

**STUDY DESIGN USED BY THE STUDENTS OF PHYSIOTHERAPY  
AT BHPI IN THEIR RESEARCH PROJECTS**

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Session: 2012-2013

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**Bangladesh Health Professions Institute(BHPI)**

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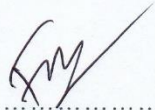
Bangladesh

February-2017

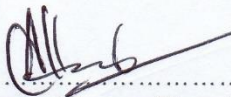
We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled.

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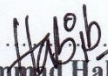
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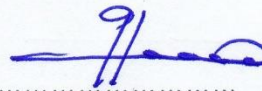
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## DECLARATION

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 from the Department of physiotherapy Bangladesh Health Professions Institute.

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## Acknowledgement

First of all, I am grateful to the Almighty Allah who gave me life and who gives me the ability to complete this project in time with great success. At the same time my thanks towards my parents who constantly encouraged me to carry out this study.

I gratefully acknowledge to my honorable and praiseworthy supervisor **Firoz Ahmed Mamin**, Assistant Professor, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka for his unrelenting effort with excellent guidance and support without which I could not be able to complete this project.

Then I am thankful to my respectable teacher **Md. Obaidul Haque**, Associate Professor and Head of the Department of Physiotherapy, BHPI, CRP, Savar, Dhaka.

I would like to express my gratitude to **Mohammad Anwar Hossain**, Associate Professor and Head of the Department of Physiotherapy, CRP, Savar, Dhaka.

I would like to express my gratitude to **Md. Shofiqul Islam**, Assistant Professor of Physiotherapy Department, BHPI, CRP, Savar for his valuable guidelines and **Mohammad Habibur Rahman**, Assistant Professor of Physiotherapy Department, BHPI, CRP, Savar, Dhaka for his valuable suggestions.

My special thanks for my all classmates, who were giving me valuable suggestion and helping me in different stage of the study that made the work easy, relieve from difficulties and inspired me to work with enthusiasm.

I am thankful to all the staff of the Bangladesh Health Professions Institute (BHPI) Library for their cordial help to find out important books and web address in the computer.

Finally, thanks to all who always are my well-wisher and besides me as friend without any expectation.

## Acronyms

<b>BHPI</b>	: Bangladesh Health Professions Institute
<b>BMRC</b>	: Bangladesh Medical Research Council
<b>CRP</b>	: Centre for the Rehabilitation of the Paralysed
<b>IRB</b>	: Institutional Review Board
<b>MSK</b>	: Musculoskeletal
<b>PT</b>	: Physiotherapy
<b>SCI</b>	: Spinal Cord injury
<b>UGR</b>	: Undergraduate Research
<b>UK</b>	: United Kingdom
<b>VAS</b>	: Visual Analogue Scale
<b>WCPT</b>	: World Confederation for Physical Therapy
<b>WHO</b>	: World Health Organization

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## Abstract

*Purpose:* To identify the study design used by the physiotherapy students at BHPI in their research projects. *Objectives:* To explore the author information, to identify the study design, study area, sampling procedure, statistical analysis, association between study design and study area of the dissertations. *Methodology:* The study was quantitative cross sectional survey. Convenience sampling technique was used to carry out the study. Total sample was 279. The data were collected through using structured questionnaire by observing the dissertations. The area of the study was at BHPI Library of CRP, Savar, Dhaka. Descriptive and inferential both statistics were used for data analysis. *Result:* Investigator found the number of authors were more female rather than male, 84.6% used quantitative paradigm. Commonly used study design are cross sectional 42.3%, experimental 20.1%, quasi experimental 9.3%, qualitative 15.4%. Most commonly used study site as CRP Savar branch (66.7%). Musculo skeletal area was prominent (50%). Population were selected purposively adult (68.1%). Convenient sampling was preferable (59.1%). 78.1% contained self-demonstrate questionnaire, 69.5% descriptive statistics found using by the researcher. Common limitation of a dissertation was time, article and technique. Researcher also showed association between study area and study design. *Conclusion:* The result of dissertation is including the all general variable of research component and showing the trend of doing dissertations. Most of the students used cross sectional study design and selected CRP as study site. For further research standard knowledge and better idea about research term helps this to make a successful dissertation with a great outcomes.

Keyword: Research, Methodology, study design.

**1.1 Background**

Research has a great value to complete many studies including physiotherapy subject also. In many countries students who wants to complete graduation in physiotherapy needed to complete a dissertation. To make a successful career and to graduate, a research project is mandatory for undergraduate physiotherapy students (Adeniyi et al., 2013).

Research is a significant element of modern undergraduate level of education. It is a positive attitude towards development (Al-Hilali et al., 2015).

Research is considered as essential elements for undergraduate medical curriculum. Depending on the level and skill of the student, it may take 6 month to a year to carry out research (Burgoyne et al., 2010).

Research is an activity which updates on the advances and science and new experience of that facts (sheikh et al., 2013).

Research is a process which is used to find out problems by using different type of research design, methodology, making questionnaire, data collection, coding, tabulation, presentation of the data, and analysis of collecting data, hypothesis testing and also using different statistical methods. Researcher should also know all the area which is related to complete a research like software for analyzing data, use of research, quality of the research (Rao, 2016).

Research synthesis have a long history. In 18<sup>th</sup> century James Lind a surgeon faced a report about the prevention and treatment of scurvy. Some decade later a farmer called Arthur Young played a pioneer role and noted that “It is impossible from single experiments, or from a great number, in different lands, separately considered, to deduce a satisfactory proof of the superiority of any method”. Then in 19<sup>th</sup> century, the French statistician developed the method of least squares to solve the problem with combining data. In 20<sup>th</sup> century the science research synthesis began to emerge. A British called Pearson having resource on the effect of vaccine against typhoid where he tried to gather

relevant studies. In 20<sup>th</sup> century has also some examples of research synthesis (Chalmers et al., 2002).

In physiotherapy there is a long history. Before eighteenth century, people were treated by massage, manual therapy technique and hydrotherapy also. Gymnasticon like machines were developed was helpful for treating gout and other joint disease. For the treatment purpose and better practice research was necessary in physiotherapy. The first physiotherapy research was published in the United States in March 1921 in the PT review. In the same year the American Physical Therapy Association (APTA) also organized. In 1940s treatment consisted of exercise, massage, traction, manipulation. Day by day PTs started practice in hospital, orthopedic clinic, rehabilitation centers and medical centers also. For specialization of physical therapy in 1974 the International Federation of Orthopedic Manipulative Therapy was formed (Melnick, 2016).

Physiotherapy is the largest healthcare profession. So research also a beneficial in this education. Nowadays therapists are revealed out paradigms, culture of physiotherapy which is theoretically close aligned with the biomedical framework. A heritage that suggests that physiotherapists have an explanatory model as like to other medical professionals. They have been same work on mind and body (Norris & Allotey, 2008).

Physiotherapy depends on skills and experience. Experience is the most essential component to work in primary care for the graduate physiotherapists around the developed countries. Documentary evidence or clinical education is needed to afford a job (McMahon et al., 2014).

For professional development of physiotherapy every students need to gather knowledge, skills and experience. Practical training is necessary. Physiotherapist needs to develop thinking way, activity and also develop personality. To develop knowledge need to improve common sense and communication sense (Korpi et al., 2014).

There are many universities remaining around both developed and developing countries which have followed movement for undergraduate research. So the students are able to well known as the producers of knowledge. Participating research in undergraduate level thinks as easy and disciplinary learning in higher education (Walkington, 2012).

There is a way to achieve integration of students to engage in learning by research and inquiry. In developed countries, there has been a trend in higher education by engaging students in research to make an integration. Research cycle is not limited stage. Overall it is more common way to require students for making a presentation which is formal. There exists literature review or others point which is ready for feedback. When students have to ready to describe their research proposal, a link appeared between understanding and communication. This is a normal but necessary process to identify their knowledge (Spronken et al., 2013).

In 21th century, higher education are used to deal with novel, complex and problems and make students prepare able to tackle all obstacles. Undergraduate research is the model of research which is beneficial and useful for academic success (Zimbardi & Myatt, 2014).

