসিক সমস্যার কারণে পরিবার, বন্ধু, প্রতিবেশী, বা দলের সাথে আপনার স্বাভাবিক সামাজিক কার্যকলাপ বিঘ্নিত হচ্ছে ?

- কোন ভাবেই নয়
- কিছুটা
- একদম সামান্য
- বেশি
- খুব বেশি

ব্যাথাঃ

গত ৪ সপ্তাহ সময় আপনার কতটুকু শারীরিক ব্যাথা ছিল?

- একদম না
- খুব অল্প
- অল্প
- সহনীয়
- বেশি
- খুব বেশি

গত ৪ সপ্তাহ সময় কতটুকু শারীরিক ব্যাথা আপনার স্বাভাবিক কাজে (ঘর ও ঘরের বাহীরে) বিঘ্নতা সৃষ্টি করেছে?

- একদম না
- অল্প
- সহনীয়
- বেশি
- খুব বেশি

শক্তি এবং আবেগ:

এই প্রশ্ন হচ্ছে গত ৪ সপ্তাহ সময় আপনার অনুভুতি কেমন ছিল এবং সব কিছু আপনার সাথে হয়েছে কিভাবে। প্রত্যেক প্রশ্নের জন্য, সব চেয়ে বেশি মিলের উত্তরটি বাছাই করুন।

আপনার নিজেকে পুরোপুরি তেজপূর্ণ মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনি কি খুব স্নায়বিক ব্যক্তি?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনি কি এতটাই হতাশাগ্রস্থ হয়েছেন যে কোন কিছুই আপনাকে উতফুল্ল করতে পারেনি ?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার নিজেকে কি শান্ত এবং শান্তিপূর্ণ অনুভূত হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার কি নিজেকে কর্মশক্তিপূর্ণ মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার কি নিজেকে হতাশাগ্রস্থ মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার কি নিজেকে জরাজীর্ণ মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার কি নিজেকে সুখি ব্যক্তি মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

আপনার কি নিজেকে ক্লান্ত মনে হয়েছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- কিছুটা সময়
- সামান্য কিছুটা সময়
- একদমই না

সামাজিক কার্যক্রমঃ

গত ৪ সপ্তাহ সময়, কত সময়, শারীরিক স্বাস্থ্য বা মানসিক সমস্যার কারনে আপনার সামাজিক কার্যকলাপে বাধা সৃষ্টি করেছে?

- সব সময়
- অধিকাংশ সময়
- অনেকটা সময়
- সামান্য কিছুটা সময়
- একদমই না

সাধারণ স্বাস্থ্য:

আপনার জন্য নিম্নলিখিত বিবৃতি প্রতিটি কতটুকু সত্য বা মিথ্যা ?

আমি অন্য মানুষের চেয়ে সহজে অসুস্থ হই।

- সম্পুর্ণ সত্য
- অধিকাংশ সত্য
- জানি না
- অধিকাংশ মিথ্যা
- সম্পুর্ণ মিথ্যা

আমার পরিচিত সবার মত আমি সুস্থ ।

- সম্পুর্ণ সত্য
- অধিকাংশ সত্য
- জানি না
- অধিকাংশ মিথ্যা
- সম্পুর্ণ মিথ্যা

আমি আমার স্বাস্থ্য আরও খারাপ হতে আশা করি।

- সম্পুর্ণ সত্য
- অধিকাংশ সত্য
- জানি না

- অধিকাংশ মিথ্যা
- সম্পুর্ণ মিথ্যা

আমার স্বাস্থ্য চমৎকার।

- সম্পুর্ণ সত্য
- অধিকাংশ সত্য
- জানি না
- অধিকাংশ মিথ্যা
- সম্পুর্ণ মিথ্যা

Permission Letter

September 10, 2015
The Head of the Department
Department of Physiotherapy
CRP, Chapain, Savar, Dhaka-1343

Through: Head of department, Department of physiotherapy, BHPI

Subject: Application for seeking permission for data collection to conduct the study for fulfillment of 4th year of B.Sc. in Physiotherapy course

Sir,

With due respect, I want to state that, I am a student of 4th year B.Sc in Physiotherapy. I am sincerely seeking permission for collecting data from spinal cord injury unit to conduct my research project as the part of my 4th year course curriculum. The title of my research is "effectiveness of group respiratory therapy among the tetraplegic patient with spinal cord injury". Now I am looking for your kind approval to start data collection for research project and I would like to assure that anything of my project will not harmful for the participants.

So, I therefore, hope that you would be kind enough to grant me the permission of collecting data to conduct the research and help me to complete a successful study as a part of my course.

Sincerely yours

Nure Taslima Tarin

Nure Taslima Tarin
4th year, B.Sc. in Physiotherapy
Department of Physiotherapy
Roll no.:02, Session: 2010-2011
BHPI, CRP, Savar, Dhaka-1343.

Forwarded for your kind permission
Shafiq
10.09.15

Mohammad Anwar Hossain
Associate Professor &
Head of Physiotherapy Dept.
CRP, Chapain, Savar, Dhaka-1343

She may be allowed for data collection.
10/09/15

Approved
16/09/15

M.C. Shafiq
Associate Professor & Head of the Department
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Contact with Kazi Indradeep Hasan. CPT, CRP for as a counterpart of the Student collection process

Statistical Probability Table

't' distribution

Table A2.5 Critical values of *t* (related and unrelated *t* tests) at various levels of probability. For your *t* value to be significant at a particular probability level, it should be *equal* to or *larger than* critical values associated with the df in your study (Reproduced from Lindley DV, Scott WF (1984) New Cambridge Elementary Statistical Tables, 10th edn. Cambridge University Press, with permission.)

	Level of significance for one-tailed test					
	.10	.05	.025	.01	.005	.0005
	Level of significance for two-tailed test					
df	.20	.10	.05	.02	.01	.001
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.941
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.859
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.405
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.473	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
∞	1.282	1.645	1.960	2.326	2.576	3.291

NB When there is no exact df use the next lowest number, except for very large dfs (well over 120), when you should use the infinity row. This is marked ∞.