The Bachelor of Science in Physiotherapy (BPT) course in Bangladesh is provided by Dhaka University, University of Rajshahi and Gono University. The BPT curriculum includes different types of important subjects including research project to complete graduation. This curriculum has designed so that graduate physiotherapists can practice independently and autonomously in their clinical field. In Bangladesh physical therapists are using prefix of Dr and suffix as PT. Still there is no regulatory body for professional physical therapists. Bangladesh Government initiated a combined council named "Therapy and Rehabilitation Council" in this country (Physical therapy education, 2017).

Research is important in physiotherapy sectors. However, there are many challenges and barriers to Physiotherapists for using research, including time restrictions, limited access to research studies, poor confidence in skills to identify and critically appraise research, and inadequate support from colleagues, managers and other health professionals (Dannapfel et al., 2013).

## **1.2 Rationale**

There are many research which is growing high in day by day makes difficulties for clinician to keep knowledge on evidence. In physiotherapy profession, evidence-based practice has been gained gradually over the last decade. Day by day it is gradually difficult in physiotherapy treatment due to change in health care facilities (Nilsen & Bernhardsson, 2013).

Research has documented the effectiveness, service interventions, implemented in educational and other settings. There has been gap between research and practice.

From clinical research many physiotherapist will get experience and effects of handling their patients. Sometimes they get idea about patient's arousal which is unexpected and same times embarrassing. It is disrupting in therapy session (Zier et al., 2012).

Diagnosis is a central element for evidence based practice. Nowadays physiotherapy play a vital role in clinical decision making not by referral or observed previous medical records which is assured by diagnosis a patient. There are many literature based on diagnosis by physiotherapists (Spoto & Collins, 2008).

Physiotherapists have a professional responsibility to move away from assessment and treatment methods which is evidence based. There are some barriers which are included in developing evidence based physiotherapy practice. The barriers are time restrictions, limited access to research, poor confidence in skills to identify and inadequate support from colleagues and other professionals (Nilsen & Bernhardson, 2013).

In undergraduate level a research is self-directed work which is supervised by a supervisor. This type of work gives idea about student judgement and encourages them to make an understanding for what they learn. However it helps students to make better learners. After all, many research has been done on the experiences of the students in conducting research (Unnikrishnan et al., 2014).

In undergraduate level there is research methodology subject and in masters level students need to do dissertation on a topic. So knowledge of research is necessary and compulsory. Physiotherapists are doing research various parts of the world and doing evidence based practice. Research is necessary in Bangladesh because physiotherapists are here keen to use electrotherapy more than manual therapy. Patients are getting

electrotherapy rather than physiotherapy. Physiotherapy should be prescribed and provided by the physiotherapists which is evidence based. Nowadays physiotherapists are engaging in higher education and doing many research.

To complete a Bachelor degree on Physiotherapy course all students should complete a dissertation. During their study period students get chance to learn research and at their final academic year students need to complete a dissertation which is reflect of their learning.

Some Studies was conducted about physiotherapy student's perception, carrier choice attitude, and life view in Australia, Canada and Sweden. In Australia study was done about the perception of graduate physiotherapy students and another one is about the perception of undergraduate physiotherapy students. Research was done about the attitude of novice of physiotherapy student in Sweden and also research was conducted about the ethical view and life view, interprofessional's perception of physiotherapy student. Another research on carrier choice and professional preferences in a group of physiotherapy students was performed in Canada. In Bangladesh no study is done yet about the physiotherapy student's research knowledge. So it's become necessary to find out the trend of Bangladeshi physiotherapy student's research. Because students are the future professional of a profession. This study shows about understanding research of the students as they complete in their undergraduate level.

Research is a common component in undergraduate level in worldwide perspectives. Now it is also included into curriculum. Researcher wanted to conduct the study and wanted to know the information about study methods of research which is done in BHPI which is beneficial for the students and teachers also.

This study is effective to identify about research design, sampling procedure all over characteristics of a research that the undergraduate students are completed in their dissertation. It is also effective to identify student's lacking, eagerness or weakness to complete a research and the common trend of doing the dissertation. Not only had higher education but also in undergraduate level research had a high impact in educational sectors which enhances learning outcomes.

### **1.3 Research question**

What are the common study design used by the students of Physiotherapy at BHPI in their research projects?

## **1.4 Aim of the study**

The aim of the study is to identify the study design used by the students of Physiotherapy at BHPI in their research projects.

## **1.5 Objectives**

### **1.5.1 General objective**

- To find out common study methodologies used by the students.

### **1.5.2 Specific objectives**

- To find out the study designs used by the students;
- To find out the areas of study;
- To find out Sites of study;
- To find out sampling procedures using in the researches;
- To find out the number of participants;
- To find out the data collection materials;
- To find out the data collection methods;
- To find out the statistical analysis;
- Association between study design and study area.



## **1.6 Operational Definition**

### **Research**

Research is a process of steps used to collect and analyze information to increase person's understanding of a topic or issue. It consists of three steps: pose a question, collect data to answer the question, and also present an answer to the question.

Research projects can be used to develop further knowledge on a topic. To test the validity of instruments, procedures, or experiments, research may replicate elements of prior projects or the project as a whole. The primary purposes of basic research are documentation, discovery and interpretation.

### **Methodology**

Methodology is a systematic and theoretical analysis of the methods applied to a field of study. It is the general research strategy that outlines the way in which research is to be undertaken and among other things, identifies the methods to be used in it. These methods, described in the methodology, define the means or modes of data collection or, sometimes, how a specific result is to be calculated.

### **Physiotherapy**

Physical therapy also known as physiotherapy. It is a service which provided by physical therapists to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan.

The service is provided in circumstances where movement and function are threatened by ageing, injury, pain, diseases, disorders, conditions or environmental factors and with the understanding that functional movement is central to what it means to be healthy. Physical therapy involves the interaction between the physical therapist, patients/clients, other health professionals, families, care givers and communities in a process where movement potential is examined/assessed and goals are agreed upon, using knowledge and skills unique to physical therapists.

Learning in University is now on research based. Students study depends on current research. An issue which is need to explore depended on research steps such as idea about problem, finding the method, discussing and contribute knowledge according to research. It is open ended with teacher and the learner (Girgensohn, 2016).

Definitions are used to clarify a topic. But if many types of different definitions for the same terms abound, confusion may occur that they become an obstacle to progress. Research is used to improve health or others by providing a normal framework which is easy to understand by experts and others also (Remme et al., 2010).

But research has also some different types of definition from different types of aspects or view of researchers.

One of the definition of research is given by John W. Creswell, who states that "research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue"(Laurenzi, 2015).

Research is a systematic work which is undertaken to describe, explain, predict and control the observed phenomenon (Unnikrishnan et al., 2014).

Research is a process which is used for collecting, analyzing and also illustrating data to help understand a factor. It is a systemic way which find the objective, managing and communicating the findings with an established frame and also with a guidelines. Research starts with one question which is try to figure out by the researchers (Williams, 2011).

"In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge"- a definition of scientific research which is given by Martyn Shuttleworth in 2008(Rao, 2016).

Undergraduate research (UGR) is an effort. A student needs to contact with teacher or researcher, to inquiry an issue of practical significant. From research in undergraduate level students are able to acquire knowledge of real life problems and issues which is combined with technology (Lewis, 2015).

There are different types of research design for doing a dissertation. Qualitative research is one of them.

Qualitative research can give knowledge about professional practice or evidence-based decision making in clinical and other sectors (Hussein et al., 2014).

Qualitative research is an approach of discovery which enables the researcher to improve the level of detail from high involvement in the real experiences. It involves in useful describing, explaining and also interpreting data which are collected. It is not so structured but builds new theories after formulating description (Williams, 2011).

Qualitative research design provides different approaches to analysis the collected data. Phenomenology is an approach. It also helps in health sector and designed to manage disease by using information of the participant's experience with the disease (Lewis, 2015).

Grounded theory is a practical and flexible approach which provides knowledgeable justification to improve analysis of qualitative research. It is a unique approach to make concepts by utilizing constant comparison. It also maintains a systemic way for analyzing data. Grounded theory has some limitations also. It is a time consuming, tiring and laborious process. Sometimes researcher may avoid methodological errors to complete the paper (Hussein et al., 2014).

In qualitative research, case study is another approach which facilitates exploration with its formula by using data. Data collection and analysis is a concurrent situation. In this method some techniques are followed to analyze data such as pattern matching, linking data propositions, explanation building, time-series analysis, logic models, and cross-case synthesis. To facilitate this method a researcher need to idea about research question and design which are provided (Baxter & Jack, 2008).

Another approach is the ethnography. In this way the researcher tried to observe participants and interpret in culture or other systems. Researcher took Interviews which are too long and need recorders and also need evidence and justification for doing research (Williams, 2011).

In qualitative research content analysis is one of the several methods currently available for analyzing data and interpreting its meaning. This method contains three main phases such as preparation, organization and reporting of the results. Collection, sense, selecting, organizing and creating category of the data are the way of this method (Elo et al., 2014).

Document analysis is particularly useful in qualitative research. It is a descriptive method for a single topic. It serves a variety of purposes of the research (Bowen, 2009).

The most common method of data collection is interview and focus group discussion. Both methods are followed structured interview. It is a quick and easy way to clear certain questions (Gill et al., 2008).

Another common method is Quantitative research. Quantitative research is a theory validation process. It is a process by which theories are validated, refined or invalidated (Nenty, 2009).

Quantitative research originated in the physical sciences. In this research methodology the researcher used mathematical models for data analyzing. The data are numeric and researcher also uses the inquiry method to make an alignment for statistical data collection (Williams, 2011).

Quantitative method is used to test hypotheses, relationships between variables and measure the frequency of observations. This type of method considered more rigorous. Quantitative data can be measured easily. Result is an important part of quantitative study. It provides information about collected data and outcome from statistical analysis. Researcher should conduct with a statistician to take advice and assistance in undertaking analysis (Hoe & Hoare, 2012).

Mixed method is also often used by the researcher. It combines of qualitative and quantitative method. It is an intellectual and practical synthesis based method. Traditionally it is important and a powerful paradigm. It provides information and complete results. It helps to find out useful result (Frels & Onwuegbuzie, 2013).

It is a third choice for the new researchers. It is confusioning and unknown to the students. There are different types of research design specially mixed methods which help to researcher to make a simple research framework according to their purpose (Leech & Onwuegbuzie, 2009).

The most common and easier study design of research is cross sectional study. The most important advantage of cross sectional study is it need not more time and also cheap. Fewer resources are required to run the study. All the measurements on each research are

made at one point in time. The data was collected all at the same time or within a short time frame. A cross sectional design provides a snapshot of the variables included in the study, at one particular point in time (Levin, 2006).

Cross sectional is an observational study which is the exposure and outcome of the participant at the same time. It can be descriptive or analytical. It is an easy method to conduct data and assessing outcomes. It is also limiting in confirming causality (Pandis, 2014).

Cross sectional studies are used to calculate the prevalence and outcome of the given population. This type of study carried out within a short period. This study provide a 'snapshot' of the outcome of the data (Levin, 2006).

Experimental research design defined as observation under control. In this design population are randomly selected. The intervention is launched after selection. Experimental design is the best way to ensure that the treatment group and control group which are assigned into two groups are comparable (Jalil, 2013).

It is a powerful method for understanding different types of relationship in research. In experimental design researcher should include some criteria for evaluations. They make clear decisions which are easy to understand by the reader (Thorson et al., 2012).

During experimental design, researcher randomly select interested population and divided them into treatment group and control group. Both group were same but one group took treatment. Often it was known as randomized control trial. Randomized control trial was high expanded model and required more time (Jalil, 2013).

Quasi experimental study design is another type of design. It mainly works with long lasting treatment. Quasi experiments is by self-selection. All experiments made a difference. It can be explanatory by using theory based treatment or outcome variables or using measurement variables. Statisticians prefer randomized experiment due to well known the differences between both groups. But in true experiments creates biasness (Cook & Beckman, 2010).

After selection of study design a research needs the knowledge of sampling way. Sampling is an important method for statistical analysis which is applied on selected population due to conduct a research or to learn something. It is used for huge data.

Simple random sampling (SRS) is the most common method which is appeared in the literature (Meng, 2013).

Random sampling is a way to select case from the list. It mainly used social survey. Convenient sampling used when sample interested. It is used in quantitative research rather than qualitative. It makes problem when samples are random. Purposive sampling are nonrandom method which is represent final sample. It used in various cases. But it selects a single cases and processes to give finishing of a sample (Robinson, 2014).

Convenient sampling is also a common method. It is a non random sampling technique. It is an affordable, easy, available method. The target population are homogenous and collect information easily. The main disadvantage of this method is biasness due to self-selection. Purposive sampling also an important method. This will be used on study purpose with the expectation that each participant will provide rich information (Etikan et al., 2016).

Data is a material which is collected, observed or created for the purpose of analysis to produce the original results. Every researcher need to conduct the research working with data. This data will depend on research content. If research contains on humanities scholar, data will be primary sources or texts. If research contains on social science, data will be in terms of survey results, interviews and statistics. Data can be both qualitative and quantitative. Research data needs to be cared because it helps to validate the research. Data are exclusive pieces of information. Data can be used both in singular and plural form of the word. Data files stores the database information. It can be generated for different purposes and processes. It also has some categories (Meng, 2013).

Before collecting data, every researcher need to select questionnaire. In several types of questionnaire followed by the researcher. Open ended questioning is one of them. It is more difficult to analyze. Open ended responses is providing a direct view of the individual's own thinking. In this type of question researcher need to coding from own theoretical expectations (Roberts et al., 2014).

Another type of questioning is close ended method. It is a method which helps the researcher to collect data easily, quickly. It cannot make any explanation or description of the participants. Researchers have not idea about participant's answers. They set answers as yes or no. So in this method potential responses is low. Sometimes researchers used mixed method where both explanation and setting of answer produced for the participants (Boynton & Greenhalgh, 2004).

After completing data collection need various statistical analysis for data analysis. The collection of statistics known as survival analysis. It uses all information up to the given time and does not missing any information. All of the popular methods were used in clinical aspects to evaluate their effectiveness. This method helps to analyze many objectives (Kul, 2010).

Statistics is a term which is used for sample of research and the ultimate goal is to apply the results from the sample to generalize population. For statistical analysis need to idea about the study design, sample and preferable statistical test. It is a systemic approach to examine a statistical part of an article. It is not necessary to understand working procedure but need some idea about the concepts (Winters et al., 2010).

There are two types of statistics used in research. Descriptive & inferential analysis method.

Descriptive is a common statistics in all researches. It mainly deals with measurement of different aspects of population. Sometimes it measures mean, median, standard deviation, different types of scale (Bickel & Lehmann, 2012).

Inferential statistics is universal practice in all types of research. It is mostly used in educational or social science related researches (Gibbs et al., 2017).

Physiotherapy, another term is physical therapy. Formally described physical therapy as providing services to people and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan (World Confederation for Physical Therapy, 2017).

Research is an important component. It is necessary for evidence based physiotherapy practice. In the 1990s evidence-based practice movement occurred which give idea about research based physiotherapy practice. (Dannapfel et al., 2013).

For advances in physiotherapy, a survey concerns about knowledge, behavior, attitudes and prerequisites for evidence based practice. But survey found that many of the physiotherapists are depended on self-knowledge rather than evidence based practice.

It happens due to lack of time and interest. Higher level of education also affected by this type of barrier (Sundelin, 2010).

But now evidence-based physiotherapy practice is a pressing issue which is validate in health care. Individual clinicians are struggled to maintain balance with increasing amount of research.

Research gives information about physiotherapy practice which requires learning new skills to identify research and its applicability into clinical practice. An experienced professional has idea about EBP and believe that it can improve quality of the patients (Heiwe et al., 2011).

Physiotherapy which is evidence based should depend on high quality, clinical research, patient preferences and also evaluate difference between employment and education sectors (Nilsagard & Lohse, 2010).

Due to natural concept of development from the evidence based medicine movement, use of research evidence in public health has promoted. Research is also important for clinical excellence. Evidence suggests that population respond is different to identical interventions (Orton et al., 2011).

For several studies, to find out relevant study research is a strategy. They are selected from review objects or index key articles (Orton et al., 2011).

Learning and teaching in the clinical education of health science is a multiple area which is under researched. This way can synthesize learning outcomes in the literature (Secomb, 2006).

A curriculum which gives students an opportunity to form a professional. Professional must be need to competent in the field of health & human. It is necessary for professional to have basic idea, understanding literature knowledge of technical language about health sectors. A research process has a favorable impact on undergraduate by their self-



thinking over a concept and making an ending on depends on available evidence (Petrella & Jung, 2008).

Undergraduate research gives opportunity students to understand published works, area of interest and gives idea about career as researcher. Students are able to find their passion, investigating knowledge, original study and understanding justification of other's research. UGR also provide a mentor which is helpful to improve communication in undergraduate level (Madan & Teitge, 2013).

A research always be maintain a high quality to produce knowledge and inform action which is applicable outside the research setting and also out of the participants of the research. The main implementation of research to implicate for policy and project. It is also necessary to overcome barriers of any findings (Green et al., 2014).

In undergraduate education it is necessary to get knowledge of awareness of patient safety. WHO suggested training for patient safety? Research on this topic is more effective and also skilled (Hayes et al., 2014).

Research projects help medical students to develop their skills, self-directed learning and also encourage for higher education (Guyen & Uysal, 2010).

It promotes judgment and understanding of the students. It helps to make expert learners (Unnikrishnan et al., 2014).

Patients who take care in research active hospitals have better health outcomes because the research active hospitals are able to offer more treatment and opportunities which included in clinical perspectives. It provides a rewarding career and beneficial to the patients (Young, 2015).

There is individuality among evidence system and classification of evidence which is focused on study design. In health care systems evidence ensure practice guidelines, decisions and assessment of a body. Sometimes it makes judgement of the purpose (Owens et al., 2010).

The major aim of the study was to answer the question of, ‘Study design used by the Physiotherapy students at BHPI in their research projects’. This research setting in which the study was carried out including study design, study population, sampling method, instrumentation and data collection etc.

### **3.1 Study design**

The researcher was used a quantitative cross sectional survey model to explore the study designs which were used by the students. A quantitative research design was used so that there were large number of participants are involved and therefore it was easy to collect data. Data was collected on individual characteristics, including others questionnaire. In this way this study provides a snapshot of the characteristics associated with it.

The focus of the study was to identify study methodology of previous research. It was conducted at one time point where estimate the frequencies of research methods.

### **3.2 Study area**

Researcher was chosen the Library of BHPI at CRP, Savar as a venue so that the researcher could obtain an appropriate sample with all the complete dissertation. The researcher thought that it was the most suitable place because there had the availability of the desired sample.

### **3.3 Study population**

A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation. So all the complete dissertation were the target population and were those which were remaining in the library within the given time according to the inclusion and exclusion criteria.

### **3.4 Sampling technique**

The investigator used the convenient sampling technique because considering the inclusion – exclusion criteria and the number of samples. This technique was more feasible, less time consuming for the investigator to obtain relevant information.

### **3.5 Study sample**

Sample selection depends on the research question and the researcher's choice of location and characteristics. The sample was collected from the Library of BHPI. For this study, the researcher was selected the dissertation according to the inclusion and exclusion criteria.

### **3.6 Sample size**

The researcher was determined to take samples as large ranging but within given time and number of sample was selected 279 maintaining the inclusion and exclusion criteria and within the scarcity of time.

### **3.7 Inclusion criteria**

- Dissertation which are completed within 2006 to 2016.
- Those dissertation which were completed by physiotherapy students.

### **3.8 Exclusion criteria**

- Not needed to observe occupational or others books.
- Also excluded which dissertation are not found in the library.
- Books which were not eligible for reading.

### **3.9 Data collection tools**

Data collection tools were structured Questionnaire (self-demonstrated), Pen, Pencil, Paper, File and SPSS 20.0 versions software for collecting and interpreting data in this study.

### **3.10 Data Collection procedure**

Data was collected by using a self-demonstrate structured questionnaire paper set, with pilot study which was developed by the investigators with the guideline of the supervisor and conducting an observation to collect information.

The questionnaire sought information on identification demographic information, research related information.

### **3.11 Data analysis**

Descriptive and inferential statistics were used for data analysis. Data was calculated in frequency and presented by using table by SPSS software version 20. In inferential statistics Chi Square test used to show association between variables.

#### **3.11.1 Chi Square test**

Chi square  $\chi^2$  test is a nonparametric test of statistical significance for bivariate tabular analysis with a contingency table. Chi square helps us analyze data that come in the form of counts. This test can be applied to nominal or categorical data. The most common application for chi square is to determine whether or not a significant difference exists between the observed counts of cases falling into each category and the expected counts based on the null hypothesis. It is often used to compare two proportions.

#### **3.11.2 Situations for Chi Square test**

- Test of association between two events in binomial samples.
- Test of association between two events in multinomial samples.

#### **3.11.3 Assumptions for Chi Square test**

- The data must be in the form of frequencies counted in each of a set of categories.
- The total numbers observed must exceed 20.
- The expected frequency in any one fraction must not normally be less than 5.

- All the observations must be independent of each other. In other words, one observation must not have an influence upon another observations.

### 3.11.4 Calculation of ( $x^2$ ) Statistic

Chi square is the sum of the squared differences between observed (O) and the expected (E) data divided by the expected (E) data in all possible categories.

In contingency table problems, writer creates an index that computes for each outcome cell,

$$\frac{(\text{Observed count} - \text{Expected count})^2}{\text{Expected count}}$$

If O stands for observed count and E for expected count, the mathematical notation the formula looks like this:

$$x^2 = \sum_{i=1}^k \frac{(O - E)^2}{E}$$

### 3.12 Ethical consideration

A research proposal was submitted to Institutional Review Board (IRB) of Bangladesh Health Professions Institute for being approval. At first the researcher was applying for official permission for the study from the head of the Physiotherapy Department of CRP. The Institutional Review Board (IRB) checked the proposal then the investigator started the study.

The investigator was followed the guidelines given by ethical review committee according to rules and guidelines of World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC).

The researcher took the permission from the academic authorities and also got permission from the research supervisor to conduct this study. The questionnaire was developed and approved by supervisor of the researcher. Each copy was filled by researcher herself. All the data was reviewed in strict secure and maintained confidentiality.

### **3.13 Rigor**

During the period of data collection and analysis, researcher always tried not to influence the process by her own perspectives, values and biases. When conducting the study the researcher took help from the supervisor.

### **3.14 Study period**

All the data was collected and completed by the researcher herself by observing the complete dissertation using a self-mediated structured questionnaire. There was taken time for data collection about 4 weeks.

The aim of the study was to explore the finding of the study design used by the students of Physiotherapy at BHPI in their research projects. Data were numerically coded and analysis the data by using the SPSS 20.0 version software program. The data was analyzed by descriptive statistics and calculated as percentages and presented by using table. In this study there were total 279 research projects.

#### 4. 1: Information about the Authors

Within 10 years of time there was total 279 dissertations, among them 147 (52.7%) completed by female authors and 132 (47.3%) completed by male authors.

**Table-1: Information about the Authors**

Passing year	Male Number (%)	Female Number (%)
2006	19 (65.5)	10 (34.5)
2007	19 (63.4)	11 (36.6)
2008	5 (31.3)	11 (68.7)
2009	12 (52.2)	11 (47.8)
2011	14 (53.8)	12 (46.2)
2012	14 (60.8)	9 (39.2)
2013	19 (59.3)	13 (40.7)
2014	8 (25.0)	24 (75.0)
2015	13 (40.6)	19 (59.4)
2016	9 (25.0)	27 (75.0)

## 4.2: Distribution of the study paradigm and design

Among 279 dissertations, most of the dissertations followed quantitative paradigm. Different types of study design followed in the dissertations. The frequency of using study design showed in Table-2.

**Table-2: Distribution of the study paradigm and design**

<b>Variables</b>	<b>Number</b>	<b>Percent (%)</b>
<b>Study paradigm</b>		
Qualitative	43	15.4
Quantitative	236	84.6
<b>Study design</b>		
Experimental	56	20.1
Quasi-experimental	26	9.3
Correlational	2	0.7
Cross sectional study	118	42.3
Case control study	6	2.2
Retrospective study	28	10.1
Qualitative study	43	15.4



### 4.3 Table-3: Distribution of study site and area

Among the 279 dissertations mainly desired site as CRP, Savar and area as musculoskeletal area. The statistics of the others information about study site and area distributed in Table-3.

**Table-3: Distribution of study site and area**

<b>Variables</b>	<b>Number</b>	<b>Percent (%)</b>
<b>Study site within BHPI</b>		
Within BHPI	2	0.7
<b>Study site within CRP( Savar) -</b>		
Within CRP (Savar)	7	2.5
Msk unit	91	32.6
Neurology unit	22	7.9
SCI unit	38	13.6
Pediatric Unit	20	7.2
Others	6	2.2
<b>Study site within CRP(Mirpur) -</b>		
Within CRP (Mirpur)	4	1.4
Msk unit	18	6.5
Neurology unit	3	1.1
Pediatric Unit	1	0.4
Others	2	0.7
<b>Study site (others) without CRP -</b>		
Within Savar	35	12.5
Within Dhaka	45	16.1
Others	18	6.5
<b>Study area -</b>		
Musculo skeletal unit	140	50.2
SCI unit	51	18.2
Pediatric unit	19	6.8
Neurology unit	24	8.6
Cardio pulmonary	3	1.1
Sports & fitness	11	3.9
Others	31	11.1

Foot Note: Msk unit-Musculoskeletal unit; SCI-Spinal cord injury.

#### 4.4: Information of population

All of the 279 research projects different types of population and based on age group for participants also which was given in Table-4.

**Table-4: Information of population**

<b>Variables</b>	<b>Frequency</b>	<b>Percent (%)</b>
General population	33	11.8
Teachers	1	0.4
Students	3	1.1
Neck pain	16	5.7
LBP	27	9.7
OA	19	6.8
Stroke	21	7.5
SCI	46	16.5
CP	11	3.9
Documentation	5	1.8
Others	60	21.5
Sports people	11	3.9
Physiotherapist	26	9.3
<b>Types of participant based on age group</b>		
Children	19	6.8
Adult	162	58.1
Elderly people	6	2.2
Both adult and elderly	61	21.9
Not mention clearly	31	11.1

Foot Note: LBP-Low back pain; OA-Osteoarthritis; SCI-Spinal cord Injury; CP-Cerebral palsy.

#### 4.5: Distribution of sampling procedure

Among 279 research, most of the authors used convenient sampling technique. Others technique also followed for collecting data which was given in Table -5.

**Table-5: Distribution of sampling procedure**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
Simple random sampling	43	15.4
Systemic random sampling	3	1.1
Convenient sampling	165	59.1
Purposive sampling	65	23.3
Others	3	1.1

#### 4.6: Tools used for data collection

Among 279 research 78.1 % (219) used a questionnaire developed by the researcher.7.9% (22) were selected previously validated questionnaire. Others information given in the Table-6.

**Table-6: Tools used for data collection**

<b>Variable</b>	<b>Number</b>	<b>Percent (%)</b>
<b>Materials of data collection</b>		
Questionnaire developed by the researcher	219	78.1
Previously validated questionnaire	22	7.9
No questionnaire used	38	13.6
<b>Structure of the questionnaire—</b>		
Close ended	61	21.9
Semi structure	49	17.6
Open ended	7	2.5
Mixed type	54	19.4
<b>Instrument—</b>		
Yes	86	30.5
No	193	69.2
<b>Pain measurement tools-</b>		
VAS	62	22.2
NPRS	11	3.9
<b>Functional measurement tools—</b>		
FIMS	13	4.7
Algofunctional Index	1	0.4
GMFS	4	1.4
<b>ROM measurement tools—</b>		
Oxford muscle power	5	1.8
Goniometer	21	7.5
<b>Others materials used—</b>		
Yes	72	25.8
No	207	74.2
<b>Method of data collection-</b>		
Face to face interview	183	65.6
Observation	15	5.4
Experiment	81	29.0
<b>Blinding-</b>		
Single blinding	30	10.8
Double blinding	6	2.2

#### 4.7: Information of statistical analysis

Most of the students of BHPI were followed 69.5 % (194) descriptive analysis, 30.5% (85) inferential analysis in their research projects. All the information about statistical analysis of the dissertations given in the Table-7.

**Table-7: Information of statistical analysis**

<b>Variables</b>	<b>Number</b>	<b>Percent (%)</b>
<b>Statistical analysis-</b>		
Descriptive	194	69.5
Inferential	85	30.5
<b>If inferential statistics used—</b>		
Parametric test	65	23.3
Non parametric test	14	5.0
Both parametric & non parametric test	5	1.8
<b>If parametric test used</b>		
Unpaired t test	46	16.5
Paired t test	24	8.6
<b>If non parametric test used</b>		
Mann-Whitney U test	20	7.2
<b>Types of data</b>		
Both nominal & ordinal	199	71.4
Both interval & ratio	58	20.8
Interval	3	1.1
Ratio	19	6.8

#### 4.8.1: Distribution between study area & study design

Among all 279 researches, there were found association between study design and study area. About 37.9% study on cross sectional study, 20.0% on experimental, 9.9% quasi experimental, 0.7% co relational, 2.0% case control, qualitative 15.0% and 14.5% others design followed to complete dissertation.

**Table-8: Distribution between study area & study design**

Study Design	Msk	Neuro -logy	SCI	Pediatric	Sports	Cardio Pulmonary	Others	Total (%)
Experimental	40	4	4	3	2	1	2	56 (20%)
Quasi experimental	16	2	6	2	-	-	-	26 (9.9%)
Co relational Study	2	-	-	-	-	-	-	2 (0.7%)
Cross Sectional Study	53	11	26	5	4	1	6	106 (37.9%)
Case Control Study	6	-	-	-	-	-	-	6 (2%)
Others	16	3	3	2	4	-	13	41 (15%)
Qualitative Study	7	4	12	7	1	1	10	42 (14.5%)
<b>Total</b>	140	24	51	19	11	3	31	279

#### 4.8.2: Association between study area & study design

**Table-9: Association between study area & study design**

	Chi-Square	P-value
Study design and study area	94.939	0.001

This observed Chi-square value was 94.939 and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was strong association between study design and study area of the dissertations.

The researcher aim was to explore the study design used by the physiotherapy students at BHPI in their research projects. A variety of methodology had been found from the selected samples whether it is designed by information of author, study design, population, sampling and statistical outcomes. Study design refers those features or factors which are responsible to complete a dissertation or research project.

This was a cross sectional type of study where the analysis was done by the SPSS 20 version. Among the 279 research projects 47.3% (132) were male and 52.7% (147) were female author. Female students were more than in male. All of them completed their Bachelor course by doing a dissertation.

Undergraduate medical research showed that among the 317 students 58% (184) of them were female and 42% (133) of them were male ( Burgoyne et al., 2010).

In a Saudi Arabian research explained that for a research project they had 520 students where 69.3% (278) were female and 30.7% (242) were male (Al-Hilali et al., 2016). Another research on medical students showed that among the 122 students 46% (56) were female and 54% (67) were male (Sheikh et al., 2013).

Between the paradigms of research qualitative is a preferable method. In BHPI physiotherapy students are also used qualitative method. Among the 279 research projects only 15.4% (43) are used qualitative paradigm in their research.

A health care literature stated that qualitative method is a category of publication. But many of them used as sub method. It forms as primary method. In 53% of article used primary method. It's a wide variety of evidence by using this common method. Sometimes it is used for testing or method of analysis for another form of model. It often forms as a pioneer to development quantitative research (Brailsford et al., 2009).

Another research showed a systemic review where 18 studies were included. Among them 15 were qualitative studies. They mainly used mixed method. It was a decision making, varied setting, methodological assessment resolved (Orton et al., 2011).

A Swedish research on physiotherapist also used qualitative method to clear their perception (Dannapfel et al., 2013).



Quantitative method is another study paradigm. 84.6% (236) were used this method from 279 participants. It's most useful method where wider sample was used. Descriptive, correlational, observational, survey, experimental and comparative all are under quantitative method (Williams, 2011).

Quantitative articles were mostly publicized during this years (2008 to 2012). 54% of quantitative articles appeared during this time. The researcher of Asia have begun to use this method. They were interested in this method (Hallinger & Chen, 2015).

This article provided an overview of statistics which is easier, familiar, understanding, reliable within quantitative research (Hoe & Hoare, 2013).

The students of BHPI used mostly the quantitative method because it is easier, understanding, used by the senior. In BHPI students followed variable study design to conduct their dissertation. Among different types of design they used mostly experimental 20.1% (56), Quasi-experimental 9.3% (26), correlational 0.7% (2), cross sectional study 42.3% (118), case control study 2.2% (6), Retrospective study 10.1% (28) and qualitative study 15.4% (43) design.

One of the Nigerian research profile stated that the students used study design as mostly Cross sectional survey 39.9% (345), Case control studies 0.8% (7), Cohort studies 0.3% (3), Correlation 4.7% (41), Longitudinal 0.2% (1), Quasi experimental 7.2% (61), Experimental 20.8% (180), Not indicated 23.0% (199) among 864 research projects (Adeniyi et al., 2013).

Egypt research that conduct on medical undergraduate contribution worked with 25,152 publications. Reports on it showed that 44.1% experimental work among one fourth of total publication. Then secondly used cross sectional study design 14.2% among one fourth of the publication (Gouda et al., 2013).

An explanatory change increasing in medical student's research. The most common articles used in cross sectional study 13.4% (47), case control 11.7% (41), cohort studies 10.6% (37) and others 12.3% (43) design (Wickramasinghe et al., 2013)

There are many design for doing a research. Among all systemic review and meta-analysis are the different types which are important in health care system. This type of design used to develop clinical practice guidelines and also keep update in this area. Most of the medical research followed this method. Systemic review is helpful to justify

research, finding the direction, value of the work and clarify of the report. But all readers are not able to assess it (Moher et al., 2010).

Although it is a way of design which is worldwide accepted but in BHPI students are not use this type of method. There was no research in this years which is followed systemic review or meta-analysis. Because it needs more time than others.

Study site is the part of a research where students selected to collect data according to their selected topics. About BHPI physiotherapy students had done their studies within CRP both Savar and Mirpur branch and others site also.0.7% (2) within BHPI, 2.5% (7) within CRP at Savar branch,32.6% (91) in Musculo skeletal unit,7.9 % (22) in Neurology unit,13.6 % (38) in SCI unit,7.2 % (20) in Pediatric unit,2.2% (6) in others unit of Savar branch.

Others part contains Prosthesis and Orthosis department, Ponseti unit, Mary Taylor school. From CRP Mirpur branch students used the study site 1.4% (4) within CRP Mirpur,6.5% (18) in Musculo skeletal unit,1.1% (3) in Neurology unit,0.4% (1) in Pediatric unit,0.7% (2) in others site of Mirpur branch.

In Mirpur branch has contained others part which is mentioned as Gynecological unit. The students also preferred to do study outside of CRP. So as their wish and topic related site 12.5% (35) within Savar, 16.1% (45) within Dhaka, and 6.5% (18) others were included.64.9% (181) were not mention part in outside of CRP.

Within Savar explained about several institute, hospital, bank, Dairy firm and so on. Within Dhaka contained the site of terminal, hospital, bank etc.

A Nigerian research declared that most of the research of their country choice in a reliable place. About 56.6% (489) within the institute alone, 31.2% (269) within the city alone,7.6% (66) within the state,4.6% (40) within Nigeria,0 % outside of Nigeria whereas total 864 research included (Adeniyi et al.,2013).

Students preferred to do research within the residential location rather than to travel anywhere. Because it is a cost effective and time consuming process (Vega & Reynolds-Feighan, 2009).

A study area is geography for which data is analyzed in a report or map. There were some classified area which have significant in research area. Among 279 research projects 50.2% (140) held in musculoskeletal unit. Half of the research conducted in musculoskeletal area. In neurology unit study occurred 8.6 % (24).SCI unit was a study area also and it covered 18.3 % (51) study area.

In pediatric unit mostly occurred 6.8% (19) area, sports and fitness area covered 3.9% (11), cardiopulmonary covered 1.1% (3) and others covered 11.1 % (31) area. Study area which mention 'others' that contained perception, gynecology, post-partum women and care giver and so on.

In a research showed that they count down of mostly used study area or research location whereas 16.0% (138) neurology, 21.4% (185) orthopedics, 4.4% (38) pediatrics, 3.6% (31)obstetrics and gynaecology,8.3% (72) ergonomics,14.2% (123) sports and fitness,9.5% (82) cardiopulmonary,22.6% (195) others among the 864 studies (Adeniyi et al.,2013).

Population is the component where researcher collects data. All of the 279 research projects 11.8 % (33) were general population,0.4% (1) teachers,1.1% (3) students,5.7% (16) neck pain,9.7% (27) LBP, 6.8% (19) OA, 7.5% (21) stroke, 16.5% (46) SCI, 3.9% (11) CP, 1.8% (5) documentation, 3.9% (11) sports people 9.3% (26) physiotherapist, 21.5% (60) others. In the others category contained ankle sprain, perception, pregnant women and so on.

An Australian research stated the way of teaching which is helpful to develop competent practitioner in the community. As it works with the teaching process so they selected physiotherapy students. They selected this area and adult students to collect data (Milanese et al., 2013).

In BHPI students were prefer to do research in the institute area due to easy way to collect data, reliable patients, no funding problem, others help from the teacher, senior or friends.

A research of UK conducted stroke population for the research purpose. Every research should select population on the basis of research title (Winward et al., 2009).

Population had taken for the purpose of the research. Most of the participants were adult 58.1%(162),children 6.8% (19),elderly people 2.2 % (6),both adult and elderly 21.9% (61).In some research could not give clear information about the participant age group.11.1% (31) were unknown.

In a research stated that in their research profile they found 38.8% patients, 60.1% healthy individuals and 1.2 % non-human samples among 864 research. On the basis of age distribution 11.6 % were children, 88.4 % were adults (Adeniyi et al., 2013).

In BHPI students were collecting data mostly adult patient. Young people are helpful because students can easily understand the knowledge, patient's need of young people. They are not so boring and preferred population group by the students. Elderly people and children always not cooperate with the researchers.

Sample size is selected from population. Among 279 research showed that expected sample size maximum 700 and minimum 1.

A research showed that their survey on research found that above minimally determined sample size was 3.1% (27), exactly minimally determined sample size was 4.1%(35),below minimally determined sample size 2.4%(21),Sample size not determined 90.4% (781) (Adeniyi et al.,2013).

A Swedish research conducted research with physiotherapist. Their expected sample size and desire sample size were 45(Dannapfel et al., 2013).

An undergraduate medical research demonstrated their expected sample size had not found and exactly determined sample size was 317 (Burgoyne et al., 2010).

In BHPI students could not maintain proper sample size. They used minimally determined sample size to fulfill their dissertation. Due to short time, lack of resources, proper knowledge of research, difficulty to understand questionnaire students could not take expected sample size.

Among 279 research, most of them used convenient sampling technique. Category wise simple random sampling 15.4% (43), systemic random sampling 1.1% (3), convenient

sampling 59.1% (165), purposive sampling 23.3% (65), others 1.1 % ( 3).Snow balling was also used for sampling.

In medical research, to find out barriers or facilitation Researcher preferred convenient sampling (Unnikrishnan et al., 2014).

Both convenience and purposive sampling techniques are important in research. But convenience sampling is used in qualitative and quantitative studies. Purposive sampling used mainly in qualitative studies. In convenience sampling ensured that the sample which was drawn from the population represented knowledge which was gained. In purposive sampling obtained understanding by continuing to sample. Every technique provides information and value of the study (Etikan et al., 2016).

As like other researcher the Students of BHPI also used convenient sampling technique. They used different types of technique according to their dissertation.

Materials for data collection included instrument, previously validated questionnaire. Among 279 research 78.1 % (219) used a questionnaire developed by the researcher.7.9% (22) were selected previously validated questionnaire.13.6 % ( 38) could not use any questionnaire. As they do experiment or using scale. A semi structure questionnaire used to collect data in medical research. Perception, limitation, barriers can be identified by this types of questionnaire (Unnikrishann et al., 2014).

Questionnaires were developed specifically for the study where including attitudes towards patient safety. Open ended question also used to identify comments and improvement (Hayes et al., 2014).

Another research used a feedback questionnaire where Linkart-type five-point scale used. It was developed on the basis of academic, skills and impact of carrier (Guyen & Uysal, 2011).

After developed questionnaire needed to translate the questionnaire into own language as it is easy to understand. Most of the questionnaire translated into Bangla. 4.7% (13) were cultural validated because they are previously validated.29.4 % (82) were not mention about the translation.

In an article of UK stated that the physiotherapist used a self-administered questionnaire which was designed by nine physiotherapist. By using this questionnaire they tried to find out interest, diagnostic criteria, result of investigation and management of the condition (Hanchard et al., 2011).

Every questionnaire followed structure to collect data. 21.9% (61) were used close ended, 17.6% (49) were semi structure, 2.5 % (7) were open ended, 19.4% (54) were mixed type and 38.7 % (108) were not mention which structure followed.

In an article of UK used close ended questions for frequency analysis and open ended questions for content analysis (Hanchard et al., 2011).

They were also used previously validated tools and sometimes scale. For data collection researcher used some instrument. 22.2 % (62) used VAS scale, 3.9 % (11) used NPR scale, for Functional measurement FIMS used 4.7% (13), Algofunctional index 0.4 % (1) used, 1.4% (4) were used GMFS. For ROM measurement oxford muscle power 1.8 % (5), goniometer 7.5% (21) used. There are some others where some scale or assessment or others type used 25.8 % (72).

In BHPI students were mainly used assessment, soap note, discharge note, Chailey sitting ability scale, 10minutes walk test, TUG test, Berg balance scale, BMI, Wall scale for height, knee osteoarthritis score, Mobility scale, Spirometry use, Roland-Morris disability scale, WOMAC scale, ASIA scale, Asworth scale for collecting data on research purpose.

An article stated that to conduct the research they used different types of instrument as VAS, WOMAC function, WOMAC stiffness (Harmer et al., 2009).

Most of the researcher used self-demonstrated questionnaire which was developed according to their research purpose. In BHPI the students also used self-demonstrated questionnaire with the help of their supervisor.

There are some methods for data collection. 65.6 % (183) face to face interview, 5.4 % (15) observation and 29 % (81) experiment.

In a research stated that method of data collection verify as Personal interview 2.0%, Observation 56.0%, Questionnaire 36.5% Focus group discussion 0.1%, Secondary data 5% (Adeniyi et al., 2013).

To conduct a research there are two ways of collecting data. For human scientific research the interview has main procedure. To collect about a phenomenon firstly used traditional method face to face interview or written or experiment something. To get accurate information face to face interview is reliable method (Englander, 2012).

Interview is highly used method for collecting data in qualitative research. It helps to describe the understanding, interpretation of respect, needs, experience, and thinking of the sample (Anyan, 2013).

In BHPI students also followed face to face interview to collect data for their research projects. It is an easy way to collect data.

Mostly blinding was not mention. 10.8 % (30) were single blinded, 2.2 % (6) were double blinded and 87.1 % (243) were not mention.

An article showed that physiotherapy rehabilitation after total knee replacement surgery. It was an experimental study and single blinded where assessor was blind. It was important for the study (Harmer et al., 2009).

Another article also stated that patients whom participated in research project has idea about the approaches. Clinicians didn't involve but they have also known about the intervention. Researcher will blinded until complete the assessment and data analyses (Hurley et al., 2009).

Students of BHPI followed single blinded and sometimes double blinded method. But most of the experimental research could not mention about blinding.

Most of the students of BHPI were followed 69.5 % (194) descriptive analysis, 30.5% (85) inferential analysis in their research projects. When inferential statistics used need parametric test. Among 279 there used parametric test 23.3 % (65), non parametric 5.0% (14), both parametric and non parametric test found 1.8 % (5). If non parametric test 7.2 % (20) used Mann-Whitney test. Data used mainly both nominal and ordinal (68.5%, 191), in experimental research used interval & ratio data (20.8%, 58).

Most of the research analyzed by descriptive statistics. A medical research statistical used that descriptive statistics, ANOVA testis done to bring out the outcome (Güven & Uysal, 2011).

In a research of United States stated that over half of research used inferential statistics in educational research within two years. It was helpful for meaning, understanding and knowing the trends (Gibbs et al., 2017).

Another research on student perspective used descriptive statistics, also used Kolmogory Smirnov statistics, Mann-Whitney U test and t test, Chi Square test to improve research skills, determine student's motivation on research (Burgoyne et al., 2010).

There are many risk factors which are responsible for musculoskeletal problem. Age, sex, positioning, psychological stress all are the risk factors. To identify this musculoskeletal problems researcher used mainly cross sectional study. Chi-square test also used to comparison any factors. Highly prevalence has been shown by cross sectional study (Korkmaz et al., 2011).

Among all 279 researches, there were found association between study design and study area. The most common design was cross sectional study. The students preferred to the musculoskeletal area. In musculoskeletal area the cross sectional method followed 53, experimental 4, quasi experimental 16, correlational 2, case control 6, qualitative 7, others 16 projects. Most of the dissertation followed cross sectional method. About 37.9% study on cross sectional study, 20.0% on experimental, 9.9% quasi experimental, 0.7% co relational, 2.0% case control, qualitative 15.0% and 14.5% others design followed to complete dissertation. There were some others condition like gynecology, prosthesis & orthosis, school, Physiotherapists. They are followed the cross sectional method 6, experimental 2, qualitative 10, others 13 projects.

A Canadian study stated that musculoskeletal pain due to using device which was also a cross sectional study. It is easier to maintain cross sectional study for musculoskeletal area (Berolo et al., 2011).

There was another study of Netherland showed the association between rheumatoid arthritis and type 2 diabetes mellitus which works as risk factors for cardio vascular



disease. It was also musculoskeletal area and research followed the cross sectional study (Van Halm et al., 2009).

In this research, researcher used Chi square test to show association between study design and study area where Chi square value was 94.939 and P value was 0.001(<0.05) which was significant.

In an undergraduate medical research showed use of different types of test for statistical analysis. In this article descriptive statistics used through means, medians and bar charts. It also used Mann Whitney U and Kruskal Wallis tests. To find out awareness of research activities also used Chi square test (Burgoyne et al., 2010).

Complete accuracy is not possible in any research so that some limitations may exist. Regarding this study, there were some limitations or barriers to consider the result of the study. Firstly, samples were collected only from the selected area at BHPI in Centre for the Rehabilitation of the paralyzed (CRP). So the result of the study could not be generalized to the whole population in Bangladesh. The research project was done by an undergraduate student and it was first research project for her. So the limited experience with techniques and strategies in term 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 honorable teacher. The researcher used a self-demonstrate questionnaire, there was some questions that was not necessary. So the researcher had to cut some questions from data.

### **6.1 Conclusion**

Bangladesh is a developing country among the whole world wide. Research is a fundamental component for undergraduate level in Bangladesh. As developing medical profession, it is the duty of physiotherapist working in the Bangladesh, should make some strong evidence, which will improve strength and skill for the physiotherapist to practice with the patient.

This study was aimed to find out the study design used by the physiotherapy students at BHPI in their research projects. Research is a new standard and internationally used tool for evidence based practice or maintain any health related condition.

For the fulfillment of the study the researcher was designed a quantitative and cross sectional study design and collected 279 data from the samples through a standard questionnaire from the complete dissertation.

Study showed that Researcher of undergraduate level had followed relevant structure to make a dissertation. Through this study further physiotherapy students will get review of research of the institute which was categorized at different characteristics of research component with limitation of doing research. By giving author information, research definition, types, datatypes, sampling procedure, statistical knowledge, any student or researcher can use the data to determine the research profile knowledge.

In this research, the researcher found that cross sectional study used mostly. Students preferred CRP as study site, musculoskeletal area as study area. Most of the study followed descriptive analysis for data analysis.

Through this study the implementation of research has found with others knowledge and trend of doing dissertations. It is a vital process to do a research so it is important to create awareness and receive proper step to reduce the bias of study. Standard knowledge and better idea about research term helps to make a successful dissertation with a great outcomes.

## **6.2 Recommendations**

The aim of the study was to find out the study design used by the students of Physiotherapy at BHPI in their research projects. However, the study had some limitations with some further steps were identified that might be taken for the better accomplishment of further study. The main recommendations would be as follow:

The random sampling technique rather than the convenient would be chosen in further in order to enabling the power of generalization the results and try to make more valid and reliable.

The duration of the study was short, so in future wider time would be taken for conducting the study.

Investigator use only 279 dissertation as the sample of this study, in future the sample size would be more and in selective area. It will be effective when study area will other institute or university.

Outcome or result can be measured in a valid scale in further studies.

Association between different variables can be showed in future study.

This is an undergraduate study and doing the same study at graduate level will give more accurate output. There was some limitations of the study mentioned at relevant section. It is recommended to overcome those limitations during further study and try to take all over research of physiotherapy to ensure the generalizability of this study.

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# APPENDIX

## Questionnaire

Serial No:

AC. No:

No	Question	Information	Code
1.	Passing Year	2006 2007 2008 2009 2010 2011 2012 2013 2014 2015	01 02 03 04 05 06 07 08 09 10
2.	Author	Male..... Female.....	01 02
3.	Study paradigm	Qualitative..... Quantitative.....	01 02
4.	Study design	Experimental..... Quasi-Experimental..... Longitudinal..... Correlational..... Cohort study..... Cross sectional study..... Case control study..... Others.....	01 02 03 04 05 06 07 08

5.	Study site	Within BHPI..... 01 <b>Within CRP Savar (except BHPI)</b> Musculoskeletal unit..... 02 Neurology unit..... 03 SCI unit..... 04 Paediatric unit ..... 05 Others..... 06 <b>Within CRP Mirpur</b> Musculoskeletal unit..... 07 Neurology unit..... 08 Paediatrics unit ..... 09 Others..... 10 <b>Outside of CRP...</b> Within Savar..... 11 Within Dhaka..... 12 Others..... 13	
6.	Study area	Orthopedics (Fracture)..... 01 Musculoskeletal Unit..... 02 Neurology Unit..... 03 Stroke..... 04 SCI Unit..... 05 Paediatrics Unit..... 06 Cerebral Palsy..... 07 Sports & fitness..... 08 Cardiopulmonary..... 09 CBR..... 10 Others..... 11	
7.	Population	General Population ..... 01 Teachers..... 02 Students..... 03 Neck pain..... 04 LBP..... 05 OA..... 06 Stroke..... 07 SCI..... 08 CP..... 09 Documentation..... 10 Others..... 11	
8.	Types of Participants Based on age group	Children..... 01 Adult..... 02 Elderly people..... 03 Others..... 04	
9.	Mean Age of participants	..... Not Found..... 01	

10.	Expected sample size	..... Not Found.....	01
11.	Sample size	Total..... Male..... Female.....	
12.	Sampling procedure	<b>Random Sampling:</b> i)Simple random sampling..... ii)Stratified random sampling..... iii)Systemic random sampling..... iv)Cluster sampling..... v)Multistage sampling..... <b>Non Random Sampling:</b> i)Convenient sampling..... ii)Purposive sampling..... iii)Quota sampling..... iv)Others.....	01 02 03 04 05 06 07 08 09
13.	Types of Data	Nominal..... Ordinal..... Interval..... Ratio.....	01 02 03 04
14.	Materials of data collection	<b><u>Questionnaire:</u></b> • Yes..... . • No..... . If Yes, i)Questionnaire • developed by researcher which is validated..... . • Previously validated in Bengali..... ii)Translated into Bengali.. • Yes..... . • No..... . If yes, iii)forward and back translation.. • Yes..... • No..... iv)cultural adaptation.. • Yes.....	01 02 03 04 05 06 07 08 09 10 11 12

		<ul style="list-style-type: none"> <li>• No.....</li> </ul> <p><b><u>Questionnaire Structure:</u></b></p> <ul style="list-style-type: none"> <li>• Yes.....</li> <li>• No.....</li> </ul> <p>If Yes,</p> <p>i) Close ended questionnaire.....</p> <p>ii) Semi structure questionnaire.....</p> <p>iii) Open ended questionnaire.....</p> <p><b><u>Instruments/ tools:</u></b></p> <ul style="list-style-type: none"> <li>• Yes.....</li> <li>• No.....</li> </ul> <p>If Yes,</p> <p>i) VAS.....</p> <p>...</p> <p>ii) FIMS.....</p> <p>iii) GMFS.....</p> <p>iv) Oxford grade muscle power.....</p> <p>v) NPRS.....</p> <p>vi) Goniometer.....</p> <p>vii) Alfofunctional index.....</p> <p>viii) Others.....</p> <p>..</p>	<p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
15.	Method of data collection	<p>Face to face interview.....</p> <p>Observation.....</p> <p>Experiment.....</p> <p>Others.....</p>	<p>01</p> <p>02</p> <p>03</p> <p>04</p>
16.	Blinding	<p>Single blind.....</p> <p>Double blinding.....</p> <p>Not Found.....</p>	<p>01</p> <p>02</p> <p>03</p>
17.	Data collectors	<p>Author.....</p> <p>Others.....</p> <p>Not mention.....</p>	<p>01</p> <p>02</p> <p>03</p>
18.	Statistical analysis	<ul style="list-style-type: none"> <li>• <b>Descriptive statistics.....</b></li> <li>i) Mean.....</li> <li>ii) Median.....</li> <li>iii) Mode.....</li> <li>iv) Standard deviation.....</li> <li>v) Standard error of mean.....</li> <li>vi) Coefficient of variation.....</li> <li>• <b>Inferential statistics.....</b></li> </ul>	<p>01</p> <p>02</p>

19.	Normal /nearly distribution of data	Yes..... No..... Not applicable..... No information.....	01 02 03 04
20.	If Inferential statistics,	<b>Parametric test-</b> Unpaired t test..... Paired t test ..... z test..... ANOVA ..... Others..... <b>Non parametric test-</b> Mann-Whitney U test..... Chi square test..... Friedman's test..... Others..... ...	01 02 03 04 05 06 07 08 09
21.	Limitations	i)Time..... ii)Money..... iii)No of participant..... iii)Not mention..... iv)Others.....	01 02 03 04 05

Remarks:

Date:

Signature:



April 6, 2017

To  
The Head

Department of Physiotherapy,  
Bangladesh Health Professions Institute (BHPI),  
CRP, Chapain, Savar, Dhaka-1343.

**Subject: Application for permission for data collection to conduct my research project.**

Dear Sir,

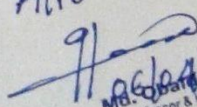
With due respect and humble submission to state that I am Khadeza Akter a student of 4<sup>th</sup> Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical board of BHPI has approved my research project entitled on 'Study design used by students of Physiotherapy at BHPI in their research projects'. To conduct this research, I want to collect data from the CRP Library. So, I need permission for data collection from the library thesis books. I would like to assure that anything of my study will not be harmful for anyone.

I therefore, pray and hope that you would be kind enough to give me the permission to make this research project successful.

Sincerely

Khadeza Akter

Khadeza Akter  
4<sup>th</sup> Professional B.Sc. in Physiotherapy  
Class Roll-18, Session: 2012-2013  
Bangladesh Health Professions Institute (BHPI)  
(An academic Institute of CRP)  
CRP, Chapain, Savar, Dhaka-1343.

Allowed  
  
Md. Obaidul Haque  
Associate Professor & Head of the Department  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343

Fms  
6.4.17  
Firoz Ahmed Mamin  
MSc in Clinical Neuroscience (London)  
Assistant Professor  
Department of Physiotherapy  
BHPI, CRP, Savar, Dhaka



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

Ref: CRP-BHPI/IRB/04/17/102

Date: 15/04/2017

To  
Khadeza Akter  
B.Sc in Physiotherapy  
Session: 2012-2013, Student ID 112120019  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Study design used by students of Physiotherapy at BHPI in their research projects.

Dear Khadeza Akter,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on 016/08/2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

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

Since the study involves a self-administered questionnaire that takes 15 to 20 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 AM on August 17, 2016 at BHPI.

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

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